

市區重建局
URBAN RENEWAL AUTHORITY

Urban Renewal Authority Development Schemes

Prepared under Section 25 (3) of the Urban Renewal Authority Ordinance

Ming Lun Street / Ma Tau Kok Road (KC-018) & To Kwa Wan Road / Ma Tau Kok Road (KC-019)

Planning Report
October 2022

PART 1

PLANNING REPORT

Urban Renewal Authority

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and
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EXECUTIVE SUMMARY

1. The Urban Renewal Authority (URA) submits this Planning Report to seek approval of the Town Planning Board (TPB) for two draft Development Scheme Plans (DSPs) Nos. S/K22/URA1/A and S/K22/URA2/A. The draft DSPs refer to a proposed holistic redevelopment located in a strategic precinct by the waterfront of Kowloon City District, covering two connected sites namely the proposed Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) and the proposed To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019).

2. URA's intention is to implement the two sites as one inclusive redevelopment. However, in case the whole redevelopment cannot be implemented in one go owing to land acquisition progress or other issues, being under separate Development Schemes will allow flexibility during the implementation stage and thus expediting the redevelopment pace.

3. Under a planning-led approach, both schemes aim to rationalize land use for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The Schemes will optimise the land uses into the long-awaited comprehensive designed waterfront developments fitting in with the redevelopment intention of the Ma Tau Kok waterfront area.

4. A 20m-wide waterfront promenade is provided at the eastern boundary of the Schemes along the waterfront for public enjoyment. The proposed waterfront promenade will be connecting with the adjoining planned waterfront promenade / waterfront developments at the Kai Tak Development Area (KTDA) in the northeast, thus enabling a continuous waterfront at the Kowloon East area and helping the Government to achieve its vision in shaping the Victoria Harbour as a world-class asset for public enjoyment. The proposed waterfront promenade will also facilitate the completion of the waterfront walk as recommended in the Kowloon City District Urban Renewal Forum (KC DURF) and in-line with CEDD's proposal of Kai Tak GreenWay network within KTDA.

5. To promote vibrancy, a 2-storeys retail belt abutting the waterfront promenade is provided. In addition, an at grade open-air central waterfront plaza with not less than 25m wide will be provided between two Schemes as a focal point for gathering and place-making opportunities. It will be connected to the proposed retail belt and waterfront promenade to bring in vibrancy and strengthen the east-west pedestrian connectivity.

6. Through restructuring and re-planning of existing land uses, the proposed developments will be setback from To Kwa Wan Road to allow space to align with Government's planned road widening works of the existing To Kwa Wan Road from a four-lane road to a six-lane road. Detailed design

and implementation programme of the planned road widening will be subject to the local views and agreement from relevant Government departments.

7. The building height restriction of the Schemes will be optimized to 120mPD, which generally respects the urban design context of the new KTDA, as well as the nearby Ma Tau Kok and To Kwa Wan areas that are undergoing major urban regeneration with numerous redevelopments, and to blend in with the surrounding building height of the existing and planned developments. The proposed relaxation of building height will also allow flexibility for creation of the at-grade waterfront plaza and well as providing sensible building separations and building setbacks within the proposed developments. Two 10m wide non-building areas (NBAs) along the southern boundaries of both Schemes will also be provided to facilitate better air ventilation and visual openness between the waterfront and the hinterland.

8. In addition to the proposed redevelopment under two DSPs, URA will explore the possibility to revitalize the adjoining abandoned Government's pier structure/landing steps located outside the DSP boundaries under separate revitalisation works. Subject to further liaison with relevant Government departments, a possible footbridge connection at the podium level over To Kwan Wan Road can be explored to enhance the pedestrian connection between the waterfront and the inland area.

行政摘要

1. 市區重建局（市建局）向城市規劃委員會（城規會）提交兩份發展計劃草圖（編號 S/K22/URA1/A 及 S/K22/URA2/A），涉及一項位於九龍城區策略性臨海地帶，涵蓋兩個分別命名為明倫街/碼頭角道發展計劃（KC-018)及土瓜灣道/馬頭角道發展計劃(KC-019）的雙連地盤的一個整體重建發展。

2. 市建局視兩個相連地盤為一個的整體重建發展項目。然而，考慮到整個發展開可能因土地收購進度或其他事宜導致未能全面推行，把整個發展分為兩個發展計劃將能為項目實施時提供彈性，從而加快重建步伐。

3. 發展計劃旨在以規劃主導的模式，透過整體規劃重整現有土地用途，更有效善用土地並為社區帶來規劃裨益。發展計劃將優化土地用途，以配合期待已久於馬頭角海濱一帶地區重建作綜合海濱發展的規劃願景。

4. 發展計劃東邊的沿海部份將設有一條 20 米闊的海濱長廊，供公眾享用。擬議的海濱長廊將連接毗鄰已規劃的海濱長廊 / 位於東北面啟德發展區的海濱發展，冀能在九龍東一帶提供一條無間斷的海濱長廊，以協助政府達致於維多利亞港締造世界級海濱的願景。擬議的海濱長廊亦有助實現於「九龍城市區更新地區諮詢平台」中建議的海濱休閒路段，同時配合土木工程拓展署於啟德發展區所推動「共融通道」的計劃。

5. 為促進海濱一帶的活力，發展計劃建議沿海濱長廊提供一段樓高兩層的零售帶。此外，於兩個發展計劃之間的地面將提供一個不少於 25 米闊的海濱廣場，作為臨海休閒空間並提供地方營造的機遇。該海濱廣場將連接擬議的零售帶和海濱長廊，以提昇活力並加強東西向的行人連接。

6. 透過重整及重新規劃現有土地用途，擬議發展將從土瓜灣道後移，以騰出足夠的地面空間配合政府於土瓜灣道的擴建工程，由目前四線車道擴闊至六線車道。有關工程的詳細設計及實施須視乎地區人士意見及相關政府部門的許可而定。

7. 考慮到啟德發展區的地市設計，以及毗鄰地區如馬頭角、土瓜灣地區等所進行的地區更新及多個重建發展，該計劃的建築物高度限制將建議放寬至主水平基準以上 120 米，以配合周邊現有及將來的建築物高度輪廓。擬議放寬建築物高度限制亦將為該計劃內的樓宇設計提供更大彈性，包括提供地面海濱廣場，以及提供合理的樓宇間距及建築物後移。加上兩條闊10米，分別位處兩個發展計劃南面邊界的非建築用地，將促進海濱及內陸地區之間的空氣流通及景觀開揚度。

8. 除兩個計劃內的擬議發展，市建局為計劃界線外毗鄰的閒置政府碼頭構築物/登岸梯級，探討透過其他市區更新手法進行活化工程的可能性。此外，為加強行人連接，市建局亦會研究於平台層興建一條橫跨土瓜灣道的行人天橋的可行性。相關的活化計劃將有待進一步研究及與相關政府部門商討。

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1. INTRODUCTION

1.1 The Urban Renewal Authority (URA) has proposed two Development Schemes, namely the Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) (the KC-018 Scheme) and the To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) (the KC-019 Scheme) under section 25 of the Urban Renewal Authority Ordinance. The KC-018 and KC-019 Schemes are connected sites which located at a strategic precinct next to the Ma Tau Kok waterfront of Kowloon City District. Under an integrated planning-led approach, both Schemes are considered as one comprehensive redevelopment which aim to rationalize land use for holistic planning of the area to enable more efficient land use and to bring planning gains to the community.

1.2 The Schemes are included in the URA's 21st Business Plan approved by the Financial Secretary for commencement in 2022/23. It is proposed to be proceeded as Development Schemes under Section 25 of the URA Ordinance (URAO). In June 2022, the URA's Board approved the submission of the Development Schemes under Section 25(5) of the URAO to the TPB for consideration. The draft Development Scheme Plans (DSPs) No. S/K22/URA1/A for the KC-018 Scheme and No. S/K22/URA2/A for the KC-019 Scheme have been prepared for submission to TPB.

1.3 Pursuant to Section 23(1) of the URAO, the URA notified the public in the Government Gazette about the commencement of both Schemes on 7 October 2022. The draft DSPs are now submitted under Section 25(5) of the URAO to TPB for consideration.

1.4 This Planning Report (**Part 1** of the whole report) is prepared to provide the TPB with the background information and the planning proposal to facilitate its consideration of the draft DSPs (**Part 2** of the report), submitted under section 25 of the URAO. Supplementary information, including the preliminary design of the proposed development, key technical assessments, Social Impact Assessment Stage 1 (SIA1) reports and implementation approach are enclosed in **Part 3** for reference.

2. THE DEVELOPMENT SCHEME PLAN AREA

2.1. The Schemes are located in the waterfront area between new development area of KTDA and old urban district of Mau Tau Kok in To Kwa Wan. It is broadly bounded by the Ma Tau Kok waterfront to the east, Grand Waterfront to the immediate south, To Kwa Wan Road to the west and reserved site for development of Dedicated Rehousing Estate (DRE) of the Hong Kong Housing Society (HKHS) to the immediate north. Ma Tau Kok Road is situated in between the two Schemes. **Plan 1** shows the location of the Schemes.

2.2. KC-018 Scheme area is broadly bounded by Ma Tau Kok waterfront to the east, Grand Waterfront to the south, To Kwa Wan Road to the west and Ma Tau Kok Road to the north. It is also known as "5-Street" area, consists of five clusters of eight-storey tenement buildings with 101 building blocks of buildings comprising Nos. 91-113 Ma Tau Kok Road (odd nos.), 1-25 Ming Lun Street (odd nos.), 2 – 28A Ming Lun Street (even nos.), 1-15 Chung Sun Street (odd nos.), 1-16 Hing Yin Street (even and odd nos.), 1-17 Hing Yan Street (even and odd nos.), and 19-31 Hing Yan Street (odd nos). The KC-018 Scheme area also involves five public streets within the Scheme area, including Ma Tau Kok Road (part), the whole of Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street. The existing Kowloon City District Council Sitting-out Area as well as the surrounding public pavement are also included in the KC-018 Scheme area. The total gross site area of KC-018 is about 11,430 sq.m. Subject to site survey and detailed design, the net site area for Plot Ratio (PR) calculation is about 10,496 sq.m. The Scheme area of KC-018 is shown in **Plan 2**.

2.3. To the north of KC-018 across Ma Tau Kok Road is the KC-019 Scheme. KC-019 Scheme area covers Newport Centre Phases I and II located at Nos. 116-118 Ma Tau Kok Road (even nos.), portion of Ma Tau Kok Road, adjoining Government land and the surrounding public pavement. The total gross site area of KC-019 is about 8,759 sq.m. Subject to site survey and detailed design, the net site area for PR calculation is about 7,816 sqm. The Scheme area of KC-019 is also shown in **Plan 2**.

2.4. Both Schemes currently falls within the "Comprehensive Development Area" ("CDA") zone with the western portion shown as "Road" on the draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7 (**Plan 3** refers). The Planning intention of CDA zone is for a comprehensive development/redevelopment of the area for residential and/or commercial uses with the provision of waterfront promenade, open space and other supporting facilities. A minor portion of the existing pavement area currently shown as "Road" on the approved Ma Tau Kok

OZP No. S/K10/28 have been included in the scheme areas to facilitate future land resumption and implementation of the Schemes, such area will not be accountable for GFA/PR calculation.

2.5. Both Schemes fall within the "5-Street" area of the "5-Street" and "13 Street" area, To Kwa Wan as defined in the Urban Renewal Plan (URP) prepared by KC DURF. Under the URP of KC DURF, the area is recommended as "*Redevelopment Priority Area*". DURF recommended to sub-divide the "Comprehensive Development Area (CDA)" site at "5-Street" into two portions based on the existing residential building portion and the industrial / commercial building portion. The Scheme, being a redevelopment project, is tally with the recommendations of KC DURF.

2.6. Both Schemes are prepared with the consideration of the proposals and recommendations by the KC DURF and the public aspirations and views from local stakeholders in the area to achieve a wider planning gain to the community. The schemes together with other completed and on-going URA redevelopment projects within the district can synergise the neighbourhood with the vision to help address the problem of urban decay and to improve the living conditions of residents in dilapidated urban area of Kowloon City.

3. BACKGROUND AND EXISTING CONDITIONS

Historical Background

3.1. After the first major reclamation in the 1890s, To Kwa Wan began its transformation into an area for industrial activities which extended from Hung Hom and the ex-Whampoa Docks. The second large-scale reclamation of To Kwa Wan started in the 1950s when industrial activities in Kowloon became even more prosperous. The Schemes and its vicinity were then transformed into a mixture of residential developments and industrial uses including manufacturing, vehicle repairing, weaving, bleaching and dyeing, printing and electroplating. Today, these industrial activities still scatter within the area.

3.2. The Ma Tau Kok Gas Production Plant (South Plant) was originally built in the 1930s at the location just south of KC-018. In 1956, with the growing demand due to the increasing industrial activities it was then expanded to the other side of Ma Tau Wai Road, namely the North Plant at its current location. The South Plant operates until 1994, and was subsequently redeveloped into the present Grand Waterfront residential development in early 2000's while the North Plant remains in operation till now but only with minor supply of gas production. According to the website[1] of The Hong Kong and China Gas Company Limited (Town gas), "In Hong Kong, town gas is produced at two production plants. *Over 98% is supplied from the Tai Po Plant, with the Ma Tau Kok Plant making up the rest*".

Existing Uses, Building and Living Conditions

KC-018

3.3. The area within KC-018 consists of five-clusters of eight-storey tenement buildings along five public streets including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road. The tenement buildings were completed between the years 1959 and 1960 (i.e., aged 62 to 63). According to the record of General Building Plans, all the buildings are permitted for domestic use on the upper floors and for non-domestic uses on ground floor. All buildings are without lift and their serviceability are generally poor (**Plan 4** and **Plan 5** refers).

[1] Town Gas, Gas Production (6 September 2022)
<https://www.towngas.com/en/About-Us/Hong-Kong-Gas-Business/Gas-Production>

3.4. Based on non-obtrusive site observation conducted in September 2022, buildings within KC-018 are mainly residential development in nature on the upper floors. Commercial premises are occupying the ground floor primarily engaging in eating places, retail shops and vehicle repair workshops.

3.5. Based on the URA's Building Care Management Information System (BCMIS) as of August 2022, 24 out of the 101 building blocks within KC-018 (about 24 %) are of either "Poor" or "Varied" condition, which are the two worst categories under BCA. The remaining 77 building blocks (about 76%) which have recently completed or are currently undergoing building rehabilitation works from 2007 to 2022 are in "Satisfactory" or "Acceptable" conditions. Based on the advice from consultant and the experience of URA, for buildings in "Poor" or "Varied" condition, their structural elements, components, finishes and facilities are observed in decay condition due to lack of building repairs and ongoing maintenance, major repair works will be required. For buildings in "Acceptable" condition, minor defects are found on the structural elements. Appropriate building repairs and ongoing maintenance works will be required in order to maintain the habitability and avoid further deterioration of the buildings. Results of the BCMIS is shown in **Plan 6**.

3.6. According to Home Affairs Department's "Database of Private Buildings in Hong Kong" as of April 2022, 69 out of 101 building blocks within KC-018 (about 68%) are "3-nil" buildings without management body for building management.

3.7. According to Buildings Department (BD)'s records held by URA as of May 2022, 53 out of 101 building blocks (about 53%) have outstanding Fire Safety Notices. 15 out of 101 building blocks (about 15%) have outstanding building orders under S26/26A Dangerous Buildings under Buildings Ordinance (Cap. 123) and 85 out of 101 the building blocks (about 84%) have outstanding Mandatory Building Inspection notices under S30B of Cap. 123. Seven out of 101 building blocks (about 7%) are carrying out improvement works under the Fire Safety Improvement Works Subsidy Scheme (FSWS) under Fire Safety (Buildings) Ordinance (Cap 572). 11 out of 101 building blocks (about 11%) have outstanding S28 Drainage Repair orders of Cap 123, implying hygiene concerns and their vulnerabilities particularly under the COVID-19 pandemic period.

3.8. BD's records also show that 67 out of the 101 building blocks (about 66%) have completed building rehabilitation works under Operation Building Bright (OBB1.0) in the last ten years. As at August 2022, 73 out of the

101 building blocks (about 72%) have been undertaking rehabilitation works under OBB2.0. It is understood that OBB works comprise mainly repairing defects (e.g., major cracks, spalling) and FSWS works comprise improvement of fire services installations, equipment and fire safety construction measures in common or public areas of the buildings. Repair works to the interior of private units are not included. Based on URA's past experience in rehabilitation works, even buildings that have undergone repair works/schemes would still be required to undertake comprehensive building rehabilitation regularly to avoid further deterioration.

KC-019

3.9. The area of KC-019 consists of Newport Centre Phase I and Phase II, which were completed in 1979 (43 years old) and 1981 (41 years old) respectively, are both six-storey including one-basement level. According to the record of occupation permits the two buildings were for workshop and repair garage from LG/F to 3/F, and car parking spaces and warehouses in the basement level. Based on the latest building conditions recorded by URA's BCMIS conducted in August 2022, Newport Centre Phases I and II are of "Varied" condition. Results of the BCMIS is shown in **Plan 6**.

3.10. Newport Centre phases I and II are internally connected and lift services are available in both Phases. Based on the non-obstructive site observation on common area conducted in August 2022, the building is currently occupied for offices, storage, workshops, showrooms and retail services use.

3.11. Photos showing the existing conditions of KC-018 and KC-019 are provided in **Plan 9**, **10 and 11**.

Demographic Background

3.12. According to 2021 Census and the experience of URA, the population within KC-018 is estimated to be about 2,970 in about 1,414 households. Detailed demographic information will be ascertained after Freezing Survey (FS) and incorporated in the SIA (Stage 2) report. According to census and non-obstructive site observation on common area, there is no living population in the two buildings within KC-019.

Ownership Pattern

3.13. As of August, 2022, all the tenement buildings within KC-018 are under multiple ownerships (**Plan 7** refers). The total number of interests (as of August 2022) is 821. The boundary of KC-018 also includes Government land allocated to Kowloon City District Council sitting-out area along the waterfront.

3.14. The Newport Centre Phases I and II in KC-019 are under multiple ownerships (**Plan 7** refers). The total number of interests (as of August 2022) of Phases I and II are about 13 and 100 respectively.

Surrounding Land Uses

3.15. The street blocks in close proximity to the Schemes are occupied by a mix of residential, commercial, Government, Institution or Community (GIC) developments and area zoned "Open Space" (**Figure 3.1 refers**). Residential developments are found at the immediate south (i.e., Grand Waterfront), immediate north (DRE of HKHS) and northwest (i.e., "13-Street" tenement buildings) of the Schemes. Commercial uses such as retail shops, eateries and vehicle repair workshops are found on the ground floor of the residential buildings nearby. The MTKGW is located to the west of the area of KC-018 across To Kwa Wan Road and is still in operation but with only minor supply of gas production.

3.16. A number of GIC facilities are found within close proximity of the Scheme areas. To the north and adjoining the DRE site of HKHS is the To Kwa Wan North Substation. To the further northwest along To Kwa Wan Road is the Hong Kong Society for the Blind (HKSB) factory cum sheltered workshop. The Cattle Depot Artist Village and the Cattle Depot Art Park adjoining the MTKGW are located to the further west of the Schemes.

3.17. To the further northeast is the Kai Tak Sports Park which is currently in construction. It will accommodate the main stadium, public sports ground, indoor sports centre building, hotel and office. To Kwa Wan Sports Centre and To Kwa Wan Recreation Ground, to the further southwest of the Schemes, are popular venue for local sports activities. Kowloon City Ferry Pier Public Transport Interchange, which is partially in operation and partially occupied as the works area of Central Kowloon Route Project, is located to the further southeast of the Schemes.

3.18. An abandoned Government landing step/pier and the To Kwa Wan Typhoon Shelter are located to the immediate east outside the boundaries of both Schemes.

3.19. Industrial buildings can be found to the further northwest and southwest of the Schemes. These buildings including Freder Centre, KK Industrial Building, Cheong Wah Factory Building, Merit Industrial Centre and more are mainly engaged in non-polluting activities including office, storage, workshop and showroom uses.

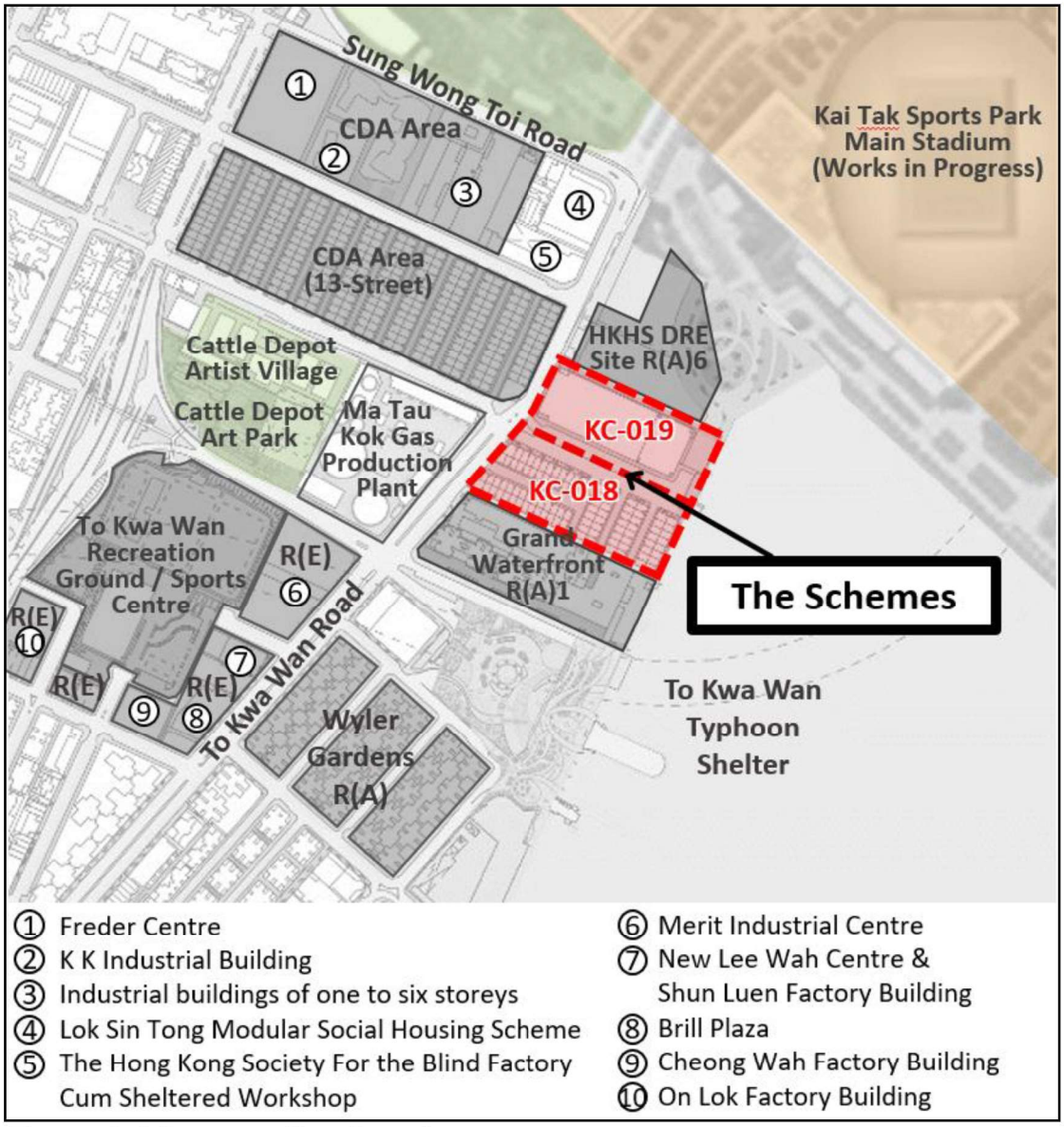


Figure 3.1 Surrounding Developments

Existing Traffic Network

3.20. To Kwa Wan Road along the western boundary of the Schemes is a single carriageway four-lane north-south district distributor linking KTDA in the north and To Kwa Wan in the south. Ma Tau Kok Road is also a district distributor connecting east and west between Ma Tau Kok in the hinterland to the waterfront area. Ming Lun Street, Chung Sun Street, Hing Yin Street, and Hing Yan Street are local roads which are frequently occupied by illegal road-side parking, vehicle repair workshops using the streets as parking space, storage and loading/unloading activities.

3.21. At present, the Schemes are well-served by various public transport services operating along To Kwa Wan Road, Ma Tau Kok Road and Mok Cheong Street including franchised bus, green minibus and public light bus. In addition, the Kowloon City Ferry Pier and bus terminus about five minutes walking distance from the Schemes. Please refer to **Appendix 4** – TIA Report for details of the existing public transport facilities.

Existing Pedestrian Network

3.22. The two Schemes are located in about 15 minutes walking distance away from both the MTR Sung Wong Toi Station and To Kwa Wan Station. Public transport services including buses and franchised buses are located in proximity of the Scheme area. Local residents of nearby residential development would walk along the two major pedestrian corridors on To Kwa Wan Road and Ma Tau Kok Road for public transport services.

3.23. Five existing road sections are included in the Schemes for redevelopment, namely portion of Ma Tau Kok Road, and the whole of Ming Lun Street, Chung Sun Street, Hing Yin Street and Hing Yan Street. Except Ming Lun Street, the remaining streets are dead-end roads. The pavement areas are often occupied by on-street parking, car repairing activities, dumping and storage, resulting a congested and unpleasant walking environment.

Environmental and Hygiene Condition

3.24. The proposed holistic redevelopment is envisaged to be subject to some traffic noise and air pollutants generated from the heavy trafficked road in To Kwa Wan Road.

3.25. The portion of Ma Tau Kok Road within the Scheme is often being occupied by vehicles and used for loading/unloading activities. Besides,

the existing Kowloon City District Council sitting-out area is situated behind buildings and of poor visibility and accessibility. Part the existing promenade area is being fenced off and not accessible by the public. The noise and hygiene issues caused by these on-street activities at Ma Tau Kok Road creates an unpleasant environment and nuisances to pedestrians.

3.26. Although Newport Centre was built for industrial uses, the premises is currently used for offices, storage, non-polluting workshops, showrooms etc. There are no chillers or massive machine rooms on the roof top of the buildings, which make the Newport Centre not a main source of environmental nuisance at all.

Planned Developments in the Vicinity

3.27. On 10 December 2021, the DRE site of HKHS adjoining KC-019 in the immediate north was gazetted and rezoned to "Residential (Group A) 6" ("R(A)6") with domestic PR of 6.5 and non-domestic PR of 1.0. Upon completion, it will be redeveloped into a subsidized housing development consists of about 1,100 units in three-towers, with about 8,500 sq.m. of retail and about 2,700 sq.m. of welfare facilities.

3.28. The Kai Tak Sports Park and Metro Park located to the further north and east are part of the major developments within the KTDA. The Sports Park is zoned "Other Specified Uses" annotated "Stadium" with a maximum building height of 55mPD, which aims to provide high-quality facilities for wide variety of sports venues, open spaces, park facilities, dining cove, office, hotel and more upon completion in 2023. The Metro Park zoned "Open Space" is currently under planning and design stage.

3.29. The HKSB site located at the junction of To Kwa Wan Road and Mok Cheong Street zoned "G/IC" will be redeveloped into a new welfare complex with a maximum building height of 100mPD. According to HKSB, the demolition works will tentatively commence in 2022 and expected completion date is in 2025.

3.30. The "Lok Sin Tong Modular Social Housing Scheme", a completed transitional housing project, is located at the proposed public housing site at the junction of Sung Wong Toi Road and To Kwa Wan Road. It is to provide affordable housing and family supporting services for low-income families that are queuing for public rental housing. According to MPC Paper No. 2/15 dated April 2015, the site will be redeveloped into one residential block of public housing. With proposed building height of

100mPD and maximum domestic plot ratio of 7.5, the proposed public housing project will provide about 600 flats.

3.31. To the further northwest of the Schemes along Mok Cheong Street are a number of factory buildings also zoned CDA. Among these, the Freder Centre and the K.K. Industrial Building remains in operation and the former sites of the Eastern Cotton Mills Ltd. and Good Harvest Air Freight Centre are currently vacant. These land parcels fall within three different "CDA" sites. Planning applications (i.e. No. A/K10/256 and No. A/K10/259), submitted by different applicants, for comprehensive residential and commercial development at "CDA(2)" site, with maximum building height of 100mPD, covering K.K. Industrial Building and Eastern Cotton Mills, have been approved with conditions by the TPB on 27 May 2016 and 7 December 2018 respectively.

3.32. Pedestrian walkways linking Mok Cheong Street and Sung Wong Toi Road are proposed including one which links to KTDA via a proposed footbridge connected to an elevated level within the commercial podium. According to the proposed scheme of planning application no. A/K10/259, a portion of the front facade of Eastern Cotton Mills Ltd. (a Grade III historic building) will be preserved and incorporated into the future development. Another planning application (i.e. No. A/K10/265) for comprehensive residential and commercial development at the "CDA(3)" site, with maximum building height of 100mPD covering seven-land-lots, has also been approved with conditions by the TPB on 10 September 2021.

3.33. To the northwest of the two Schemes across To Kwa Wan Road is a cluster of tenements building which is known as the "13-Street area". The area is recommended as a "*Proposed Redevelopment Priority Area*" under KC DURF. To the further north is the KTDA, which is under construction and the land is designed for a mix of residential, commercial, tourism, community uses, sports uses supported with infrastructure facilities.

3.34. The Schemes are sandwiched between the new development area of Kai Tak and the old urban district fabrics of Ma Tau Kok and To Kwa Wan. Given the planned developments as described above, the vicinity areas are undergoing urban regeneration with numerous developments for various uses, and a major face-lift is underway.

4. PLANNING OBJECTIVES

4.1. Both Schemes aim to rationalize land use by adopting an integrated planning-led approach for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The Urban Renewal Strategy (URS) issued in 2011 promulgates a comprehensive and holistic approach to carry out urban renewal with the following objectives:

- Restructuring and re-planning of concerned urban areas;
- Designing more effective and environmentally-friendly local transport and road networks within the concerned urban areas;
- Rationalizing land uses within the concerned urban areas;
- Redeveloping dilapidated buildings into new buildings of modern standard and environmentally-friendly design;
- Providing more open space and community / welfare facilities; and
- Enhancing the townscape with attractive landscape and urban design.

4.2. Following the objectives in the 2011 URS, the Schemes, as a holistic redevelopment, seek to restructure and re-plan the area through a holistic "planning-led" and "district-based" urban renewal approach with integration of Redevelopment (R1) and Revitalisation (R4) initiatives.

4.3. Both Schemes fall within the "5-Street" area of the "5-Street" and "13 Street" area, To Kwa Wan as defined in the Urban Renewal Plan (URP) prepared by KC DURF. Under the URP of KC DURF, the area is recommended as "*Redevelopment Priority Area*". DURF recommended to sub-divide the "Comprehensive Development Area (CDA)" site at "5-Street" into two portions based on the existing residential building portion and the industrial / commercial building portion. The Scheme, being a redevelopment project, is tally with the recommendations of KC DURF.

4.4. Apart from the redevelopment of the Schemes, an integration of other urban renewal initiatives is proposed at the adjoining area by separate revitalisation works outside the Scheme boundary to multiply the planning gains and urban renewal effects. Details of the planning proposals are provided in Section 5.

5. PLANNING AND LAND USE PROPOSALS

Development Intensity

5.1. Under the draft DSPs, the scheme areas in orange color are proposed to be zoned "R(A)", which is primarily intended for comprehensive high density residential developments with the provision of waterfront promenade, as well as commercial uses and/or GIC facilities at the lowest three floors or in the purpose-designed non-residential portion of a building; while the scheme areas in beige color are proposed to be zoned "Road" to allow spaces for Government's planned road widening works of To Kwa Wan Road.

5.2. In the proposed Notes of "R(A)" zone, the maximum PR of the proposed development is 7.5, of which PR 6.5 is for domestic uses and PR 1.0 is for non-domestic uses, with a maximum site coverage of 65%. The proposed PR and site coverage are in line with the development intensity of "R(A)6" at the adjoining DRE site of HKHS under the prevailing Kai Tak OZP. Not less than 1,000 sq.m and 500 sq.m. non-domestic GFA is proposed for the GIC uses under the KC-018 and KC-019 DSPs, respectively. It is proposed a clause to be included in the "Remarks" of the proposed Notes of "R(A)" that any floor space that is constructed intended for use solely as GIC facilities, as required by Government, may be disregarded from GFA/PR calculation.

5.3. To optimise the land uses into the long-awaited comprehensive designed waterfront developments fitting in with the redevelopment intention of the Ma Tau Kok waterfront area, a 20m-wide waterfront promenade is provided at the eastern boundary of both Schemes along the waterfront for public enjoyment. A strip of land abutting the waterfront promenade will be designated as for "Shop and Services" and "Eating uses" only, with buildings not exceeding 2 storeys for provision of a retail belt to bring vibrancy to the waterfront area. Such provision are also in line with the planning intention of the current "CDA" zone under the prevailing Kai Tak OZP.

5.4. Whilst achieving the planning objectives as identified in Section 2.4 above, a relaxation of maximum building height from 65mPD and 110mPD to 120mPD is proposed under the "R(A)" zone under the draft DSPs to facilitate greater design flexibility of the building blocks and provisions of building setbacks in the Schemes. The proposed building height of 120mPD in the Schemes generally respect the surrounding built environment in the adjoining Ma Tau Kok, To Kwa Wan and Kai Tak area which are facing dramatic changes through redevelopment, with building heights ranging from 55mPD to 176mPD (i.e. 55mPD for the Kai

Tak Sports Park, 100mPD for the proposed DRE site of HKHS, 159mPD for Sky Tower and 176mPD of Grand Waterfront).

5.5. The proposed development parameters of the Schemes are shown in **Table 5.1**, which will be subject to adjustments at the detailed design stage after DSP's approval.

Table 5.1 Proposed Development Parameters of the Schemes

Parameters	Overall	KC-018	KC-019
Gross Site Area	about 20,189 sq.m.	about 11,430 sq.m.	about 8,759 sq.m.
Site Area for PR Calculation (Subject to survey and detailed design)	about 18,312 sq.m.	about 10,496 sq.m.	about 7,816 sq.m.
Proposed Zonings	"R(A)", Road		
Proposed Maximum Building Height (at main roof level)	Not more than 120mPD		
Proposed Maximum Domestic GFA (PR)^	about 119,028 sq.m. (PR = 6.5)	about 68,224 sq.m. (PR = 6.5)	about 50,804 sq.m. (PR = 6.5)
Proposed Maximum Non-domestic GFA (excluding GIC Provision) (PR) ^	about 18,312 sq.m. (PR = 1.0)	about 10,496 sq.m. (PR = 1.0)	about 7,816 sq.m. (PR = 1.0)
Proposed Maximum Non- domestic GFA for GIC Provision^ (proposed to be exempted from GFA calculation under DSP)	1,500 sq.m.	1,000 sq.m.	500 sq.m.
Total GFA (about)	138,840 sq.m.	79,720 sq.m.	59,120 sq.m.
No. of Flats@	2,226	1,276	950
Average Flat Size@ (GFA)	about 53.5 sq.m.		
Internal Transport Facilities for the proposed development*	Basement ancillary car park to accommodate: - 758 nos. private car parking spaces - 36 nos. motor-cycle parking spaces	Basement ancillary car park to accommodate: - 434 nos. private car parking spaces - 20 nos. motor-cycle parking spaces	Basement ancillary car park to accommodate: - 324 nos. private car parking spaces - 16 nos. motor-cycle

	- 28 nos. L/UL bays	- 16 nos. L/UL bays	parking spaces - 12 nos. L/UL bays
Assumed PPoF	2.3		
Completion Year	2033		

Notes:
^ The exact GFA and PR are subject to TPB approval, detailed design and prevailing First Schedule of Building (Planning) Regulations.
@ Indicative only, subject to detailed design at implementation stage.
* Subject to liaison and agreement with Transport Department.

Notional Layout

5.6. As shown in the indicative block plan and the section plans of the notional design (**Appendix 1**), the proposed redevelopment comprises 4 residential towers on top of two separate three-storey-podium of commercial / retail / GIC facilities uses, and a three levels basement for ancillary with separate ingress/egress.

5.7. Through re-structuring and re-planning of existing land uses, a 20m-wide waterfront promenade is provided at the eastern boundary of the Scheme along the waterfront for public enjoyment. Through integrated design approach, the waterfront promenade within the Schemes will be connected with the adjoining waterfront developments including the dining cove, Kai Tak Sports Park, Metro Park in KTDA in the northeast, enabling better connection between the old and new districts and continuous waterfront promenade. To align with CEDD's proposal of Kai Tak GreenWay network within KTDA, cycling facilities along the proposed waterfront promenade will also be provided.

5.8. Two 10-m wide NBAs along the southern boundaries of both Schemes as stipulated under the prevailing OZP will also be appreciated and retained. The two NBAs will enable better air ventilation and visual openness between the waterfront and the Ma Tau Kok and To Kwa Wan in the hinterland. Building setbacks will be provided along To Kwa Wan Road to allow sufficient space for Government's future implementation of the planned road widening works.

5.9. To promote vibrancy, a 2-storeys retail belt abutting the waterfront promenade is provided. In addition, an open-air central waterfront plaza will be provided between two Schemes as a focal point for gathering and place-making opportunities. It will be connected to the proposed retail belt and waterfront promenade to bring in vibrancy and strengthen the east-west connectivity.

Other Separate Urban Renewal Initiatives to be Considered after DSPs approval

5.10. Through integration of redevelopment revitalisation initiatives, the Scheme provides a valuable opportunity to link up the wider neighbourhood at the inner part of To Kwa Wan. To capture the opportunity, a footbridge connection is proposed at the Scheme to facilitate the development of a footbridge across To Kwa Wan Road under separate URA's revitalisation initiatives.

5.11. In addition, separate revitalization works at the adjoining abandoned pier/landing step outside the DSP is proposed to achieve a coherent design theme for this part of waterfront promenade for public enjoyment. Detailed design and programme of the said works would be subject to the views and agreement with relevant Government departments.

6 TECHNICAL ASSESSMENTS

6.1. Given both Schemes are considered as one redevelopment as a whole, comprehensive technical assessments have been carried out to assess the cumulative impacts for the two Schemes, with the exception of the Social Impact Assessment Stage 1 (SIA1) reports which will be prepared separately for each scheme.

Visual Impact

6.2. A Visual Impact Assessment (VIA) was conducted (see **Appendix 2**) to study the potential visual impact with the implementation of the two Schemes. Visual appraisal has made reference to the TPB Guidelines No. 41 and have been carried out at local viewpoints. To comprehensively compare the visual impact of the Proposed Schemes, two sensitivity tests, namely Sensitivity Test 1 (with maximum building height permitted in OZP in the surroundings) and Sensitivity 2 (with 20% increase in building height in the surroundings), were also prepared for scenario testing. The two sensitivity tests are for reference only and intend to demonstrate the possible visual changes of the surroundings before and after the proposed developments with assumption of the possible future redevelopments in the nearby area under the two proposed schemes.

6.3. The proposed maximum building height of 120mPD falls between the Grand Waterfront of +176mPD in the immediate south and the approved DRE of HKHS with +100mPD in the immediate north. The VIA has demonstrated that the proposed developments are visually compatible with the surrounding built environment and planned developments, and would not create significant visual impact in general.

Social Impact

6.4. In accordance with the URS, non-obtrusive SIA (Stage 1) has been conducted for KC-018 and KC-019, respectively. The reports are included as **Appendices 3a and 3b**. The reports include the local profile of the two Schemes, which will need to be prepared for and borne in mind during the implementation of the Schemes. The Stage 2 SIA reports are under preparation based on factual data, which has been conducted on the commencement of the Schemes. The Stage 2 SIA reports will be submitted to TPB separately. The SIA reports are to assess the likely effect of the implementation of the Schemes and to propose mitigation measures to minimise any social impacts.

Traffic Impact

6.5. A Traffic Impact Assessment (see **Appendix 4**) has been conducted to assess the traffic impact of the two Schemes and the proposed provision of internal transport facilities of the proposed developments. The TIA demonstrated that the Schemes have no adverse traffic impact on the local traffic network and the pedestrian walking environment. The proposed parking provision and the internal transport facilities fulfil the high-end requirements of the latest Hong Kong Planning Standards and Guidelines and are acceptable from traffic engineering point of view.

Environmental Aspect

6.6. An Environmental Assessment (see **Appendix 5**) was conducted to study any potential environmental impact/benefits associated with the implementation of the two Schemes. The study concluded that the impact on air quality, noise impact, land contamination and waste management were not insurmountable with mitigation measures adopted if necessary.

6.7. The Air Quality Impact Assessment indicated that the predicted concentrations of assessment parameters except NO_2 at all Air Sensitive Receivers (ASR) of the Schemes would comply with the relevant Hong Kong Air Quality Objectives. Therefore, no fresh air intake for the podium would be located within the area with exceedance. It is also anticipated that the ASR will not be subject to adverse air quality impact. The predicted concentration of odour for all ASRs are expected to be within the odour criterion, as such, the occupant at these uses will not be subject to adverse odour impact.

6.8. On Noise Impact Assessment, with appropriate noise mitigation measures implemented during the construction period, no adverse impact arising from the construction activities is expected. Based on the notional layouts and adoption of mitigated measures, direct noise mitigation measures including fixed glazing (with or without maintenance window), utility platform with self-closing door (not for ventilation), acoustic window/door (baffle type) are recommended to address the adverse traffic noise impact. The potential noise impact from the fixed noise sources has also assessed and no adverse noise impact is anticipated with the mitigated measures adopted.

6.9. A Land Contamination appraisal was carried out for the Scheme areas. Since vehicle repair workshops and hardware stores are found on the ground floor of buildings in KC-018 by on-site observation, the release of oils, fuels and lubricants are expected during vehicle and equipment

maintenance and refuelling. For KC-019, the basement and ground floor of the Newport Centre comprise mainly of showrooms and offices. No aboveground/ underground oil storage tanks or chemical dangerous goods were observed during the site visits. Owing to the nature of the building, manufacturing industries might be present in the past. Further site appraisal shall be conducted upon DSP approval to ascertain any land contamination issues.

6.10. On waste management, appropriate sustainable measures/approaches to waste management are proposed to reduce less waste and reuse or recover value from waste, no adverse environmental impacts arising from handling, storage, transportation or disposal of the wastes generated the construction and operation stage of the Schemes are envisaged.

Air Ventilation

6.11. An Air Ventilation Assessment - Expert Evaluation has been conducted to assess the ventilation performance of the area surrounding the two Schemes (see **Appendix 6**). A comparison of air ventilation was made between the notional design under the OZP-compliant Scheme (the Baseline Scheme) and the notional design under the draft DSPs (the Proposed Schemes). It is concluded that no adverse air ventilation impact is anticipated for the proposed Schemes as compared to the Baseline Scheme.

Drainage and Sewerage Impact

6.12. A Drainage and Sewerage Impact Assessment (DSIA) was conducted for both Schemes (see **Appendix 7**). The DSIA report concluded that the impact on the capacities of the existing drainage and sewerage system due to the increase of population from the two Schemes will be acceptable. With the provision of new drainage and sewerage pipes and upgrading/diversion of a few sections of existing drainage and sewerage pipes connecting with the proposed development, the discharge generated from the proposed redevelopment will be within the capacities and will not have adverse impact to the existing drainage and sewerage systems.

Water Supply Impact

6.13. A Water Supply Impact Assessment (WSIA) was also conducted (see **Appendix 8**). Findings of WSIA concluded that there would be no adverse impact to the water supply due to the two proposed Schemes.

Qualitative Appraisal of Risk Impact

6.14. The Coordinating Committee on Land-use Planning and Control relating to Potentially Hazardous Installations (CCPHI) had reviewed a quantitative risk assessment (QRA) report, which had assessed the risk levels associated with the MTKGW arising from potential residential development (including development in DRE site of HKHS, "5-Street" and "13-Street" area) within the Consultation Zone of the PHI of the MTKGW. The CCPHI considered the risk level acceptable and endorsed the QRA in August 2021.

6.15. A set of QRA Technical Notes (TN) was prepared (see **Appendix 9)** in support of the proposed developments in KC-018 and KC-019**.** According to the TN, as the planned population of the proposed Schemes will have no more than that adopted in the approved QRA, the proposed development would not adversely affect the risk levels as compared with the assessment in the endorsed QRA report.

6.16. All technical assessments, apart from QRA TN, have also included a sensitivity testing scenario based on the assumption that the adjacent "13-Street" area being redeveloped by others, with the consideration of relaxation of the permitted development intensity stipulated under prevailing OZP of the respective "CDA" zone. To form a base for an aggressive sensitivity test, a 15% addition has been added to the total GFA and a 20% increase of maximum building height of the OZP compliant scheme. This sensitivity testing scenario was found to be technically feasible and will not have any adverse environmental and traffic impacts with mitigation measures.

7 PLANNING AND DESIGN MERITS

7.1. The Schemes are located in a strategic precinct within Kowloon City District. The Schemes are also situated by the waterfront, which connects with KTDA and the old urban district of Ma Tau Kok and To Kwa Wan in the hinterland. The following planning and environmental benefits will be provided under the proposed schemes.

Contribute as Part of the World-Class Waterfront Promenade

7.2. Through restricting and replanning of land use, the Schemes will provide a 20m wide waterfront promenade along the eastern boundary for public enjoyment purposes. With the adoption of integrated design approach, the two waterfront promenades under KC-018 and KC-019 will be connected with each other and linking up with the adjoining waterfront area towards KTDA in the northeast, thus enabling a continuous waterfront at the Kowloon East area and helping the Government to achieve its vision in shaping the Victoria Harbour as a world-class asset for public enjoyment. The proposed waterfront promenade will also facilitate the completion of the waterfront walk as recommended in the KC DURF and in-line with CEDD's proposal of Kai Tak GreenWay network within KTDA.

7.3. Appropriate landscaping, seaside footpath and sitting-out areas will also be provided along the water promenade to create a comfortable and environment for future residents and users of promenade. With the proposed development, the existing dilapidated buildings and associated adverse environmental impacts will be vanished and so as to return the waterfront to the public.

Improve Connectivity between KTDA and Inland Areas

7.4. Building setbacks will be provided at the buildings facing To Kwa Wan Road to allow space for the planned road widening works for the section of To Kwa Wan Road abutting the scheme boundaries. The proposed building setbacks will allow the widening of the sections of To Kwa Wan Road from an existing four-lane road to a six-lane road when the need arises in future. The widened carriageway to connect Shing Kai Road (formerly known as Road D6) in the north, and running northward through the core of KTDA to Choi Hung/San Po Kong area in the northeast and southbound to To Kwa Wan and southern part of Kowloon.

7.5. In addition, a possible footbridge connection at the podium level over To Kwa Wan Road will be explored under separate URA's revitalisation

initiatives. The proposed footbridge connection will provide opportunity to enhance the walkability and to link up the wider neighbourhood at the inner part of To Kwa Wan.

Enhance Walkability and Visual Permeability through Building Design

7.6. The proposed redevelopment acts as a connector between the existing built-up in Ma Tau Kok in the west and the waterfront promenade in the east. Existing traffic and pedestrian networks have been rearranged to create a car-free walking environment to enhance walkability and connectivity.

7.7. The proposed residential towers in the Schemes will adopt careful design on block size, disposition and layout to take into account of building separation to improve permeability. With the proposed increase of building height of 120mPD, the residential towers can be designed in a smaller building footprint an slimmer building form to enhance building permeability of the local area, with sensible building setbacks and building separation proposed between towers to create wider pavement and more comfortable pedestrian walking environment at the valuable waterfront area.

7.8. Besides, two 10m-wide NBAs will be provided along the southern boundaries of both KC-018 and KC-019 to enhance the air ventilation and visual permeability of the proposed redevelopment. The two NBAs as direct pedestrian access towards the waterfront promenade.

Shaping a Vibrant and Appealing Waterfront

7.9. To reinforce the waterfront ambience for public enjoyment, a waterfront plaza, with landscaping features and placemaking initiatives, will be provided between the two sites and served as focal point of the community. It will also create a sense of arrival for the public when approaching the Schemes from the inland area in the west. Together with the adjoining two-storey retail belt and the waterfront promenade along the eastern site boundaries, the pedestrian waterfront experience and the robustness and vibrancy of the area will be significantly enhanced. The proposed retail belt abutting the waterfront promenade will be supported with alfresco dining and commercial facilities to create an attractive and appealing destination by the Ma Tau Kok waterfront. A preliminary landscape design concept of the waterfront plaza, retail belt and promenade is shown in **Appendix 1**. The proposed waterfront promenade, retail belt and waterfront plaza will be owned, managed and

maintained by URA or its assignee or its joint venture partner(s) upon completion. These facilities are intended to be opened at for public enjoyment at reasonable hours.

7.10. In addition, separate revitalization works at the adjoining abandoned pier structure/landing steps outside the DSP boundary is also proposed to achieve a coherent design theme for this part of waterfront promenade for public enjoyment. Detail design and programme of the said works would be subject to the views and agreement with relevant Government departments.

7.11. In light of the above planning gains, the Schemes will not only catalyse the improvement works of a section of the waterfront promenade, but will also formulate and contribute to the branding of an appealing waterfront in Kowloon East.

Create a Progressive Building Height Profile along the Waterfront

7.12. A maximum building height of 120mPD is proposed under the draft DSPs taking into account the site constraints, the compatibility with adjoining built environment at the waterfront and the additional planning merits to be brought by the proposed redevelopment. The proposed maximum building height is also not incompatible with the adjoining exsting/planned developemtns including the Grand Waterfront to the immediate south (+176mPD), and the planned DRE development to the immediate north (+100mPD). The proposed maximum building height of for the Schemes will create a smooth and progressive building height profile along the waterfront to enhance the visual quality of the area.

No Adverse Impacts to the Surrouding Environment

7.13. As stated in Section 6, a number of technical assessments have been conducted and concluded that the proposed developments are technically feasible and no insurmountable impact on the surrounding environment are anticipated. Please refer to **Appendices 4 to 9** for details.

7.14. The proposed redevelopment will facilitate the expedition of redevelopment of the existing industrial uses which help phase out the non-conforming uses and address the possible Industrial / Residential (I/R) interface problems. Nevertheless, as mentioned in paras. 3.9 and 3.10 above, the Newport Centre in KC-019 are mainly used for office, showroom, storage purposes that are non-polluting uses in nature. Should KC-018 and KC-019 cannot be proceed in one go owing to land

acquisition or other issues, no I/R interface issues are anticipated. Besides, the site to the immediate north of KC-019 was also reserved for DRE development of HKHS.

Provisioning of GIC Facilities

7.15. Apart from achieving the planning objectives to create a successful waterfront redevelopment embracing the above planning gains, a total of about 1,500sqm floor space will be provided for GIC facilities at the podium levels of the Schemes to meet community needs. Actual GIC provision will be subject to liaison and agreement with relevant Government departments.

8 IMPLEMENTATIONS OF THE DEVELOPMENT SCHEME

8.1. The URA currently does not own or lease any land within the boundaries of the Schemes and will acquire all the private lots within the Development Scheme boundaries. The URA intends to acquire the property within the Scheme boundaries by purchase under the current acquisition policy. An owner of domestic and non-domestic property will receive the market value of his/her property (valued on vacant possession basis). As for the owner-occupier of domestic property, on top of the said market value, the URA will pay a Home Purchase Allowance, which is assessed based on a seven-year-old notional replacement unit of similar size within the same locality.

8.2. Supplementary documents detailing the implementation programme for the Schemes as one comprehensive redevelopment is attached in **Appendix 10**. In case the whole redevelopment cannot proceed in one-go owing to land acquisition or other issues, being under two DSPs will allow flexibility for carrying on the implementation as two projects following separate implementation programmes with two land grants. The URA may implement the two Schemes in association with one or more parties or by itself alone.

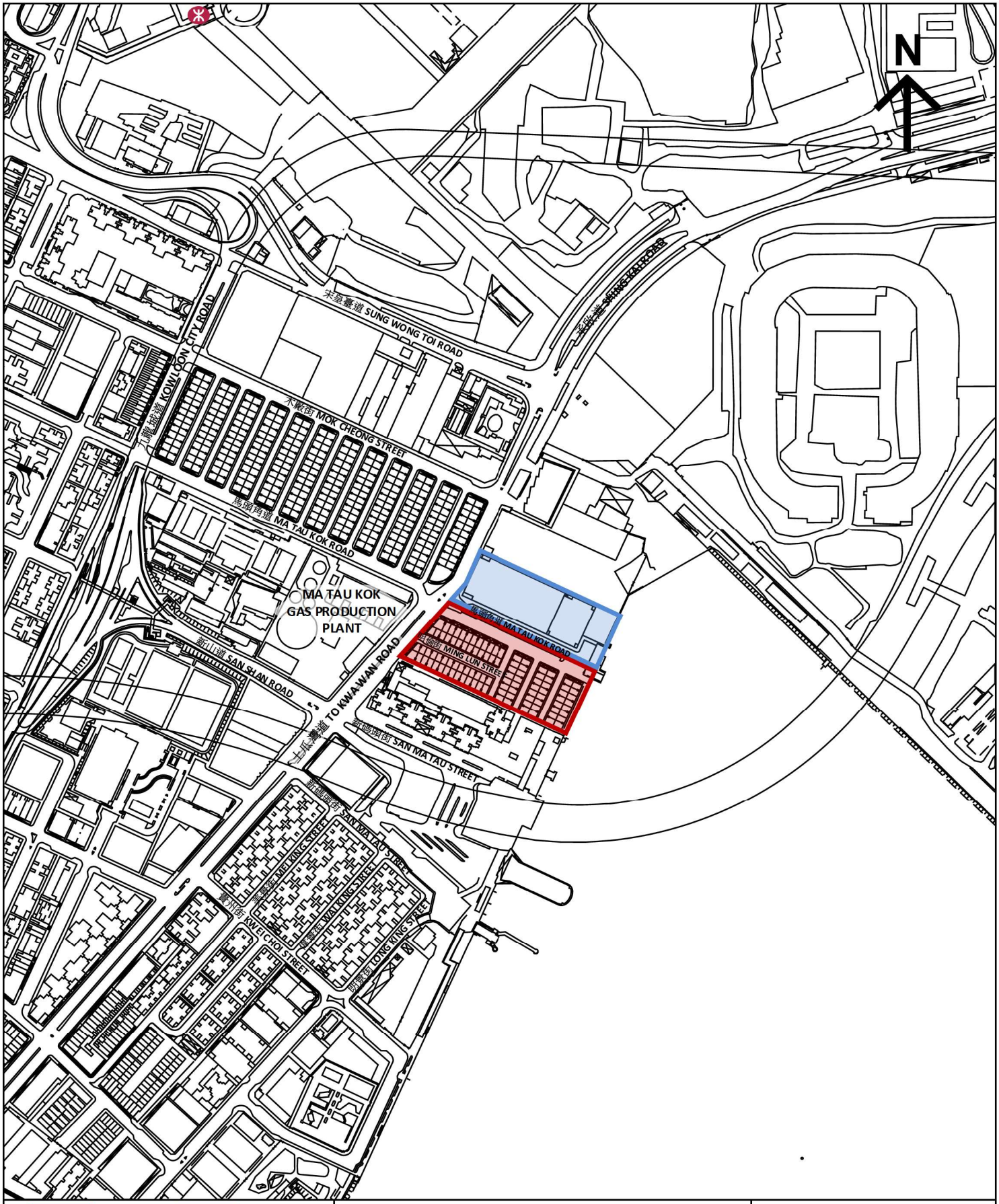
8.3. The URA's acquisition, rehousing and ex-gratia allowance principles are subject to prevailing policies at the time of issuing acquisition offers. The policies will be published on the URA's website and communicated to affected persons when issuing the acquisition offers. Prevailing policies relating to property acquisition, rehousing and ex-gratia allowances will be reviewed by the URA from time to time. For details of the mitigation measures and acquisition policies for the two Schemes, please refer to the Social Impact Assessment (SIA) Stage 1 report (**Appendices 3a** and **3b**).

8.4. Any information contained in this document relating to compensation and re-housing arrangement are with reference to the URA's prevailing policy on compensation and re-housing arrangement ("Compensation Package") offered by the URA to owners/ tenants at the time of issuance of this document. The Compensation Package may be subject to change from time to time upon any review carried out by the URA. The Compensation Package to be offered by the URA to owners / tenants affected by the URA's redevelopment shall be that Compensation Package prevailing at the time of offer. Nothing contained in this document shall constitute any representation or warranty on the part of the URA or give rise to any expectation that the Compensation Package

contained in this document will not be changed at the time of implementation of the proposal.

URBAN RENEWAL AUTHORITY

October 2022



KC-018 KC-019

SUNG WONG TOI STATION EXITS

EXTRACT PLAN PREPARED ON 23.5.2022
BASED ON SURVEY SHEET No. 11-NE-11C, 11-NE-11D, 11-NE-16A, 11-NE-16B, 11-NE-16C, 11-NE-16D

LOCATION PLAN

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AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

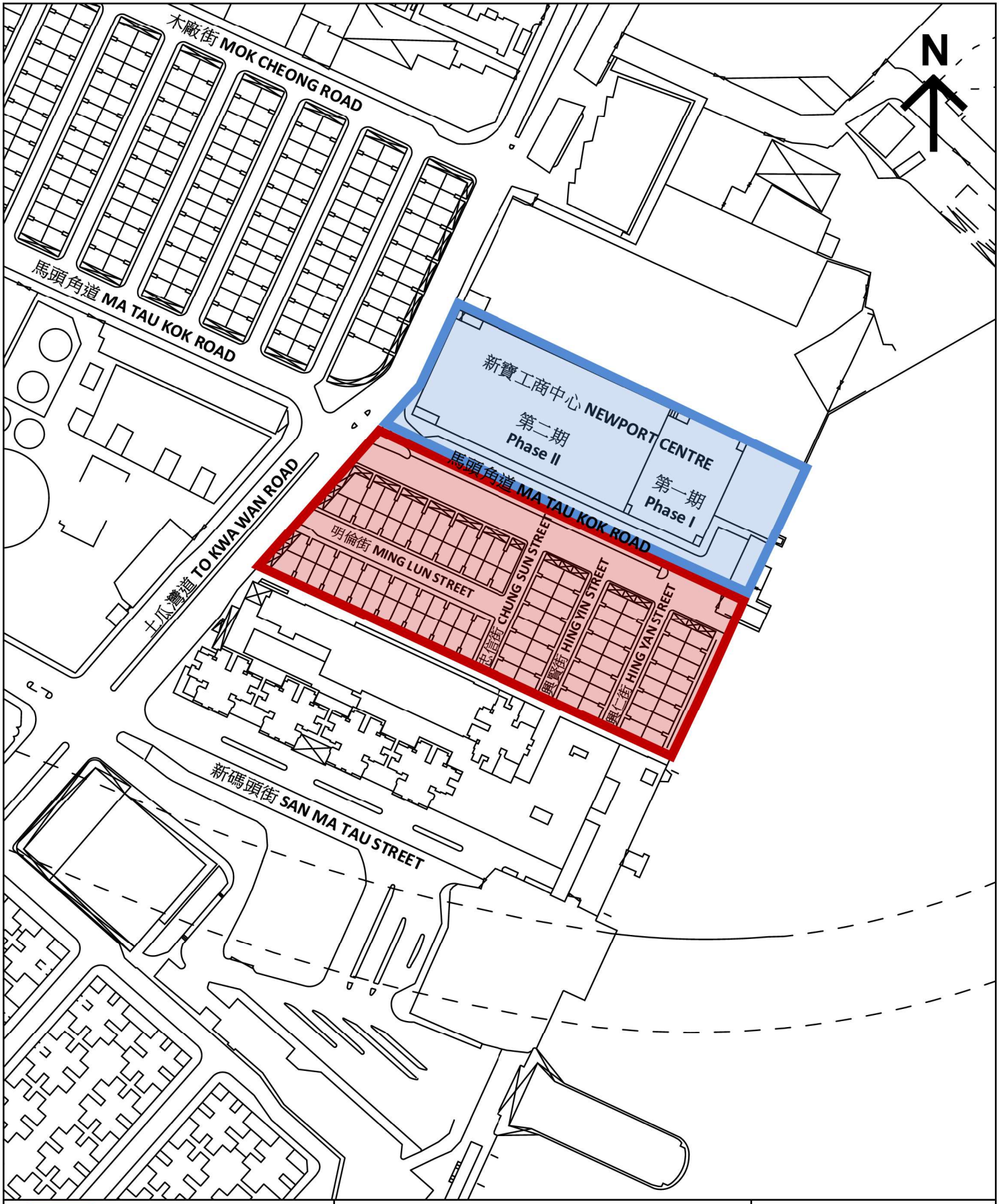
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市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 1



KC-018

KC-019

EXTRACT PLAN PREPARED ON 23.5.2022
BASED ON SURVEY SHEET No. 11-NE-16A

SCHEME AREA

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

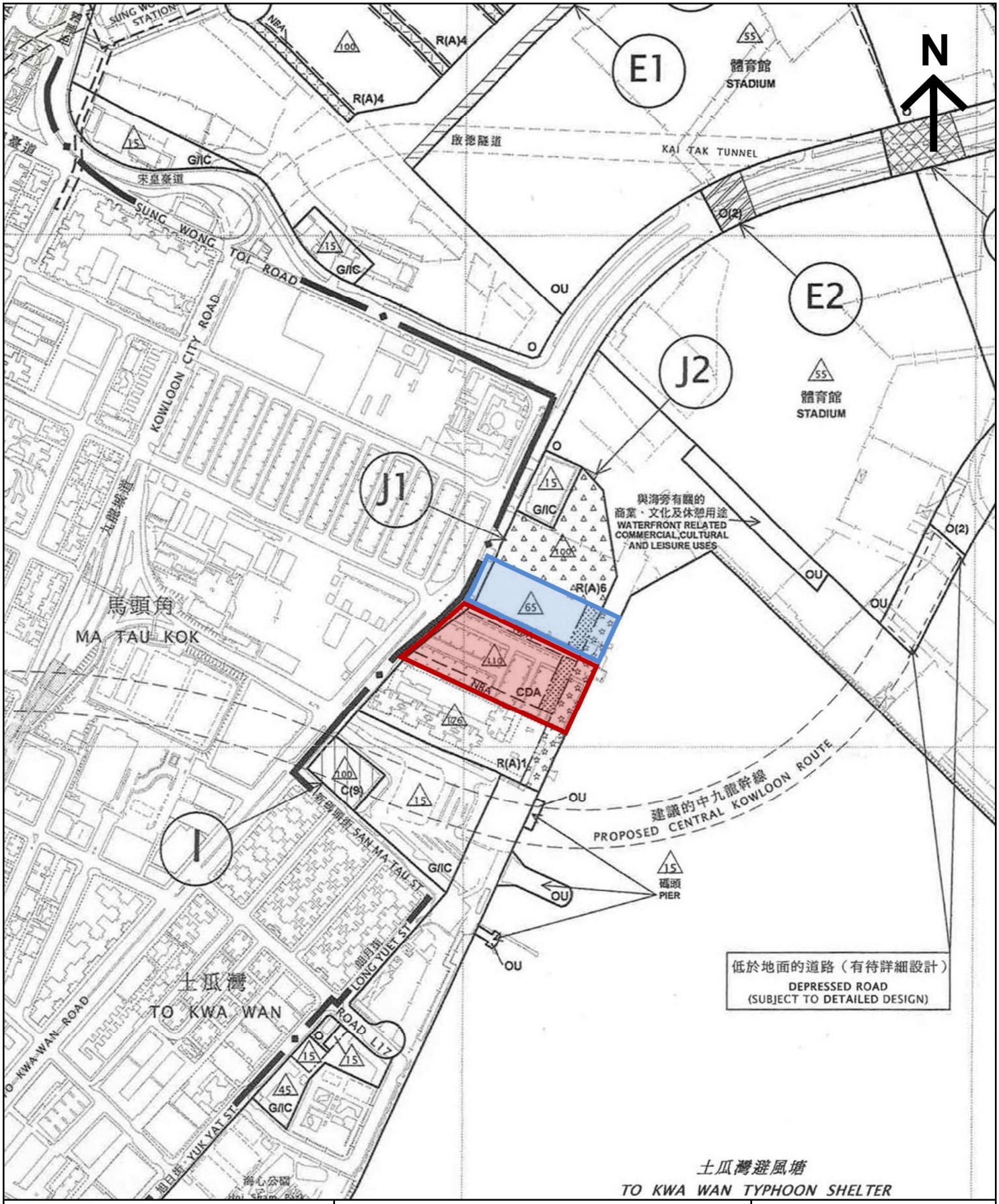
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市區重建局
URBAN RENEWAL AUTHORITY

KC-018
& KC-019

PLAN
2



KC-018

KC-019

EXTRACT PLAN BASED ON
DRAFT KAI TAK OUTLINE ZONING PLAN
No.S/K22/7

EXISTING ZONING OF THE DEVELOPMENT SCHEMES

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

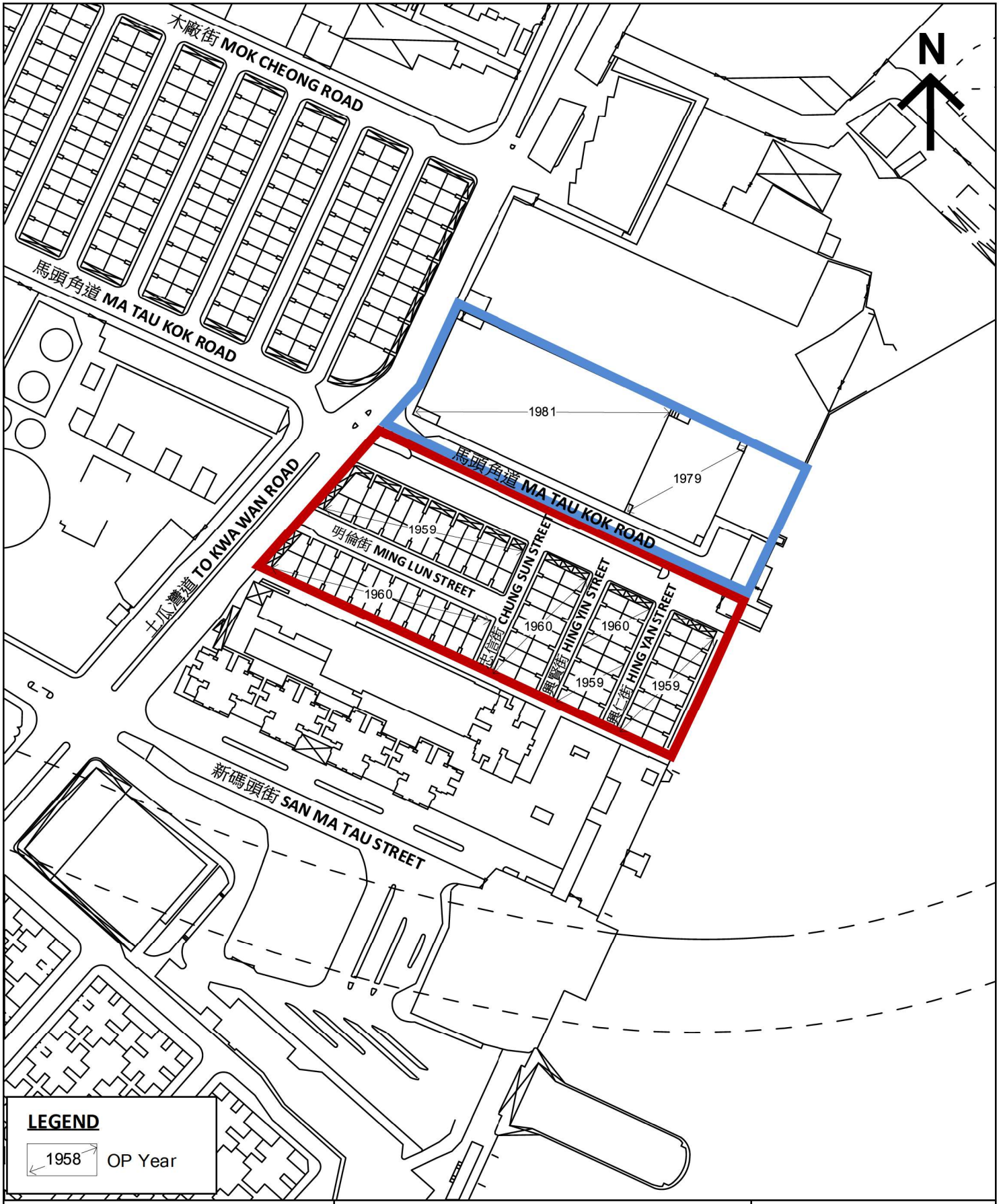
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市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 3



KC-018

KC-019

EXTRACT PLAN PREPARED ON 23.5.2022
BASED ON SURVEY SHEET No. 11-NE-16A

BUILDING AGE

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

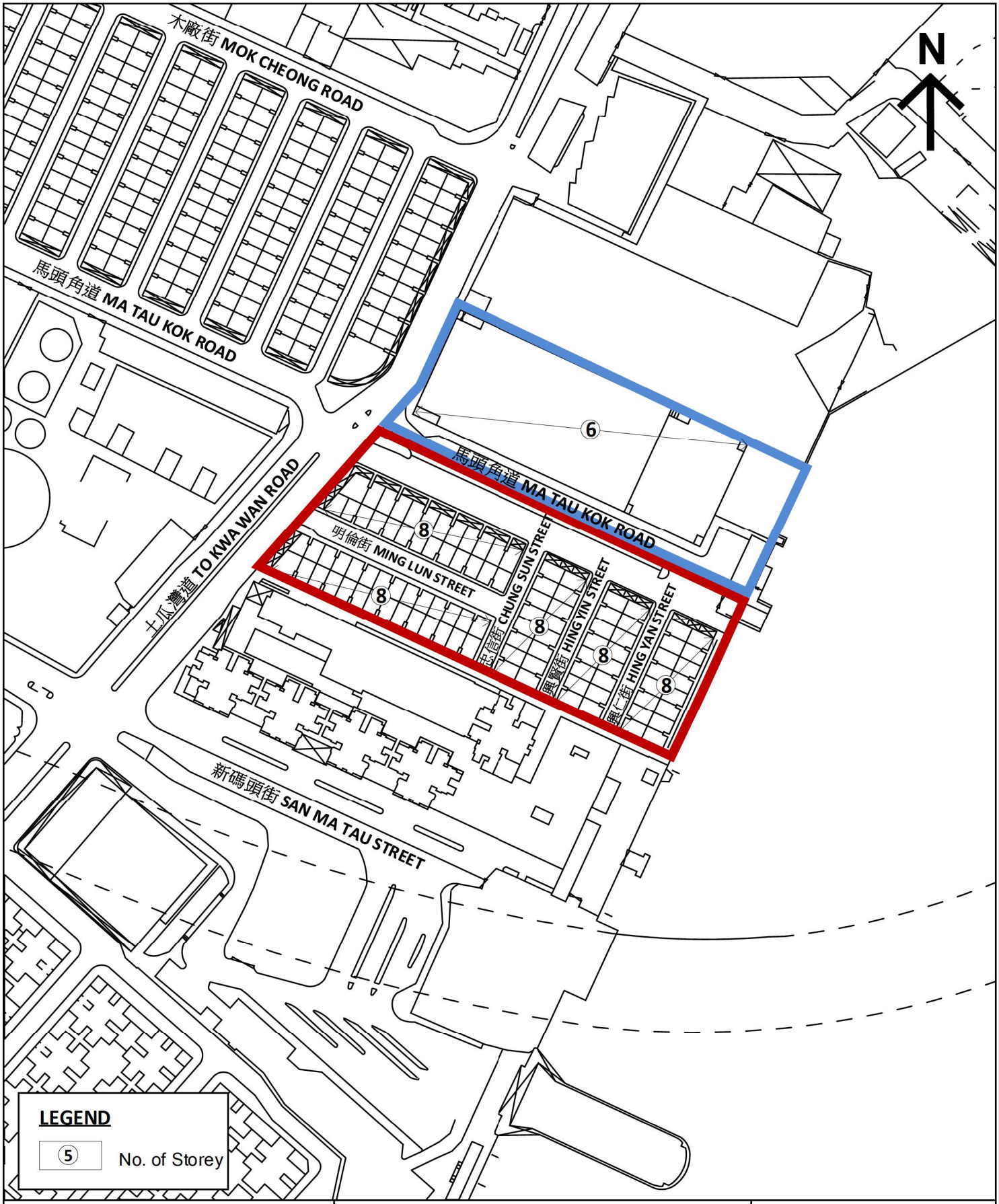
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市區重建局
URBAN RENEWAL AUTHORITY

KC-018
& KC-019

PLAN
4



KC-018

KC-019

EXTRACT PLAN PREPARED ON 23.5.2022
BASED ON SURVEY SHEET No. 11-NE-16A

BUILDING HEIGHT

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

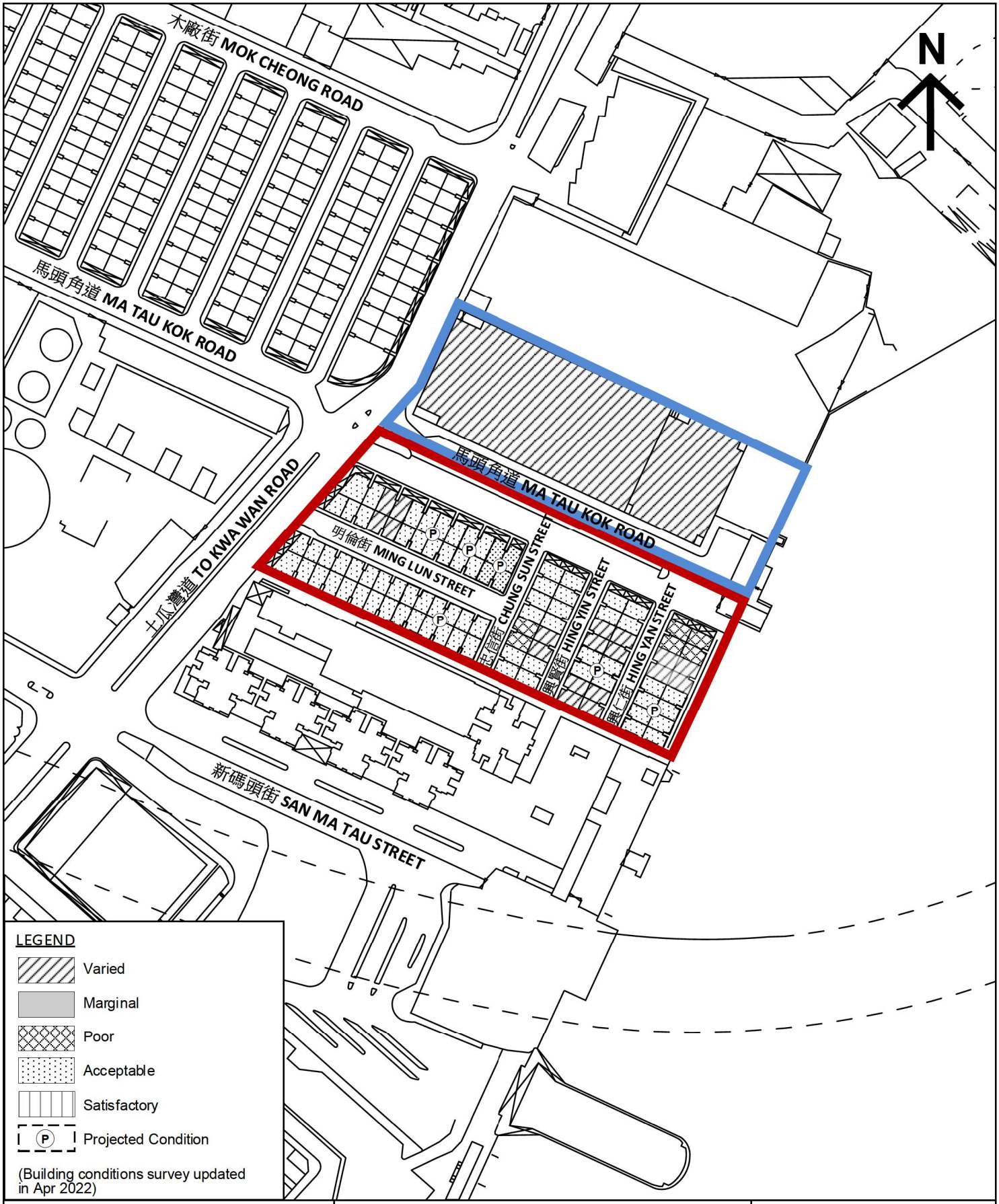
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市區重建局
URBAN RENEWAL AUTHORITY

KC-018
& KC-019

PLAN
5



KC-018

KC-019

EXTRACT PLAN PREPARED ON 23.5.2022

BASED ON SURVEY SHEET No. 11-NE-16A

BUILDING CONDITION

DEVELOPMENT SCHEMES

AT MING LUN STREET / MA TAU KOK ROAD (KC-018)

AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

SCALE 1 : 2000

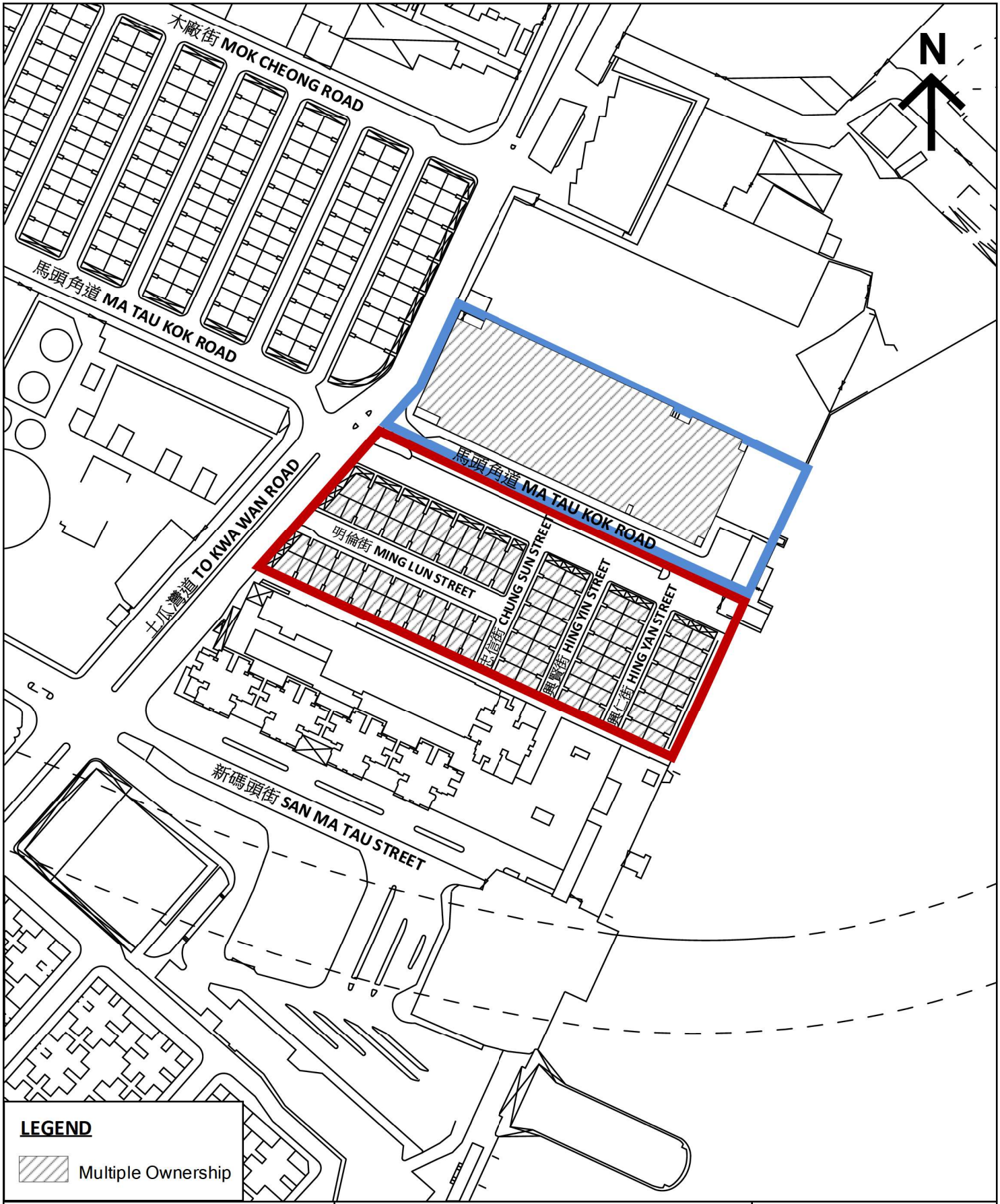
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市區重建局

URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 6



KC-018

KC-019

EXTRACT PLAN PREPARED ON 23.5.2022
BASED ON SURVEY SHEET No. 11-NE-16A

OWNERSHIP PATTERN

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

SCALE 1 : 2000

METRES 20 0 20 40 60 80 100 METRES

市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

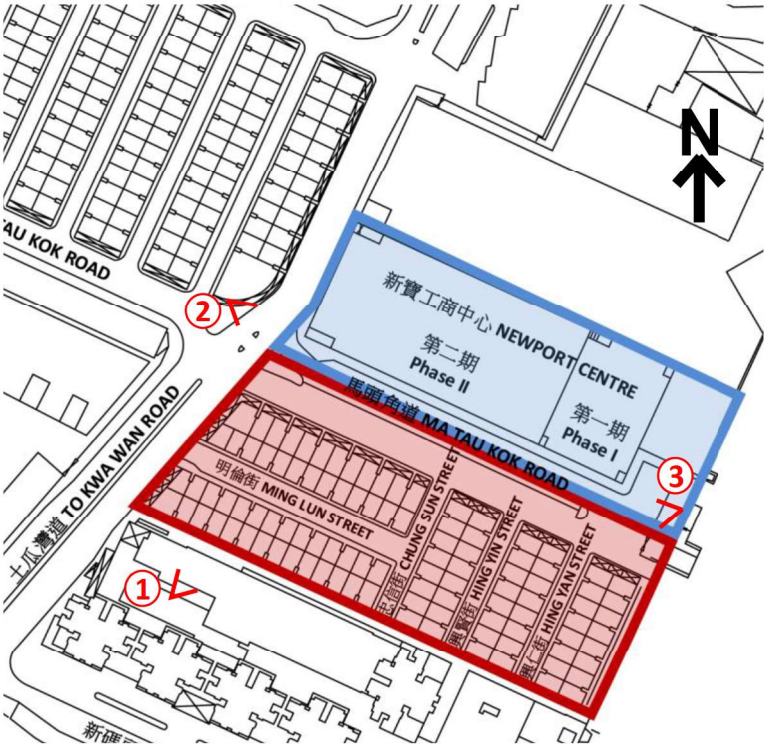
PLAN 7



VIEW 1: BUILDINGS WITHIN THE SCHEMES



VIEW 2: BUILDINGS WITHIN KC-018 ALONG TO KWA WAN ROAD AND MA TAU KOK ROAD





VIEW 3: BUILDINGS WITHIN KC-018 ALONG MA TAU KOK ROAD

KC-018

KC-019

PHOTOS TAKEN IN MARCH 2022

SITE PHOTOS

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 8



VIEW 4: SOUTHERN BOUNDARY ABUTTING GRAND WATERFRONT (DEAD-END ROAD)



VIEW 5: KOWLOON CITY DISTRICT COUNCIL SITTING-OUT AREA





VIEW 6: BUILDINGS ALONG HING YAN STREET (DEAD-END ROAD)

KC-018

KC-019

PHOTOS TAKEN IN MARCH 2022

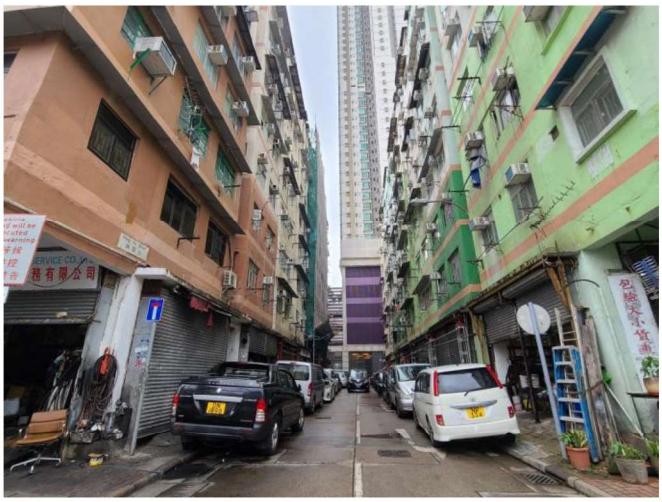
SITE PHOTOS

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 9

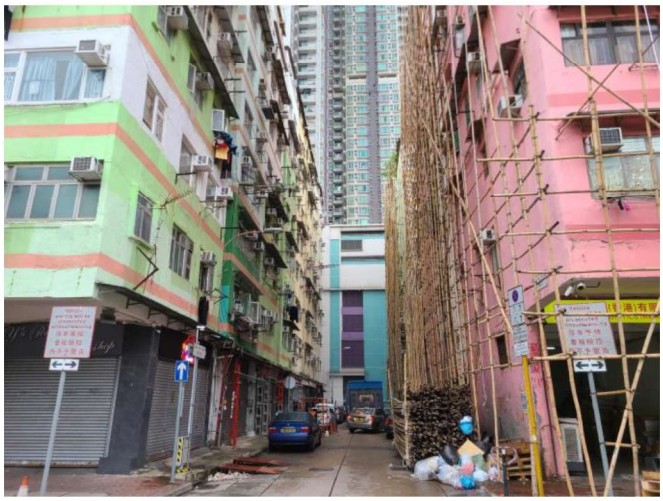


VIEW 7: BUILDINGS ALONG HING YIN STREET
(DEAD-END ROAD)



VIEW 8: BUILDINGS ALONG HING YIN STREET
(DEAD-END ROAD)





VIEW 9: BUILDINGS ALONG CHUNG SUN STREET
(DEAD-END ROAD)

KC-018

KC-019

PHOTOS TAKEN IN
MARCH 2022

SITE PHOTOS

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

市區重建局
URBAN RENEWAL AUTHORITY

KC-018
& KC-019

PLAN
10



VIEW 10: BUILDINGS ALONG MA TAU KOK ROAD



VIEW 11: BUILDINGS ALONG MA TAU KOK ROAD



KC-018

KC-019

PHOTOS TAKEN IN MARCH 2022

SITE PHOTOS

DEVELOPMENT SCHEMES
AT MING LUN STREET / MA TAU KOK ROAD (KC-018)
AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

市區重建局
URBAN RENEWAL AUTHORITY

KC-018 & KC-019

PLAN 11

PART 2

THE DRAFT PLANS

KC-018

DSP notes, ES and DSP Plan

DRAFT URBAN RENEWAL AUTHORITY
MING LUN STREET / MA TAU KOK ROAD
DEVELOPMENT SCHEME PLAN NO. S/K22/URA1/A

(Being a Draft Plan for the Purposes of the Town Planning Ordinance prepared by the Urban Renewal Authority under section 25 of the Urban Renewal Authority Ordinance)

NOTES

(N.B. These form part of the Plan)

(1) These Notes show the uses or developments on land falling within the boundaries of the Plan which are always permitted and which may be permitted by the Town Planning Board, with or without conditions, on application. Where permission from the Town Planning Board for a use or development is required, the application for such permission should be made in a prescribed form. The application shall be addressed to the Secretary of the Town Planning Board, from whom the prescribed application form may be obtained.

(2) Any use or development which is always permitted or may be permitted in accordance with these Notes must also conform to any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, as may be applicable.

(3) (a) No action is required to make the existing use of any land or building conform to this Plan until there is a material change of use or the building is redeveloped.

(b) Any material change of use or any other development (except minor alteration and/or modification to the development of the land or building in respect of the existing use which is always permitted) or redevelopment must be always permitted in terms of the Plan or, if permission is required, in accordance with the permission granted by the Town Planning Board.

(c) For the purposes of subparagraph (a) above, "existing use of any land or building" means –

(i) before the publication in the Gazette of the notice of the first statutory plan covering the land or building (hereafter referred as 'the first plan');

- a use in existence before the publication of the first plan which has continued since it came into existence; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building; and

(ii) after the publication of the first plan,

- a use permitted under a plan which was effected during the effective period of that plan and has continued since it was effected; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building and permitted under a plan prevailing at the time when the use or change of use was approved.

(4) Except as otherwise specified by the Town Planning Board, when a use or material change of use is effected or a development or redevelopment is undertaken, as always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board, all permissions granted by the Town Planning Board in respect of the site of the use or material change of use or development or redevelopment shall lapse.

(5) Road junctions, alignments of roads and railway/tram tracks, and boundaries between zones may be subject to minor adjustments as detailed planning proceeds.

(6) Temporary uses (expected to be 5 years or less) of any land or building are always permitted as long as they comply with any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, and there is no need for these to conform to the zoned use or these Notes. For temporary uses expected to be over 5 years, the uses must conform to the zoned use or these Notes.

(7) The following uses or developments are always permitted on land falling within the boundaries of the Plan except where the uses or developments are specified in Column 2 of the Notes of individual zones:

(a) provision, maintenance or repair of plant nursery, amenity planting, open space, rain shelter, refreshment kiosk, road, bus/rail/tram/public light bus stop or layby, cycle track, rail track, railway station entrance, railway structure below ground level, taxi rank, nullah, public utility pipeline, electricity mast, lamp pole, telephone booth, telecommunications radio base station, automatic teller machine and shrine;

(b) geotechnical works, local public works, road works, sewerage works, drainage works, environmental improvement works, marine related

facilities, waterworks (excluding works on service reservoir) and such other public works coordinated or implemented by Government; and

(c) maintenance or repair of watercourse.

(8) In any area shown as 'Road', all uses or developments except those specified in paragraph (7) above and those specified below require permission from the Town Planning Board:

on-street vehicle park, railway track and tram track.

(9) Unless otherwise specified, all building, engineering and other operations incidental to and all uses directly related and ancillary to the permitted uses and developments within the same zone are always permitted and no separate permission is required.

(10) In these Notes, "existing building" means a building, including a structure, which is physically existing and is in compliance with any relevant legislation and the conditions of the Government lease concerned.

(11) Any development not compatible with the Urban Renewal Authority's Development Scheme for the area is prohibited by virtue of section 25(4) of the Urban Renewal Authority Ordinance.

DRAFT URBAN RENEWAL AUTHORITY
MING LUN STREET / MA TAU KOK ROAD
DEVELOPMENT SCHEME PLAN NO. S/K22/URA1/A

Schedule of Uses

	Page
RESIDENTIAL (GROUP A)	1

S/K22/URA1/A

RESIDENTIAL (GROUP A)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot	Commercial Bathhouse/ Massage Establishment
Flat	Eating Place
Government Use (not elsewhere specified)	Education Institution
House	Exhibition or Convention Hall
Library	Government Refuse Collection Point
Market	Hospital
Place of Recreation, Sports or Culture	Hotel
Public Clinic	Institutional Use (not elsewhere specified)
Public Transport Terminus or Station (excluding open-air terminus or station)	Office
Residential Institution	Petrol Filling Station
School (in free-standing purpose-designed building only)	Place of Entertainment
Social Welfare Facility	Private Club
Utility Installation for Private Project	Public Convenience
	Public Transport Terminus or Station (not elsewhere specified)
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
	Religious Institution
	School (not elsewhere specified)
	Shop and Services (not elsewhere specified)
	Training Centre

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

In addition, the following uses are always permitted (a) on the lowest three floors of a building, taken to include basements; or (b) in the purpose-designed non-residential portion of a building, both excluding floors containing wholly or mainly car parking, loading/ unloading bay and/or plant room:
Eating Place
Educational Institution
Institutional Use (not elsewhere specified)
Off-course Betting Centre
Office
Place of Entertainment
Private Club
Public Convenience
Recyclable Collection Centre
School
Shop and Services
Training Centre

Planning Intention

This zone is intended primarily for comprehensive high-density residential developments with provision of waterfront promenade. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-residential portion of a building.

Remarks

(1) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum plot ratio and maximum site coverage specified below, or the plot ratio and site coverage of the existing building, whichever is the greater:

Maximum Domestic Plot Ratio	Maximum Non-Domestic Plot Ratio	Maximum Site Coverage (excluding basement(s))
6.5	1.0	65%

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

Remarks (Cont'd)

(2) For the purposes of paragraph (1) above, no addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the relevant maximum domestic and/or non-domestic plot ratio(s), or the domestic and/or non-domestic port ratio(s) or the existing building, whichever is the greater, subject to, as applicable –

(i) the plot ratio(s) of the existing building shall apply only if any addition, alteration and/or modification to or redevelopment of an existing building is for the same type of building as the existing building, i.e. domestic, non-domestic, or partly domestic and partly non-domestic building; or

(ii) the maximum domestic and/or non-domestic plot ratio(s) stated in paragraph (1) above shall apply if any addition, alteration and/or modification to or redevelopment of an existing building is not for the same type of building as the existing building, i.e. domestic, non-domestic, or partly domestic and partly non-domestic building.

(3) No new development, or addition, alternation and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(4) On land designated 'Shop and Services' and 'Eating Place' uses only, buildings not exceeding 2 storeys to accommodate 'Shop and Services' and 'Eating Place' uses shall be provided.

(5) On land designated 'Waterfront Promenade', a 20m-wide promenade abutting the waterfront shall be provided for public enjoyment purpose.

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

Remarks (Cont'd)

(6) In determining the maximum plot ratio for the purposes of paragraph (1) above,

(a) any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded; and

(b) any floor space that is constructed or intended for use solely as Government, institution or community facilities, as required by the Government, may also be disregarded.

(7) In determining the maximum site coverage for the purposes of paragraph (1) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, shall be included for calculation.

(8) Where the permitted plot ratio as defined in Building (Planning) Regulations is permitted to be exceeded in circumstances as set out in Regulation 22(1) or (2) of the said Regulations, the plot ratio for the building on land to which paragraphs (1) and (2) applies may be increased by the additional plot ratio by which the permitted plot ratio is permitted to be exceeded under and in accordance with the said Regulation 22(1) or (2), notwithstanding that the relevant maximum plot ratio specified in the paragraphs (1) and (2) above may thereby be exceeded.

(9) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and/or building height restrictions as stated in paragraphs (1) and (3) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(10) Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restriction as stipulated on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

DRAFT URBAN RENEWAL AUTHORITY

MING LUN STREET / MA TAU KOK ROAD

DEVELOPMENT SCHEME PLAN NO. S/K22/URA1/A

EXPLANATORY STATEMENT

DRAFT URBAN RENEWAL AUTHORITY

MING LUN STREET / MA TAU KOK ROAD

DEVELOPMENT SCHEME PLAN NO. S/K22/URA1/A

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2.	AUTHORITY FOR THE PLAN AND PROCEDURES	1
3.	OBJECT OF THE PLAN	2
4.	NOTES OF THE PLAN	3
5.	AREA COVERED BY THE PLAN	3
6.	EXISTING CONDITIONS	3
7.	PLANNING AND LAND USE PROPOSALS	4
8.	IMPLEMENTATION OF THE DEVELOPMENT SCHEME	7

DRAFT URBAN RENEWAL AUTHORITY
MING LUN STREET / MA TAU KOK ROAD
DEVELOPMENT SCHEME PLAN NO. S/K22/URA1/A

(Being a Draft Plan for the Purposes of the Town Planning Ordinance prepared by the Urban Renewal Authority under section 25 of the Urban Renewal Authority Ordinance)

EXPLANATORY STATEMENT

Note: For the purposes of the Town Planning Ordinance (the Ordinance), this statement shall not be deemed to constitute a part of the Plan.

1. INTRODUCTION

This explanatory statement is intended to assist an understanding of the draft Urban Renewal Authority (URA) Ming Lun Street / Ma Tau Kok Road Development Scheme Plan (DSP) No. S/K22/URA1/A. It reflects the planning intention and objectives of the Town Planning Board (the Board) for the area covered by the Plan.

2. AUTHORITY FOR THE PLAN AND PROCEDURES

2.1 In the URA's 21st Business Plan (2022/23) which was approved by the Financial Secretary, the Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) (the Development Scheme) was proposed to be processed as a Development Scheme under section 25 of the URA Ordinance (URAO).

2.2 On 7 October 2022, pursuant to section 23(1) of the URAO, the URA notified in the Government Gazette the commencement of implementation of the Development Scheme.

2.3 On the same day of commencement (i.e. 7 October 2022), the URA submitted the draft URA Ming Lun Street/Ma Tau Kok Road DSP to the Board under section 25(5) of the URAO.

2.4 On XXXX 2022, the Board, under section 25(6)(a) of the URAO, deemed the draft URA Ming Lun Street /Ma Tau Kok Road DSP as being suitable for publication. Under section 25(7) of the URAO, the draft DSP, which the Board has deemed suitable for publication, is deemed to be a draft plan prepared by the Board for the purposes of the Ordinance.

2.5 On XXXX 2022, the draft Ming Lun Street/Ma Tau Kok Road DSP No. S/K22/URA1/A (the Plan) was exhibited under section 5 of the Ordinance. By virtue of section 25(9) of the URAO, the Plan has from the date replaced the draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7 in respect of the area delineated and described herein.

3. OBJECT OF THE PLAN

3.1 The Plan illustrates that the Development Scheme Area (the Area) is designated as "Residential (Group A)" ("R(A)") and areas shown as 'Road'. It is planned to be developed by means of the Development Scheme prepared under section 25 of the URAO. The Development Scheme intends to achieve a holistic re-planning of land uses together with the adjoining urban fabric at To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) to facilitate the expedition of redevelopment of existing uses into comprehensive designed waterfront developments fitting in with the redevelopment intention of the 5-Streets area in Ma Tau Kok. Waterfront promenade and retail belt will be provided in the Area for public enjoyment purpose. GIC facilities will be provided within the Area to meeting community needs.

4. NOTES OF THE PLAN

4.1 Attached to the Plan is a set of Notes which shows the types of uses or developments which are always permitted within the Area in this zone and which may be permitted by the Board, with or without conditions, on application. The provision for application for planning permission under section 16 of the Ordinance allows greater flexibility in land use planning and control of development to meet changing needs.

4.2 For the guidance of the general public, a set of definitions that explains some of the terms used in the Notes may be obtained from the Technical Services Division of the Planning Department and can be downloaded from the Board's website at http://www.info.gov.hk/tpb.

5. AREA COVERED BY THE PLAN

5.1 The Development Scheme boundary which is shown in heavy broken line on the Plan. The Area is broadly bounded by Ma Tau Kok Waterfront to the east, the Grand Waterfront to the south and To Kwa Wan Road to the west and Ma Tau Kok Road to the north. With a total gross site area of about 11,430m^2, the Area includes buildings built on private lots, the Kowloon City District Council Sitting-out Area, roads, government lanes and the surrounding public pavement.

5.2 On the draft Kai Tak OZP No. S/K22/7, the Area is zoned "Comprehensive Development Area" as well as and a stirp of land shown as "Road"[1] before the exhibition of the Plan.

6. EXISTING CONDITIONS

The Area is currently consisting of 5 clusters of 8 storey residential buildings, and were completed between 1959 and 1960. They are predominantly occupied for domestic use on the upper floors and non-domestic uses on the ground floors. All buildings are without lift and the serviceability is poor.

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[1] To facilitate land resumption and implementation of the Scheme, the Development Scheme boundary covers minor portion of the pavement area which falls within the approved Ma Tau Kok OZP No. S/K10/28, while the pavement area along To Kwa Wan Road is not accountable for GFA/PR calculation.

7. PLANNING AND LAND USE PROPOSALS

7.1 On the Plan, the Area is zoned "R(A)" and areas shown as 'Road'. The Notes of the Plan indicated broadly the intended land uses within the Area. The area covered by the "R(A)" zone is about 10,496 m^2, subject to site survey.

Uses

7.2 The "R(A)" zone is intended primarily for comprehensive high-density residential developments with the provision of waterfront promenade for public enjoyment purposes. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-domestic portion of a building.

7.3 The maximum plot ratio within the "R(A)" zone is 7.5, or the plot ratio of the existing building(s), whichever is the greater. Except where the plot ratio is permitted to be exceeded under the Notes of the Plan or under Building (Planning) Regulations 22(1) or (2), under no circumstances shall the plot ratio for the domestic part of any development exceed 6.5. The "R(A)" zone is also subject to a maximum site coverage of 65% and maximum building height of 120 metres above Principal Datum (mPD).

7.4 The PR control under "R(A)" zone is regarded as being stipulated in a "new or amended statutory plan" according to the Joint Practice Note No. 4 "Development Control Parameters Plot Ratio/Gross Floor Area", and shall be subject to the streamlining arrangements stated therein.

7.5 To provide design flexibility, minor relaxation of the plot ratio, site coverage and/or building height restrictions may be considered by the Board on application under section 16 of the Ordinance taking into account its individual planning and design merits.

Waterfront Promenade

7.6 In view of the waterfront location of the Area, a waterfront promenade of not less than 20m wide will be provided for public enjoyment. Seaside footpath, siting-out area, cycling facilities and landscaping will be

provided at the waterfront promenade as appropriate. The waterfront promenade will seamlessly connect with the planned waterfront promenade at the north, contributing as part of the continuous promenade from Ma Tau Kok towards Cha Kwo Ling. To promote vibrancy and liveliness of the waterfront area, a strip of land for provision of a two-storey retail belt for "Shop and Services" and "Eating Place" uses will be provided along the waterfront promenade. The waterfront promenade will be opened for public use 24 hours to benefit the local community, subject to local views and liaison with relevant Government departments.

Waterfront Plaza

7.7 Subject to detailed design, an at-grade Waterfront Plaza, with landscaping, covered and uncovered sitting out area, is proposed to connect with the retail belt and waterfront promenade. The Waterfront Plaza will be integrated with the adjoining planned waterfront plaza in URA's To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) to the north, to provide pedestrian connection between To Kwa Wan Road to the west and the retail belt and waterfront promenade to the east. The Waterfront Plaza will reinforce the waterfront ambience of the Area through creating a focal point for harbour viewing, leisure strolling and place-making.

Non-building Area and Building Setback

7.8 In respecting the waterfront setting and promoting public access and visual permeability to the waterfront, a NBA of about 10m wide in a east-west direction is designated along the southern boundary of the "R(A)" zone of the Area. The NBA is intended to allow for better wind penetration into the inland sites, which can also help to improve the overall air ventilation and visual permeability for the Area. Landscaping feature, covered walkway and/or boundary fence/boundary wall that is designed to allow high air porosity will be provided at above ground within the NBA. Below ground structure is allowed within the NBA.

7.9 Ground floor/podium setback is proposed at the "R(A)" site to create wider and more comfortable walking environment. The setback is

subject to detailed design on the feasibility and agreement with relevant government departments.

Government, Institution or Community (GIC) Facilities

7.10 Subject to confirmation of operational needs and detailed design, not less than 1,000m^2 non-domestic gross floor area would be proposed for GIC uses within the non-domestic portion of the Area. The intended GIC use would be subject to further liaison with relevant Government departments as well as views from local stakeholders. The actual GIC GFA is subject to departmental confirmation upon land grant preparation stage. In determining the relevant maximum plot ratio of the development and/or redevelopment, any floor space that is constructed or intended for use solely as GIC facilities, as required by the Government, may be disregarded. The total GFA of GIC facilities shall be determined based on the operational and design requirements of the confirmed uses as advised by relevant Government departments.

Internal Transport Facilities

7.11 Ancillary car parking spaces and loading/unloading bays would be provided in a basement car park. The number of car parking spaces, loading/unloading bays will be based on the relevant requirements under the Hong Kong Planning Standards and Guidelines (HKPSG) and subject to agreement with Transport Department.

Pedestrian and Vehicular Circulation

7.12 Under a holistic planning approach, the Development Scheme is proposed to enhance both the pedestrian and vehicular connectivity to Kai Tak Development Area (KTDA) and the old urban area of Ma Tau Kok and To Kwa Wan in the hinterland. To enhance walkability and connectivity of the Area with the waterfront promenade and the surrounding neighbourhood, the section of Ma Tau Kok Road, whole of Ming Lun Street, Chung Sun Street, Hing Yin Street and Hing Yan Street within the Area will be closed permanently for redevelopment and/or creation of the Waterfront Plaza. It can facilitate a car-free walking

environment to bring pedestrians from the hinterland of Ma Tau Kok towards the waterfront promenade.

7.13 In addition, through rationalizing of existing land uses, the residential development within the "R(A)" site will be setback from To Kwa Wan Road to provide an opportunity to reserve area for the planned road widening works of the existing To Kwa Wan Road from a 4-lane road to a 6-lane road. Detailed design and implementation programme will be subject to local views and agreement with relevant Government departments.

Abandoned Pier Structure and Landing Steps

7.14 There is potential to revitalize the existing abandoned pier structure and landing steps owned by the Government to achieve a coherent design theme for waterfront area for public enjoyment. Given the pier structure and landing steps are located outside the DSP boundary and does not form part of the DSP, the URA will liaise with relevant Government departments on the proposal via separate revitalisation initiatives subject to the approval of DSP and detailed technical feasibility.

8. IMPLEMENTATION OF THE DEVELOPMENT SCHEME

8.1 The proposals set out in the Plan form an integral part of the Development Scheme for the Area.

8.2 The URA does not own or lease any land within the boundaries of the Development Scheme and intends to acquire the properties within the Area of the Development Scheme. With respect to any of such properties which cannot be acquired by purchase, the Secretary for Development would consider, upon the application of the URA, recommending to the Chief Executive in Council the resumption of properties under the Lands Resumption Ordinance, if necessary.

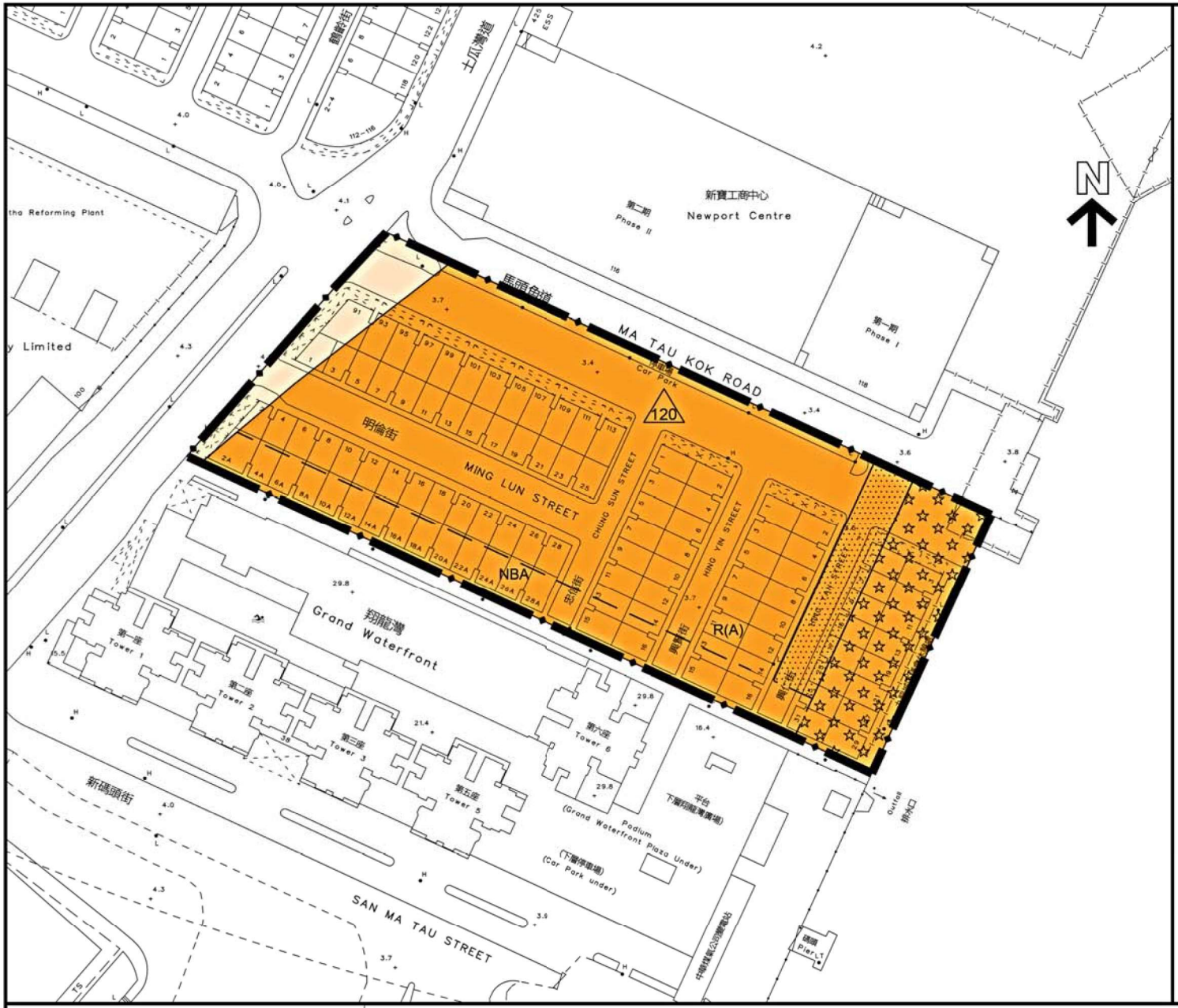
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Kong Housing Authority (HKHA) for the purpose of making available rehousing units by HKHS or HKHA to rehouse affected tenants who satisfy the eligibility criteria of HKHS or HKHA.

8.4 Non-domestic tenants of properties acquired by URA whose tenancies are terminated by URA due to implementation of the Development Scheme may be offered an ex-gratia allowance to assist in their business relocation.

8.5 Details of the acquisition, rehousing and ex-gratia allowance policies are subject to the URA's prevailing policies at the time of acquisition. The URA may implement the Development Scheme on its own or in association with one or more partners.

TOWN PLANNING BOARD
October 2022



圖例
NOTATION

BOUNDARY OF DEVELOPMENT SCHEME	發展計劃範圍界線
RESIDENTIAL (GROUP A)	住宅(甲類)
ROAD	道路
MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM)	最高建築物高度 (在主水平基準上若干米)
AREA DESIGNATED FOR 'SHOP AND SERVICES' AND 'EATING PLACE' USES ONLY	只限於指定為「商店及服務行業」和「食肆」用途的地區
AREA DESIGNATED FOR 'WATERFRONT PROMENADE'	指定為「海濱長廊」的地區
NON-BUILDING AREA	非建築用地

夾附的<<註釋>>屬這份圖則的一部分

THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2022年 月 日城市規劃委員會根據市區重建局條例第25(6)(a)條認為圖則適宜公布，並於2022年 月 日按照城市規劃條例第5條展示。

PLAN DEEMED SUITABLE BY THE TOWN PLANNING BOARD FOR PUBLICATION UNDER SECTION 25(6)(a) OF THE URBAN RENEWAL AUTHORITY ORDINANCE ON 2022 AND EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 2022.

SECRETARY, TOWN PLANNING BOARD 城市規劃委員會秘書

香港城市規劃委員會依據城市規劃條例擬備的市區重建局明倫街/馬頭角道發展計劃圖則
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD URBAN RENEWAL AUTHORITY MING LUN STREET / MA TAU KOK ROAD DEVELOPMENT SCHEME PLAN

SCALE 1 : 1000 比例尺

米 METRES 10 0 10 20 30 40 50 METRES米

依據市區重建局條例第25(3)(a)條擬備
PREPARED UNDER SECTION 25(3)(a) OF THE URBAN RENEWAL AUTHORITY ORDINANCE

圖則編號 PLAN No. S/K22/URA1/A

KC-019

DSP notes, ES and DSP Plan

DRAFT URBAN RENEWAL AUTHORITY TO KWA WAN ROAD / MA TAU KOK ROAD DEVELOPMENT SCHEME PLAN NO. S/K22/URA2/A

(Being a Draft Plan for the Purposes of the Town Planning Ordinance prepared by the Urban Renewal Authority under section 25 of the Urban Renewal Authority Ordinance)

NOTES

(N.B. These form part of the Plan)

(1) These Notes show the uses or developments on land falling within the boundaries of the Plan which are always permitted and which may be permitted by the Town Planning Board, with or without conditions, on application. Where permission from the Town Planning Board for a use or development is required, the application for such permission should be made in a prescribed form. The application shall be addressed to the Secretary of the Town Planning Board, from whom the prescribed application form may be obtained.

(2) Any use or development which is always permitted or may be permitted in accordance with these Notes must also conform to any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, as may be applicable.

(3) (a) No action is required to make the existing use of any land or building conform to this Plan until there is a material change of use or the building is redeveloped.

(b) Any material change of use or any other development (except minor alteration and/or modification to the development of the land or building in respect of the existing use which is always permitted) or redevelopment must be always permitted in terms of the Plan or, if permission is required, in accordance with the permission granted by the Town Planning Board.

(c) For the purposes of subparagraph (a) above, "existing use of any land or building" means –

(i) before the publication in the Gazette of the notice of the first statutory plan covering the land or building (hereafter referred as 'the first plan');

- a use in existence before the publication of the first plan which has continued since it came into existence; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building; and

(ii) after the publication of the first plan,

- a use permitted under a plan which was effected during the effective period of that plan and has continued since it was effected; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building and permitted under a plan prevailing at the time when the use or change of use was approved.

(4) Except as otherwise specified by the Town Planning Board, when a use or material change of use is effected or a development or redevelopment is undertaken, as always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board, all permissions granted by the Town Planning Board in respect of the site of the use or material change of use or development or redevelopment shall lapse.

(5) Road junctions, alignments of roads and railway/tram tracks, and boundaries between zones may be subject to minor adjustments as detailed planning proceeds.

(6) Temporary uses (expected to be 5 years or less) of any land or building are always permitted as long as they comply with any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, and there is no need for these to conform to the zoned use or these Notes. For temporary uses expected to be over 5 years, the uses must conform to the zoned use or these Notes.

(7) The following uses or developments are always permitted on land falling within the boundaries of the Plan except where the uses or developments are specified in Column 2 of the Notes of individual zones:

(a) provision, maintenance or repair of plant nursery, amenity planting, open space, rain shelter, refreshment kiosk, road, bus/rail/tram/public light bus stop or layby, cycle track, rail track, railway station entrance, railway structure below ground level, taxi rank, nullah, public utility pipeline, electricity mast, lamp pole, telephone booth, telecommunications radio base station, automatic teller machine and shrine; and

(b) geotechnical works, local public works, road works, sewerage works,

drainage works, environmental improvement works, marine related facilities, waterworks (excluding works on service reservoir) and such other public works co-ordinated or implemented by Government; and

(c) maintenance or repair of watercourse.

(8) In any area shown as 'Road', all uses or developments except those specified in paragraph (7) above and those specified below require permission from the Town Planning Board:

on-street vehicle park.

(9) Unless otherwise specified, all building, engineering and other operations incidental to and all uses directly related and ancillary to the permitted uses and developments within the same zone are always permitted and no separate permission is required.

(10) In these Notes, "existing building" means a building, including a structure, which is physically existing and is in compliance with any relevant legislation and the conditions of the Government lease concerned.

(11) Any development not compatible with the Urban Renewal Authority's Development Scheme for the area is prohibited by virtue of section 25(4) of the Urban Renewal Authority Ordinance.

DRAFT URBAN RENEWAL AUTHORITY
TO KWA WAN ROAD / MA TAU KOK ROAD
DEVELOPMENT SCHEME PLAN NO. S/K22/URA2/A

Schedule of Uses

	Page
RESIDENTIAL (GROUP A)	1

RESIDENTIAL (GROUP A)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot	Commercial Bathhouse/ Massage Establishment
Flat	Eating Place
Government Use (not elsewhere specified)	Education Institution
House	Exhibition or Convention Hall
Library	Government Refuse Collection Point
Market	Hospital
Place of Recreation, Sports or Culture	Hotel
Public Clinic	Institutional Use (not elsewhere specified)
Public Transport Terminus or Station (excluding open-air terminus or station)	Office
Residential Institution	Petrol Filling Station
School (in free-standing purpose-designed building only)	Place of Entertainment
Social Welfare Facility	Private Club
Utility Installation for Private Project	Public Convenience
	Public Transport Terminus or Station (not elsewhere specified)
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
	Religious Institution
	School (not elsewhere specified)
	Shop and Services (not elsewhere specified)
	Training Centre

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

In addition, the following uses are always permitted (a) on the lowest three floors of a building, taken to include basements; or (b) in the purpose-designed non-residential portion of a building, both excluding floors containing wholly or mainly car parking, loading / unloading bay and / or plant room:
Eating Place Educational Institution Institutional Use (not elsewhere specified) Off-course Betting Centre Office Place of Entertainment Private Club Public Convenience Recyclable Collection Centre School Shop and Services Training Centre

Planning Intention

This zone is intended primarily for high-density residential developments with the provision of waterfront promenade. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-residential portion of a building.

Remarks

(1) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum plot ratio and maximum site coverage specified below, or the plot ratio and site coverage of the existing building, whichever is the greater.

Maximum Domestic Plot Ratio	Maximum Non-Domestic Plot Ratio	Maximum Site Coverage (excluding basement(s))
6.5	1.0	65%

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

Remarks (Cont'd)

(2) For the purposes of paragraph (1) above, no addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the relevant maximum domestic and/or non-domestic plot ratio(s), or the domestic and/or non-domestic port ratio(s) or the existing building, whichever is the greater, subject to, as applicable –

(i) the plot ratio(s) of the existing building shall apply only if any addition, alteration and/or modification to or redevelopment of an existing building is for the same type of building as the existing building, i.e. domestic, non-domestic, or partly domestic and partly non-domestic building; or

(ii) the maximum domestic and/or non-domestic plot ratio(s) stated in paragraph (1) above shall apply if any addition, alteration and/or modification to or redevelopment of an existing building is not for the same type of building as the existing building, i.e. domestic, non-domestic, or partly domestic and partly non-domestic building.

(3) No new development, or addition, alternation and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(4) On land designated 'Shop and Services' and 'Eating Place' uses only, buildings not exceeding 2 storeys to accommodate 'Shop and Services' and 'Eating Place' uses shall be provided.

(5) On land designated 'Waterfront Promenade', a 20m-wide promenade abutting the waterfront shall be provided for public enjoyment purpose.

(6) In determining the maximum plot ratio for the purposes of paragraph (1) above,

(a) any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded; and

(b) any floor space that is constructed or intended for use solely as Government, institution or community facilities, as required by the Government, may also be disregarded.

(7) In determining the maximum site coverage for the purposes of paragraph (1) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, shall be included for calculation.

(8) Where the permitted plot ratio as defined in Building (Planning) Regulations is permitted to be exceeded in circumstances as set out in Regulation 22(1) or (2) of the said Regulations, the plot ratio for the building on land to which paragraphs (1) and (2) applies may be increased by the additional plot ratio by which the permitted plot ratio is permitted to be exceeded under and in accordance with the said Regulation 22(1) or (2), notwithstanding that the relevant maximum plot ratio specified in the paragraphs (1) and (2) above may thereby be exceeded.

(9) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and/or building height restrictions as stated in paragraphs (1) and (3) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(10) Under exceptional circumstances, for a development or redevelopment proposal, minor relaxation of the non-building area restriction as stipulated on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

DRAFT URBAN RENEWAL AUTHORITY

TO KWA WAN ROAD / MA TAU KOK ROAD

DEVELOPMENT SCHEME PLAN NO. S/K22/URA2/A

EXPLANATORY STATEMENT

DRAFT URBAN RENEWAL AUTHORITY

TO KWA WAN ROAD / MA TAU KOK ROAD

DEVELOPMENT SCHEME PLAN NO. S/K22/URA2/A

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4.	NOTES OF THE PLAN	2
5.	AREA COVERED BY THE PLAN	3
6.	EXISTING CONDITIONS	3
7.	PLANNING AND LAND USE PROPOSALS	4
8.	IMPLEMENTATION OF THE DEVELOPMENT SCHEME	8

DRAFT URBAN RENEWAL AUTHORITY
TO KWA WAN ROAD / MA TAU KOK ROAD
DEVELOPMENT SCHEME PLAN NO. S/K22/URA2/A

(Being a Draft Plan for the Purposes of the Town Planning Ordinance prepared by the Urban Renewal Authority under section 25 of the Urban Renewal Authority Ordinance)

EXPLANATORY STATEMENT

Note: For the purposes of the Town Planning Ordinance (the Ordinance), this statement shall not be deemed to constitute a part of the Plan.

1. INTRODUCTION

This explanatory statement is intended to assist an understanding of the draft Urban Renewal Authority (URA) To Kwa Wan Road/Ma Tau Kok Road Development Scheme Plan (DSP) No. S/K22/URA2/A. It reflects the planning intention and objectives of the Town Planning Board (the Board) for the area covered by the Plan.

2. AUTHORITY FOR THE PLAN AND PROCEDURES

2.1 In the URA's 21st Business Plan (2022/23) which was approved by the Financial Secretary, the To Kwa Wan Road/Ma Tau Kok Road Development Scheme (KC-019) (the Development Scheme) was proposed to be processed as a Development Scheme under section 25 of the URA Ordinance (URAO).

2.2 On 7 October 2022, pursuant to section 23(1) of the URAO, the URA notified in the Government Gazette the commencement of implementation of the Development Scheme.

2.3 On the same day of commencement (i.e. 7 October 2022), the URA submitted the draft URA To Kwa Wan Road/Ma Tau Kok Road DSP to the Board under section 25(5) of the URAO.

2.4 On XXXX 2022, the Board, under section 25(6)(a) of the URAO, deemed the draft URA To Kwa Wan Road/Ma Tau Kok Road DSP as being suitable for publication. Under section 25(7) of the URAO, the draft DSP, which the Board has deemed suitable for publication, is deemed to be a draft plan prepared by the Board for the purposes of the Ordinance.

2.5 On XXXX 2022, the draft To Kwa Wan Road/Ma Tau Kok Road DSP No. S/K22/URA2/A (the Plan) was exhibited under section 5 of the Ordinance. By virtue of section 25(9) of the URAO, the Plan has from the date replaced the draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7 in respect of the area delineated and described herein.

3. OBJECT OF THE PLAN

The Plan illustrates that the Development Scheme Area (the Area) is designated as "Residential (Group A)" ("R(A)") and areas shown as 'Road'. It is planned to be developed by means of the Development Scheme prepared under section 25 of the URAO. The Development Scheme intends to achieve a holistic re-planning of land uses together with the adjoining urban fabric at Ming Lun Strret / Ma Tau Kok Road Development Scheme (KC-018) to facilitate the expedition of redevelopment of existing uses into comprehensive designed waterfront developments fitting in with the redevelopment intention of the 5-Streets area in Ma Tau Kok. Waterfront promenade and retail belt will be provided in the Area for public enjoyment purpose. GIC facilities will be provided within the Area to meeting community needs.

4. NOTES OF THE PLAN

4.1 Attached to the Plan is a set of Notes which shows the types of uses or developments which are always permitted within the Area in this zone and which may be permitted by the Board, with or without conditions,

on application. The provision for application for planning permission under section 16 of the Ordinance allows greater flexibility in land use planning and control of development to meet changing needs.

4.2 For the guidance of the general public, a set of definitions that explains some of the terms used in the Notes may be obtained from the Technical Services Division of the Planning Department and can be downloaded from the Board's website at http://www.info.gov.hk/tpb.

5. AREA COVERED BY THE PLAN

5.1 The Development Scheme boundary which is shown in heavy broken line on the Plan. The Area is broadly bounded by Ma Tau Kok waterfront to the east, northern portion of Ma Tau Kok Road to the south, To Kwa Wan Road to the west and Hong Kong Housing Society's (HKHS) reserved site for dedicated rehousing estate (DRE) to the north. With a total gross site area of about 8,759m^2, the Area includes buildings built on private lots, government land, roads and the surrounding public pavement.

5.2 On the draft Kai Tak OZP No. S/K22/7, the Area is zoned "Comprehensive Development Area", and the pavement and streets are shown as "Road"[1] before the exhibition of the Plan.

6. EXISTING CONDITIONS

The Area of KC-019 consists of Newport Centre Phase I and Phase II, which were built between 1979 and 1981and are both 6 storeys including one basement level. The buildings are currently occupied for workshops, storage, showrooms offices, garage, and retail services. Lift services are available at both New Port Centre Phase I and Phase II.

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[1] To facilitate land resumption and implementation of the Scheme, the Development Scheme boundary covers minor portion of the pavement area which falls within the approved Ma Tau Kok OZP No. S/K10/28, while the pavement area along To Kwa Wan Road is not accountable for GFA/PR calculation.

7. PLANNING AND LAND USE PROPOSALS

7.1 On the Plan, the Area is zoned "R(A)" and areas shown as 'Road'. The Notes of the Plan indicated broadly the intended land uses within the Area. The area covered by the "R(A)" zone is about 7,816 m^2, subject to site survey.

Uses

7.2 The "R(A)" zone is intended primarily for comprehensive high-density residential developments with the provision of waterfront promenade for public enjoyment purposes. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-domestic portion of an existing building.

7.3 The maximum plot ratio within the "R(A)" zone is 7.5, or the plot ratio of the existing building(s), whichever is the greater. Except where the plot ratio is permitted to be exceeded under the Notes of the Plan or under Building (Planning) Regulations 22(1) or (2), under no circumstances shall the plot ratio for the domestic part of any development exceed 6.5. The "R(A)" zone is also subject to a maximum site coverage of 65% and maximum building height of 120 metres above Principal Datum (mPD).

7.4 The PR control under "R(A)" zone is regarded as being stipulated in a "new or amended statutory plan" according to the Joint Practice Note No. 4 "Development Control Parameters Plot Ratio/Gross Floor Area", and shall be subject to the streamlining arrangements stated therein.

7.5 To provide design flexibility, minor relaxation of the plot ratio, site coverage and/or building height restrictions may be considered by the Board on application under section 16 of the Ordinance taking into account its individual planning and design merits.

Waterfront Promenade

7.6 In view of the waterfront location of the Area, a waterfront promenade of not less than 20m wide will be provided for public enjoyment. Seaside footpath, siting-out area, cycling facilities and landscaping will be provided at the waterfront promenade as appropriate. The waterfront promenade will seamlessly connect with the planned waterfront promenade at the north, contributing as part of the continuous promenade from Ma Tau Kok towards Cha Kwo Ling. To promote vibrancy and liveliness of the waterfront area, a strip of land of about 10m for provision of a two-storey retail belt for "Shop and Services" and "Eating Place" uses will be provided along the waterfront promenade. The waterfront promenade will be opened for public use 24 hours to benefit the local community, subject to local views and liaison with relevant Government departments.

Waterfront Plaza

7.7 Subject to detailed design, an at-grade Waterfront Plaza, with landscaping, covered and uncovered sitting out area, is proposed to connect with the retail belt and waterfront promenade. The Waterfront Plaza will be integrated with the adjoining planned waterfront plaza in URA's Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) to the south, to provide pedestrian connection between To Kwa Wan Road to the west and the retail belt and waterfront promenade to the east. The Waterfront Plaza will reinforce the waterfront ambience of the Area through creating a focal point for harbour viewing, leisure strolling and place-making.

Non-building Area and Building Setback

7.8 In respecting the waterfront setting and promoting public access and visual permeability to the waterfront, a NBA of about 10m wide in a east-west direction is designated along the southern boundary of the "R(A)" zone of the Area. The NBA is intended to allow for better wind penetration into the inland sites, which can also help to improve the overall air ventilation and visual permeability for the Area. Landscaping feature, covered walkway and/or boundary fence/boundary wall that is

designed to allow high air porosity will be provided at above ground within the NBA. Below ground structure is allowed within the NBA.

7.9 Ground floor/podium setback is proposed at the "R(A)" site to create wider and more comfortable walking environment. The setback is subject to detailed design on the feasibility and agreement with relevant government departments.

Government, Institution or Community (GIC) Facilities

7.10 Subject to confirmation of operational needs and detailed design, not less than 500m^2 non-domestic gross floor area would be proposed for GIC uses within the non-domestic portion of the Area. The intended GIC use would be subject to further liaison with relevant Government departments as well as views from local stakeholders. The actual GIC GFA is subject to departmental confirmation upon land grant preparation stage. In determining the relevant maximum plot ratio of the development and/or redevelopment, any floor space that is constructed or intended for use solely as GIC facilities, as required by the Government, may be disregarded. The total GFA of GIC facilities shall be determined based on the operational and design requirements of the confirmed uses as advised by relevant Government departments.

Internal Transport Facilities

7.11 Ancillary car parking spaces and loading/unloading bays would be provided in a basement car park. The number of car parking spaces, loading/unloading bays will be based on the relevant requirements under the Hong Kong Planning Standards and Guidelines (HKPSG) and subject to agreement with Transport Department.

Pedestrian and Vehicular Circulation

7.12 Under a holistic planning approach, the Development Scheme is proposed to enhance both the pedestrian and vehicular connectivity to Kai Tak Development Area (KTDA) and the old urban area of Ma Tau Kok and To Kwa Wan in the hinterland. To enhance walkability and connectivity of the Area with the waterfront promenade and the surrounding neighbourhood, the section of Ma Tau Kok Road within the

Area will be closed permanently for redevelopment and/or creation of the Waterfront Plaza. It can facilitate a car-free walking environment to bring pedestrians from the hinterland of Ma Tau Kok towards the waterfront promenade.

In addition, through rationalizing of existing land uses, the residential development within the "R(A)" site will be setback from To Kwa Wan Road to provide an opportunity to reserve area for the planned road widening works of the existing To Kwa Wan Road from a 4-lane road to a 6-lane road. Detailed design and implementation programme will be subject to local views and agreement with relevant Government departments

Provision of Footbridge Connection

7.13 To further enhance the walkability and connectivity between the Area and the inland area of To Kwa Wan, separate revitalisation initiative to provide a footbridge connection at the podium level at the "R(A)" site over To Kwa Wan Road will be explored. The design and openings of the footbridge is subject to liaison and agreement with relevant Government departments.

Abandoned Pier Structure and Landing Steps

7.14 There is potential to revitalize the existing abandoned pier structure and landing steps owned by the Government to achieve a coherent design theme for waterfront area for public enjoyment. Given the pier structure and landing steps are located outside the DSP boundary and does not form part of the DSP, the URA will liaise with relevant Government departments on the proposal via separate revitalisation initiatives subject to the approval of DSP and detailed technical feasibility.

8. IMPLEMENTATION OF THE DEVELOPMENT SCHEME

8.1 The proposals set out in the Plan form an integral part of the Development Scheme for the Area.

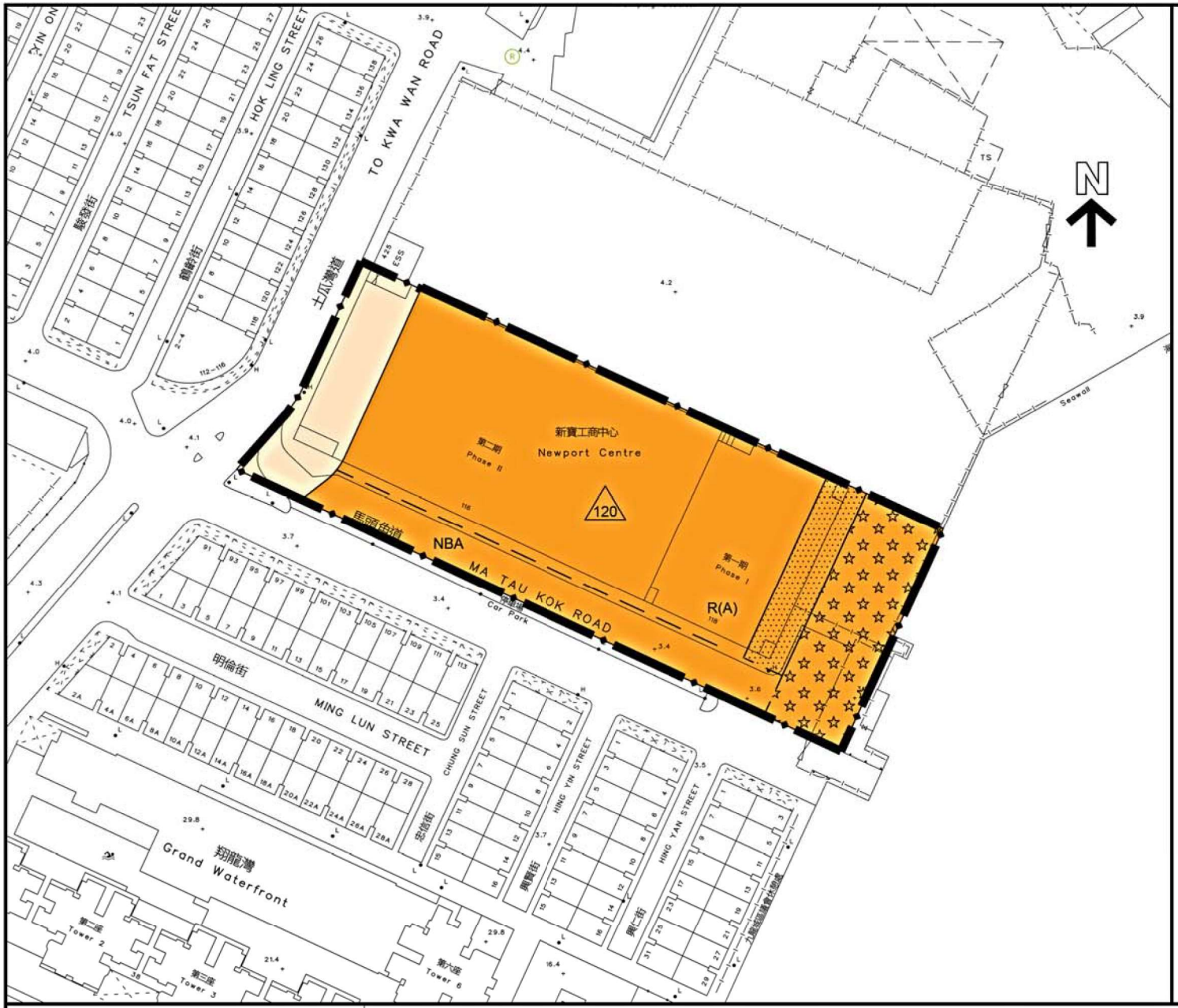
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8.3 All eligible tenants will be offered an ex-gratia payment package in accordance with URA's policy. The URA has already entered into agreement with the HKHS and the Hong Kong Housing Authority (HKHA) for the purpose of making available rehousing units by HKHS or HKHA to rehouse affected tenants who satisfy the eligibility criteria of HKHS or HKHA.

8.4 Non-domestic tenants of properties acquired by URA whose tenancies are terminated by URA due to implementation of the Development Scheme may be offered an ex-gratia allowance to assist in their business relocation.

8.5 Details of the acquisition, rehousing and ex-gratia allowance policies are subject to the URA's prevailing policies at the time of acquisition. The URA may implement the Development Scheme on its own or in association with one or more partners.

TOWN PLANNING BOARD
October 2022



圖例
NOTATION

- BOUNDARY OF DEVELOPMENT SCHEME ..... 發展計劃範圍界線
- RESIDENTIAL (GROUP A) ..... R(A) ..... 住宅(甲類)
- ROAD ..... 道路
- MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM) ..... 120 ..... 最高建築物高度(在主水平基準上若干米)
- AREA DESIGNATED FOR 'SHOP AND SERVICES' AND 'EATING PLACE' USES ONLY ..... 只限於指定為「商店及服務行業」和「食肆」用途的地區
- AREA DESIGNATED FOR 'WATERFRONT PROMENADE' ..... 指定為「海濱長廊」的地區
- NON-BUILDING AREA ..... NBA ..... 非建築用地

夾附的<<註釋>>屬這份圖則的一部分

THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2022年 月 日城市規劃委員會根據城市區重建局條例第25(6)(a)條認為圖則適宜公布，並於2022年 月 日按照城市規劃條例第5條展示。

PLAN DEEMED SUITABLE BY THE TOWN PLANNING BOARD FOR PUBLICATION UNDER SECTION 25(6)(a) OF THE URBAN RENEWAL AUTHORITY ORDINANCE ON 2022 AND EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 2022.

SECRETARY, TOWN PLANNING BOARD 城市規劃委員會秘書

香港城市規劃委員會依據城市規劃條例擬備的市區重建局土瓜灣道/馬頭角道發展計劃圖則
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD URBAN RENEWAL AUTHORITY TO KWA WAN ROAD / MA TAU KOK ROAD DEVELOPMENT SCHEME PLAN

SCALE 1 : 1000 比例尺

米 METRES 10 0 10 20 30 40 50 METRES米

依據市區重建局條例第25(3)(a)條擬備
PREPARED UNDER SECTION 25(3)(a) OF THE URBAN RENEWAL AUTHORITY ORDINANCE

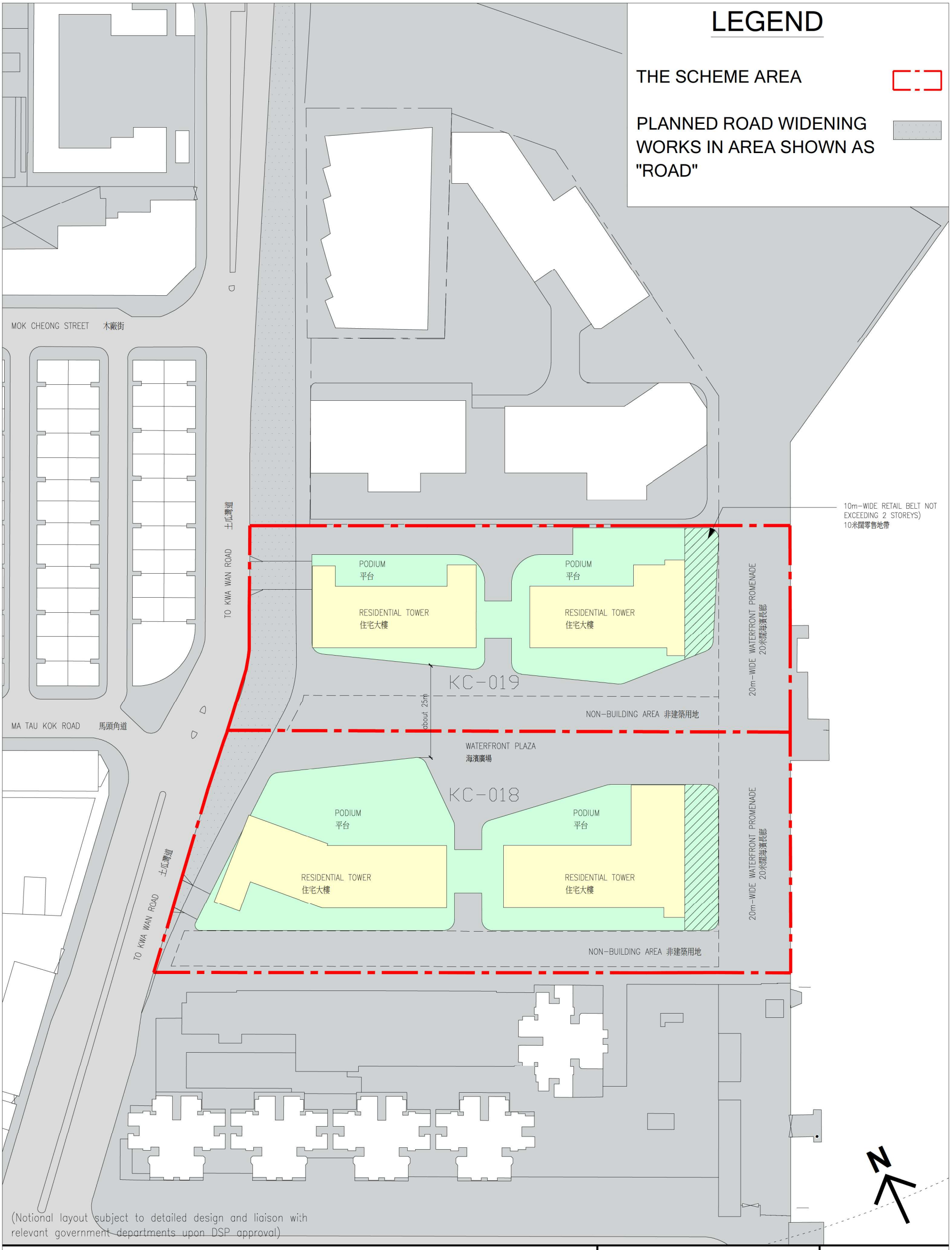
圖則編號 PLAN No. S/K22/URA2/A

PART 3

SUPPLEMENTARY INFORMATION

Appendix 1

Preliminary Design

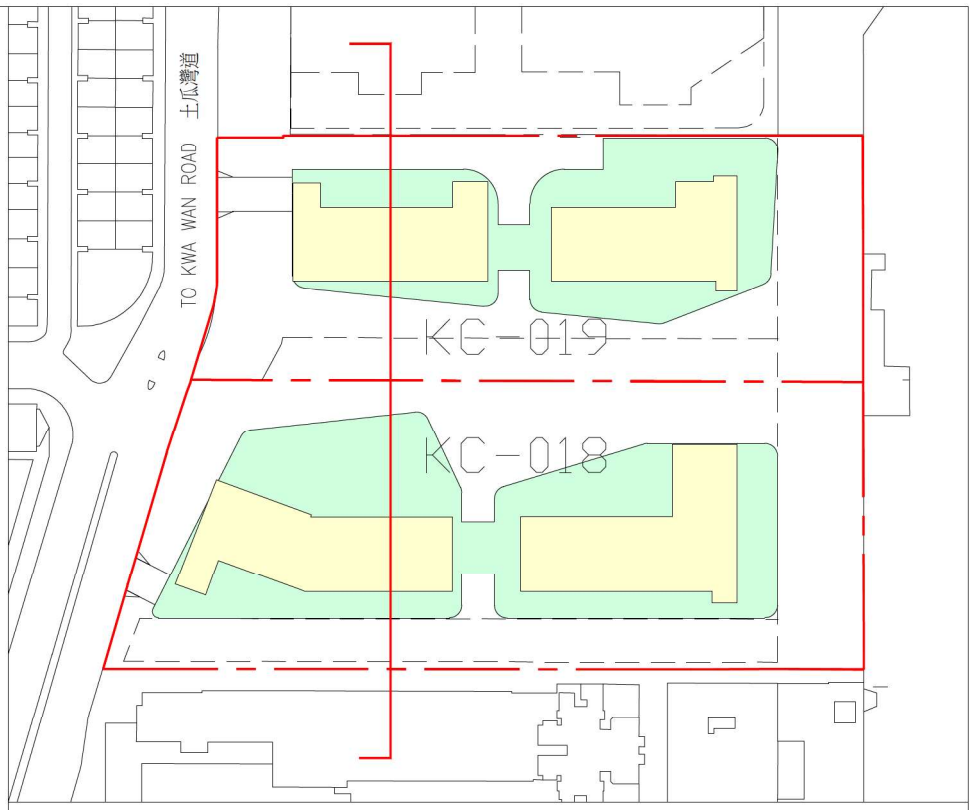


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

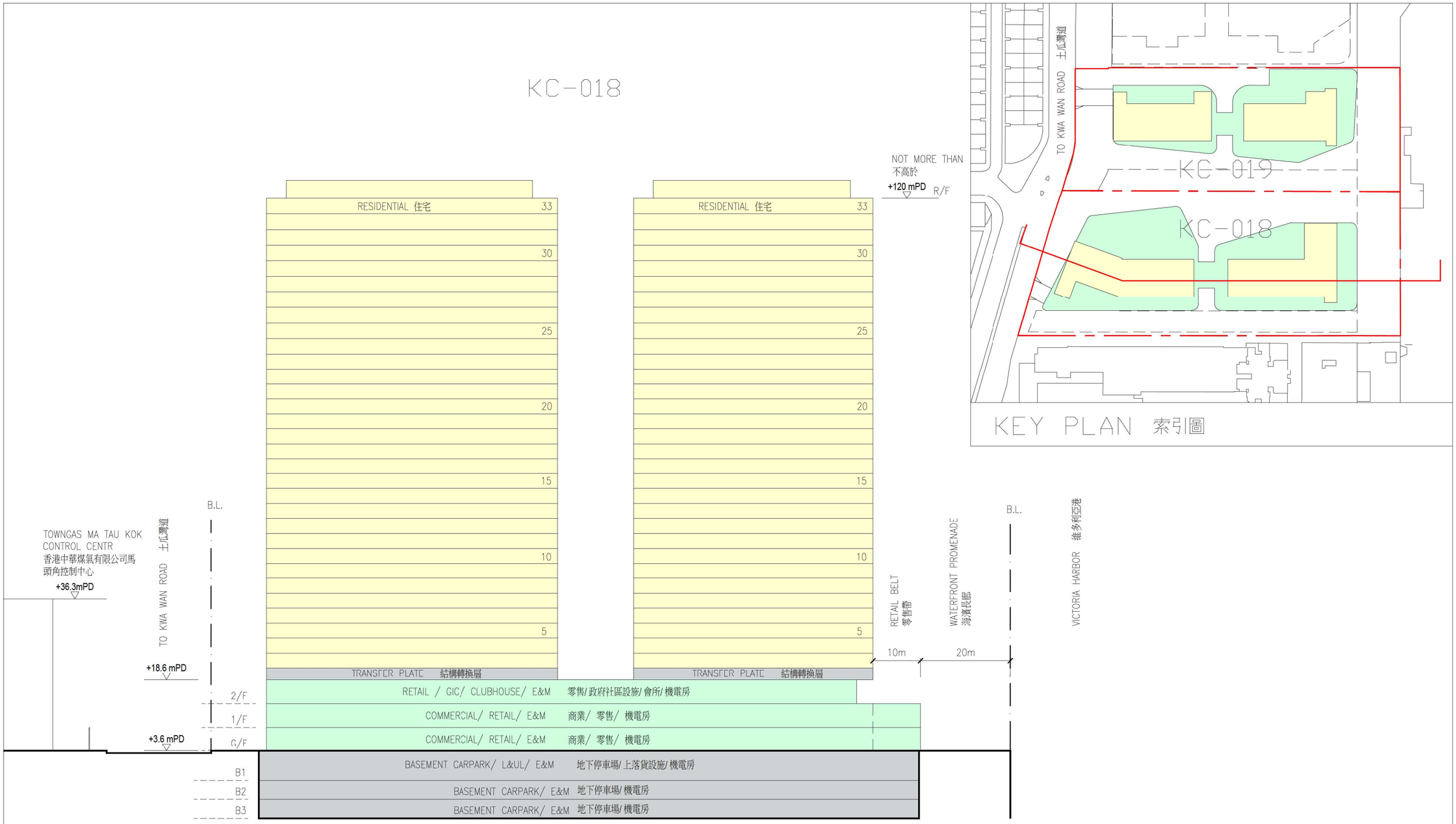
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

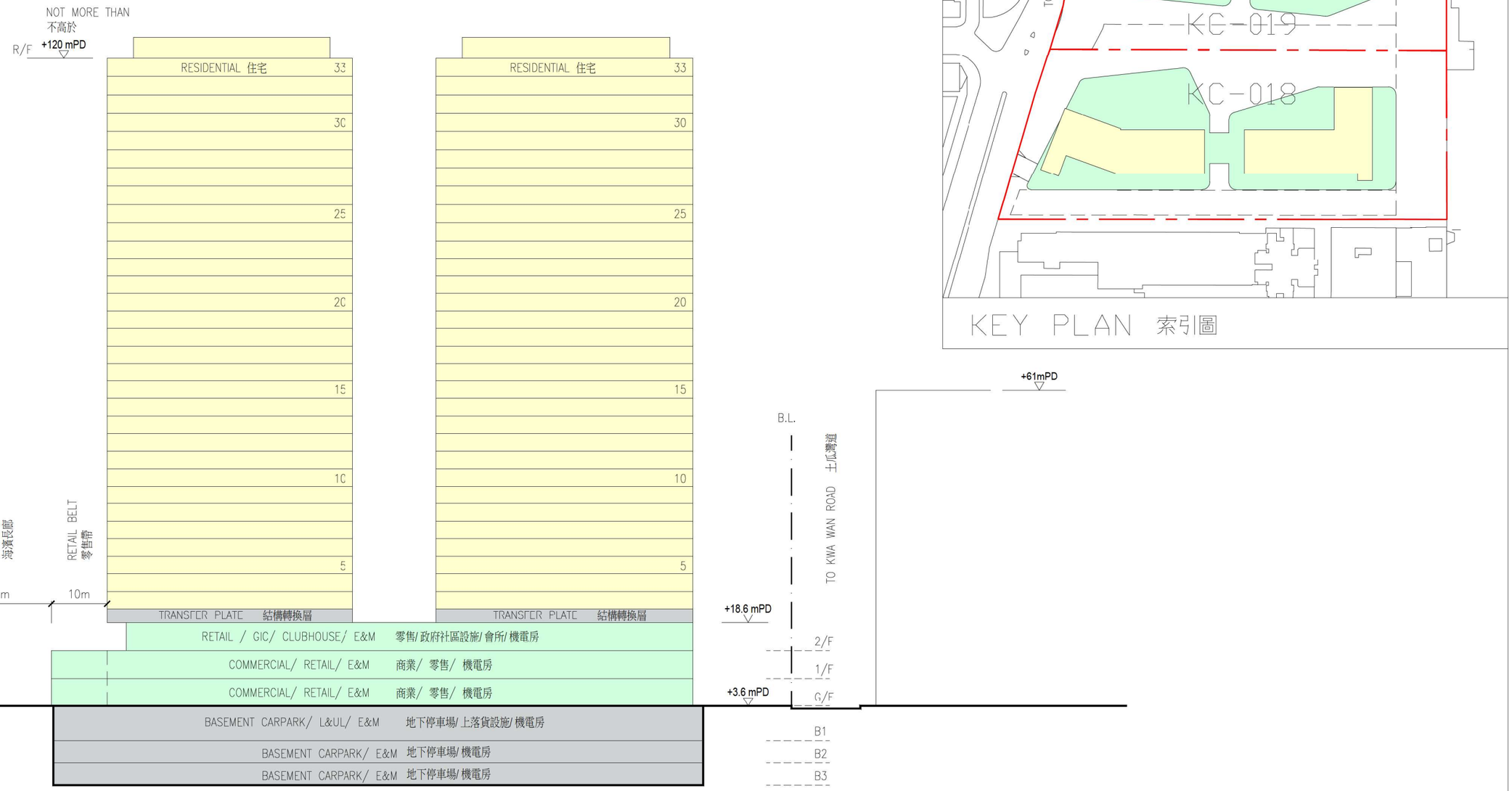
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



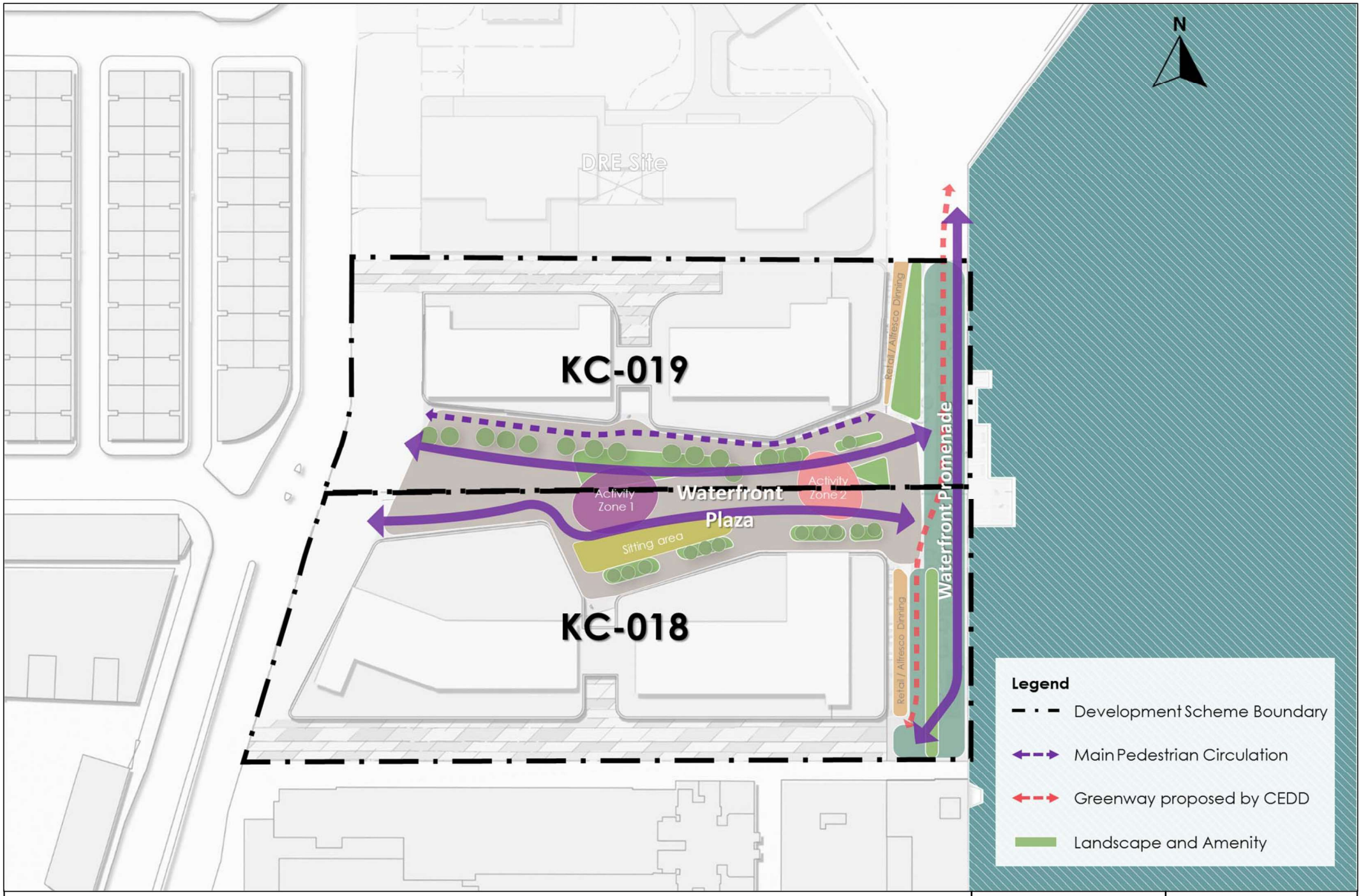
(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE



市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Preliminary
Landscape Design
Concept

FIGURE
1.5
NOT TO SCALE

Appendix 2

Visual Impact Assessment

(VIA) Report

Urban Renewal Authority Development Scheme

Prepared under Section 25 (3) of the Urban Renewal Authority Ordinance

Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) and To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019)

Visual Impact Assessment

October 2022

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1. INTRODUCTION

1.1. The Urban Renewal Authority (URA) has proposed two Development Schemes, namely the Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) (the KC-018 Scheme) and the To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) (the KC-019 Scheme) under section 25 of the Urban Renewal Authority Ordinance.

1.2. The KC-018 and KC-019 Schemes are connected sites which located at a strategic precinct next to the Ma Tau Kok waterfront of Kowloon City District. Under an integrated planning-led approach, both Schemes are considered as one holistic redevelopment which aim to rationalize land use for holistic planning of the area to enable more efficient land use and to bring planning gains to the community.

1.3. KC-018 Scheme area is broadly bounded by Ma Tau Kok waterfront to the east, Grand Waterfront to the south, To Kwa Wan Road to the west and Ma Tau Kok Road to the north. It is also known as “5-Street” area, which is currently occupied by building clusters along 5 public streets namely Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street, and a portion of Ma Tau Kok Road. The existing Kowloon City District Council sitting-out area as well as the surrounding public pavement area are also included within the KC-018 Scheme area.

1.4. To the north of KC-018 Scheme across Ma Tau Kok Road is the KC-019 Scheme. It is broadly bounded by Ma Tau Kok waterfront to the east, Ma Tau Kok Road to the south, To Kwa Wan Road to the west and the Hong Kong Housing Society (HKHS)’s reserved site for dedicated rehousing estate (DRE) to the north. KC-019 Scheme is currently occupied by the Newport Centre Phases I and II which are industrial / commercial buildings. It also includes a portion of Ma Tau Kok Road and adjoining Government land and public pavement.

1.5. This VIA report is prepared in support of the submission of the draft Development Scheme Plans (DSPs) under both KC-018 and KC-019 with its planning proposal involving rezoning and relaxation of building height of the Scheme Area to the TPB for consideration. The VIA is prepared to assess the potential visual impact of the notional design of the Scheme in accordance with the TPB Guidelines (TPB PG) No. 41 – Guideline on submission of Visual Impact Assessment for Planning Application to the TPB. Reference will also be made to Chapter 4, 10 and 11 of the Hong Kong Planning Standards and Guidelines (HKPSG) in preparing the VIA.

1.6. This VIA will cover the followings:

Section 2: describes the Proposed Schemes.
Section 3: identifies the area of assessment and the visual context of the Scheme areas.
Section 4: identifies the key visual sensitive receivers.
Section 5: appraises the potential visual impacts induced by the proposed development; and
Section 6: summarises the findings of the VIA.

2. THE PROPOSED SCHEME

2.1. The KC-018 and KC-019 Scheme areas are currently zoned "Comprehensive Development Area" ("CDA"), with the western portion shown as "Road" on the draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7. Under the draft DSPs of KC-018 and KC-019, both areas are proposed to be zoned "R(A)" and with a maximum domestic plot ratio of 6.5 and non-domestic PR of 1.0, as well as maximum building height of 120mPD and site coverage of 65%. To allow spaces for the planned road widening works of To Kwa Wan Road, a strip of land along the western boundary of both Scheme areas are also proposed to be zoned "Road" on the draft DSPs.

2.2. As shown in the layout plan of the notional design of both Schemes in **Figure 2.1**, the proposed development comprises four residential towers on top of 2 separate commercia/retail/GIC podia of 3 storeys and ancillary car parking facilities at basement levels. A 20m-wide waterfront promenade is provided at the eastern boundary along the waterfront for public enjoyment under both Schemes, and will be connecting with the adjoining waterfront promenade towards the Kai Tak Development Area (KTDA) at north east. To promote vibrancy, a 10m-wide 2-storeys retail belt abutting the waterfront promenade is provided. Two 10m-wide non-building areas (NBA) will also be provided along the southern boundaries of both Schemes to enhance the visual permeability of the proposed developments. The proposed waterfront promenade, retail belt and the NBAs also conform with the development requirements as stipulated under the current OZP.

2.3. In addition, an at-grade Waterfront Plaza will be provided at the central area between KC-018 and KC-019 as a focal point for gathering and place-making opportunities. It will be connected to the proposed retail belt and the waterfront promenade to bring in vibrancy and strengthen the east-west connectivity between the old and new districts. The proposed development parameters of the notional design of both proposed Schemes are shown in **Table 2.1**, which will be subject to adjustments at the detailed design stage after DSP's approval.

Table 2.1 Major Development Parameters of the Proposed Schemes

Parameters	Overall	KC-018	KC-019
Gross Site Area	About 20,189 sq.m.	About 11,430 sq.m.	About 8,759 sq.m.
Site Area for PR Calculation (subject to survey and detailed design)	About 18,312 sq.m.	About 10,496 sq.m.	About 7,816 sq.m.
Proposed Zonings	"R(A)", Road		
Proposed Maximum Building Height (at main roof level)	Not more than 120mPD		
Proposed Maximum Domestic GFA (PR)^	About 119,028 sq.m. (PR = 6.5)	About 68,224 sq.m. (PR = 6.5)	About 50,804 sq.m. (PR = 6.5)
Proposed Maximum Non-domestic GFA (excluding GIC Provision) (PR) ^	about 18,312 sq.m. (PR = 1.0)	about 10,496 sq.m. (PR = 1.0)	about 7,816 sq.m. (PR = 1.0)
Proposed Maximum Non- domestic GFA for GIC Provision^ (proposed to be exempted from GFA calculation under DSP)	1,500 sq.m.	1,000 sq.m.	500 sq.m.
Total GFA (about)	138,840 sq.m.	79,720 sq.m.	59,120 sq.m.
No. of Flats@	2,226	1,276	950
Average Flat Size@ (GFA)	About 53.5 sq.m.		

Notes:
^ The exact GFA and PR are subject to TPB approval, detailed design and prevailing First Schedule of Building (Planning) Regulations.
@ Indicative only, subject to detailed design at implementation stage.

2.4. Both Schemes fall within the "5-Streets" area of the "5-Streets" and "13 Streets" area, To Kwa Wan as defined in the Urban Renewal Plan (URP) prepared by KC DURF. Under the URP of KC DURF, the area is recommended as "Redevelopment Priority Area". DURF recommended to sub-divide the "Comprehensive Development Area (CDA)" site at "5-Streets" into two portions based on the existing residential building portion and the industrial / commercial building portion. It is also suggested to increase the plot ratio of the residential building portion from 5 to 6.5. The Scheme, being a redevelopment project, is tally with the recommendations of KC DURF.

2.5. The two Schemes will provide the following planning and environmental benefits:

Link up disjointed waterfront promenade

2.6. The Schemes will provide a 20-meters building setback along the eastern boundary creating space for waterfront promenade connecting the missing linkage of the CEDD's Kai Tak GreenWay network project which connects the KTDA in the north. Seaside footpath, cycling facilities and sitting-out areas will also be proposed along the waterfront promenade to further enhance the waterfront experience.

Enhance accessibility to KTDA and inland areas

2.7. The proposed boundary setback on the western portion of the two Schemes will reserve space for the planning road widening works of the section of To Kwa Wan Road abutting the site boundaries.

2.8. In addition, a possible footbridge connection at the podium level over To Kwa Wan Road is proposed under separate URA's revitalisation initiatives. The proposed footbridge connection will provide opportunity to enhance the walkability and to link up the wider neighbourhood at the inner part of To Kwa Wan.

Tower disposition to enhance accessibility and visual permeability to waterfront

2.9. The proposed redevelopment acts as a connector between the built-up Ma Tau Kok area in the west and the waterfront promenade in the east. Two 10m-wide NBAs will be provided along the southern boundaries of both KC-018 and KC-019 to enhance the air ventilation and visual permeability of the proposed redevelopment. It will also provide direct pedestrian access towards the waterfront promenade.

Create a vibrant and appealing waterfront

2.10. A Waterfront Plaza, with landscaping features and placemaking initiatives, will be provided between the two sites and served as focal point of the community. Together with the adjoining two-storey retail belt and the waterfront promenade along the eastern site boundaries, it will further enhance the waterfront experience and the robustness and vibrancy of the area. In light of the above planning gains, the Schemes will not only catalyse the improvement works of a section of the waterfront promenade, but will also formulate and contribute to the branding of an appealing waterfront in Kowloon East.

2.11. In addition, separate revitalisation works at the adjoining disused pier structure/landing steps outside the DSP boundary is also proposed to achieve a coherent design theme for this part of waterfront promenade for public enjoyment. Detail design and programme of the said works would be subject to the views and agreement with relevant Government departments.

Sensitivity Tests for Visual Assessment

2.12. To comprehensively compare the visual impact of the Proposed Schemes, two sensitivity tests, namely Sensitivity Test 1 (with maximum building height permitted in OZP in the surroundings) and Sensitivity 2 (with 20% increase in building height in the surroundings), were also prepared for scenario testing. The two sensitivity tests are for reference only and intend to demonstrate the possible visual changes of the surroundings before and after the proposed developments with assumption of the possible future redevelopments in the nearby area under the two proposed schemes.

2.13. This VIA will compare the visual changes of existing buildings with the Proposed Scheme, two abovementioned scenarios and thus appraise the visual impact.

3. AREA OF ASSESSMENT

3.1. Area of Visual Influence (AVI)

3.1.1. According to the TPB PG-No.41, the assessment area (i.e. the visual envelop) should cover the area of visual influence within which any part of the proposed development is pronouncedly visible from key sensitive viewers. The assessment area for the VIA is defined by the Visual Envelope (VE) of the Scheme Area. The VE has taken 3 times of the proposed building height of the Scheme (i.e. 120mPD x 3 = 360m) as an assumption. The areas for KC-018 and KC-019 are combined to form the assessment area of this VIA.

3.1.2. As indicated in **Figure 3.1**, the assessment area extends to Kai Tak Sports Park to the north, To Kwa Wan Typhoon Shelter to the east, Kwei Chow Street to the south and Kowloon City Road to the west. Apart from the coverage of the assessment area, in order to take into consideration the prominent waterfront location of the Site, a strategic viewing point and two additional viewing points opposite to the Scheme area across Victoria Harbour are also identified, namely Kai Tak Elevated Landscaped Deck, North Point Ferry Pier and Quarry Bay Park (**Figures 3.2 and 3.3**).

3.1.3. In gist, the following VPs are identified for assessment**:**

Local View Points (**Figures 3.2**)
(1) VP 1: Kai Tak Elevated Landscaped Deck
(2) VP 2: Junction of Shing Kai Road and Sung Wong Toi Road
(3) VP 3: Ma Tau Kok Road
(4) VP 4: Junction of San Shan Road and To Kwa Wan Road
(5) VP 5: San Ma Tau Street
(6) VP 6: North Point Ferry Pier

Strategic Viewing Point (**Figure 3.3**)
(7) Quarry Bay Park

3.2. Visual Context and Character

3.2.1. The visual context is shaped by the combined composition of all the visual elements which come into sight of the viewers. Presently the assessment area is predominantly built-up areas at a prominent waterfront location in Ma Tau Kok dominated by following visual element:

- KC-018 Scheme area is currently occupied by five clusters of tenement buildings of 8 storeys, separated by Hing Yan Street, Hing

Yin Street, Chung Sun Street, Ming Lun Street and Ma Tau Kok Road (part), with low visibility and poor accessibility from the main street.

- KC-019 Scheme area is currently occupied by the Newport Centre Phases I and II, an industrial-office complex of 6 storeys, including one basement level. The section of Ma Tau Kok Road within the Site between KC-018 and KC-019 is currently highly occupied by roadside parking and loading/unloading by private and goods vehicles, with poor pedestrian walking environment and low accessibility to the waterfront.

- To the north of the Site is the proposed DRE by HKHS with proposed building height of 100mPD. To the further north is committed and planned development in Kai Tak area such as Kai Tak Sports Park (70mPD), Metro Park, surrounding committed open spaces and recreational facilities, indicating the local visual context and visual amenity will be changed accordingly.

- To the west of the Site are older part of Ma Tau Kok inland area, predominantly mixed commercial/residential in nature with lower floors for commercial uses such as retail shops and eateries, as well as industrial-office buildings. A number of existing and committed medium to high-rise residential and comprehensive development are also considered in the VIA, including proposed developments at CDA(2) and CDA(3) sites along Mok Cheong Street (100mPD), proposed public housing development at the junction of Sung Wong Toi Road and To Kwa Wan Road (100mPD), proposed redevelopment of Factory for the Blind by the Hong Kong Society for the Blind (67.75mPD) and Sky Tower (159mPD). Regarding industrial uses, the Ma Tau Kok Gas Production Plant, located at the junction of To Kwa Wan Road and Ma Tau Kok Road to the west of the Site, has long been operating in the area. Today, it is a storage facility with a small gasification plant as a backup facility. Other industrial-office buildings within the assessment area includes Merit Industrial Centre, New Lee Wah Centre and Shun Luen Factory Building with building height of about 45mPD.

- To the south of the Site is mainly medium to high-rise residential and commercial development including Grand Waterfront (176mPD), proposed commercial development at the junction of San Ma Tau Street and To Kwa Wan Road (100mPD) and Wyler Gardens (about 45mPD). The Kowloon City Ferry Pier providing franchised and licensed ferry services and the Kowloon City Vehicular Ferry Pier are also located to the south of the Site at the waterfront.

3.2.2. A number of cultural heritage sites are also identified in the vicinity, including Kowloon City Ferry Pier (Grade 2), Kowloon City Vehicular Ferry Pier (Grade 2), Eastern Cotton Mills Ltd (Grade 3), and Ma Tau Kok Animal Quarantine Depot (Grade 2), which has been revitalised into Cattle Depot Artist Village and Cattle Depot Art Park.

3.2.3. Apart from the major visual elements discussed above, a number of recreation grounds and public open spaces are located within the assessment area. Apart from committed open space development in Kai Tak area, the Cattle Depot Art Park, To Kwa Wan Recreation Ground and To Kwa Wan Sports Centre are some other major existing open spaces in the To Kwa Wan area. In addition, some known future recreation developments are also considered in the VIA, including the planned continuous waterfront promenade from Kai Tak to Ma Tau Kok (with about 20m to 35m in wide) , as well as the waterfront open space at the cove of Ma Tau Kok in between the proposed DRE and Sports Park intended to complement the Dining Cove with food and beverage uses on its two sides overlooking the Victoria Harbour as planned under the Kai Tak OZP.

3.2.4. With the consideration of the above, it is observed that the Scheme area is situated at the waterfront and is highly urbanised with medium to high-rise development. The heights of building blocks are increasing progressively from the waterfront to the inland and foothill area. This stepped building height profile has already been reflected onto the current OZP. Waterfront area along Ma Tau Kok and Kai Tak is pending for gradual change with implementation of committed development in Kai Tak and redevelopment in Ma Tau Kok area. In particular, planned open spaces at Kai Tak and Kai Tak Sports Park which are under construction will appear as new visual resources in the visual context of Kowloon East. Adjacent to the Site, planned open space “Dining Cove”, and planned promenade extending to To Kwa Wan and Hung Hom also provide another new visual resources to the local visual context.

3.3. Visual Quality of Proposed Scheme

3.3.1. The Proposed Scheme will adopt careful design on block sizes, disposition and layout to take into account of building separation to improve permeability at the waterfront location. Under the notional design of both Schemes, the proposed redevelopment comprises 4 residential towers on top of 2 separate commercial / retail / GIC podium, and two 3-level basement car parks with separate ingress/egress for ancillary parking spaces. A maximum building height of 120mPD is proposed under the draft

DSPs taking into account the site constraints, the compatibility with adjoining built environment at the waterfront and the additional planning merits to be brought by the proposed redevelopment. The proposed building height will generally respect the existing urban design and building height profile in the vicinity (including the permissible maximum building height of 100mPD for the various CDA zones in the hinterland, as well as the existing and planned developments including the Grand Waterfront to the immediate south (176mPD) and the DRE site to the immediate north (100mPD). The proposed building height restriction of 120mPD for KC-018 and KC-019 will help create a smooth and progressive building height profile along the waterfront to create visual interest and bring enhancement to the visual quality of the area.

3.3.2. A 20m-wide waterfront promenade will be provided along the eastern boundaries of both Schemes for public enjoyment. It will be connected to the 2-storey retail belt as well as the at-grade waterfront plaza, thus creating a wide and welcoming setting and sense of arrival for the waterfront promenade. In addition, two NBAs will be provided along southern boundaries to serve as to facilitate air ventilation as well as creating wider pavement. Building separation between towers with reference to Sustainable Building Design Guidelines (SBD) are proposed to create a wider visual angle to bring more visual and spatial comfort for future pedestrian. With the provision of waterfront promenade, retail belt, waterfront plaza and the two NBAs under both Schemes, an unique and enjoyable pedestrian environment will be created.

4. KEY VISUAL SENSITIVE RECEIVERS AT LOCAL VIEWPOINTS

4.1. As per the requirements of TPB PG-No.41, key visually sensitive receivers (VSRs) are those people, who have views of the Scheme area from the most affected viewing points (VP) in the AVI, and these VSRs are likely to be affected most by the proposed visual change. The identified VSRs of the subject VIA include the public at popular areas for outdoor activities, recreation, rest, leisure and prominent travel routes where their visual attention may be caught by the proposed development.

4.2. VSRs are categorised based on the characters and what they engage in the public VPs. The sensitivity of receives of visual changes will be influenced by:

1) The activities they are engaged in;
2) The duration which the portion of the proposed development remain visible;
3) View towards the change is full or partial, and
4) The public perception towards the portion of the proposed development.

4.3. With consideration to the nature of the people who are mostly affected by the proposed visual changes at the key VPs, the selected VSRs of the subject VIA are categorised into two groups, namely;

Recreation – General public have sights on the proposed development while engaging in recreational facilities. Their visual sensitivity varies depending on the type of recreational activity they are engaging in.

Traveller – General public have sights on the proposed development in public passageways. Their visual experience depends on the speed of travel and whether their views will be continuous or occasional.

4.4. Based on the above criteria, the visual sensitivity of the public viewers from the viewing points are categorised into 3 grades (i.e. “High”, “Medium” and “Low”), depending of their duration of stay at the VPs. For example, the visual sensitivity of the viewers from public open space will be classified as “High”, while travellers who are in transient in nature would be classified as “Low”.

4.5. **Table 4.1** lists out the visual sensitivity of the selected VSRs at the selected VPs.

Table 4.1 Brief Analysis of Visual Sensitive Receivers at Selected VPs (Existing Condition)

Visually Sensitive Receiver and Type of User (Recreation and/or Traveller)	Approx. Viewing Distance	Quality of Existing View (Good / Fair / Poor)	Degree of Visibility on the Proposed Development (Full / Partial / Glimpsed) Frequency of View towards the Proposed Development (Frequent / Occasional / Rare)	Sensitivity
VP 1: Kai Tak Elevated Landscaped Deck **VSR**: Tourists/ general public visiting Kai Tak and engage in sightseeing / recreational activities. **Type of User:** Recreation	About 950m to the southeast of the Schemes	**Good –** viewing to the eastern boundary of the Schemes with existing view to construction sites in the foreground. Open view to the planned Kai Tak Metro Park, Sports Park and urbanised building skyline along the waterfront of Kai Tak to Ma Tau Kok, with medium to high-rise development in Kowloon City and Ma Tau Kok as backdrop.	**Full view –** long distance view of the proposed development along the waterfront, which contributed to the stepped building height profile and is compatible with the urban built environment. **Rare view –** Users of the Kai Tak Elevated Landscaped Deck are transient in nature and mainly focus on leisure and recreational activities with only occasional distant view towards the Scheme area.	Medium
VP 2: Junction of Shing Kai Road and Sung Wong Toi Road **VSR**: Pedestrians and vehicular travellers from Kai Tak **Type of User:** Traveller	About 230m to the north of the Schemes	**Good –** viewing to the north-western boundary of the Schemes. Existing horizontal view mainly with Grand Waterfront (+176mPD) dominating the scene. Future developments such as proposed DRE of HKHS (+100mPD) and committed developments along Sung Wong Toi Road (+100mPD) constructed in the foreground will obstruct some view from this VP.	**Glimpsed view –** views largely screened by proposed DRE of HKHS in the foreground. **Occasional view –** Pedestrians and vehicular travellers are transient in nature. Views towards the surrounding development are rare.	Medium
VP 3: Ma Tau Kok Road **VSR**: Mainly local residents and business operators nearby, bus	About 250m to the west of the Schemes	**Fair –** Viewing to the western boundary of the Schemes. Existing view is largely screened by existing development such as Ma Tau Kok Gas Production Plant and	**Partial view –** view towards KC-018 Scheme area is partially screened by the Ma Tau Kok Gas Production Plant. View towards KC-019 Scheme area is fully screened by existing development along Mok Cheong Street (i.e. 13-Street).	Medium

Visually Sensitive Receiver and Type of User (Recreation and/or Traveller)	**Approx. Viewing Distance**	**Quality of Existing View (Good / Fair / Poor)**	**Degree of Visibility on the Proposed Development (Full / Partial / Glimpsed)** **Frequency of View towards the Proposed Development (Frequent / Occasional / Rare)**	**Sensitivity**
passengers, pedestrians and visitors to the Cattle Depot Artist Village **Type of User:** Traveller / Recreation		development along Mok Cheong Street (i.e. 13-Street) in the foreground.	**Occasional view –** Visitors to the Cattle Depot Artist Village mainly focus in heritage visits and exhibitions with only occasional view towards the Scheme area and the Grand Waterfront (+176mPD) at the backdrop. Furthermore, pedestrians and local residents walking along the street is transient in nature. Views towards the surrounding development are occasional.	
VP 4: Junction of San Shan Road and To Kwa Wan Road **VSR**: Mainly local residents living nearby, pedestrian passing by, and public accessing the future Scheme area **Type of User:** Traveller	About 175m southwest of the Schemes	**Good –** Oblique view towards the south-western edge of the Schemes. Existing views with open sky view, with Ma Tau Kok Gas Production Plant and Grand Waterfront in the foreground.	**Partial view –** views generally screened by Grand Waterfront in the foreground. **Occasional view –** people walking along To Kwa Wan Road is transient in nature. Only occasional view towards the surrounding development.	Medium
VP 5: San Ma Tau Street	About 250m to the south of the Schemes	**Good –** Oblique view along the eastern boundary of the Schemes. Grand Waterfront, bus terminus, pier and a public	**Glimpsed view –** Major views will be screened by Grand Waterfront (+176mPD) in the foreground with glimpsed view of tower blocks of the Schemes.	Low

Visually Sensitive Receiver and Type of User (Recreation and/or Traveller)	**Approx. Viewing Distance**	**Quality of Existing View (Good / Fair / Poor)**	**Degree of Visibility on the Proposed Development (Full / Partial / Glimpsed)** **Frequency of View towards the Proposed Development (Frequent / Occasional / Rare)**	**Sensitivity**
VSR: Mainly pedestrians/ local residents walking in the neighbourhood, bus passengers and ferry passengers. Furthermore, this viewpoint is located along planned open space and waterfront promenade, hence future VSRs include users engage in recreational activities **Type of User:** Traveller / Recreation		toilet in the foreground, and with open sky view.	**Rare view** – Public transport passengers are transient in nature. Future users of the waterfront promenade will mainly focus in recreational activities or view across the harbourfront. Only occasional view towards the Scheme area.	
VP 6: North Point Ferry Pier **VSR**: ferry passengers, public engaging leisure activities along North Point Promenade, residents nearby	About 3km to the south of the Scheme, on the opposite side of the harbour	**Good** – Long distance panoramic views towards the Scheme area is largely characterized by existing high-rise and high density development in Hung Hom, Ma Tau Kok, KTDA and Kowloon Bay with continuous ridgelines of Lion Rock as backdrop.	**Full view –** long distance view of the proposed development, which is compatible with the urban built environment along the harbourfront and will contribute to the stepped building height profile. **Rare view** – ferry passengers are transient in nature. Users of the Promenade will focus on leisure activities and public's view along the promenade mainly focus on Victoria Harbour.	Low

Visually Sensitive Receiver and Type of User (Recreation and/or Traveller)	**Approx. Viewing Distance**	**Quality of Existing View (Good / Fair / Poor)**	**Degree of Visibility on the Proposed Development (Full / Partial / Glimpsed)** **Frequency of View towards the Proposed Development (Frequent / Occasional / Rare)**	**Sensitivity**
Type of User: Traveller / Recreation				
VP 7: Quarry Bay Park (Strategic Viewing Point) **VSR**: Public engaging in recreational activities within the park **Type of User:** Recreation	About 4.3km to the southeast of the Scheme, on the opposite side of the harbour	**Good –** Long distance panoramic views towards the Scheme area largely characterized by the existing high-rise and high density development in Kwun Tong, Kowloon Bay and KTDA with continuous ridgelines of Lion Rock as backdrop.	**Full view –** long distance view of the proposed development, which is compatible with the urban built environment along the harbourfront. **Rare view –** Public's view along the promenade mainly focus on Victoria Harbour.	Low

5. ASSESSMENT OF VISUAL IMPACTS

5.1. Methodology for the Appraisal of Visual Impact

5.1.1. With reference to the TPB PG-No.41, the appraisal of overall visual impacts to VSRs can be determined by four aspects:

1) Visual composition (i.e. to assess the visual effects resulted from the change in massing, heights, disposition, forms, etc viz the overall visual backdrop);

2) Visual obstruction (i.e. to assess the degree of visual obstruction and loss of views or visual openness due to the proposed development);

3) Effect on Public Viewers (i.e. to assess the visual changes from key public viewing points with direct sightline to the proposed development); and

4) Effect on Visual Resources (i.e. to assess the change in visual quality and character of the AVI).

5.1.2. With reference to TPB PG-No.41, the resultant overall visual impact will be classified as follow:

Table 5.1 – Classification of Overall Visual Impact

Classification	Descriptions
Enhanced	The proposed development in overall term will improve the visual quality and complement the visual character of its setting from most of the identified key public VPs.
Partly Enhanced/ Partly Adverse	The proposed development will exhibit enhanced visual effects to some of the identified key public viewing points and at the same time, with or without mitigation measures, exhibit adverse visual effects to some other key public VPs.
Negligible	The proposed development will, with or without mitigation measures, in overall term have insignificant visual effects to most of the identified key public VPs, or the visual effects would be screened or filtered by other distracting visual elements in the assessment area.
Slightly adverse	The proposed development will, with or without mitigation measures, result in overall some negative visual effects to most of the identified key public VPs

Classification	Descriptions
Moderately adverse	The proposed development will, with or without mitigation measures, result in overall term negative visual effects to most of the key identified key public VPs.
Significantly adverse	The proposed development will in overall term cause serious and detrimental visual effects to most of the identified key public VPs even with mitigation measures.

5.2. Appraisal of Visual Impacts of Selected Viewing Points

5.2.1. Ma Tau Kok is an old urban area undergoing rapid development and redevelopment. Changes in visual composition, amenities and resources are also expected with the implementation of a number of projects in Kai Tak Development Area (KTDA). In order to better reflect future building height profile and account for potential visual change in the surrounding, two scenarios, namely Sensitivity 1 and 2 are also incorporated in the visual assessment for scenario testing as reference.

5.2.2. For the visual assessment of each VPs, photomontages of four development scenarios will be prepared for comparison of the changes before and after the proposed development at the Scheme area, namely:

i. **Existing Condition** – existing development condition of the VPs will be illustrated.

ii. **Indicative Proposed Scheme** - This scenario refers to the notional design of the Proposed Scheme of both KC-018 and KC-019 Development Schemes, with a proposed maximum building height of 120mPD for the "R(A)" zone of the Scheme Areas. Committed developments in the surrounding will be taken into account.

iii. **Sensitivity 1** – Further to the "Indicative Proposed Scheme" scenario, maximum building height permitted in OZP in the surroundings will be taken into account.

iv. **Sensitivity 2** – Further to the "Indicative Proposed Scheme" scenario, maximum building height permitted in OZP with sensitivity test of 20% increase in building height in the surroundings will be taken into account.

5.2.3. For the strategic viewing points, photomontages of the Proposed Scheme will be prepared. The appraisal of visual impacts of each VPs are described in **Table 5.2** below. The corresponding photomontages are attached in **Figures 5.1** to **5.7**. The appraisal of visual impacts in Table 5.2 is conducted

by comparing changes between existing condition and the indicative Proposed Scheme for both KC-018 and KC-019 schemes. Scenarios for Sensitivity 1 and 2 are for reference only.

Table 5.2 – Appraisal of Visual Impacts of Selected Viewing Points

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
VP 1: Kai Tak Elevated Landscaped Deck	About 950m to the southeast of the Schemes	Recreation	As shown in **Figure 5.1**, following implementation, visual composition of this VP comprises of open sky view, open view to the planned Metro Park and Kai Tak Sports Park in front and building skyline of Ma Tau Kok in the background. Proposed development will contribute to an overall stepped building height profile descending from Grand Waterfront (176mPD), Sky Tower (159mPD), the proposed KC-018 and KC-019 (120mPD), proposed DRE by HKHS and proposed development along Mok Cheong Street and Ma Tau Kok Road (100mPD) to Kai Tak Sports Park (70mPD). Responsive building design including building disposition, proposed	Although the proposed development will obstruct some views from existing and planned developments at Ma Tau Kok inland area, visual impact is considered minimal with responsive building design measures including building disposition, proposed 120mPD building height to contribute to the stepped BH profile and the two building separation will break the building mass and alleviate visual obstruction. Views to the ridgeline and planned parks at Kai Tak remain unaffected.	The key visual resources from this VP are the existing built-up areas and the sky view. With a compatible building scale, and building separation to break the building mass, the proposed development will blend in well with the existing visual resources and will not create significant visual change to this VP. Existing open sky view and visual openness from this VP can also be generally maintained.	Users at Kai Tak Elevated Landscaped Deck are considered as general public and tourists engaged in recreational activities mainly transient in nature, the effect to public viewers is low.	Negligible to slightly adverse

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			120mPD building height and the two building separation (i.e. two 10m NBAs between Grand Waterfront and between KC-018 and KC-019) would break up the development mass and ensure visual permeability. The existing ridgeline will not be affected from this view. Hence, the proposed development is considered compatible with visual composition of the existing and planned visual context.				
VP 2: Junction of Shing Kai Road and Sung Wong Toi Road	About 230m to the north of the Schemes	Traveller	As shown in **Figure 5.2**, the existing visual composition of this VP comprises of open sky view with the To Kwa Wan Road pumping station at the foreground and the Grand Waterfront at the backdrop.	Given the planned and committed development in the Ma Tau Kok and Kai Tak area, visual obstruction to the open sky will be inevitable, resulted from the urbanisation and redevelopment	The proposed development will have slight impact to the visual accessibility to the open sky with the existing Grand Waterfront (176mPD) as the background and the planned DRE	Although cumulative visual change resulted from surrounding development including proposed DRE by HKHS and committed development	Slightly Adverse

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			Building mass under the Indicative Proposed Scheme are visible and the proposed development will be largely screened by the proposed DRE by HKHS and proposed development along Sung Wong Toi Road at the foreground. Some tree plantings within the future public open space at the foreground of the To Kwa Wan Road Pumping Station will also serve as visual relief of the building mass. Visual access to the open sky is inevitably affected by the planned and committed developments as part of the urbanisation and redevelopment process. Hence, the proposed development is considered not incompatible with the surrounding planned developments and the	process of the Kai Tak and Ma Tau Kok area. The proposed development will obstruct some views at street level towards the Grand Waterfront and the open sky. However, as most of the proposed development is largely concealed by the proposed DRE by HKHS in the foreground, together with responsive design measure incorporated, such as building setback along the western boundary of the Site, building separation, and proposed responsive building height of 120mPD, blockage of view resulted by the	by HKHS (100mPD) in the foreground dominating the view. The proposed 120mPD building height and building separation incorporated within KC-018 and KC-019 will contribute to the stepped building height profile and soften the building mass of the proposed development. The proposed building height is also compatible with the surrounding building context.	along Sung Wong Toi Road will be substantial, visual change resulted by proposed development will be slight. VSRs at this viewpoint are mainly pedestrians and vehicular travellers whose views are occasional and transient in nature, the effect to public viewers is relatively low.	

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			visual change resulted will be minimal.	proposed development will become less substantial.			
VP 3: Ma Tau Kok Road	About 250m to the west of the Schemes	Traveller / Recreation	As shown in **Figure 5.3**, the existing visual composition of this VP comprises of existing developments along both sides of Ma Tau Kok Road, including the Ma Tau Kok Gas Production Plant, Cattle Depot Artist Village and existing development at the 13-Street area in the foreground and Grand Waterfront at the backdrop. The proposed development is visually aligning with the adjoining developments. Proposed development at KC-019 will be largely shielded by existing development at the foreground, while part of KC-018 will be concealed by Ma Tau Kok Gas Production Plant in the foreground, the top	Part of the proposed development at KC-018 will be concealed by the Ma Tau Kok Gas Production Plant. Although a small portion of open sky will be blocked by the proposed development at KC-018, visual access to the sky view will be generally maintained through the two building gaps (i.e. between KC-018 and Grand Waterfront and the separation between the residential towers between KC-018 and KC-019). Building separation	Proposed development at KC-018 will be visible from this VP, reducing some sky view and visual openness of the existing environment. Responsive building design measures including building separation, setback along western boundary, provision of NBAs and building disposition will mitigate visual impact resulted by proposed development at KC-018. Given	Visual composition from this VP will be slightly affected due to its close proximity to the proposed development. Taking into account responsive design measures including building separation, provision of NBAs, building setback, building disposition and proposed responsive BH of 120mPD incorporated	Slightly Adverse

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			part of the proposed buildings at KC-018 will be visible. The overall impact to the visual composition is considered visually compatible with the surrounding existing and planned urbanised context.	incorporated along the breezeway/ view corridor help to generally maintain visual access to the waterfront. Proposed development at KC-019 will be fully shielded by existing 13-Street buildings in the foreground, and will not reduce visual openness to the sky.	the proposed development at KC-019 will be shielded by existing 13-Street buildings in the foreground, the visual openness towards the sky will not be affected. The historic buildings in Cattle Depot Artist Village would be unaffected. Proposed development will not affect views to the waterfront through building separation and disposition.	and planned development in the surrounding, the effect to public viewers are expected to be negligible.	
VP 4: Junction of San Shan Road and To Kwa Wan Road	About 175m southwest of the Schemes	Traveller	As shown in **Figure 5.4**, visual composition of this viewpoint is characterised by To Kwa Wan Road, Grand Waterfront and the Ma Tau Kok Gas	Part of KC-018 will be shielded by Grand Waterfront. The proposed KC-018 and KC-019 will obstruct some	Key visual resources from this VP are existing built-up areas and the sky view.	By virtue of the low elevation view in proximity to the proposed development and surrounding	Moderately Adverse

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			Production Plant in front, proposed KC-018, KC-019 and development along Ma Tau Kok Road in the centre, and proposed development in Kai Tai form the background. The Grand Waterfront (+176mPD) is the dominant feature to the existing sky view and will partly shield the proposed KC-018 and KC-019 development. Due to close viewing distance, the proposed KC-018 and KC-019 will be quite dominant in the view, however, responsive design measures including building disposition, proposed 120mPD building height, building setback along western boundary and building separation has been incorporated to help to break the building mass, alleviate visual obstruction to the sky and contribute	views to the open sky. A small degree of the existing sky view will also be disturbed by the proposed redevelopment by the Hong Kong Society for the Blind (+67.75mPD) to the west of the Proposed Scheme. Responsive design measures including building disposition, proposed 120mPD building height and tower separation will be provided under the Proposed Scheme to reduce building mass, alleviate visual obstruction to the sky and enhance air flow at street level. The building mass is aligned with the adjoining developments	Despite some sky view will be inevitably blocked by the proposed development, with a compatible building scale, the proposed development will blend in well with the existing visual resources to this VP. The overall impact on visual elements and resources from this VP is considered to be moderate.	committed development, change in view to the open sky will be inevitable as a result of redevelopment process in Ma Tau Kok. Given the proposed KC-018 and KC-019 will be partly blocked by Grand Waterfront, responsive building design measures incorporated including building setback along western boundary, building separation, building disposition and the provision of NBAs to soften the building mass of the	

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			to the stepped building height profile. In view of the substantial mass of development that surrounds the Scheme, the change in visual context is considered to be acceptable.	which is considered compatible. The effect to visual permeability is low.		proposed development. Besides, there would be overall enhancement of the pedestrian environment by provision of a coherent landscape design at the proposed waterfront plaza towards the water promenade. In view of the above and taken into account transient nature of public views, the effect to public viewers is moderate.	
VP 5: San Ma Tau Street	About 250m to the south of the Schemes	Traveller	As shown in **Figure 5.5**, the visual composition of this viewpoint is characterised by San Ma	Part of the existing sky view has already been disturbed by Grand	The sky view is partially blocked by the proposed development and	The proposed KC-018 and KC-019 will lead to slight change to	Slightly Adverse

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			Tau Street Public Toilet and bus terminus in the foreground, Kowloon City Ferry Pier, a Grade 2 historic building, on the right side, the Grand Waterfront dominating the sky view on the left, and the ridgeline forms the visual backdrop. The proposed KC-018 and KC-019 will be largely screened by Grand Waterfront (+176mPD) in the foreground . Hence, the change in visual context is considered to be acceptable.	Waterfront. Majority of the proposed KC-018 and KC-019 will be shielded by Grand Waterfront as well. Though part of the residential towers will affect some view to the open sky, the view will also be disturbed by proposed DRE by HKHS at the backdrop. Responsive design measures including 20m setback from the waterfront, building disposition, and proposed 120mPD in building height will reduce building mass and improve visual openness.	the proposed DRE by HKHS at the backdrop. The proposed development will be largely screened by the existing developments at the foreground and will not create significant visual change to this VP.	the existing view to the open sky. Yet viewers at this viewpoint are mainly pedestrians, bus and ferry passengers, representing an occasional and transient view. In addition, 20m building setback is proposed along the eastern boundary to alleviate visual impact, hence generally maintain visual permeability to the waterfront and streetscape. Therefore, the effect to public viewers is low to moderate.	

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
VP 6: North Point Ferry Pier	About 3km to the south of the Scheme, on the opposite side of the harbour	Traveller	As shown in **Figure 5.6**, Along the urbanised waterfront context, the proposed KC-018 and KC-019 with building height 120mPD is considered compatible with the surrounding existing and planned development of 100 – 120mPD in Ma Tau Kok and 70 – 200mPD in Kai Tak area, including the proposed DRE by HKHS (100mPD), committed redevelopments along Mok Cheong Street and San Ma Tau Street (100mPD). From Whampoa to Ma Tau Kok waterfront, the proposed KC-018 and KC-019 will also contribute to the overall stepped building height profile descending from the Harbourfront Landmark (235mPD) in Whampoa at the west and towards planned developments in KTDA in the east such as the Kai	Although the proposed KC-018 and KC-019 will slightly obstruct some views from existing and planned developments in inland area, responsive design measures including two building separation, setback from the waterfront, building disposition and proposed 120mPD building height will reduce building mass and improve visual permeability and visual openness. The view to the ridgeline, Lion Rock and open sky remain unaffected.	The proposed KC-018 and KC-019 will not affect important visual resources in this viewpoint including view to the sky, planned parks and recreational facilities in Kai Tak, the highly valued Victoria Harbour and the ridgeline.	The proposed KC-018 and KC-019 will integrate with the building skyline in Ma Tau Kok area. As the proposed development is partly concealed by Grand Waterfront, the change of visual amenity and visual composition is not obvious from this distant view. In addition, as most viewers are ferry passengers and users engaged in recreational activities, representing a transient and occasional view, hence the effect to public viewers is low.	Negligible

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			Tak Sports Park (70mPD) at the planned residential developments in R(B)" zones (95-110mPD). Visual change in terms of building mass is considered not detrimental and the highly valued Victoria Harbour and Kowloon ridgeline remain unaffected.				
VP7: Quarry Bay Park (Strategic Viewing Point)	About 4.3km to the southeast of the Scheme, on the opposite side of the harbour	Recreation / Traveller	As shown in Figure **5.7**, visual composition of this viewpoint is characterised by the Victoria Harbour in the foreground, medium to high-rise development along the waterfront from To Kwa Wan to Kwun Tong, and ridgeline from Beacon Hill to Kowloon Peak in the background. The proposed KC-018 and KC-019 are located in urbanised waterfront and are considered compatible with the existing and future building height profile with	The Kowloon ridgeline and the view towards the 20% building free zone of the Beacon Hill remain unaffected. View to the open sky and Victoria Harbour are also maintained and unaffected.	The proposed KC-018 and KC-019 will not affect views towards important visual resources including the ridgeline, 20% building free zone of Beacon Hill, open sky, Victoria Harbour, as well as planned parks and recreation facilities in Kai Tak.	The proposed KC-018 and KC-019 will integrate with the building skyline in Ma Tau Kok area. The magnitude of change of visual amenity and visual context is minimal from this distant view. In addition, as most viewers are users engaged in	Negligible

Location of Viewing Points (VPs)	Distance and Direction between the VPs and the Scheme	VSR Type	Visual Composition	Visual Obstruction and Visual Permeability	Effect on Visual Elements and Resources	Effect on VSRs	Resultant Overall Visual Impact
			the surrounding. From Ma Tau Kok to Kai Tak, the building skyline descend from Grand Waterfront (176mPD), Sky Tower (159mPD), proposed KC-018 and KC-019 (120mPD), to proposed DRE by HKHS (100mPD). Therefore the proposed development is considered compatible with the highly urbanised and undulating building skyline from Ma Tau Kok to Kai Tak with the highly valued Victoria Harbour and Kowloon ridgeline remain unaffected.			recreational activities, representing a long ranged, transient and occasional view, hence the effect to public viewers is low.	

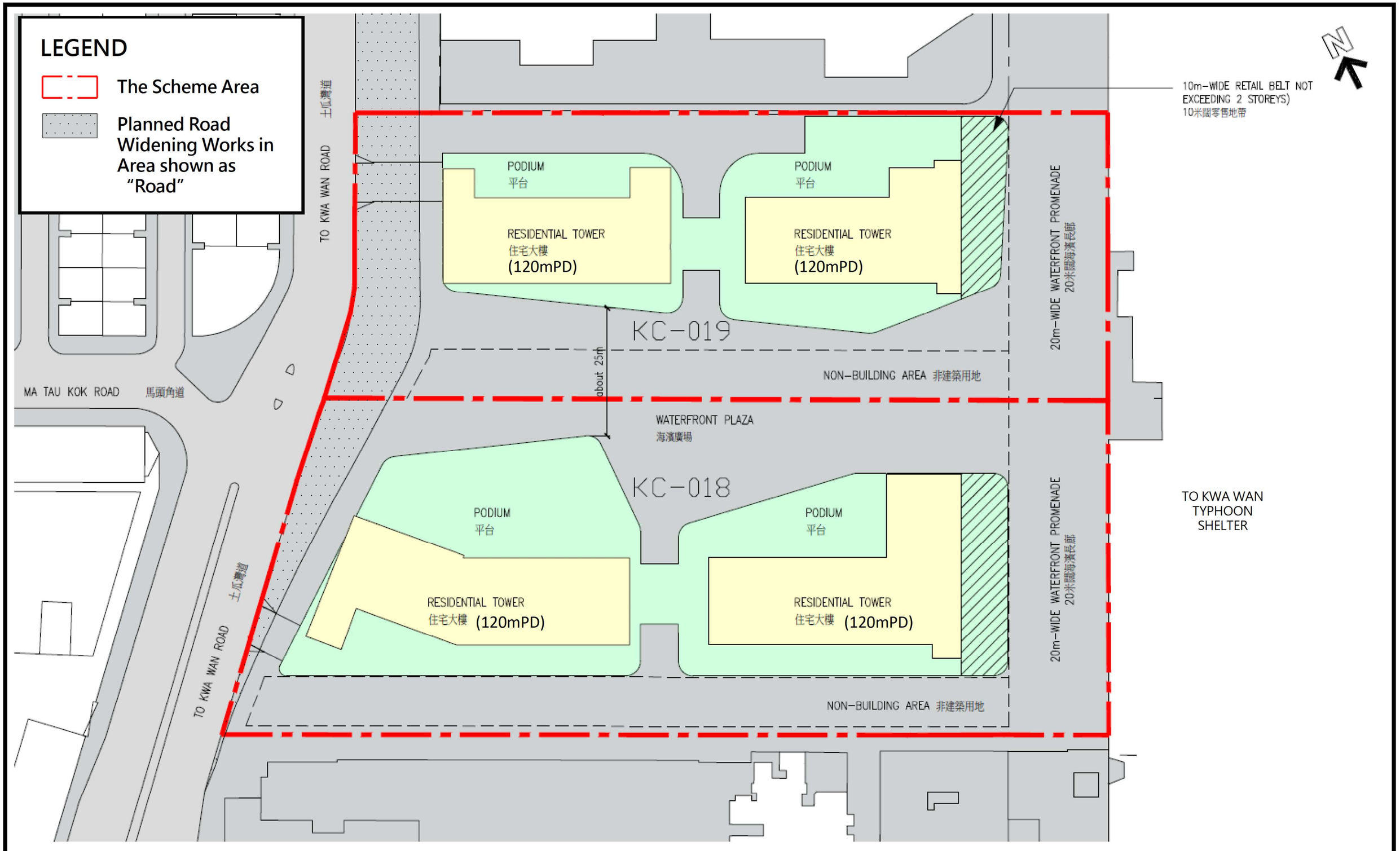
6. EVALUATION OF OVERALL VISUAL IMPACT

6.1. This VIA is submitted in order to evaluate the degree of visual impacts on visual sensitive receivers (VSRs) from major public viewing points (VPs) due to the proposed development at KC-018 and KC-019.

6.2. By viewing from the 6 selected local VPs, the proposed development with maximum building height of 120mPD in the Proposed Scheme can generally blend in with the surrounding highly-urbanised built environment, which include existing Grand Waterfront (176mPD), Sky Tower (159mPD), proposed DRE by HKHS (100mPD) and other planned development along Mok Cheong Street and Ma Tau Kok Road (100mPD).

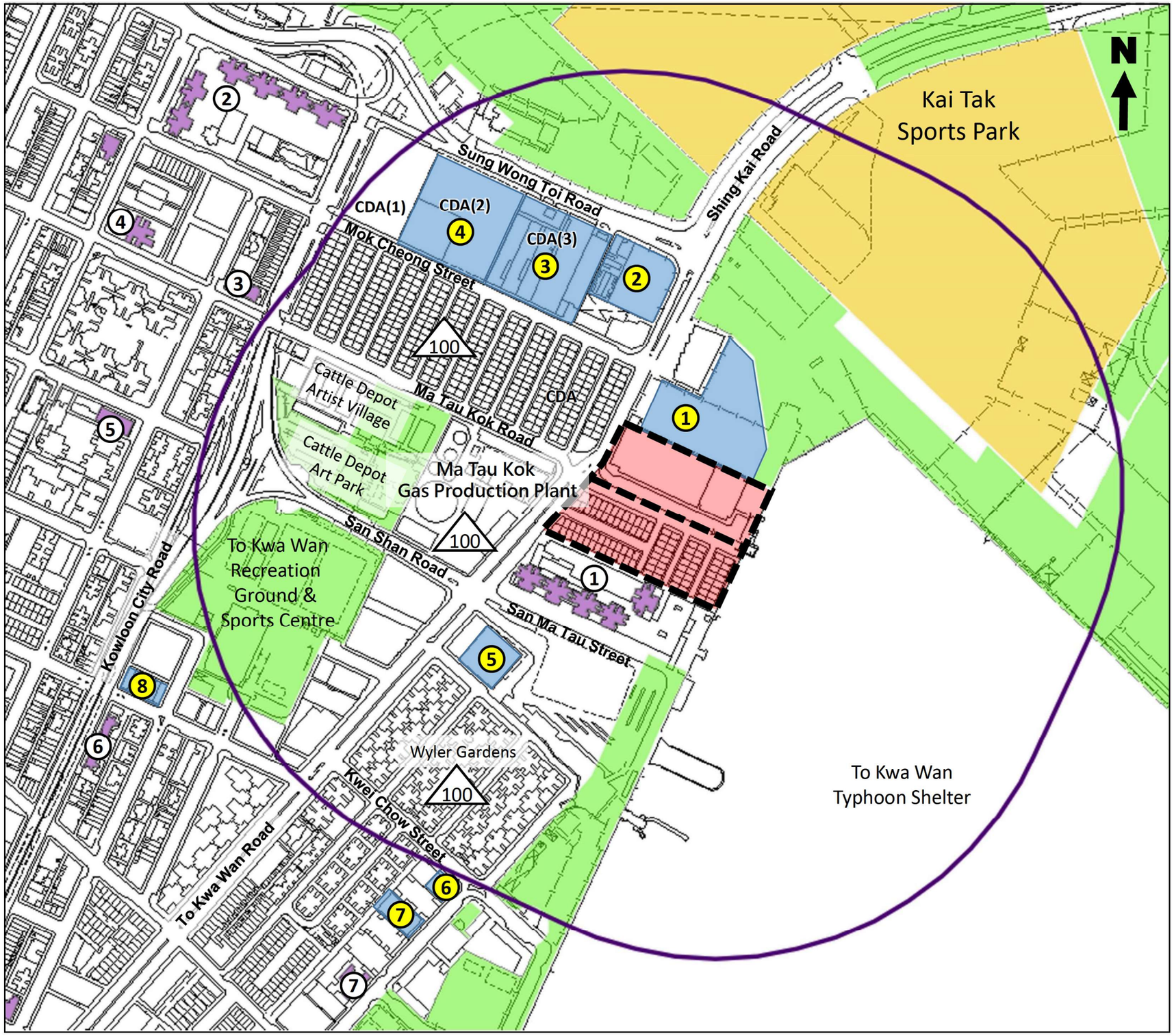
6.3. The proposed increase of building height to 120mPD and relaxation of site coverage to 65% at KC-018 and KC-019, would allow greater design flexibility of building blocks to accommodate proposed GIC provision, changing building skyline in the surrounding and fulfil stringent development constraint at the waterfront site, including incorporation of two 10m-wide NBAs and a 20m-wide promenade abutting the waterfront for public enjoyment. The proposed relaxation will also contribute to slimmer building bulk. The 20m-wide promenade, together with the adjoining 2-storey retail belt and the waterfront plaza, will not only create a focal point and bring vibrancy to the waterfront area, it will also create visual interests and spatial relief at pedestrian level.

6.4. In conclusion, the VIA demonstrates that the proposed developments in KC-018 and KC-019 are considered visually compatible with the surrounding environment and will not create any significant blockage of views from both the strategic VP as recommended in the HKPSG and the key local VPs.



(Remarks: For indicative purpose only. KC-018 and KC-019 Notional layout subject to detailed design upon DSP approval.)

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	**Figure 2.1**	**Layout Plan of the Proposed Scheme (KC-018 & KC-019) (max. 120mPD)**	Not to scale October 2022



LEGEND

- Scheme Area (KC-018 & KC-019)
- Boundary of the Assessment Area (360 m from the Scheme)
- Major Open Space
- 100 — Maximum Building Height stipulated on OZP (mPD)
- Existing Developments of 100mPD or above

1	Grand Waterfront	~ 176mPD
2	Sky Tower	~ 159mPD
3	The Zutten	~ 100mPD
4	Metropolitan Rise	~ 138mPD
5	93 Pau Chung Street	~ 100mPD
6	Artisan Garden	~ 112mPD
7	Bayview	~ 146mPD

Future Developments of 100mPD or above

1	Proposed Dedicated Rehousing Estate	~ 100mPD
2	Proposed Public Housing Development at Sung Wong Toi Rd	~ 100mPD
3	KILs 6342, 6344, 7427, 7629, 7630, 7631 and 7632 (A/K10/265)	~ 100mPD
4	5 & 7 Mok Cheong Street and 70-78 Sung Wong Toi Road (A/K10/256 & A/K10/259)	~ 100mPD
5	Commercial development (Y/K22/3)	~ 100mPD
6	21 Yuk Yat Street (A/K10/269)	~ 100mPD
7	17 Yuk Yat Street (A/K10/266)	~ 100mPD
8	21-31 Sheung Heung Road (odd numbers) (A/K10/267)	~ 120mPD

市區重建局 URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) &
To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019)
Visual Impact Assessment

Figure 3.1

Assessment Area and Visual Elements

Not to scale

October 2022

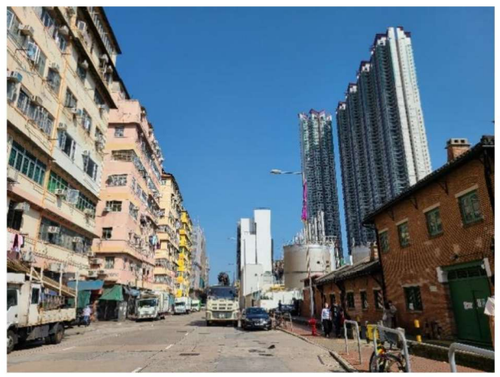
Photos of Viewing Points



1 Kai Tak Elevated Landscaped Deck



2 Junction of Shing Kai Road and Sung Wong Toi Road



3 Ma Tau Kok Road



4 Junction of San Shan Road and To Kwa Wan Road

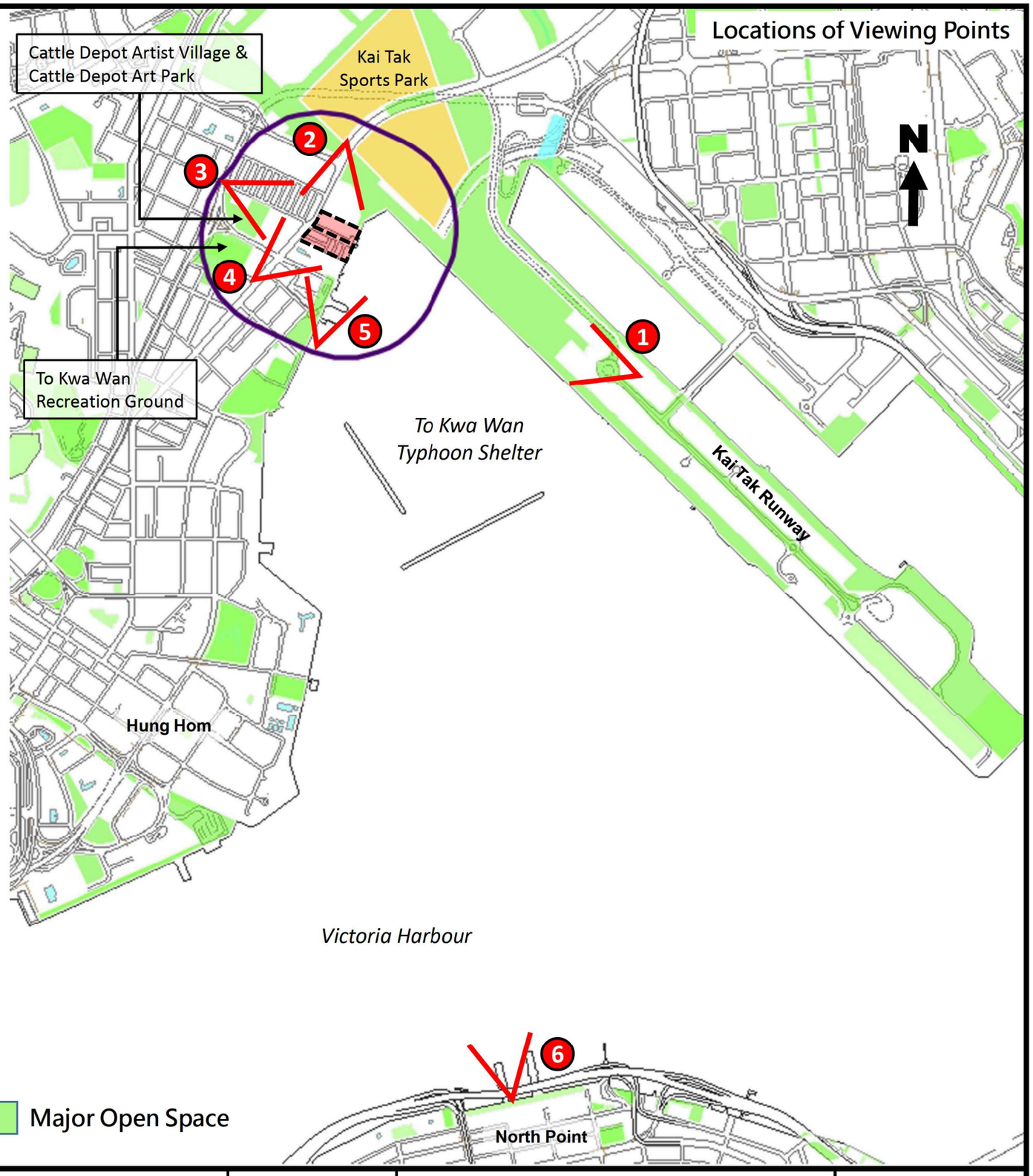


5 San Ma Tau Street



6 North Point Ferry Pier

Locations of Viewing Points

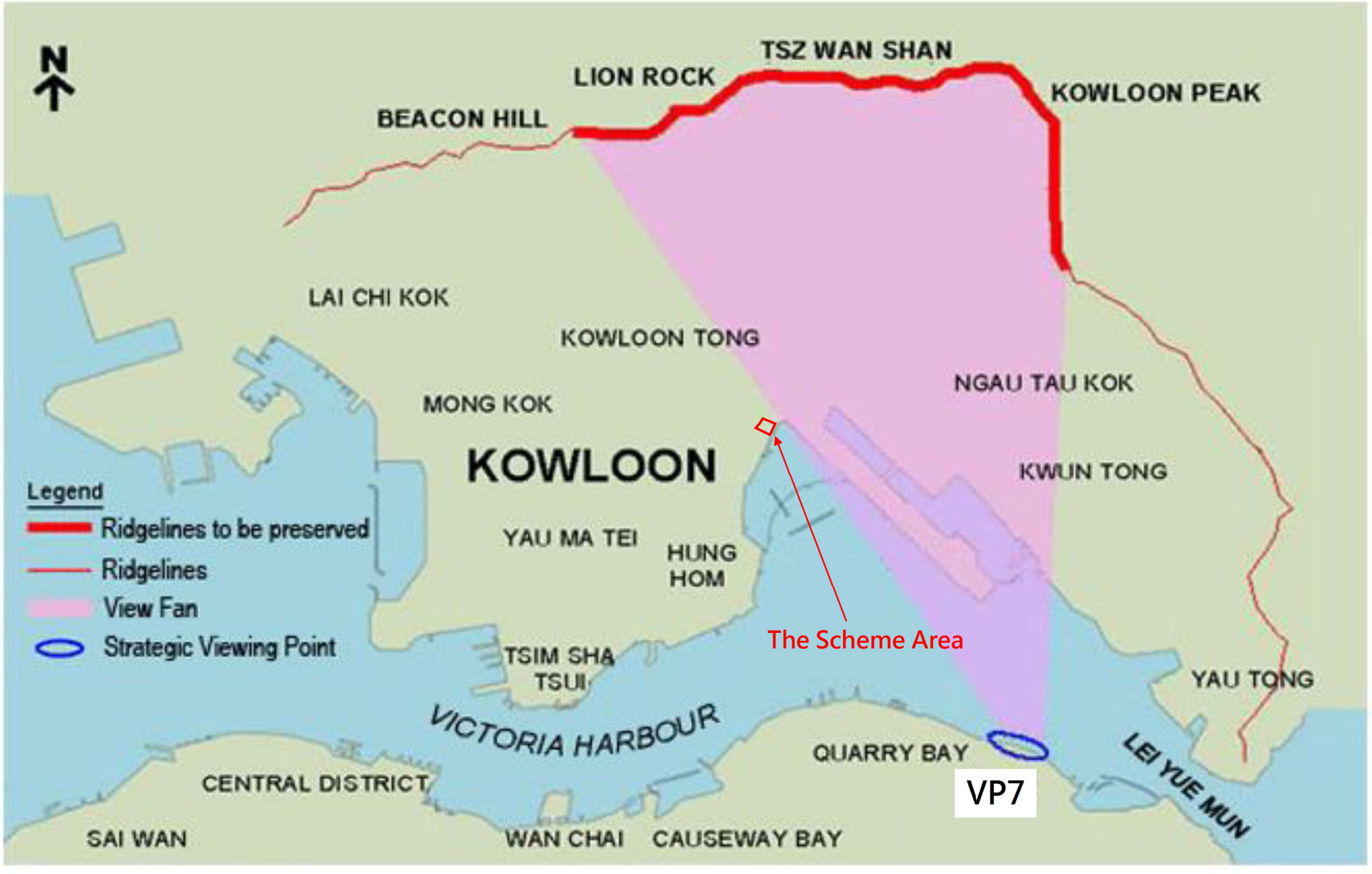


Scheme Area (KC-018 & KC-019)

Boundary of the Assessment Area (360 m from the Scheme)

Major Open Space

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	Figure 3.2	**Locations of Local Viewing Points**	Not to scale October 2022



Source:
Strategic Viewing Points Webpage of Planning Department for the Town Planning Board Guidelines for Submission of Visual Impact Assessment to the Town Planning Board (TPB PG-No. 41) *https://www.pland.gov.hk/pland_en/info_serv/via/web/vp_eng.html*

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	**Figure 3.3**	**Location of the Strategic Viewing Point (VP7)**	October 2022

Key Plan

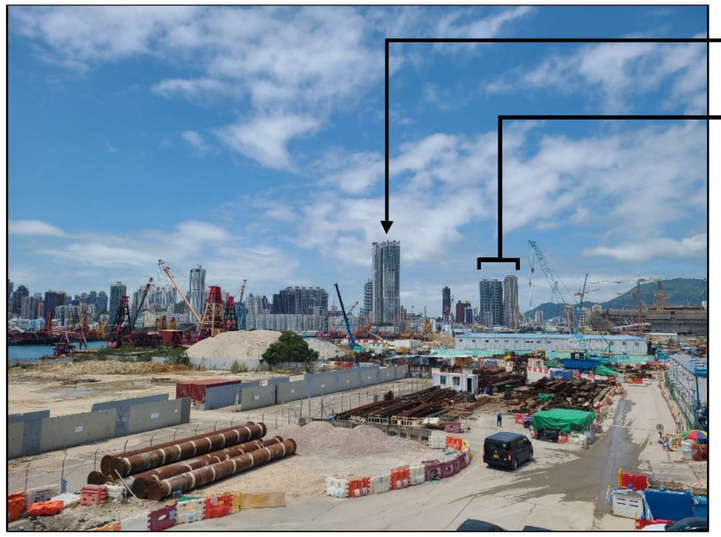


Scheme Area

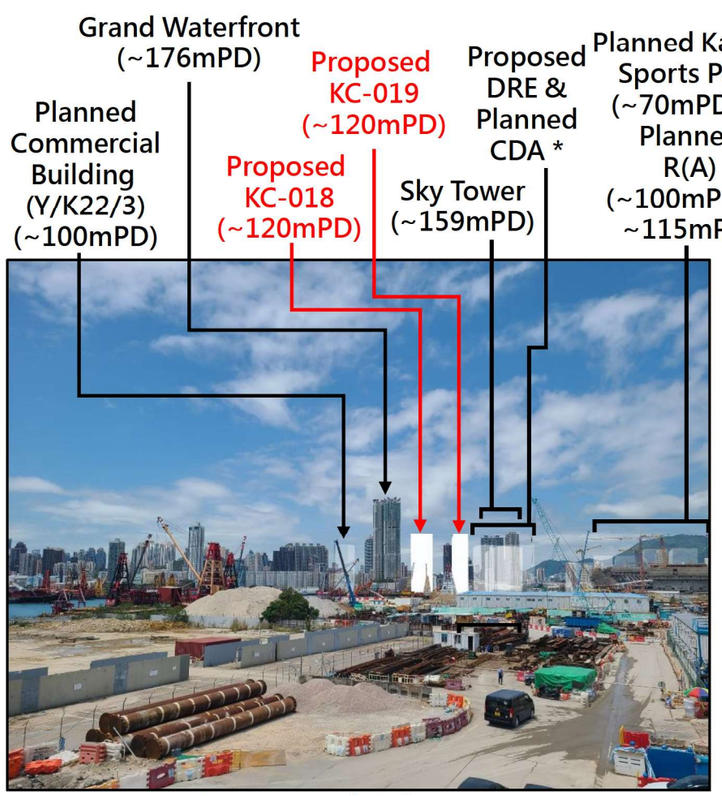
Assessment Area

VP1

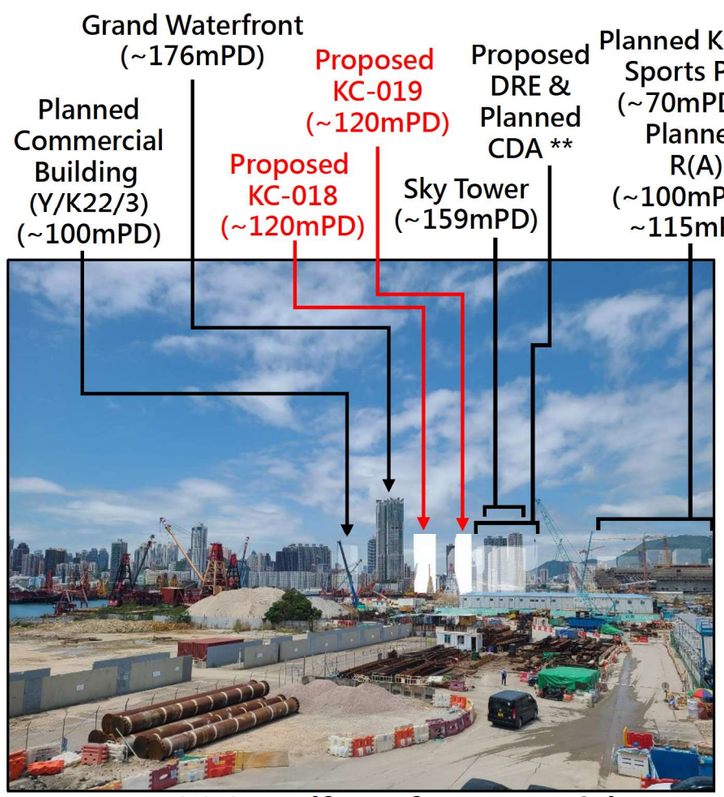
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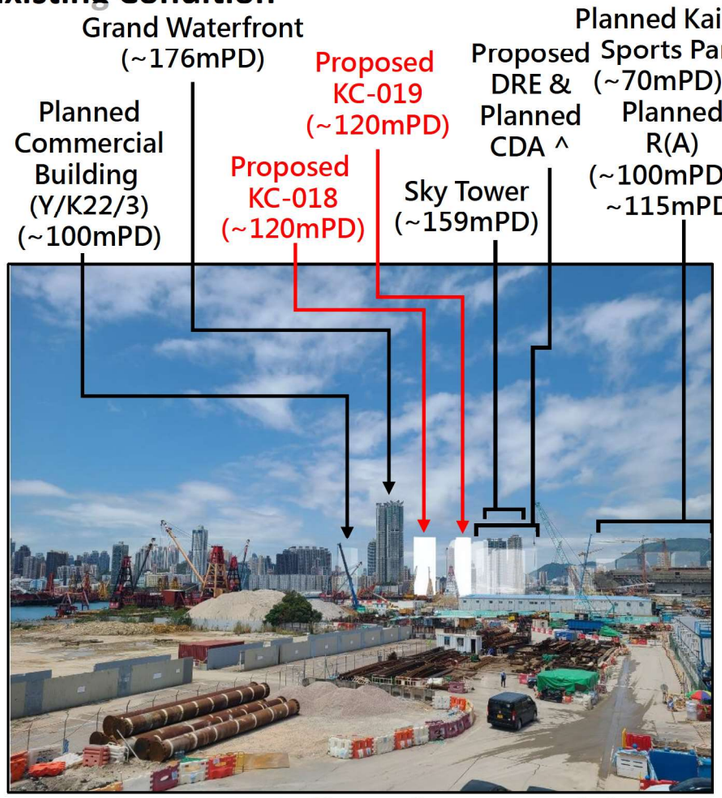
Existing Condition



Proposed Scheme



Sensitivity 1 (for reference only)



Sensitivity 2 (for reference only)

* Proposed Dedicated Rehousing Estate (DRE) (100mPD), planned CDA sites (100mPD) at Mok Cheong Street (A/K10/256, A/K10/259 & A/K10/265), redevelopment by Hong Kong Society for the Blind (HKSB) (67.75mPD) & Proposed Public Housing Development at Sung Wong Toi Rd (100mPD).

** Proposed DRE (100mPD), Planned CDA sites (100mPD) at Mok Cheong Street (A/K10/256, A/K10/259 & A/K10/265), redevelopment by HKSB (67.75mPD), proposed public housing development at Sung Wong Toi Road (100mPD) and maximum BH stipulated in OZP in the surrounding (100mPD).

^ Proposed DRE (100mPD), Planned CDA sites (100mPD) at Mok Cheong Street (A/K10/256, A/K10/259 & A/K10/265), redevelopment by HKSB (67.75mPD), proposed public housing development at Sung Wong Toi Road (100mPD) and maximum BH stipulated in OZP in the surrounding with sensitivity test of 20% increase (120mPD).

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	**Figure 5.1**	**Photomontages of VP1** **(Kai Tak Elevated Landscaped Deck)**	October 2022

Key Plan

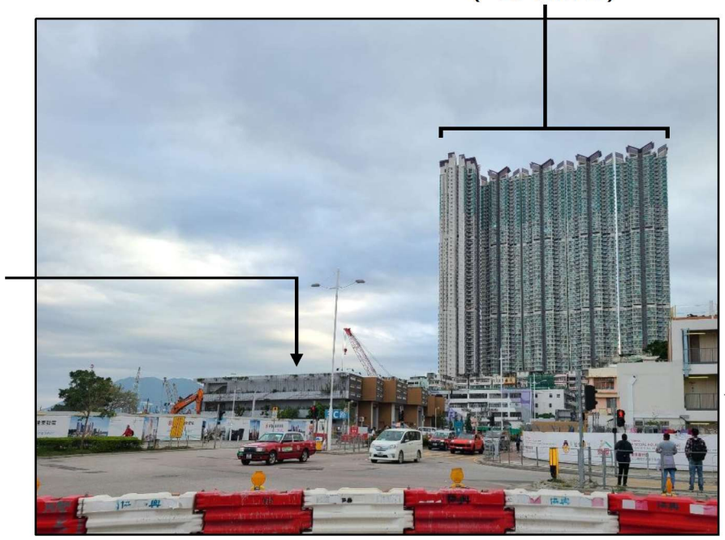


Scheme Area

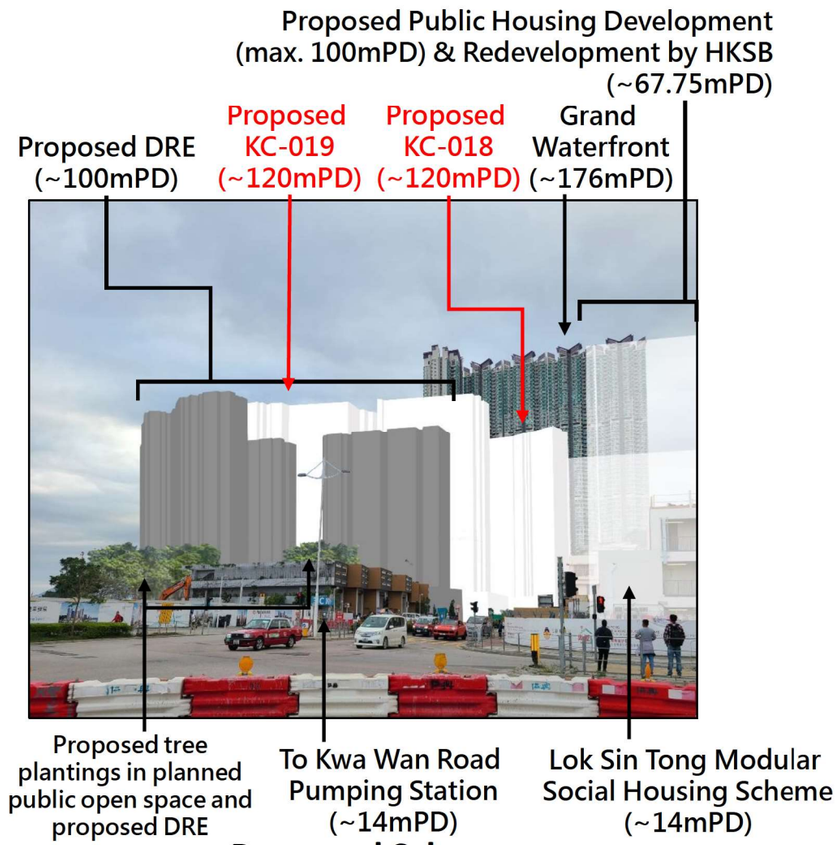
Assessment Area

VP2

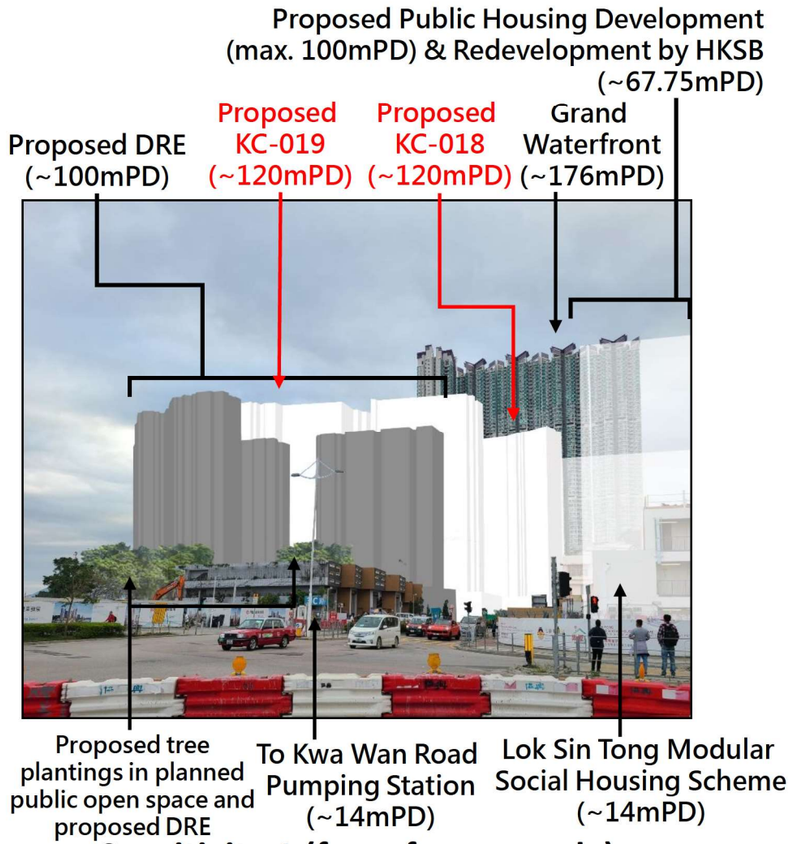
(not to scale)



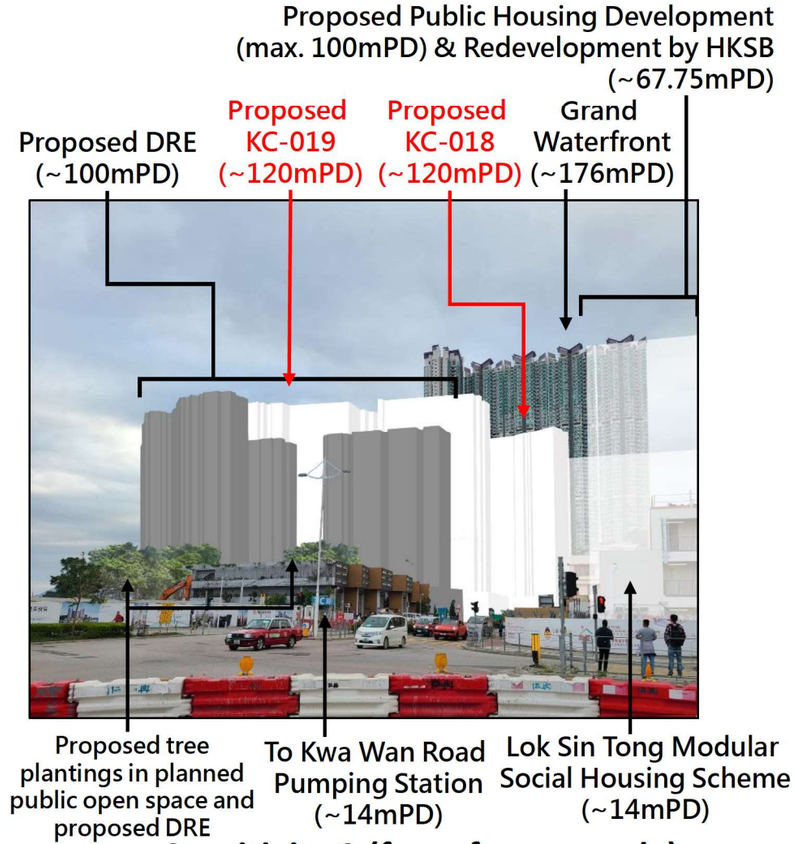
Existing Condition



Proposed Scheme



Sensitivity 1 (for reference only)



Sensitivity 2 (for reference only)

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	Figure 5.2	**Photomontages of VP2** (Junction of Shing Kai Road and Sung Wong Toi Road)	October 2022

Key Plan



Scheme Area

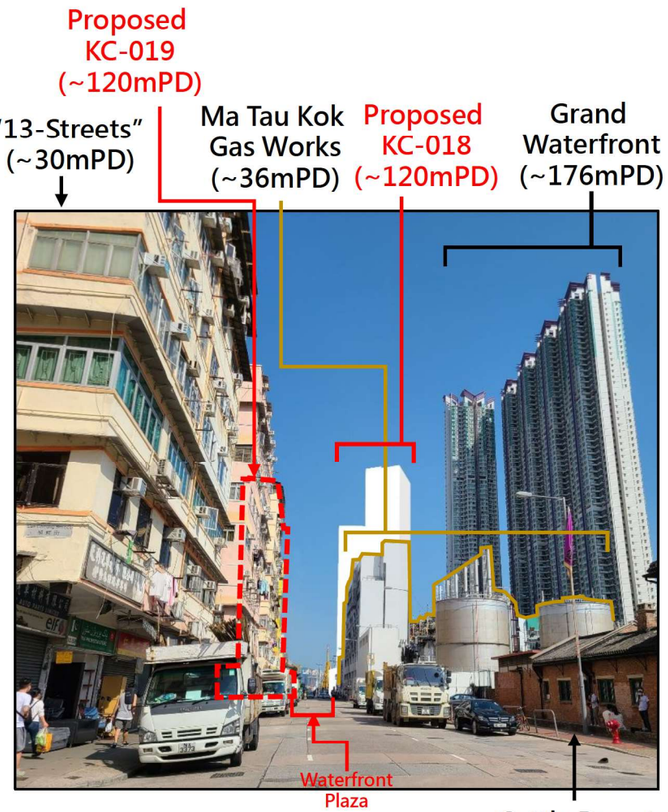
Assessment Area

VP3

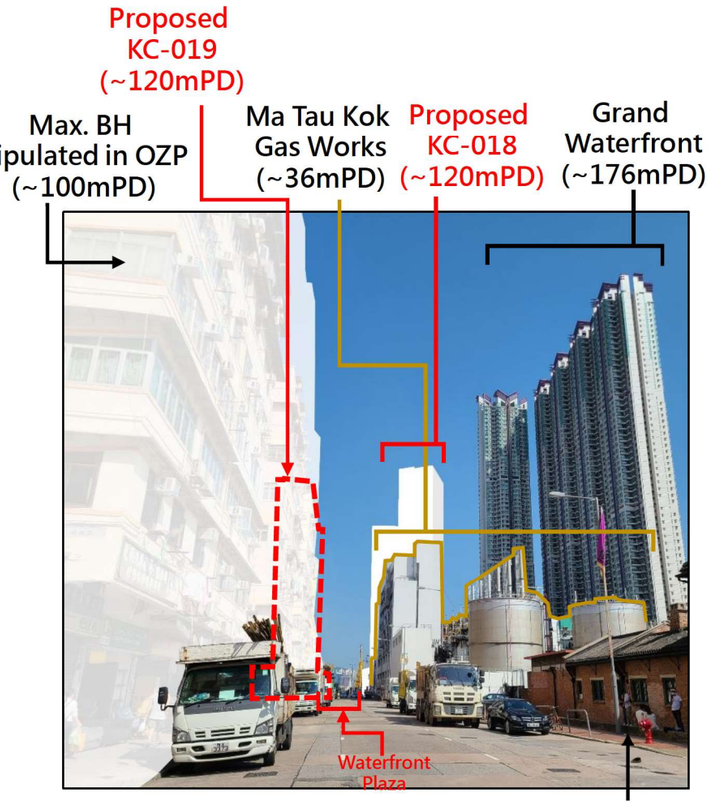
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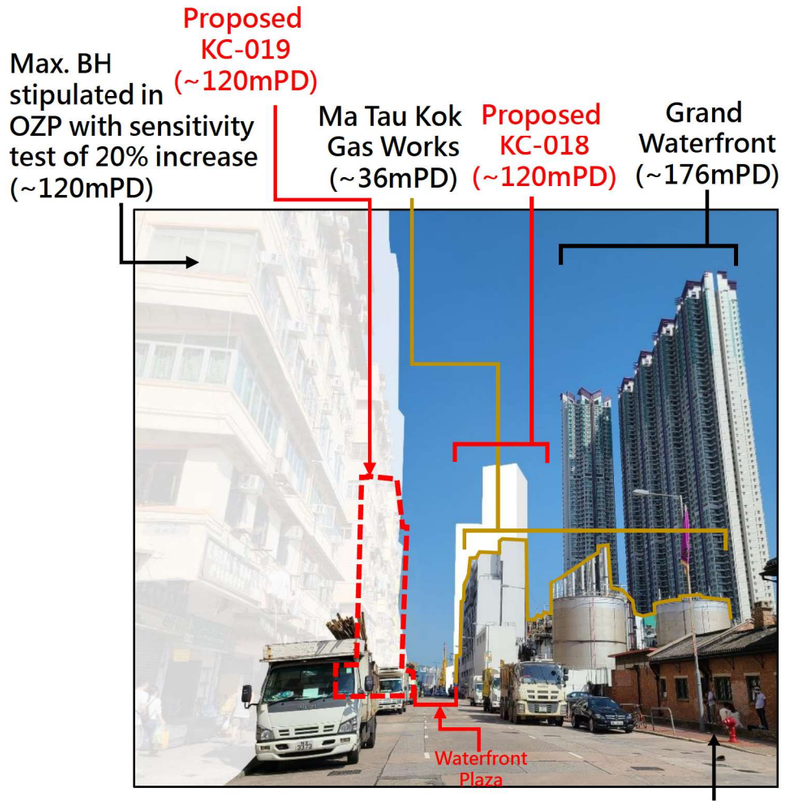
Existing Condition



Proposed Scheme



Sensitivity 1
(for reference only)



Sensitivity 2
(for reference only)

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	Figure 5.3	**Photomontages of VP3** (Ma Tau Kok Road)	October 2022

Key Plan

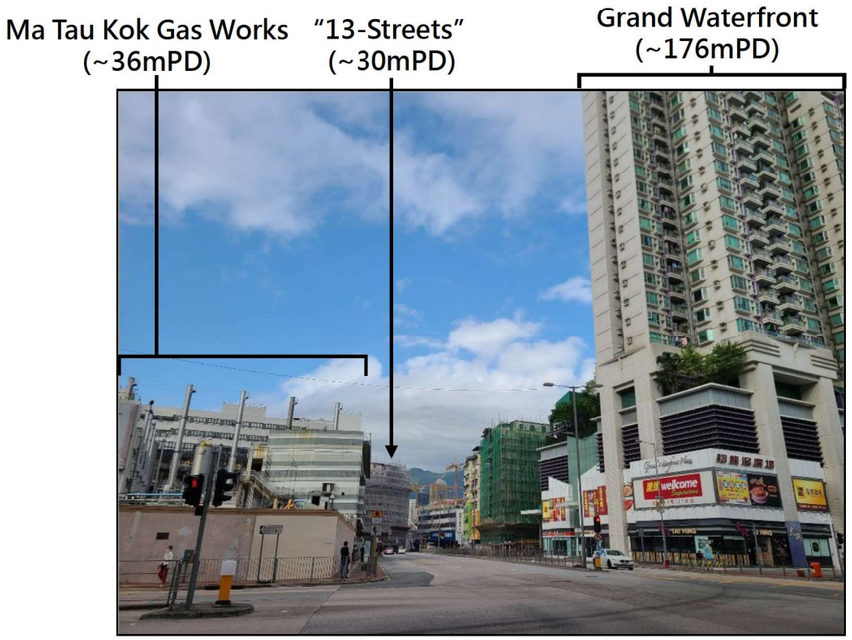


Scheme Area

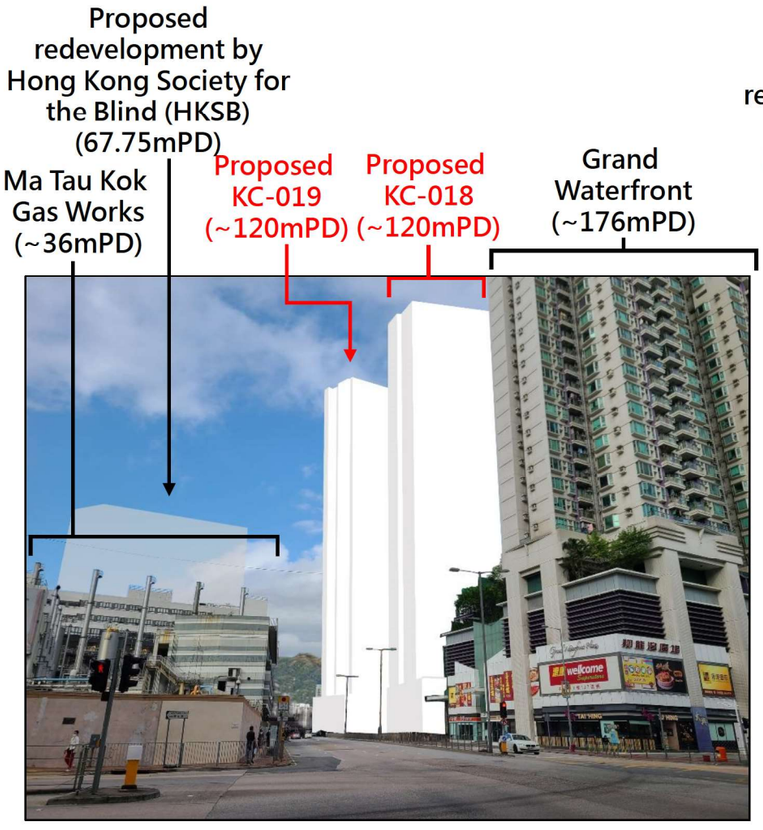
Assessment Area

VP4

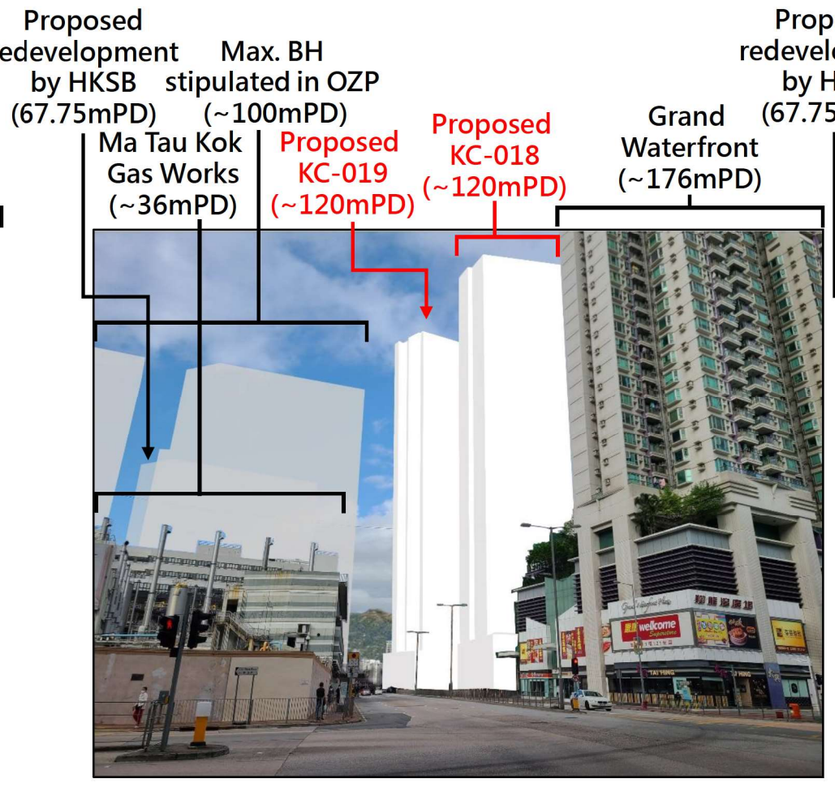
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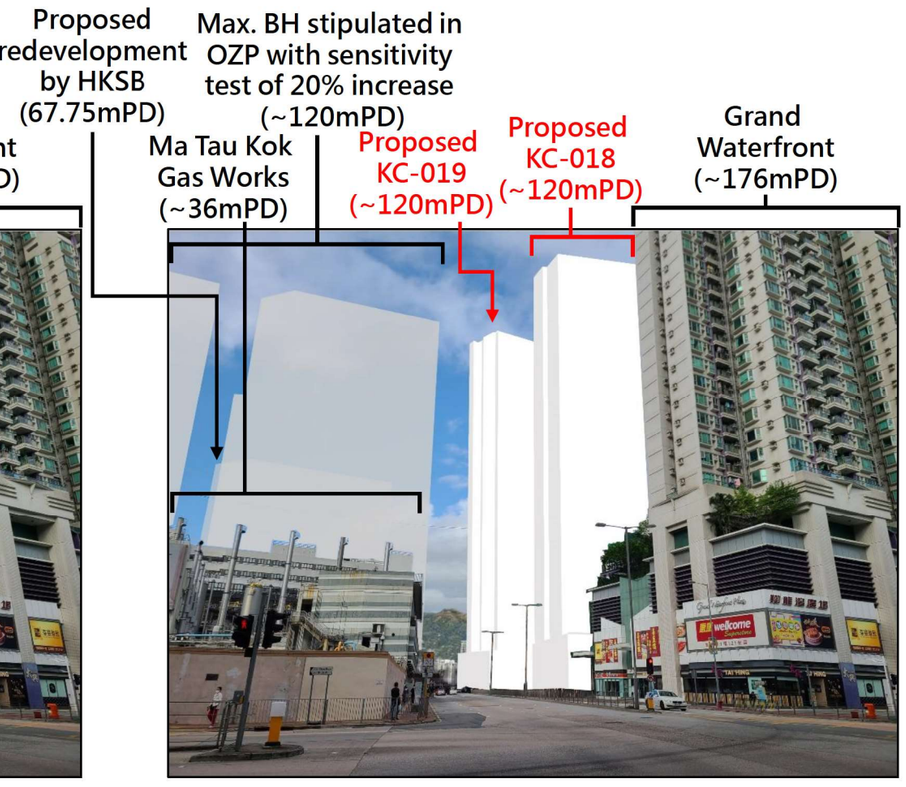
Existing Condition



Proposed Scheme



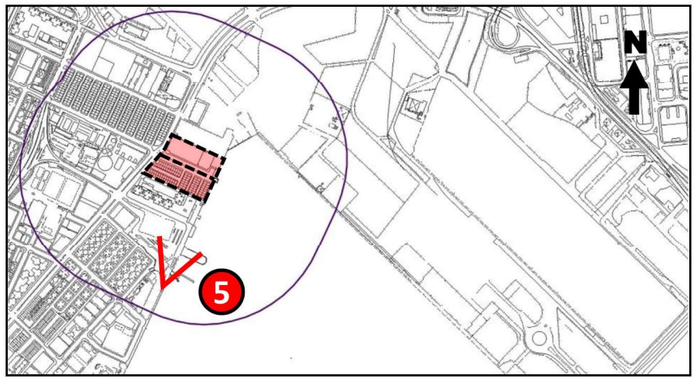
Sensitivity 1 (for reference only)



Sensitivity 2 (for reference only)

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	Figure 5.4	**Photomontages of VP4** (Junction of San Shan Road and To Kwa Wan Road)	October 2022

Key Plan



Scheme Area

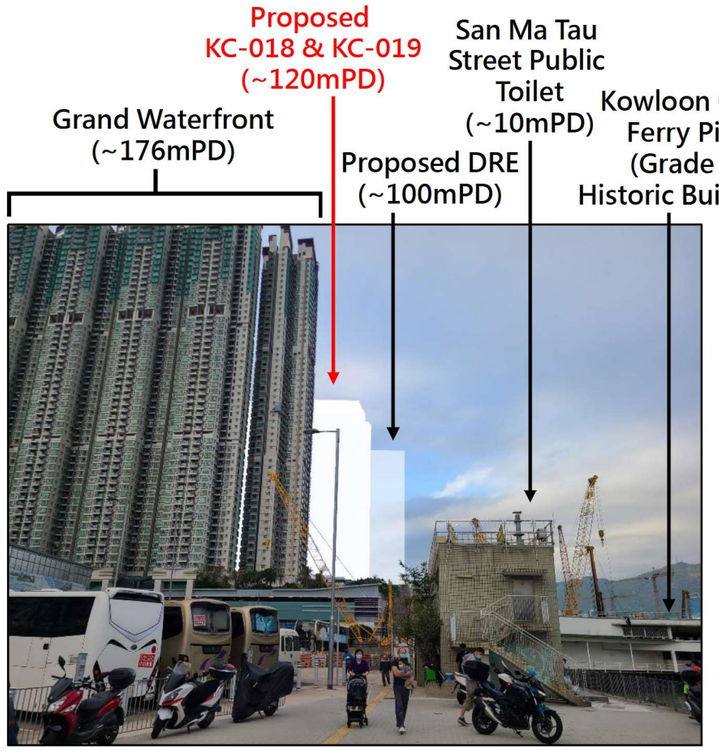
Assessment Area

VP5

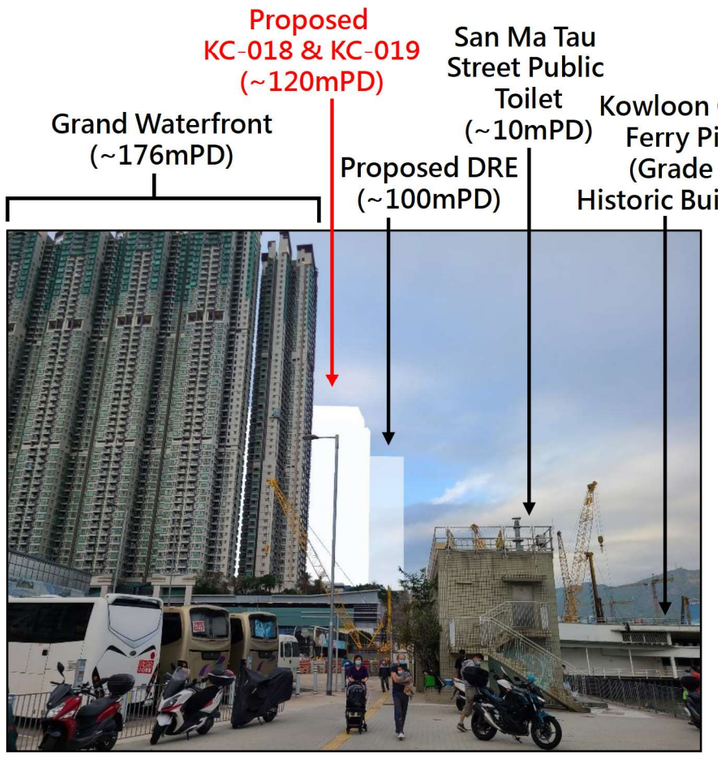
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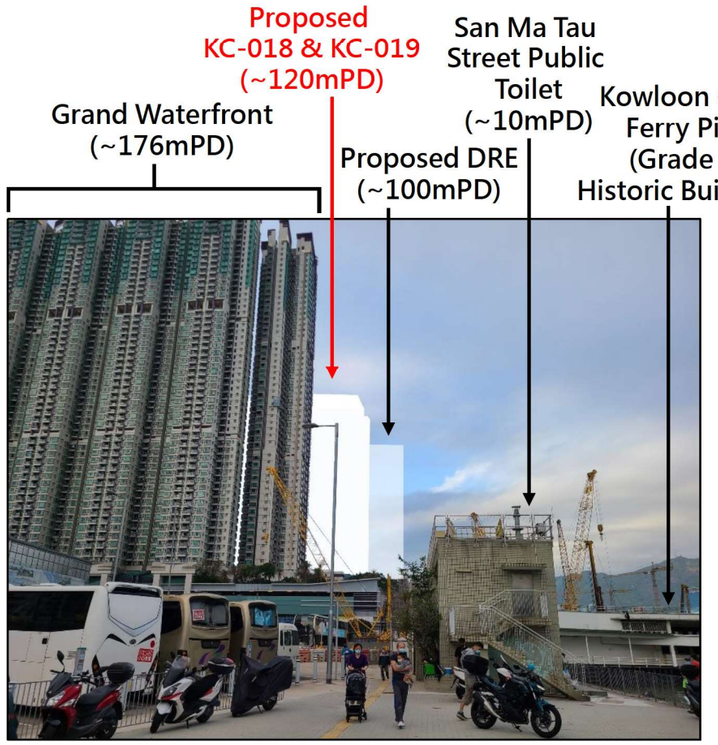
Existing Condition



Proposed Scheme



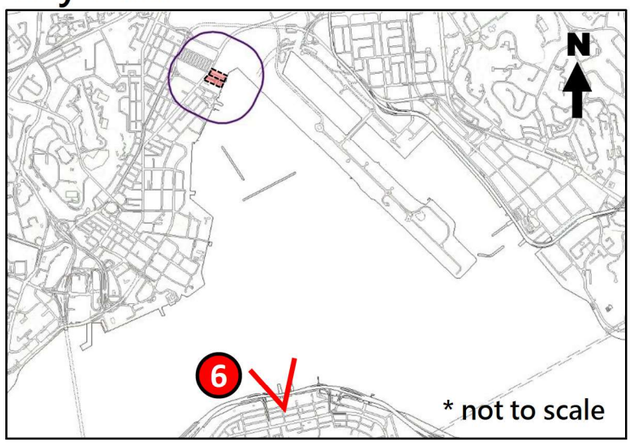
Sensitivity 1 (for reference only)



Sensitivity 2 (for reference only)

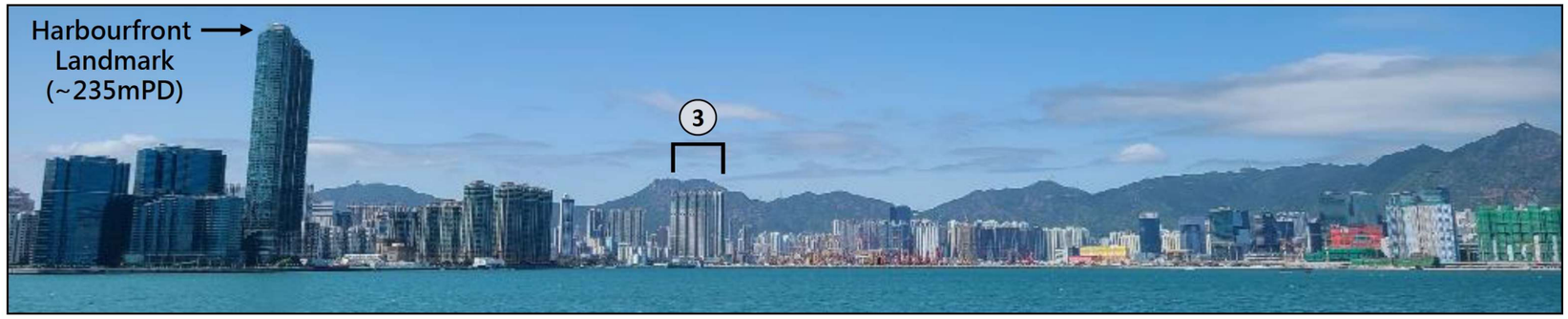
市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	**Figure 5.5**	**Photomontages of VP5** (San Ma Tau Street)	October 2022

Key Plan

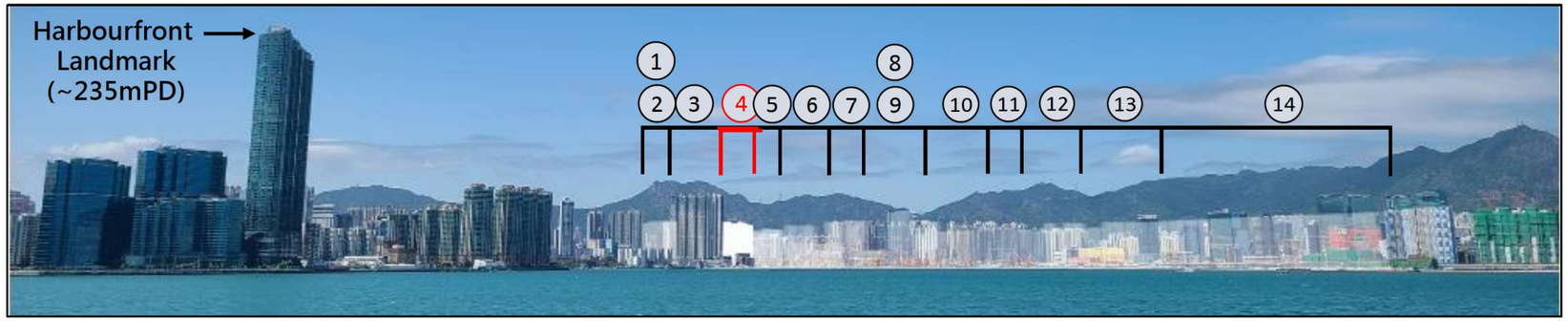


Scheme Area
Assessment Area
VP6

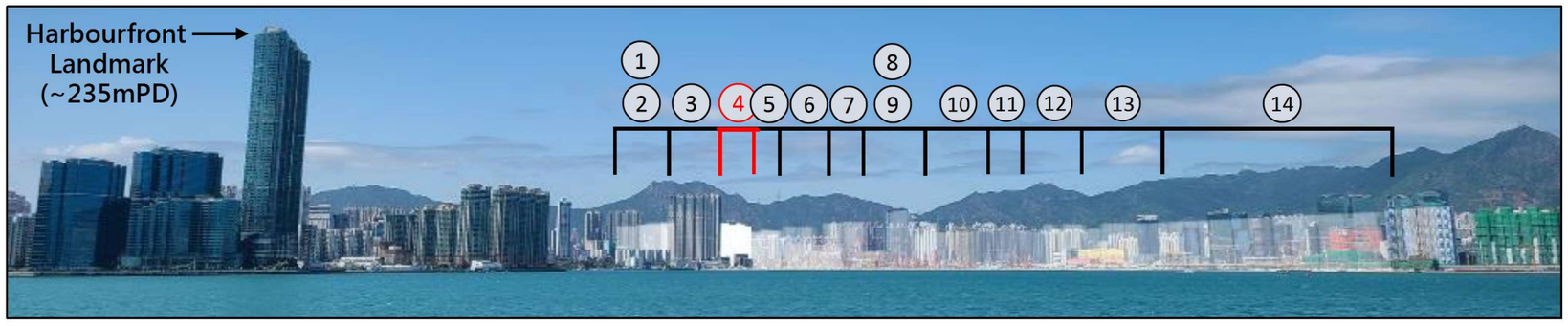
1. Planned CDA sites (100mPD) at Mok Cheong Street (A/K10/256, A/K10/259 & A/K10/265), Redevelopment by Hong Kong Society for the Blind (HKSB) (67.75mPD) & Proposed public housing at Sung Wong Toi Rd (100mPD).
   Sensitivity 1: Max. BH stipulated in OZP along Ma Tau Kok Rd (~100mPD)
   Sensitivity 2: Max. BH stipulated in OZP along Ma Tau Kok Rd with sensitivity test of 20% increase (~120mPD)
2. Planned Commercial Building (Y/K22/3) (~100mPD)
3. Grand Waterfront (~176mPD)
4. Proposed KC-018 & KC-019 (~120mPD)
5. Proposed DRE (~100mPD)
6. Planned R(A) (S/K22/6) (~115mPD)
7. Planned R(B) (~125mPD) & Planned CDA (~135mPD) (S/K22/6)
8. Kai Tak Sports Park (70mPD) & Planned R(B) 95 - 110mPD) (S/K22/6)
9. Planned CDA (~200mPD) (S/K22/6)
10. Planned R(B) (~110mPD) (S/K22/6)
11. Planned R(B) (~120mPD) (S/K22/6)
12. Planned R(B) (~110mPD) (S/K22/6)
13. Planned R(B) (~95mPD) (S/K22/6)
14. Planned R(B) (95 - 108mPD) (S/K22/6 & S/K22/7)



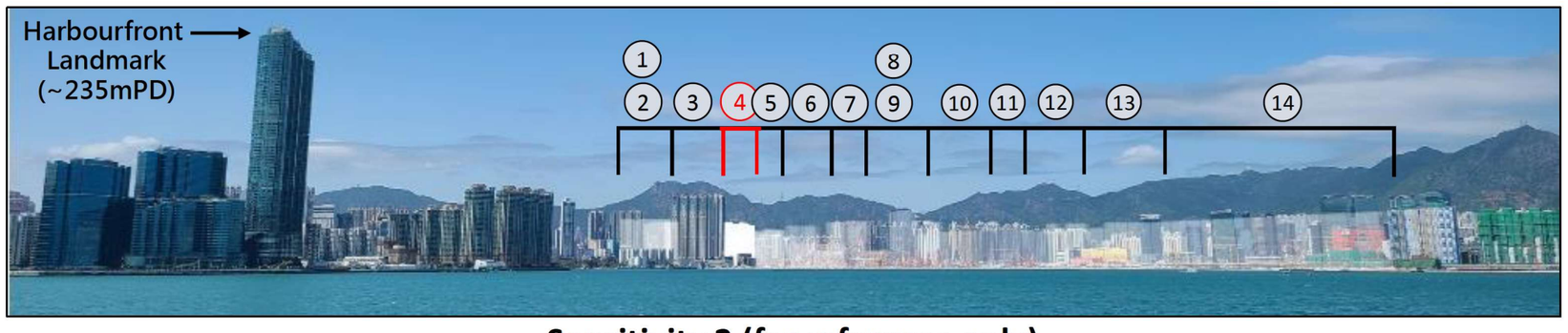
Existing Condition



Proposed Scheme



Sensitivity 1 (for reference only)



Sensitivity 2 (for reference only)

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	Figure 5.6	**Photomontages of VP6** (North Point Ferry Pier)	October 2022



Source:
Strategic Viewing Points Webpage of Planning Department for the Town Planning Board Guidelines for Submission of Visual Impact Assessment to the Town Planning Board (TPB PG-No. 41) *https://www.pland.gov.hk/pland_en/info_serv/via/web/vp_eng.html*

市區重建局 URBAN RENEWAL AUTHORITY	URA Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) **Visual Impact Assessment**	**Figure 5.7**	**Photomontages of VP7 – Strategic Viewing Point 4** **(Quarry Bay Park)**	October 2022

Appendix 3a

KC-018 Social Impact Assessment

(Stage 1) Report



市區重建局
URBAN RENEWAL AUTHORITY

Urban Renewal Authority Development Scheme
Prepared under Section 25 (3) of the Urban Renewal Authority Ordinance

Ming Lun Street / Ma Tau Kok Road (KC-018)

Stage 1 Social Impact Assessment
October 2022

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1 INTRODUCTION

1.1 According to the Urban Renewal Strategy (URS) issued by the Government in February 2011, the Urban Renewal Authority (URA) will carry out Social Impact Assessment (SIA) studies in the form of "*a Stage 1 social impact assessment …… before the publication of any proposed redevelopment project in the Government Gazette*", and "*a Stage 2 social impact assessment …… after the proposed project has been published in the Government Gazette*". This Stage 1 SIA is prepared by the URA **for the proposed Ming Lun Street / Ma Tau Kok Road Development Scheme KC-018 (the Scheme)**.

1.2 The URS also states "*Early social impact assessments will be initiated and conducted by DURF (District Urban Renewal Forum) before redevelopment is recommended as the preferred option. The URA will update these assessments by DURF before implementing any specific redevelopment project*." As the Scheme falls within the study area of Kowloon City District Urban Renewal Forum ("KC DURF"), consultants for the KC DURF had completed a DURF SIA report of the Urban Renewal Plan (URP) for Kowloon City in 2014. This Stage 1 SIA is prepared with reference to the DURF SIA report, where appropriate.

1.3 According to the URS, the main elements of the Stage 1 SIA conducted by the URA before the publication of a proposed project should include:

- the population characteristics of the area;
- the socio-economic characteristics of the area;
- the housing conditions in the area;
- the characteristics of local business activities, including small shops and street stalls;
- the degree of overcrowding in the area;
- the availability of amenities, community and welfare facilities in the area;
- the historical background of the area;
- the cultural and local characteristics of the area;
- an initial assessment of the potential social impact of the proposed project; and
- an initial assessment of the mitigation measures required.

1.4 The Stage 2 SIA will be conducted after the publication of the Scheme based on the factual information collected in the Freezing Survey (FS) upon project commencement. The URS stipulates the URA should submit both Stage 1 and Stage 2 SIA reports to the Town Planning Board (TPB) under section 25 of the Urban Renewal Authority Ordinance (URAO), and should release the reports for public information.

2 THE DEVELOPMENT SCHEME

2.1 The Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) (the Scheme) is located in To Kwa Wan of Kowloon City (KC) District, which is bounded by Ma Tau Kok Road in the north, Ma Tau Kok waterfront in the east, Grand Waterfront in the south and To Kwa Wan Road in the west **(Figure 2.1** refers**)**.

2.2 The Scheme, also known as the "5-Street" area, covers 101 street numbers of buildings comprising Nos. 91-113 Ma Tau Kok Road (odd nos.), 1-28A Ming Lun Street, 1-15 Chung Sun Street (odd nos.), 1-16 Hing Yin Street, 1-17 Hing Yan Street, and 19-31 Hing Yan Street (odd nos). The Scheme area also involves five public streets, including Ma Tau Kok Road (part), and the whole of Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street, the existing Kowloon City District Council Sitting-out Area as well as the surrounding public pavement. The total gross site area of the Scheme is about 11,430 sq.m. Subject to site survey and detailed design, the net site area for Plot Ratio (PR) calculation is about 10,496 sq.m.

2.3 The Scheme forms part of the proposed holistic redevelopment with the adjoining land parcels at To Kwa Wan Road / Ma Tau Kok Road which will be implemented under the separate To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019). A separate Stage 1 SIA has been prepared for To Kwa Wan Road / Ma Tau Kok Road Development Scheme KC-019.

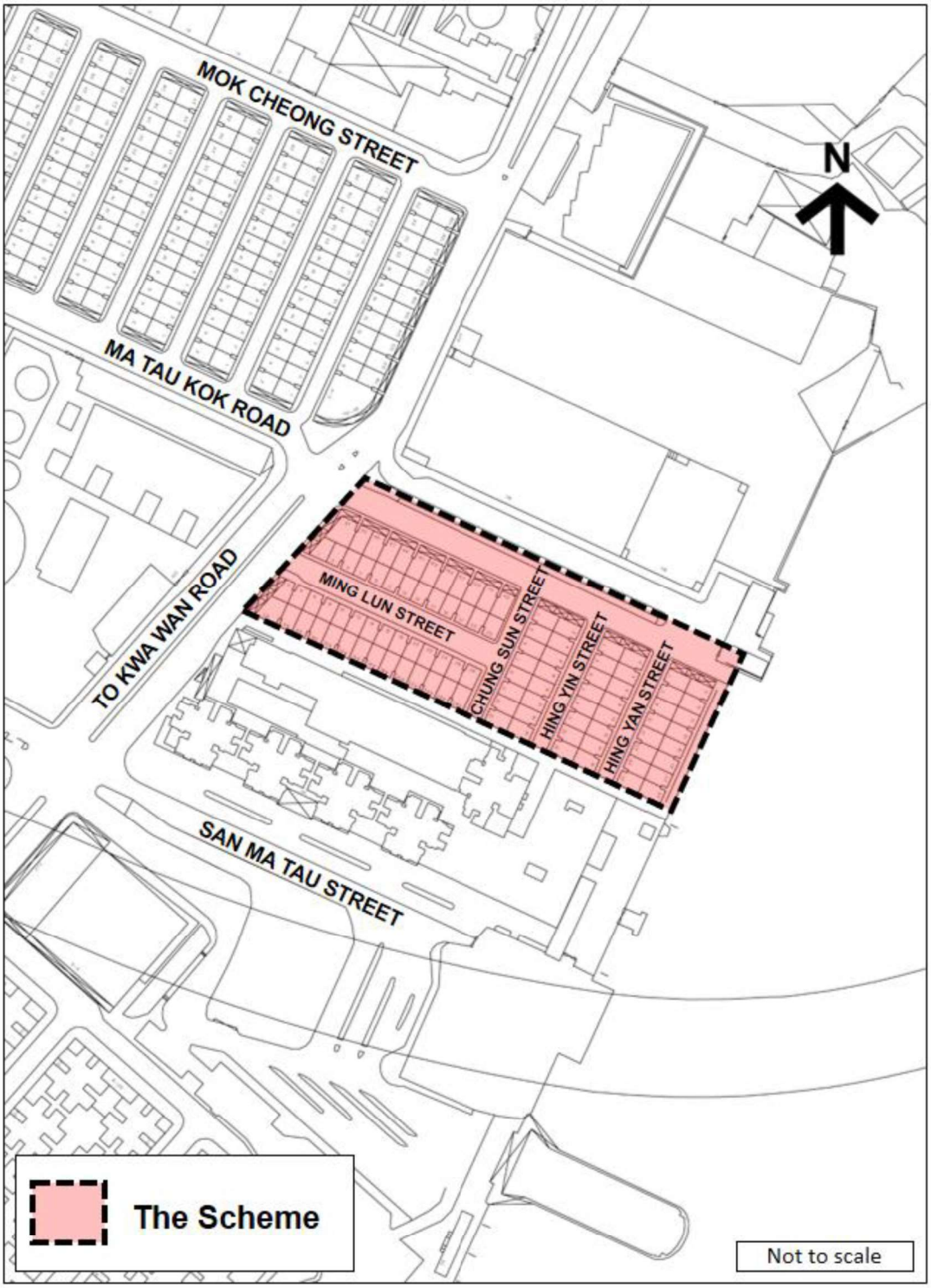


Figure 2.1 Location Plan

Planning Objectives

2.4 The Scheme, together with the adjoining To Kwa Wan Road / Ma Tau Kok Road Development Scheme KC-019, aims to rationalize land use by adopting an integrated planning-led approach for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The URS issued in 2011 promulgates a comprehensive and holistic approach to carry out urban renewal with the following objectives:

- Restructuring and replanning of concerned urban areas;
- Designing more effective and environmentally-friendly local transport and road networks within the concerned urban areas;
- Rationalising land uses within the concerned urban areas;
- Redeveloping dilapidated buildings into new buildings of modern standard and environmentally-friendly design;
- Providing more open space and community / welfare facilities; and
- Enhancing the townscape with attractive landscape and urban design.

2.5 The Scheme falls within the "5-Streets" area of the "5-Streets" and "13 Streets" area, To Kwa Wan as defined in the Urban Renewal Plan (URP) prepared by KC DURF. Under the URP of KC DURF, the area is recommended as "*Redevelopment Priority Area*". DURF recommended to sub-divide the "Comprehensive Development Area (CDA)" site at "5-Streets" into two portions based on the existing residential building portion and the industrial / commercial building portion. The Scheme, being a redevelopment project, is tally with the recommendations of KC DURF.

2.6 To achieve the objectives in URS and to address the recommendations of KC DURF as well as public aspirations and views from local stakeholders to expedite the redevelopment of the area, the Scheme will include the following key proposals:

i. Under a planning-led approach, the Scheme aim to rationalize land use for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The Scheme will optimise the land uses into the long-awaited comprehensive designed waterfront developments fitting in with the redevelopment intention of the Ma Tau Kok waterfront area. A 20m-wide waterfront promenade is provided at the eastern boundary of the Scheme along the waterfront for public enjoyment.

The proposed waterfront promenade will be connecting with the adjoining planned waterfront promenade / waterfront developments at the Kai Tak Development Area (KTDA) in the northeast, thus enabling a continuous waterfront at the Kowloon East area and helping the Government to achieve its vision for public enjoyment.

ii. To promote vibrancy, a 2-storeys retail belt abutting the waterfront promenade is provided. In addition, an at grade open-air central waterfront plaza with not less than 25m wide will be provided between the Scheme and the adjoining To Kwa Wan Road / Ma Tau Kok Road Development Scheme KC-019, serving as a focal point for gathering and place-making opportunities. It will be connected to the proposed retail belt and waterfront promenade to bring in vibrancy and strengthen the east-west pedestrian connectivity.

iii. Through restructuring and re-planning of existing land uses, buildings of the proposed developments will be setback from To Kwa Wan Road to allow sufficient space to align with Government's planned road widening works of the existing To Kwa Wan Road from a four-lane road to a six-lane road. Detailed design and implementation programme of the planned road widening will be subject to the local views and agreement from relevant Government departments.

iv. Under the current notional design, it is proposed to provide not less than 1,000sq.m. non-domestic GFA for "Government, Institution or Community" ("GIC") facilities within the Scheme to meet the community's needs and to align with the "Single site, Multiple Use" model promoted by the Government to enhance planning gains.

2.7 In addition to the proposed redevelopment under the Scheme, URA will explore the possibility to revitalize the adjoining abandoned Government's pier structure/landing steps located outside the Scheme boundary under separate revitalization urban renewal initiatives, subject to further study and liaison with relevant Government departments.

URA Projects in the Vicinity

2.8 The Scheme is located close to various completed and on-going URA projects in the To Kwa Wan area (See **Figure 2.2).** To the immediate north of the Scheme is the To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019) which is commenced on the same day as the Scheme. The Scheme will create synergy with KC-019 to formulate a comprehensive land-use restructuring together to create more planning gains in the area.

2.9 A number of completed URA's projects can be found to the further west and southeast of the Scheme. These projects include the Pak Tai Street / Mok Cheong Street Development Project (named "My Place"), Pak Tai Street / San Shan Road Project (named "Downtown 38") and San Shan Road / Pau Chung Street Project (named "93 Pau Chung Street"), Kowloon City Road / Sheung Heung Road Development Project (KC-007) (named "Artisan Garden"), Chi Kiang Street / Ha Heung Road Development Project (TKW/1/001) (named "City Hub").

2.10 To the further southeast of the Scheme, the area in the vicinity of Wing Kwong Street of To Kwa Wan was being identified by URA as the Kowloon City Action Area 1 (KCAA1) for holistic planning of urban renewal works. A total of 8 projects were commenced in the KCAA1 area in recent years, forming a cluster of URA's redevelopment projects of the existing tenement buildings concentrated in the area. These projects include:

- Bailey Street / Wing Kwong Street Development Project (KC-009)
- Hung Fook Street / Ngan Hon Street Development Scheme (KC-010)
- Kai Ming Street Demand-Led Redevelopment Project (DL-8:KC)
- Hung Fook Street / Kai Ming Street Development Project (KC-011)
- Wing Kwong Street Development Project (KC-012)
- Kai Ming Street / Wing Kwong Street Development Project (KC-013)
- Wing Kwong Street / Sung On Street Development Project (KC-014)
- To Kwa Wan Road / Wing Kwong Street Development Scheme (KC-016)

2.11 URA's projects in the vicinity also include two pilot projects in Kowloon City to redevelop buildings under the Civil Servants' Co-operative Building Society Scheme, which are the Shing Tak Street / Ma Tau Chung Road Development Project (CBS-1: KC) approved by Secretary for Development in June 2021 and

the Kau Pui Lung Road / Chi Kiang Street Development Scheme (CBS-2:KC) commenced in May 2020.

2.12 The Scheme, which forms part of holistic planning approach, will continue to contribute as a vital part of the comprehensive urban renewal of this part of Kowloon City District.

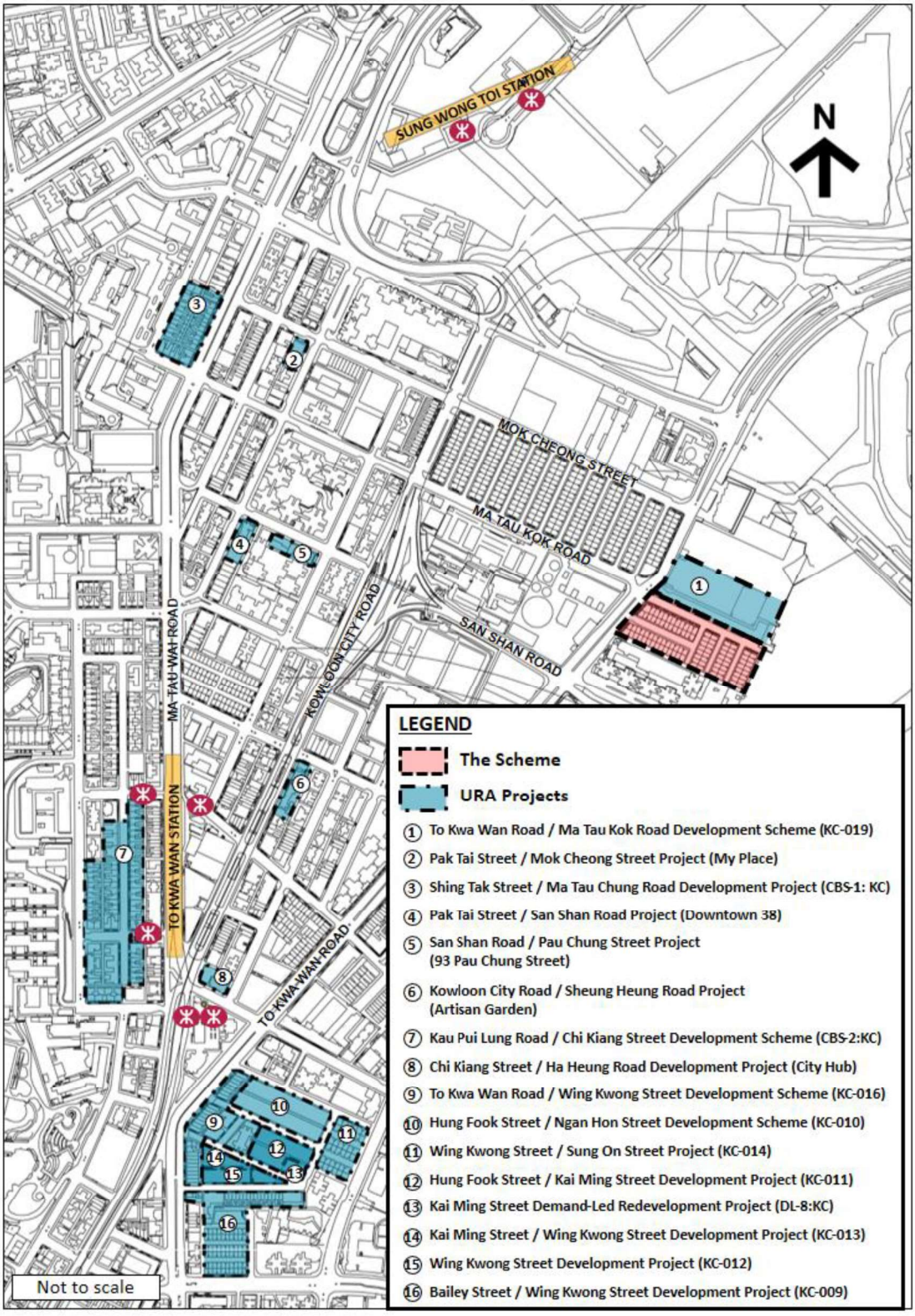


Figure 2.2 URA Projects in the Vicinity

3 HISTORICAL BACKGROUND AND LOCAL CHARACTERISTICS

Historical Background

3.1 Before the 1890s, To Kwa Wan was a bay lined by beaches and mud-flats with a stream originated from the hinterland named Ma Tau Chung where flowed closely along the existing Ma Hang Chung Road. The headland to the north of the bay is Ma Tau Kok, which might be named after the long pier of Kowloon Walled City nearby. A string of agricultural and stone-cutter villages along the coast of To Kwa Wan Bay sharing the name of To Kwa Wan Village was believed to be the largest village in the Hung Hom and To Kwa Wan area. Quarrying became active in the mid-18th century that Quarry Hill and San Shan (new quarry) Road were believed to commemorate these activities.

3.2 After the reclamation undertaken in the 1890s, To Kwa Wan started being developed by industrial activities extended from Hung Hom and the ex-Whampoa Docks. Streets including Mok Cheong (timber factory) Street and Pau Cheung (firecracker) Street were believed to commemorate the factory development in the early 20th century.

3.3 The second large-scale reclamation of To Kwa Wan started in the 1950s while industrial activities in Kowloon became more prosperous. The Schemes and its vicinity became inland and were then transformed into a mixture of residential developments and industrial uses including manufacturing, car-repairing, weaving, bleaching and dyeing, printing and electroplating. Today, industrial buildings still scatter along roads/streets within the area.

3.4 **Figure 3.1** shows the locations of places with historical background identified and local characters in this part of To Kwa Wan.

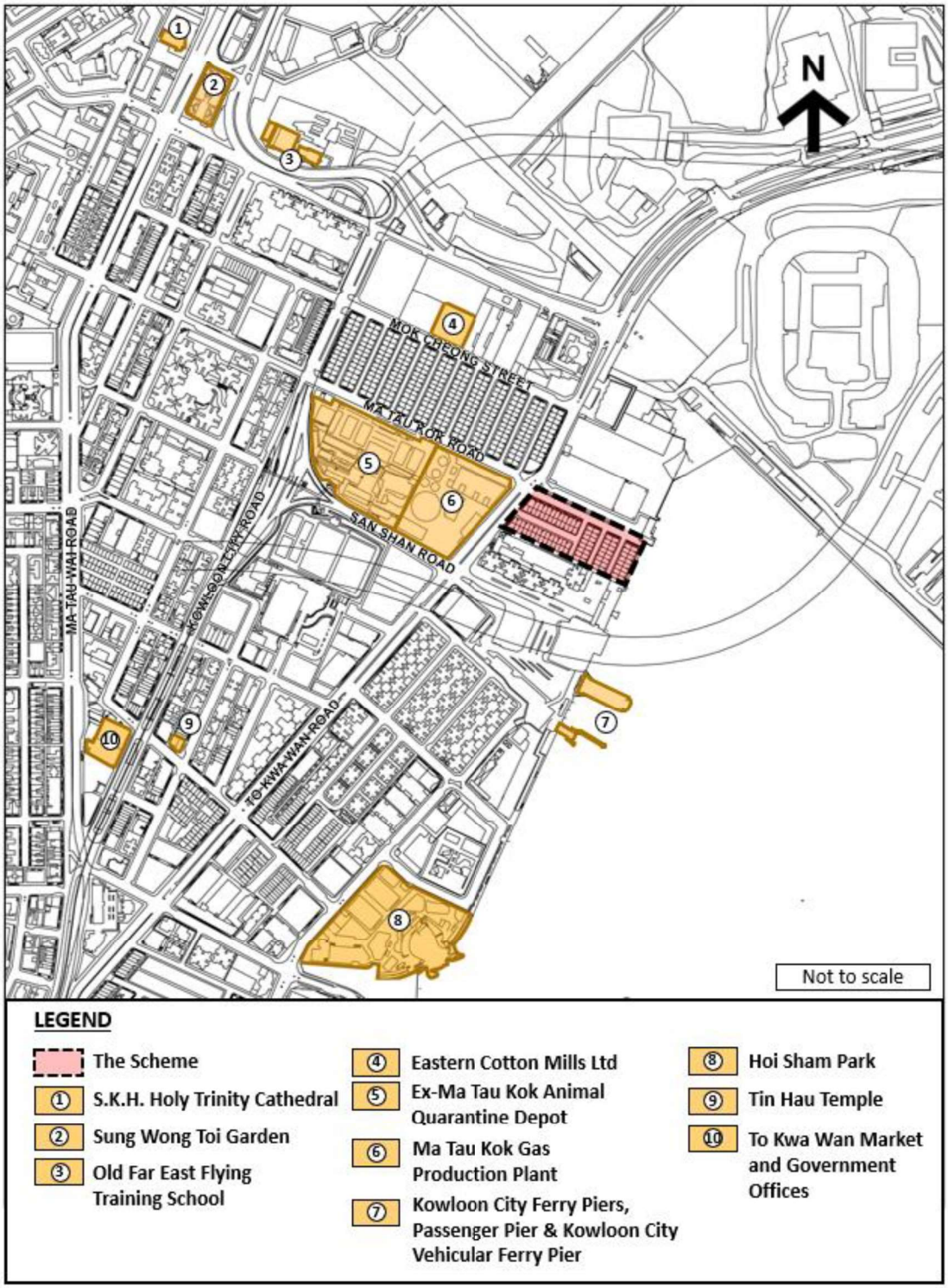


Figure 3.1 Places with Historical Background and Local Characters in To Kwa Wan

Source: KC DURF's URP and Geographic Information System on Hong Kong Heritage, as of June 2022.

Ex-Ma Tau Kok Animal Quarantine Depot

3.5 The ex-Ma Tau Kok Animal Quarantine Depot (commonly known as the "Cattle Depot") located at the further west of the Scheme was originally located in Hung Hom, which was moved to Ma Tau Kok due to the construction of Kowloon–Canton Railway and was built in 1908. It was owned by the Government and was used as a cattle quarantine and slaughter centre for more than 90 years. In 1999, the Cattle Depot was ceased operation due to expressed concerns by the neighbouring residents about hygiene problems. The Cattle Depot was renovated and developed into an artist village in 2001, and is now home of around 20 art groups. Under the "Revitalisation of the Rear Portion of the Cattle Depot" project proposed by the Kowloon City District Council (KCDC) in 2016, the Cattle Depot Art Park provides a venue for recreational purpose and community art promotion. The Cattle Depot Art Park inherits the elements of its history as a cattle depot, the ex-Ma Tau Kok Animal Quarantine Depot is classified as Grade II historic building by the Antiquities Advisory Board (AAB).

Ma Tau Kok Gas Production Plant

3.6 The Ma Tau Kok Gas Production Plant (South Plant) was originally built in the 1930s at the location just south of the Scheme. In the 1956, with the growing demand due to the increasing industrial activities it was then expanded to the other side of To Kwa Wan Road, namely the North Plant at its current location. The South Plant operates until 1994, and was subsequently redeveloped into a comprehensive residential development (named "Grand Waterfront") in early 2000's while the North Plant remains in operation till now but serve as a backup facility only. According to the website of Towngas Company Limited, "*Over 98% of town gas is supplied from the Tai Po Plant, with the Ma Tau Kok Plant making up the rest*.

Kowloon City Ferry Piers, Passenger Pier & Kowloon City Vehicular Ferry Pier

3.7 Along the coastline of To Kwa Wan, the Passenger Pier and Vehicular Pier were completed in 1956 and 1965, witnessing the development of transportation and eastern Kowloon in the second half of the 20th century. The Passenger Pier was the first of its kind built in Hong Kong's urban areas after the World War II, with no notable or significant alterations made since its completion. Together with

the adjacent bus terminus and car park, the Passenger Pier formed a public transport interchange serving commuters between the two sides of the Victoria Harbour, to various parts of the city and the former Kai Tak Airport. The Vehicular Pier was built to ease the demand of cross harbour vehicular ferry service in Central, and is one of the four vehicular ferry piers remaining in Hong Kong. The Passenger Pier and the Vehicular Ferry Pier have been graded the Grade II status by the AAB.

Themed Walking Trail of KC DURF

3.8 The URP of KC DURF has proposed a "Themed Walking Trail" to strengthen and highlight the historic and cultural characters of the district. The trail is sub-divided into four sub-trails in accordance with its characters, aiming to attract potential visitors and create a distinctive image for the district (refers to **Figure 3.2**).

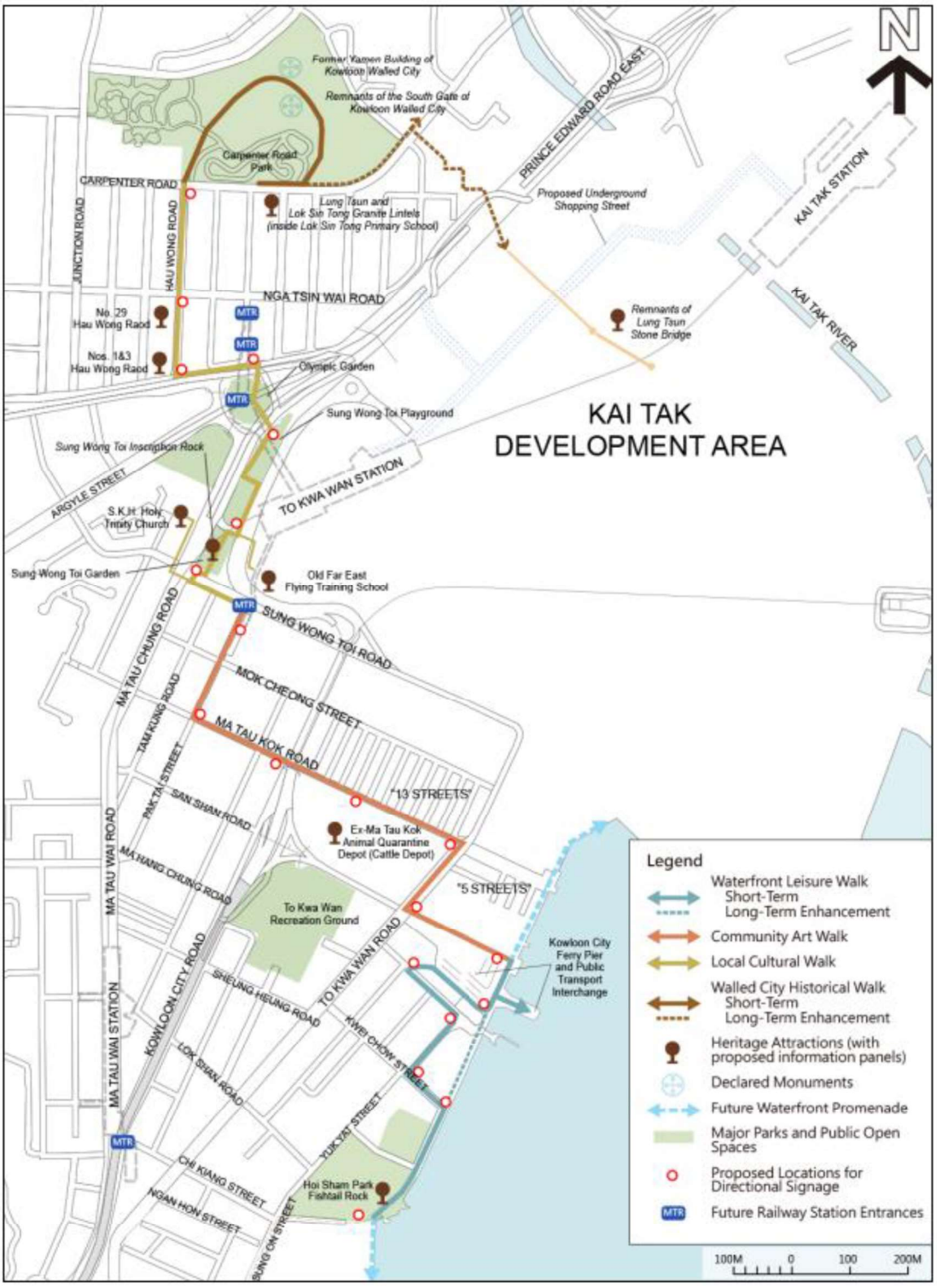


Figure 3.2 Themed Walking Trail of KC DURF (Extract of the KC DURF URP)

4 POPULATION AND SOCIO-ECONOMIC CHARACTERISTICS

4.1 The DURF SIA completed in 2014 had provided an overview of the population and socio-economic characteristics of the "*Proposed Redevelopment Priority Area"* in the KC DURF's URP where the Scheme falls within. To further update and analyse these characteristics of the Scheme, a combination of the 2021 Population Census results and the experience from other URA projects are used to assess the population and socio-economic characteristics. The accommodation assessment is then based on inspection of approved building plans and on-site non-obtrusive observation. Given the general and non-obtrusive nature of data sources available to carry out this Stage 1 SIA, the assessments derived should only be considered as indicative and for reference use only and subject to the Freezing Survey upon project commencement.

4.2 The Census and Statistics Department's (C&SD) website provides the 2021 Population Census results. Depending on the type of information, the most disaggregated data available are down to various geographical division levels, including Tertiary Planning Units (TPU), District Council Constituencies, Large Subunit Groups (LSG) and Small Subunit Groups (SSG).

4.3 The Scheme is within the Tertiary Planning Unit 247. It falls within Sung Wong Toi (G02) constituency of the Kowloon City (KC) District (**Figure 4.1**).

4.4 The Scheme lies within LSG 247/11-13 and SSG 247/11-13, sharing the same boundary, which is bounded by To Kwa Wan Road to the west, the planned Kai Tak Sports Park (under construction) to the north, To Kwa Wan Typhoon Shelter to the east and Grand Waterfront to the south (**Figure 4.2**). The boundary covers buildings within the Scheme, the KC-019 Scheme (i.e. Newport Centre Phases I and II) and the To Kwa Wan Road Pumping Station. Based on non-obtrusive on-site observation, there is no population and household identified in Newport Centre Phases I and II.

4.5 The DURF SIA report has suggested that the average household size within its study area is around 2.6-2.9. However, such figure corresponds to the wider study area of KC DURF, which may be less representative for older, dilapidated buildings with sub-divided flats that are in need for redevelopment. Based on URA's past experience, the average household size of those within the Scheme is assumed to be around 2.1. The tenure split between owner-occupied and

tenanted households is assumed to be 30:70 for this Stage 1 SIA. Site observation indicates some existing units in the Scheme appear to have been converted into sub-divided units or cubicle apartments. Given similar sub-division situation found in various past URA projects, it is estimated that the degree of sharing in the Scheme is about 2 based on URA experience. Actual numbers will be ascertained as far as practicable at the Stage 2 SIA.

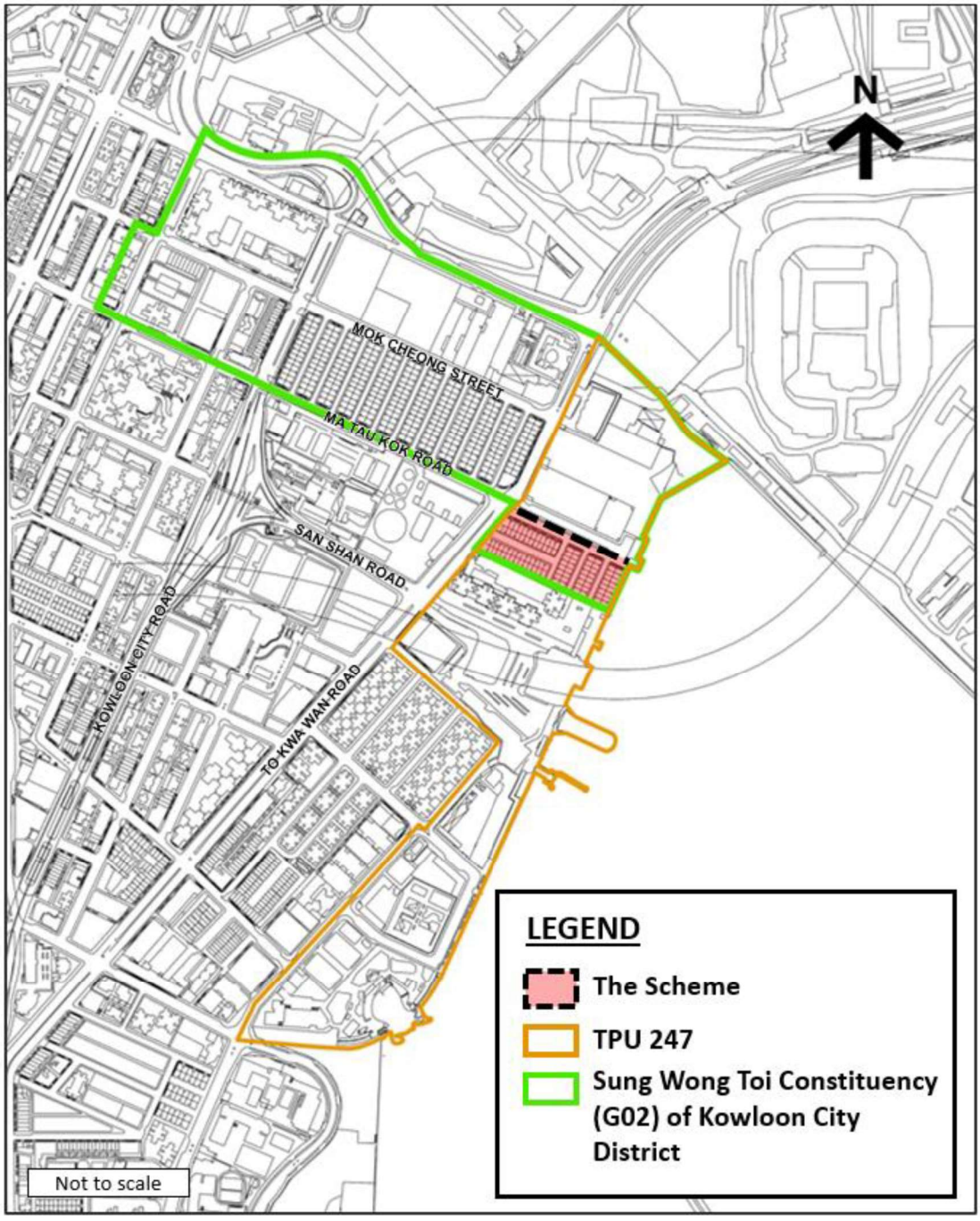


Figure 4.1 Boundaries of Sung Wong Toi Constituency (G02) and Tertiary Planning Unit (TPU) 247

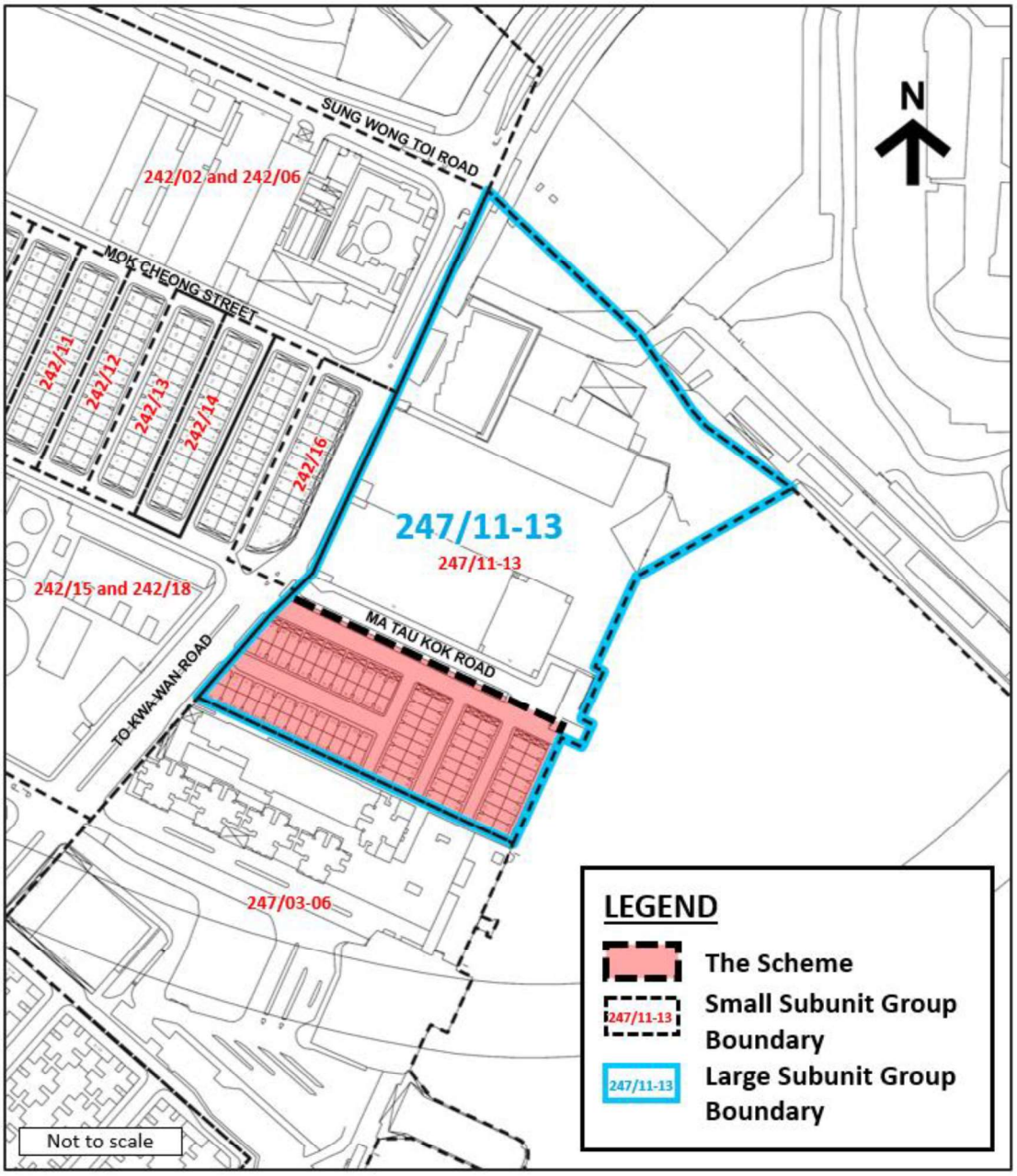


Figure 4.2 Subunits Boundaries Covering the Scheme

Overview of Housing & Population Characteristics of Kowloon City District

4.6 As revealed in the 2021 Population Census, the overall KC district has a population of about 410,634. In terms of monthly household income, the DURF SIA in 2014 reported that the particular "5 Streets" and "13 Streets" Area which covers the Scheme has a median monthly household income of $17,919. Though the figure has increased to $26,700 in 2021 Census, it is still lower that of the whole KC District ($30,010). The DURF SIA explained that the low income

level might be related to the residents' occupations and the high proportion of residents with low educational attainment. The household income level, including nos. of households with Comprehensive Social Security Assistance (CSSA) Recipients, and the social characteristics of the affected in the Scheme will be ascertained in the Freezing Survey (FS) upon commencement.

4.7 According to the 2021 Population Census, private housing blocks are the major type of living quarters in KC District (about 73%) which is higher than the territorial percentage of about 53%. On the other hand, there are only 26% of living quarters in public rental housings / subsidized home ownership housings which is lower than the territorial average of 46%. Public housings in KC District are mainly public rental housings which account for about 24% of living quarters of the district. There is no Public Rental Housing (PRH) or Home Ownership Scheme (HOS) within the Scheme, TPU 247 nor Sung Wong Toi Constituency (G02). Being mainly built in the 1950s and 1960s, quite a number of private residential blocks in KC District appear to be lack of proper maintenance and management.

Household Composition

4.8 In accordance with approved General Building Plans (GBPs) of the buildings in the Scheme, the total number of upper floor residential units (excluding ground floor units for shops, and/or office uses) within the Scheme is 707 units. Based on the 2021 Population Census, the degree of sharing of KC District and territory is 1.0 (i.e. one household per unit). However, based on URA experience, the degree of sharing within redevelopment projects is generally about 2 due to the existing of sub-divided units. By adopting the degree of sharing of 2, the total number of households within the Scheme is estimated to be about 1,414 households with overcrowded and unsatisfactory living conditions which are commonly found in URA redevelopment projects. The actual number of domestic units may be different from that under the approved GBPs. The household composition will be verified in the Freezing Survey upon commencement.

4.9 According to the 2021 Census, the overall proportion of singleton (30%) in LSG (which is the closest area coverage as the Scheme) is higher than the Territorial and KC District level. While Doubletons (20%) in LSG are lower than the Territorial and KC District level. 3-person or above households (50%) in the LSG are similar to the proportions under the various geographical division levels **(Table 4.1)**. The actual proportion of household types in the Scheme will be verified in Stage 2 SIA.

Table 4.1 Proportions of Singletons, Doubletons, and 3-person or above Households by Geographical Division Levels

	Singletons	Doubletons	3-person or above households
LSG 247/11-13	**30%**	**20%**	**50%**
TPU 247	26%	25%	49%
Sung Wong Toi (G02) Constituency	28%	27%	45%
KC District	22%	28%	50%
Territorial	20%	29%	51%

4.10 Based on the Census results and URA experience as stated in Para. 4.5 above, the average household size within the Scheme is estimated to be around 2.1, which is lower than the average household sizes of KC District (2.7) and the territory (2.7). The assessment adopts a lower household size to reflect the presence of lots of sub-divided units and/or cubicle apartments in previous URA projects, which can be assumed to be occupied by some singleton and doubleton households.

Population

4.11 According to paragraph 4.8, the estimated number of households within the Scheme is about 1,414. With the estimated average household size of 2.1, the number of residents living within the Scheme is estimated to be around 2,970 persons. The Stage 2 SIA will verify the number of households, living quarters and population affected.

4.12 **Table 4.2** compares the distribution of the percentage of working population and elderly residents (aged 65 or above) among the various geographical division levels. The LSG data, which covers the Scheme, indicates that the percentage of working population is slightly lower than that of wider district / territory. Besides, the percentage of elderly residents of the LSG is higher than that of TPU and DC Constituency, but lower than that of district and territorial levels. Despite so, particular attention would be paid to elderly residents and their needs when the Scheme is implemented.

Table 4.2 Percentages of Working Population and Elderly Residents by Geographical Division Levels

	Percentage of working population	**Percentage of elderly residents**
LSG 247/11-13	**47.4%**	**16.2%**
TPU 247	55.1%	11.3%
Sung Wong Toi (G02) Constituency	51.4%	11.1%
KC District	49.7%	20.1%
Territorial	49.6%	19.6%

4.13 As presented in **Table 4.3**, the percentages of ethnic minorities residing in the LSG, TPU 247 and Sung Wong Toi (G02) constituency are similar with the territorial percentage, while the percentage of the KC district was above 10% which was higher than the territorial percentage. Nevertheless, special attention would be paid to residents of ethnic minorities and their needs when the Scheme is implemented. The FS and Stage 2 SIA will ascertain the actual number of households and residents of ethnic minorities as far as practicable.

Table 4.3 Percentages of Ethnic Minorities by Geographical Division Levels

	Percentage of ethnic minorities
LSG 247/11-13	**6.4%**
TPU 247	8.9%
Sung Wong Toi (G02) Constituency	7.9%
KC District	10.7%
Territorial	8.4%

4.14 **Table 4.4** shows the comparison of percentages of owner-occupiers and tenanted occupiers among the various geographical division levels. In accordance with the LSG data, percentages of tenanted occupiers within the Scheme may probably be higher than that at other geographical division levels. Based on the URA's experience obtained from previous redevelopment projects, a higher proportion of tenanted households (70%) is assumed in the Scheme in consideration of existence of sub-divided units which are mainly for rental in the tenement buildings in the older district. The composition will be ascertained in the FS and reported in the Stage 2 SIA.

Table 4.4 Percentages of Owner-Occupiers and Tenanted Occupiers by Geographical Division Levels

	Percentage of owner-occupiers	**Percentage of tenanted occupiers**
LSG 247/11-13	**42%**	**58%**
TPU 247	60%	40%
Sung Wong Toi (G02) Constituency	46%	54%
KC District	47%	53%
Territorial	49%	51%

4.15 Higher median monthly rents were recorded in the LSG, TPU and the constituency than KC District and the whole territory. However, as there is no subsidized public housing in the LSG, TPU and the constituency, and only a

transitional housing project of 110 units within the constituency boundary, the assessment further compares the median monthly household rents of private permanent housings. **Table 4.5** shows that the median rents of private housings at LSG and constituency levels are much lower than the KC district and territorial levels. This is probably caused by the relatively poor building condition and living environment of the Scheme's vicinity as compared to the general private housings and therefore the median rent is lower. While TPU level, median monthly household rent is similar with the KC district and territorial levels. This is probably due to inclusion of a private residential redevelopment in 2006, the Grand Waterfront, within the boundary of TPU, leading to a significant increase in median monthly household rent.

Table 4.5 Median Monthly Household Rents by Geographical Division Levels

	Median monthly household rents of all housing types	**Median monthly household rents of private permanent housings**
LSG 247/11-13	$6,300	$6,300*
TPU 247	$10,000	$10,000*
Sung Wong Toi (G02) Constituency	$5,700	$5,700*
KC District	$4,000	$11,470
Territorial	$2,900	$11,000

** As the majority of housing in LSG, TPU 247 and the constituency are private permanent housings, the median monthly household rents of private permanent housings are assumed to be the same as the ones of all housing types.*

4.16 In conclusion, the presence of newer residential developments such as Grand Waterfront within the TPU may possibly have different household composition, which means such data should be used for reference only.

4.17 The Stage 2 SIA to be conducted upon project commencement will give clearer and accurate information concerning those living and working within the Scheme.

5 HOUSING AND ENVIRONMENTAL CONDITIONS

Building Age, Building and Living Condition

5.1 The Scheme consists of five clusters of tenement buildings with 8 storeys high, completed in 1959 and 1960 (i.e. aged from 62 to 63). According to the GBP records, all the buildings are without lift and the serviceability of these buildings are generally poor.

5.2 Based on the ownership records in the Land Registry as of Sept 2022, all the buildings within the Scheme are under multiple ownerships. According to Home Affairs Department's "Database of Private Buildings in Hong Kong" as of April 2022, 69 out of the total of 101 building blocks within the Scheme (about 68%) are "3-nil" buildings without any management body for building management.

5.3 Based on the URA's Building Care Management Information System (BCMIS) as of August 2022, 24 out of the 101 buildings within the Scheme (about 24%) are of either "Poor" or "Varied" conditions. Based on the URA's experience and the consultant's advice, major repair works will be required for buildings of "Poor" or "Varied" conditions as their structural elements, components, finishes and facilities are observed in decay condition due to lack of building repairs and ongoing maintenance. Some structures on the roof of the buildings in the Scheme were suspected to be Unauthorized Building Works (UBWs).

5.4 77 out of the 101 buildings (about 76%) are projected as "Acceptable" to "Satisfactory" conditions, probably due to the fact that these buildings have recently completed/ carrying out rehabilitation works from 2007 to 2022. BD's records show that 67 out of 101 building blocks within the Scheme (about 66%) have completed building rehabilitation works under Operation Building Bright (OBB1.0) in the last ten years. As at August 2022, there are 73 out of 101 buildings (about 72%) in the Scheme undertaking rehabilitation works under OBB2.0. It is understood that OBB works comprise mainly repairing defects (e.g. major cracks, spalling) in common or public areas of the buildings however repair works to the interior of private units are not included. Based on URA's past experience in rehabilitation works, even buildings that have undergone such repair works / schemes need to undertake comprehensive building rehabilitation regularly in order to avoid deterioration. Appropriate building

repairs and ongoing maintenance works will be required in order to maintain the habitability and avoid further deterioration of the building.

5.5 Moreover, according to Buildings Department (BD)'s records as of May 2022, 53 out of 101 buildings within the Scheme (about 53%) have outstanding Fire Safety Directions (FSDN). 15 out of 101 buildings within the Scheme (about 15%) have outstanding building orders issued under S26/S26A Dangerous Buildings under Buildings Ordinance (Cap. 123). 85 out of 101 buildings within the Scheme (about 84%) have outstanding Mandatory Building Inspection notices under S30B of Cap. 123. 7 out of the 101 buildings are carrying out improvement works under Fire Safety Improvement Works Subsidy Scheme (FSWS) under Fire Safety (Buildings) Ordinance (Cap 572). 11 out of 101 buildings within the Scheme (10.9%) have outstanding S28 Drainage Repair orders of Cap. 123, implying hygiene concerns and their vulnerabilities particularly under the COVID-19 pandemic period.

5.6 Non-obtrusive site observations conducted in Sept 2022 found that some of the original units as shown in the approved GBPs were suspected to be sub-divided into smaller units, which will be ascertained in the Freezing Surveys.

Existing Uses

5.7 Based on non-obtrusive observation site observation conducted in Sept 2022, buildings within the Scheme are mainly residential in nature on the upper floors with a few are occupied by commercial uses / businesses. Commercial premises are occupying the ground floor. These commercial premises are primarily engaging in vehicle repair workshops, eateries, grocery stores and services such as property agencies and laundry services. The detailed uses of the units found within the Scheme will be verified in the Freezing Survey and reported in the SIA 2 as far as practicable.

5.8 The Kowloon City District Council Sitting-out Area is located at the eastern boundary of the Scheme next to the waterfront, it is situated behind buildings and of poor visibility and accessibility.

Existing Pedestrian Network

5.9 The Scheme is located about 15 minutes walking distance away from both the Sung Wong Toi station and To Kwa Wan station. Public transport services,

including buses and franchised buses are located in proximity of the Scheme area. Local residents of nearby residential developments would walk along the two major pedestrian corridors on To Kwa Wan Road and Ma Tau Kok Road for public transport services.

5.10 There are five existing road sections included in the Scheme, portion of Ma Tau Kok Road, and the whole of Ming Lun Street, Chung Sun Street, Hing Yin Street and Hing Yan Street. Except Ming Lun Street, the remaining streets are dead-end roads. The pavement areas are often occupied by on-street parking, car repairing activities, dumping and storage, resulting a congested and unpleasant walking environment.

Environmental and Hygiene Condition

5.11 The Scheme is envisaged to be subject to some traffic noise and air pollutants generated from the heavily trafficked road in To Kwa Wan Road.

5.12 Vehicle repairing activities, dumping and road-side storage are often found along the inner streets and dead-end roads, including Hing Yan Street, Hing Yin Street, Chung Sun Street, Ming Lun Street and a portion of Ma Tau Kok Road. The noise and hygiene issues caused by these on-street activities create an unpleasant environment and nuisances to pedestrians.

5.13 Besides, the pavement area adjoining to the Kowloon City District Council Sitting-out Area located at the eastern boundary of the Scheme is often being blocked by dumping and road side storage, utilization of this sitting-out area is relatively low due to the its unwelcoming setting and hygiene issues.

Planning Intention under Outline Zoning Plan and Planned Developments in the Vicinity

5.14 The Scheme is currently zoned “Comprehensive Development Area” (“CDA”) and also shown as “Road” on the Draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7. The “CDA” zone is intended for comprehensive development / redevelopment of the area for residential and/or commercial uses with the provision of waterfront promenade, open space and other supporting facilities. The “Road” zone is planned for future road widening of To Kwa Wan Road.

5.15 To the immediate north of the Scheme is Newport Centre Phases I and II (KC-019). As mentioned in para. 2.3 above, it forms part of the proposed holistic redevelopment with the Scheme and to be implemented under the separate To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019).

5.16 To the further north is the reserved site for development of DRE which is currently zoned Residential (Group A)6" ("R(A)6") under the OZP. According to HKHS, about 1,101 units with commercial uses and G/IC facilities will be provided.

5.17 The Hong Kong Society for the Blind (HKSB) site located at the junction of To Kwa Wan Road and Mok Cheong Street will be redeveloped into a new welfare complex with a maximum building height 100mPD. According to HKSB, the demolition works will tentatively commence in 2022 and the completion is expected to be in 2025.

5.18 The "Lok Sin Tong Modular Social Housing Scheme", a completed transitional housing project, is located at the proposed public housing site at the junction of Sung Wong Toi Road and To Kwa Wan Road. It is to provide affordable housing and family supporting services for low-income families that are queuing for public rental housing. According to MPC Paper No. 2/15 dated April 2015, the site will be redeveloped into one residential block of public housing. With proposed building height of 100mPD, maximum domestic plot ratio of 7.5 or plot ratio of 9.0 for a building that is partly domestic and partly non-domestic, the proposed public housing project will provide about 600 flats.

5.19 To the further northwest of the Scheme along Mok Cheong Street are a number of factory buildings also zoned CDA. Among these, the Freder Centre and the K.K. Industrial Building are in operation and the former sites of the Eastern Cotton Mills and Good Harvest Air Freight Centre are currently vacant. These land parcels fall within three different "CDA" sites. Planning applications (Nos. A/K10/256 and A/K10/259), submitted by different lot owners, for comprehensive residential and commercial development at the "CDA(2)" site, with maximum building height of 100mPD, covering K.K. Industrial Building and Eastern Cotton Mills, have been approved with conditions by the TPB on 27 May 2016 and 7 December 2018, respectively. According to the proposed scheme of planning application no. A/K10/259, a portion of the front facade of Eastern Cotton Mill (a Grade III historic building) will be preserved and incorporated into

the future development. Another planning application (No. A/K10/265) for comprehensive residential and commercial development at the "CDA(3)" site, with maximum building height of 100mPD, covering 7 land lots, has also been approved with conditions by the TPB on 10 September 2021.

5.20 Ma Tau Kok Gas Production Plant located to the west of the Scheme across To Kwa Wan Road is currently zoned as "Residential (Group A)" ("R(A)") with a planning intention for residential use according to OZP. According to the URP prepared by KC DURF, it is recommended to explore the feasibility of relocating the gas plant in the long term.

5.21 To the northwest of the Scheme across To Kwa Wan Road is a cluster of tenement buildings which is known as the "13-Street area". The area is recommended as a "Proposed Redevelopment Priority Area" under DURF. To the further north and northeast of the Scheme is the Kai Tak Development Area (KTDA), which is under construction and the land is designated for a mix of residential, commercial, tourism, community uses, sports uses supported with infrastructure facilities.

6 CULTURAL AND LOCAL CHARACTERISTICS, AND CHARACTERISTICS OF LOCAL BUSINESS ACTIVITIES

6.1 The Scheme is located at an older part of Ma Tau Kok / To Kwa Wan area within the Kowloon City District, and its vicinity is predominantly mixed of residential, industrial and infrastructural developments. Most of the industrial buildings in the area appeared not actively engaged in manufacturing activities but mainly used for office, storage, warehouse, workshop and showroom uses.

6.2 To the immediate north is Newport Centre Phases I and II which is under URA Project KC-019. Based on non-obtrusive observation conducted in April and September 2022 and the available information at the building directory, the major uses of the building appear to be office, storage, showroom, car parks and workshops.

6.3 To the immediate south of the Scheme is the Grand Waterfront, which comprises of a private residential estate and shopping mall named Grand Waterfront Plaza, with a number of chain stores, supermarket and shops provided in the Grand Waterfront Plaza.

6.4 To the northwest of the Scheme across To Kwa Wan Road is the 13-Street area. It comprises of clusters of tenement buildings with ground floor eateries, car repair shops and shops mainly selling groceries, hardware and small electronic parts. To its north across Mok Cheong Street is a string of industrial buildings. By non-obtrusive observation conducted in April 2022, no polluting industries are found operating at these industrial buildings. As mentioned in para. 5.19, some of these industrial buildings are planned for redevelopments into residential / commercial uses.

6.5 Based on non-obtrusive site visits conducted in April and Sept 2022, about 103 shops were identified at ground floor of the Scheme area. Uses of the shops are observed mainly to be vehicle repair workshops, workshops, eateries, grocery stores and services such as property agency and laundry service. Several shops were unidentified and suspected vacant, as they were closed during several attempts of site visits. The addresses and business nature of the shops are listed in **Table 6.1** below. The exact number of non-domestic operators, details and nature of the businesses within the Scheme will be verified in the Freezing Survey upon commencement of the Scheme and reported in the Stage 2 SIA.

Table 6.1 Ground Floor Business Activities within the Scheme

	Address	Current Use*
1.	1 Hing Yan Street	Vehicle Repair Workshop
2.	3 Hing Yan Street	Vehicle Repair Workshop
3.	5 Hing Yan Street	*(Unidentified)*
4.	7 Hing Yan Street	Vehicle Repair Workshop
5.	9 Hing Yan Street	*(Unidentified)*
6.	11 Hing Yan Street	*(Unidentified)*
7.	13 Hing Yan Street	*(Unidentified)*
8.	15 Hing Yan Street	*(Unidentified)*
9.	17 Hing Yan Street	Vehicle Repair Workshop
10.	19 Hing Yan Street	*(Unidentified)*
11.	21 Hing Yan Street	*(Unidentified)*
12.	23 Hing Yan Street	Vehicle Repair Workshop
13.	25 Hing Yan Street	Vehicle Repair Workshop
14.	27 Hing Yan Street	*(Unidentified)*
15.	29 Hing Yan Street	*(Unidentified)*
16.	31 Hing Yan Street	Vehicle Repair Workshop
17.	2 Hing Yan Street	Vehicle Repair Workshop
18.	4 Hing Yan Street	Vehicle Repair Workshop
19.	6 Hing Yan Street	Kitchenware Store
20.	8 Hing Yan Street	*(Unidentified)*
21.	10 Hing Yan Street	Vehicle Repair Workshop
22.	12 Hing Yan Street	Vehicle Repair Workshop
23.	14 Hing Yan Street	*(Unidentified)*
24.	16 Hing Yan Street	Vehicle Repair and Machinery Workshop
25.	1 Hing Yin Street	Vehicle Repair Workshop
26.	3 Hing Yin Street	*(Unidentified)*
27.	5 Hing Yin Street	*(Unidentified)*
28.	7 Hing Yin Street	Vehicle Repair Workshop
29.	9 Hing Yin Street	Workshop
30.	11 Hing Yin Street	Vehicle Repair Workshop
31.	13 Hing Yin Street	*(Unidentified)*
32.	15 Hing Yin Street	*(Unidentified)*
33.		*(Unidentified)*
34.		Air Conditioning Engineering
35.	2 Hing Yin Street	Vehicle Repair Workshop
36.	4 Hing Yin Street	*(Unidentified)*
37.	6 Hing Yin Street	Vehicle Repair Workshop
38.	8 Hing Yin Street	*(Unidentified)*
39.	10 Hing Yin Street	Vehicle Repair Workshop
40.	12 Hing Yin Street	Trademark Company
41.	14 Hing Yin Street	Interior Design and Renovation
42.	16 Hing Yin Street	Car Accessories
43.	1 Chung Sun Street	Vehicle Repair Workshop / Car Accessories
44.	3 Chung Sun Street	*(Unidentified)*
45.	5 Chung Sun Street	*(Unidentified)*
46.	7 Chung Sun Street	Vehicle Repair Workshop
47.	9 Chung Sun Street	Vehicle Repair Workshop
48.	11 Chung Sun Street	Vehicle Repair Workshop
49.	13 Chung Sun Street	Vehicle Repair Workshop

50.	15 Chung Sun Street	Vehicle Repair Workshop
51.	91 Ma Tau Kok Road	Eatery
52.	93 Ma Tau Kok Road	Car Accessories
53.	95 Ma Tau Kok Road	Massage Establishment
54.	97 Ma Tau Kok Road	Vehicle Repair Workshop / Car Accessories
	99 Ma Tau Kok Road	
55.	101 Ma Tau Kok Road	Decoration and Painting
56.	103 Ma Tau Kok Road	Car Accessories
57.	105 Ma Tau Kok Road	Kitchenware Store / Office
58.	107 Ma Tau Kok Road	Vehicle Repair Workshop
59.	109 Ma Tau Kok Road	*(Unidentified)*
60.	111 Ma Tau Kok Road	Printing and Design
61.	113 Ma Tau Kok Road	Logistics
62.	1 Ming Lun Street	*(Suspected Vacant)*
63.	3 Ming Lun Street	Vehicle Repair Workshop
64.	5 Ming Lun Street	*(Unidentified)*
65.	7 Ming Lun Street	Vehicle Repair Workshop
66.	9 Ming Lun Street	Vehicle Repair Workshop
67.	11 Ming Lun Street	Vehicle Repair Workshop
68.	13 Ming Lun Street	Workshop
69.	15 Ming Lun Street	Air Conditioning Engineering
70.	17 Ming Lun Street	Vehicle Repair Workshop
71.	19 Ming Lun Street	Vehicle Repair Workshop
72.	21 Ming Lun Street	Vehicle Repair Workshop
73.	23 Ming Lun Street	Storage
74.	25 Ming Lun Street	*(Unidentified)*
75.	2 Ming Lun Street	*(Suspected Vacant)*
76.	4 Ming Lun Street	Vehicle Repair Workshop
77.	6 Ming Lun Street	Grocery Store
78.	8 Ming Lun Street	Vehicle Repair Workshop
79.	10 Ming Lun Street	Vehicle Repair Workshop
80.	12 Ming Lun Street	Vehicle Repair Workshop
81.	14 Ming Lun Street	Vehicle Repair Workshop
82.	16 Ming Lun Street	Vehicle Repair Workshop
83.	18 Ming Lun Street	Machinery Workshop
84.	20 Ming Lun Street	Vehicle Repair Workshop
85.	22 Ming Lun Street	Vehicle Repair Workshop
86.	24 Ming Lun Street	Vehicle Repair Workshop
87.	26 Ming Lun Street	Vehicle Repair Workshop
88.	28 Ming Lun Street	Vehicle Repair Workshop
89.	2A Ming Lun Street	Property Agency
90.		*(Suspected Vacant)*
91.	4A Ming Lun Street	Pet Shop
92.	6A Ming Lun Street	Eatery
93.	8A Ming Lun Street	Laundry Service
94.	10A Ming Lun Street	Grocery Store
95.	12A Ming Lun Street	*(Unidentified)*
96.	14A Ming Lun Street	Property Agency
97.	16A Ming Lun Street	Engineering Services
98.	18A Ming Lun Street	*(Unidentified)*
99.	20A Ming Lun Street	*(Unidentified)*
100.	22A Ming Lun Street	Brush Pen Museum
101.	24A Ming Lun Street	*(Unidentified)*

102.	26A Ming Lun Street	Brush Pen Workshop / Divination Services
103.	28A Ming Lun Street	Vehicle Repair Workshop

(Based on site visits conducted in April and Sept 2022)

** Nature / details of business activities are subject to FS and Stage 2 SIA*

7 RECREATIONAL, AMENITY AND COMMUNITY AND WELFARE FACILITIES

7.1 **Figure 7.1** shows the locations of various existing public open spaces, and government, institution and community (GIC) facilities within the 500m radius area of the Scheme. There are a number of public open spaces near the Scheme Area, the closest being Cattle Depot Art Park located to the west, To Kwa Wan Recreation Ground and To Kwa Wan Sports Centre located to the southwest, and Hoi Sham Park to the further south of the Scheme.

7.2 A number of planned public open spaces are within the 500m radius from the Scheme. The Kai Tak Sports Park located to the north of the Scheme area is currently under construction with target completion in 2023. With an area of around 28 hectares, the Sports Park will provide a wide variety of sports and leisure facilities to be enjoyed by the public. To the north of the Scheme area at the cove of Ma Tau Kok in between the DRE site and the Sports Park is zoned as "Open Space" ("O") on the OZP, with an intention to complement the Dining Cove with food and beverage uses for creating a vibrant waterfront environment and unique dining experience. To the south of the Scheme area along the waterfront is also zoned as "O" on the OZP for optimising pedestrian and waterfront environment, as well as for future extension of cycle track network, the GreenWay Network.

7.3 Major GIC facilities within 500m radius of the Scheme include the HKSB and the To Kwa Wan Market and Government Offices. There are also a number of educational facilities, mainly primary schools within 500m of the Scheme.

7.4 For existing social welfare facilities and services (refer to **Table 7.1**), family and child welfare services, social security field units, services for the elderly, rehabilitation and medical social services, etc. and services for offenders are found in close proximity to the Scheme.

7.5 About 1,000 sq.m. non-domestic GFA will be reserved in the podium of the proposed Scheme for appropriate community uses to meet community needs, subject to consultation with relevant Government departments, views from local stakeholders and KCDC.

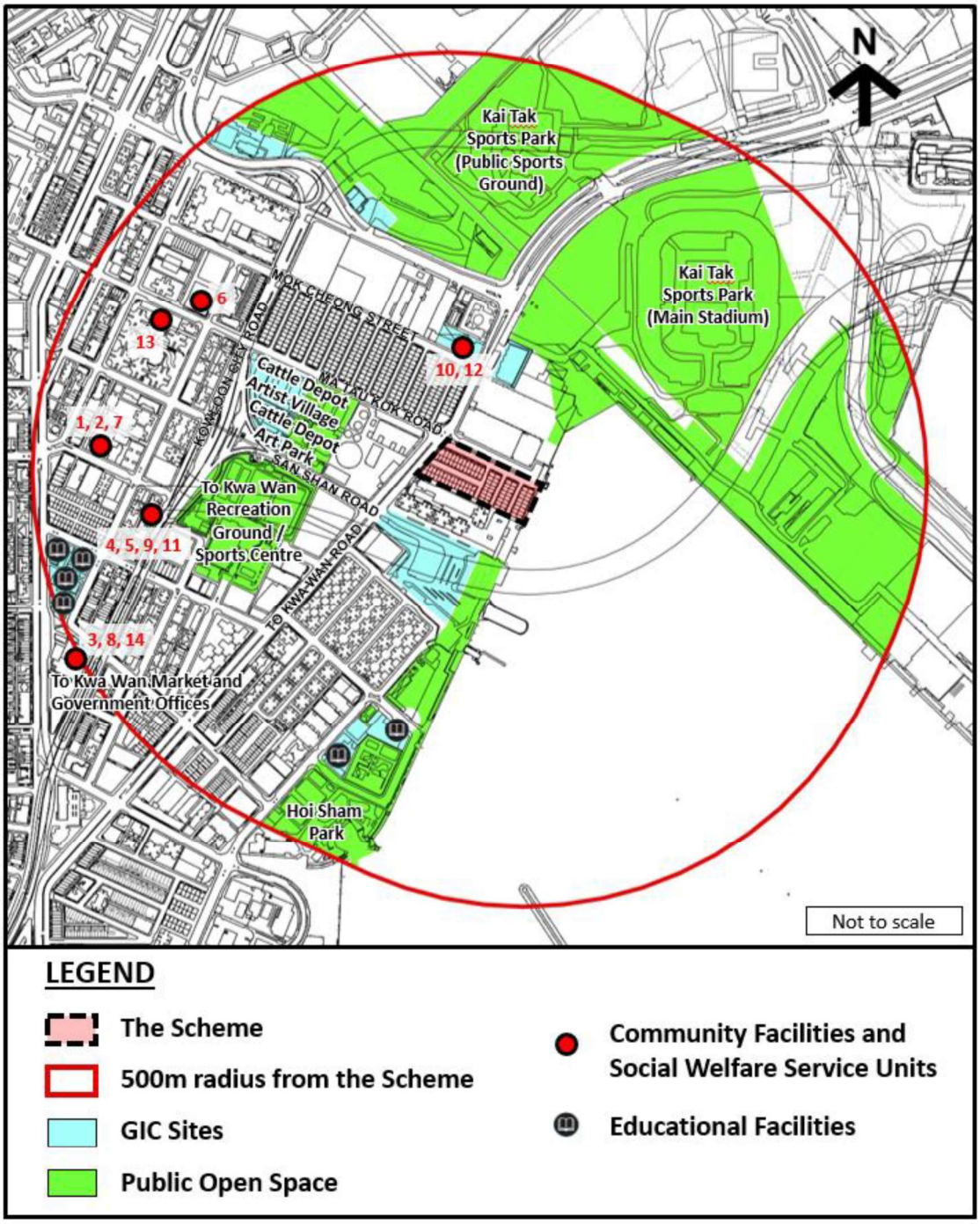


Figure 7.1 Existing Community Facilities, Amenity, and Social Welfare Service Units within 500m Radius from the Scheme

Source: Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Kowloon City) as of May 2022.

Table 7.1 Community Facilities and Social Welfare Service Units within 500m Radius from the Scheme

Community Facility / Service Unit	Operator	Address
A. Family and Child welfare		
Integrated Family Service Centre		
1. Kai Tak Integrated Family Service Centre	Social Welfare Department	Unit 3, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
2. Ma Tau Wai Integrated Family Service Centre	Social Welfare Department	Unit 3, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
3. To Kwa Wan Integrated Family Service Centre	Social Welfare Department	Unit 903, 9/F, Tokwawan Government Offices, 165 Ma Tau Wai Road, Kowloon
Extended Hours Service		
4. Sik Sik Yuen - Ho Oi Day Nursery (EHS)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
Occasional Child Care Service		
5. Sik Sik Yuen - Ho Oi Day Nursery (OCCS)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
B. Social Security		
Integrated Employment Assistance Programme for Self-reliance		
6. Hong Kong Lutheran Social Service, the Lutheran Church - Hong Kong Synod Limited - Integrated Employment Assistance Programme for Self-reliance	Hong Kong Lutheran Social Service, the Lutheran Church - Hong Kong Synod Limited	Room A103,A108,A109, 8/F, Tung Nam Factory Building, 40 Ma Tau Kok Road, To Kwa Wan, Kowloon
Social Security Field Units		
7. Kowloon City Social Security Field Unit	Social Welfare Department	Unit 2, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
8. To Kwa Wan Social Security Field Unit	Social Welfare Department	7/F, To Kwa Wan Government Offices, 165 Ma Tau Wai Road, Kowloon City, Kowloon
C. Services for the Elderly		
Neighbourhood Elderly Centre		
9. Hong Kong Family Welfare Society - Kowloon City Centre for Active Ageing	Hong Kong Family Welfare Society	1/F, Block 2, Harmony Garden, 55-61 Kowloon City Road, To Kwa Wan, Kowloon
D. Rehabilitation and Medical Social Services		
Care and Attention Home for the Aged Blind		

Community Facility / Service Unit	Operator	Address
10. Hong Kong Society for the Blind (The) - Bradbury Care and Attention Home for the Aged Blind	Hong Kong Society for the Blind (The)	19 Mok Cheong Street, To Kwa Wan, Kowloon
Integrated Programme in Kindergarten-cum-Child Care Centre		
11. Sik Sik Yuen - Ho Oi Day Nursery (IP)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
Sheltered Workshops		
12. Hong Kong Society for the Blind (The) - Factory for the Blind	Hong Kong Society for the Blind (The)	19 Mok Cheong Street, To Kwa Wan, Kowloon
13. Hong Chi Association - Ma Tau Kok Workshop	Hong Chi Association	Podium 2, Jubilant Place, 33 Ma Tau Kok Road, To Kwa Wan, Kowloon
E. Services for Offenders		
Probation and Community Service Orders Office		
14. Kowloon City Probation and Community Service Orders Office (2)	Social Welfare Department	11/F, To Kwa Wan Government Offices, 165 Ma Tau Wai Road, Kowloon City, Kowloon

Source: Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Kowloon City) as of May 2022.

8 INITIAL ASSESSMENT OF POTENTIAL SOCIAL IMPACT, AND MITIGATION MEASURES

Potential Social Impact

8.1 The Scheme is estimated to affect 1,414 households, with 2,970 residents. About 100 shops were identified in the Scheme during site visits. Based on non-obtrusive observation, there are some original units appeared to be sub-divided into smaller units (sub-divided units / cubicles). The exact number of affected residents and shop operators will be verified in the Stage 2 SIA.

8.2 The Scheme, if implemented, will inevitably affect the domestic and non-domestic occupants within the Scheme. The FS and SIA Questionnaire will help identifying needy cases such as households with single elderly, elderly couples, family members with disability or new immigrants worried about the impact of redevelopment on employment, living expenses and social network etc. The Social Service Team (SST) commissioned by the Urban Renewal Fund (URF) is expected to provide assistance to those in need. This SST is independent of the URA and it will directly report to the Board of the URF.

Mitigation Measures

8.3 Affected owners would receive an acquisition offer from URA according to the prevailing URA Acquisition Policies. For affected tenanted households, rehousing or ex-gratia allowance would be offered. The URA will arrange briefing session(s) / recording video(s) to the owners and tenants to explain the URA acquisition, rehousing and ex-gratia allowance policies. An in-house URA engagement team will visit the affected owners and tenants accordingly as to care for those who are unclear about the URA's policies and require any other assistance.

8.4 If affected residents and/or business operators are not clear about the URA acquisition, rehousing and ex-gratia allowance policies or future arrangement, the SST will endeavour to clarify their doubts with full support from the URA. If the affected residents and/or business operators are ethnic minorities who are not familiar with Chinese or English languages, the URA will arrange translation services as far as practicable to alleviate their concerns on the redevelopment.

8.5 In handling problems related to different kinds of livelihood problems, the SST, apart from offering counselling, will mobilise different community resources to liaise closely with Government departments and work with the URA to resolve the residents' and operators' problems and reduce their anxiety. The SST will also provide orientation assistance for those in needs after moving home such as familiarisation with new neighbourhood, accommodation and local facilities.

8.6 For the vulnerable groups (including the elderly, disabled and single parent families), arrangements for assistance such as child care/ foster services, domestic help services, etc. offered by the Social Welfare Department, and other social service agencies would be made. For the low-income households, arrangement could be made with the Hong Kong Housing Authority or the Hong Kong Housing Society on public rental housing allocation if they are eligible. Domestic tenants who do not fulfil the rehousing eligibility criteria maybe re-housed on compassionate grounds if they have genuine hardship arising from factors such as health, disability or special family circumstances.

8.7 If the Scheme is to be implemented, the URA will ensure the construction works follow and fulfil the mitigation measures and practices as stipulated by Environmental Protection Department (EPD) for construction site. Appropriate measures will be proposed to mitigate potential noise and dust impact during the construction phase of the Scheme.

Acquisition & Rehousing Policies for Domestic Premises

8.8 The URA will offer an owner of domestic property the market value of his/her property plus the applicable allowances for domestic properties such as Home Purchase Allowance (HPA), Supplementary Allowance (SA), incidental cost allowance and allowance for vacant property for purchase of his/her property.

8.9 The URA may also offer "flat-for-flat" (FFF) (subject to any changes in the relevant legislations or Urban Renewal Strategy) in a URA new development in-situ or in the same district or at available site(s) (as URA may select for the purpose provided that necessary approval / authorization has been obtained at the time of FFF offer), as an additional choice to cash acquisition offers to eligible owner-occupiers of domestic units. The amount of cash compensation and allowance offered to an owner-occupier will not be changed by his/her

choice of using that amount, or part of it, to join the flat-for-flat arrangement or otherwise.

8.10 According to the new URS, the URA will offer an allowance to eligible elderly owners of tenanted domestic properties on compassionate ground in exceptional circumstances such as elderly owners who rely on the rental income from their properties for a living.

8.11 Eligible domestic tenants affected by URA's redevelopment projects are provided with rehousing to public housing, if eligible, or units at URA's rehousing blocks, subject to meeting URA's requirements, or the applicable allowance.

8.12 The URA has also introduced the "Domestic Tenants Compassionate Assistance Programme" to take care of those domestic tenants whose tenancies commenced before the FS of this Scheme and moved out from the properties because they have been required to move out from their properties by their landlords upon expiry or termination of their tenancies and before URA purchases the properties. In general, eligible domestic tenants who meet the criteria under this programme will be offered special allowance or special rehousing such as public housing, if eligible, or units at URA's rehousing blocks, subject to meeting URA's requirements.

Acquisition Policies and Allowances for Non-Domestic Premises

8.13 The URA will offer an owner of non-domestic property the market value of his/her property plus the applicable allowances for non-domestic properties. For owner-occupied non-domestic premises, an allowance of 4 times the rateable value or 35% of the market value of the affected property, whichever is the higher, an Ex-gratia Business Allowance (EGBA) and an incidental cost allowance will be offered; the owner-occupiers may alternatively lodge a claim for business loss in lieu of the allowances. For owners of tenanted or vacant non-domestic properties, an allowance of 1 time the rateable value or 10% of the market value of the affected property, whichever is the higher and incidental cost allowance will be offered. In addition, the owners of vacant non-domestic properties will be offered an allowance for vacant property at 2 times the rateable value, subject to meeting certain criteria.

8.14 For non-domestic tenants of non-domestic premises, an allowance of 3 times the rateable value of the affected premises or an allowance equals to the

prevailing ex-gratia allowance offered by the Lands Department on resumption by the Government, whichever is higher will be offered. An additional payment of EGBA is also payable to tenants who commenced occupying the premises for business before the date of FS. Those non-domestic tenant-operators who have occupied the properties before FS and are evicted by their landlords before acquisition of the properties by the URA, can apply for the Special EGBA. The minimum payment of EGBA will be subject to annual review.

8.15 According to the new URS, if requested, the URA will help identify suitable premises in the district of the redevelopment projects to enable the affected shop operators to relocate and continue operation in the same district as far as practicable.

Review of Measures and Policies

8.16 The acquisition, rehousing and ex-gratia allowance policies are subject to prevailing policies at the time of issuing acquisition policies. The policies are published on the URA's website and will be communicated to affected persons when acquisition of property interests for this Scheme commences. Prevailing policies relating to property acquisition, rehousing and ex-gratia allowances will be reviewed by the URA from time to time.

8.17 The Stage 2 SIA to be conducted after the FS will further assess the impact of the Scheme in detail on both domestic and non-domestic occupants and propose mitigation measures. It may also be able to highlight the psychological stress and worry for some of the affected within the Scheme. Special measures may have to be adopted under exceptional circumstances.

9 CONCLUSION

9.1 The local community and the surrounding neighbourhoods are likely to experience gains and losses due to the proposed redevelopment. Residents, business operators and their employees within the Scheme will be affected in different ways and to various degrees depending on their particular circumstances. Those who currently live in overcrowded or poor building condition within the Scheme may welcome the opportunity to improve their living environment through cash compensation or rehousing if eligible; whilst others (e.g. some business operators) may prefer to remain un-disturbed and maintain the status quo. The various degrees of concerns and social impacts to the affected residents, business operators and their employees within the Scheme will be assessed in the Stage 2 SIA in detail.

9.2 For non-domestic uses, a number of ground floor shops are witnessed in the Scheme, whereas the upper floor non-domestic uses, if any, are to be recorded in the FS upon commencement of the Scheme under section 23 of the URAO. The needs of the affected non-domestic occupants will be assessed in the Stage 2 SIA.

9.3 This Stage 1 SIA study provides a general profile of the Scheme and the surrounding area. Based on URA's experience of similar scale and context of redevelopment projects, it can be expected that there will be some sharing of living quarters and a relatively low average household income for those within the Scheme. The assumptions in this report will be verified by the Stage 2 SIA to be carried out after the FS. The Stage 2 SIA will assess needs of the affected households and operators and to propose appropriate mitigation measures to minimise major adverse social impact, if any.

URBAN RENEWAL AUTHORITY
October 2022

Appendix 3b

KC-019 Social Impact Assessment

(Stage 1) Report

市區重建局
URBAN RENEWAL AUTHORITY



Urban Renewal Authority Development Scheme
Prepared under Section 25 (3) of the Urban Renewal Authority Ordinance

To Kwa Wan Road / Ma Tau Kok Road (KC-019)

Stage 1 Social Impact Assessment
October 2022

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Appendix 1 Directory at Newport Centre Phases I and II

1 INTRODUCTION

1.1 According to the Urban Renewal Strategy (URS) issued by the Government in February 2011, the Urban Renewal Authority (URA) will carry out Social Impact Assessment (SIA) studies in the form of "*a Stage 1 social impact assessment …… before the publication of any proposed redevelopment project in the Government Gazette*", and "*a Stage 2 social impact assessment …… after the proposed project has been published in the Government Gazette*". This Stage 1 SIA is prepared by the URA **for the proposed To Kwa Wan Road / Ma Tau Kok Road Development Scheme KC-019 (the Scheme).**

1.2 The URS also states "*Early social impact assessments will be initiated and conducted by District Urban Renewal Forum (DURF) before redevelopment is recommended as the preferred option. The URA will update these assessments by DURF before implementing any specific redevelopment project*." As the Scheme falls within the study area of Kowloon City District Urban Renewal Forum ("KC DURF"), consultants for the KC DURF had completed a DURF SIA report of the Urban Renewal Plan (URP) for Kowloon City in 2014. This Stage 1 SIA report is prepared with reference to the DURF SIA, where appropriate.

1.3 According to the URS, the main elements of the Stage 1 SIA conducted by the URA before the publication of a proposed project should include:

- the population characteristics of the area;
- the socio-economic characteristics of the area;
- the housing conditions in the area;
- the characteristics of local business activities, including small shops and street stalls;
- the degree of overcrowding in the area;
- the availability of amenities, community and welfare facilities in the area;
- the historical background of the area;
- the cultural and local characteristics of the area;

- an initial assessment of the potential social impact of the proposed project; and
- an initial assessment of the mitigation measures required.

1.4 The Stage 2 SIA will be conducted after the publication of the Scheme based on the factual information collected in the Freezing Survey (FS) upon project commencement. The URS stipulates the URA should submit both Stage 1 and Stage 2 SIA reports to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance (URAO), and should release the reports for public information.

2 THE PROJECT BACKGROUND

2.1 The To Kwa Wan Road / Ma Tau Kok Road Development Scheme (KC-019) (the Scheme) is located in To Kwa Wan of Kowloon City (KC) District, which is bounded by the Hong Kong Housing Society's (HKHS) reserved site for development of dedicated rehousing estate (DRE) in the north, Ma Tau Kok waterfront in the east, Ma Tau Kok Road in the south and To Kwa Wan Road in the west (**Figure 2.1** refers).

2.2 The Scheme covers Newport Centre Phases I and II, located at Nos. 116-118 Ma Tau Kok Road (even nos.), portion of Ma Tau Kok Road, adjoining Government land and the surrounding public pavement. The total gross site area of the Scheme is about 8,759 sq.m. Subject to site survey and detailed design, the net site area for Plot Ratio (PR) calculation is about 7,816 sq.m.

2.3 The Scheme forms part of the proposed holistic redevelopment with the adjoining land parcels at Ming Lun Street / Ma Tau Kok Road which will be implemented under the separate Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018). A separate Stage 1 SIA has been prepared for Ming Lun Street / Ma Tau Kok Road Development Scheme KC-018.

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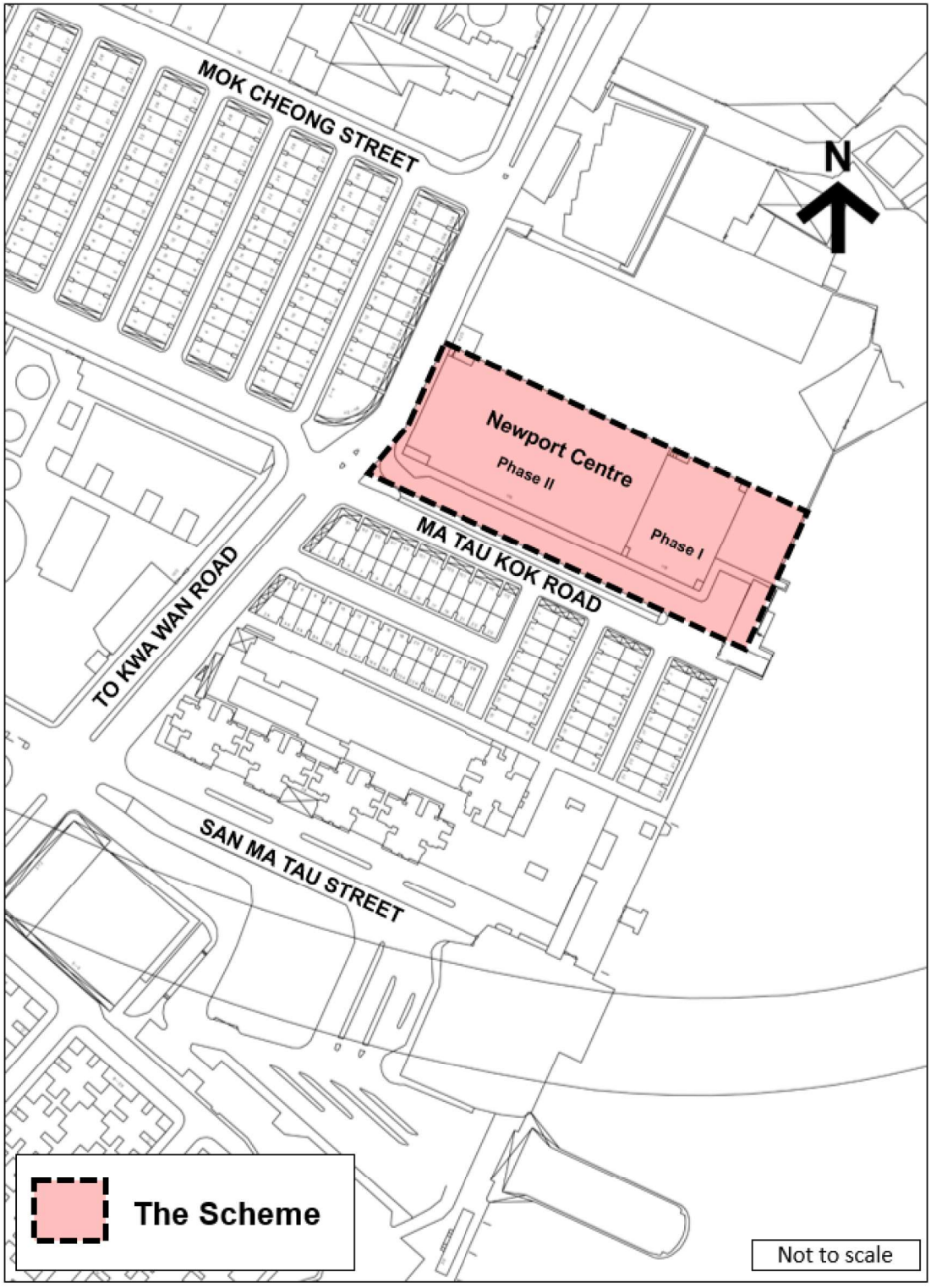


Figure 2.1 Location Plan

Planning Objectives

2.4 The Scheme, together with the adjoining Ming Lun Street / Ma Tau Kok Road Development Scheme KC-018, aims to rationalize land use by adopting an integrated planning-led approach for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The URS issued in 2011 promulgates a comprehensive and holistic approach to carry out urban renewal with the following objectives:

- Restructuring and re-planning of concerned urban areas;
- Designing more effective and environmentally-friendly local transport and road networks within the concerned urban areas;
- Rationalising land uses within the concerned urban areas;
- Redeveloping dilapidated buildings into new buildings of modern standard and environmentally-friendly design;
- Providing more open space and community / welfare facilities; and
- Enhancing the townscape with attractive landscape and urban design.

2.5 The Scheme falls within the "5-Street" area of the "5-Street" and "13 Street" area, To Kwa Wan as defined in the Urban Renewal Plan (URP) prepared by KC DURF. Under the URP of KC DURF, the area is recommended as "*Redevelopment Priority Area*". DURF recommended to sub-divide the "Comprehensive Development Area (CDA)" site at "5-Street" into two portions based on the existing residential building portion and the industrial / commercial building portion. The Scheme, being a redevelopment project, is tally with the recommendations of KC DURF.

2.6 To achieve the objectives in URS and to address the recommendations of KC DURF as well as public aspirations and views from local stakeholders to expedite the redevelopment of the area, the Scheme will include the following key proposals:

i. Under a planning-led approach, the Scheme aim to rationalize land use for holistic planning of the area to enable more efficient land use and to bring planning gains to the local community. The Scheme will

optimise the land uses into the long-awaited comprehensive designed waterfront developments fitting in with the redevelopment intention of the Ma Tau Kok waterfront area. A 20m-wide waterfront promenade is provided at the eastern boundary of the Scheme along the waterfront for public enjoyment. The proposed waterfront promenade will be connecting with the adjoining planned waterfront promenade / waterfront developments at the Kai Tak Development Area (KTDA) in the northeast, thus enabling a continuous waterfront at the Kowloon East area and helping the Government to achieve its vision in shaping the Victoria Harbour as a world-class asset for public enjoyment.

ii. To promote vibrancy, a 2-storeys comemercial belt abutting the waterfront promenade is provided. In addition, an at grade open-air central waterfront plaza with not less than 25m wide will be provided between the Scheme and the adjoining Ming Lun Street / Ma Tau Kok Road Development Scheme KC-018, serving as a focal point for gathering and place-making opportunities. It will be connected to the proposed commercial belt and waterfront promenade to bring in vibrancy and strengthen the east-west pedestrian connectivity.

iii. Through restructuring and re-planning of existing land uses, buildings of the proposed developments will be setback from To Kwa Wan Road to allow sufficient space to align with Government's planned road widening works of the existing To Kwa Wan Road from a single carriageway four-lane road to a dual carriageway three-lane road. Detailed design and implementation programme of the planned road widening will be subject to the local views and agreement from relevant Government departments.

iv. Under the current notional design, it is proposed to provide not less than 500sq.m. non-domestic GFA for "Government, Institution or Community" ("GIC") facilities within the Scheme to meet the

community's needs and to align with the "Single site, Multiple Use" model promoted by the Government and enhance planning gains.

2.7 In addition to the proposed redevelopment under the Scheme, URA will explore the possibility to revitalize the adjoining abandoned Government's pier structure/landing steps located outside the Scheme boundary as well as to provide footbridge connection over To Kwa Wan Road to enhance pedestrian connectivity under separate revitalization urban renewal initiatives, subject to further study and liaison with relevant Government departments.

URA Projects in the Vicinity

2.8 The Scheme is located close to various completed and on-going URA projects in the To Kwa Wan area (See **Figure 2.2)**. To the immediate south of the Scheme is the Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018) which is commenced on the same day as the Scheme.

2.9 A number of completed URA's projects can be found to the further west and southeast of the Scheme. These projects include the Pak Tai Street / Mok Cheong Street Development Project (named "My Place"), Pak Tai Street / San Shan Road Project (named "Downtown 38") and San Shan Road / Pau Chung Street Project (named "93 Pau Chung Street"), Kowloon City Road / Sheung Heung Road Development Project (KC-007) (named "Artisan Garden"), Chi Kiang Street / Ha Heung Road Development Project (TKW/1/001) (named "City Hub").

2.10 To the further southeast of the Scheme, the area in the vicinity of Wing Kwong Street of To Kwa Wan was being identified by URA as the Kowloon City Action Area 1 (KCAA1) for holistic planning of urban renewal works. A total of eight-projects were commenced in the KCAA1 area in recent years, forming a cluster of URA's redevelopment projects of the existing tenement buildings concentrated in the area. These projects include:

- Bailey Street / Wing Kwong Street Development Project (KC-009)
- Hung Fook Street / Ngan Hon Street Development Scheme (KC-010)
- Kai Ming Street Demand-Led Redevelopment Project (DL-8:KC)
- Hung Fook Street / Kai Ming Street Development Project (KC-011)
- Wing Kwong Street Development Project (KC-012)
- Kai Ming Street / Wing Kwong Street Development Project (KC-013)
- Wing Kwong Street / Sung On Street Development Project (KC-014)
- To Kwa Wan Road / Wing Kwong Street Development Scheme (KC-016)

2.11 On-going URA's projects also include the Shing Tak Street / Ma Tau Chung Road Development Project (CBS-1: KC), which was approved by Secretary for Development in June 2021 and the Kau Pui Lung Road / Chi Kiang Street Development Scheme (CBS-2:KC) which is currently under planning.

2.12 The Scheme, which forms part of holistic planning approach, will continue to contribute as a vital part of the comprehensive urban renewal of this part of Kowloon City District.

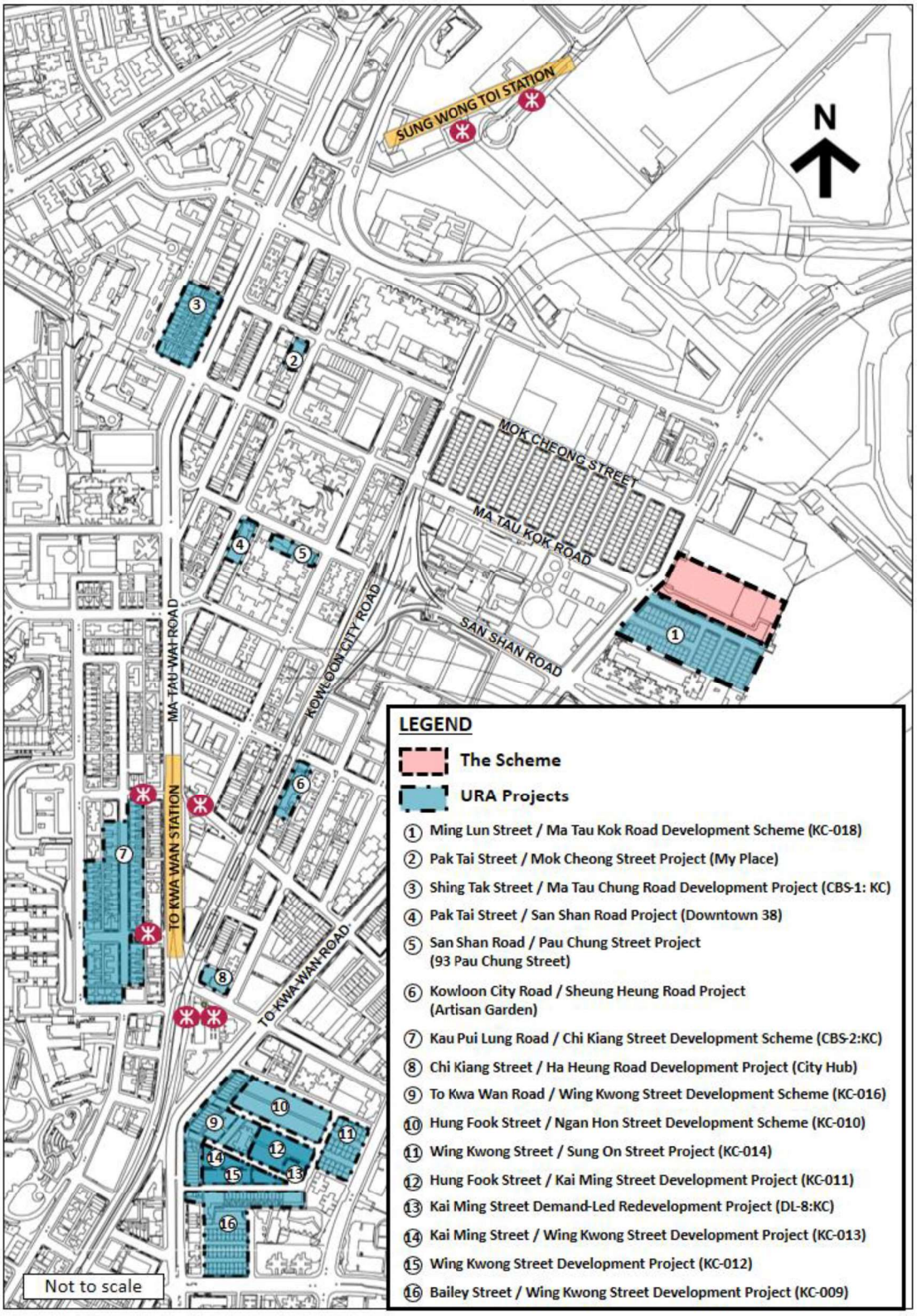


Figure 2.2 URA Projects in the Vicinity

3 HISTORICAL BACKGROUND AND LOCAL CHARACTERISTICS

Historical Background

3.1 Before the 1890s, To Kwa Wan was a bay lined by beaches and mud-flats with a stream originated from the hinterland named Ma Tau Chung where flowed closely along the existing Ma Hang Chung Road. The headland to the north of the bay is Ma Tau Kok, which might be named after the long pier of Kowloon Walled City nearby. A string of agricultural and stone-cutter villages along the coast of To Kwa Wan Bay sharing the name of To Kwa Wan Village was believed to be the largest village in the Hung Hom and To Kwa Wan area. Quarrying became active in the mid-18th century that Quarry Hill and San Shan (new quarry) Road were believed to commemorate these activities.

3.2 After the reclamation undertaken in the 1890s, To Kwa Wan started being developed by industrial activities extended from Hung Hom and the ex-Whampoa Docks. Streets including Mok Cheong (timber factory) Street and Pau Cheung (firecracker) Street were believed to commemorate the factory development in the early 20th century.

3.3 The second large-scale reclamation of To Kwa Wan started in the 1950s while industrial activities in Kowloon became more prosperous. The Schemes and its vicinity became inland and were then transformed into a mixture of residential developments and industrial uses including manufacturing, vehicular-repairing, weaving, bleaching and dyeing, printing and electroplating. Today, industrial buildings still scatter along roads/streets within the area.

3.4 **Figure 3.1** shows the locations of places with historical background identified and local characters in this part of To Kwa Wan.

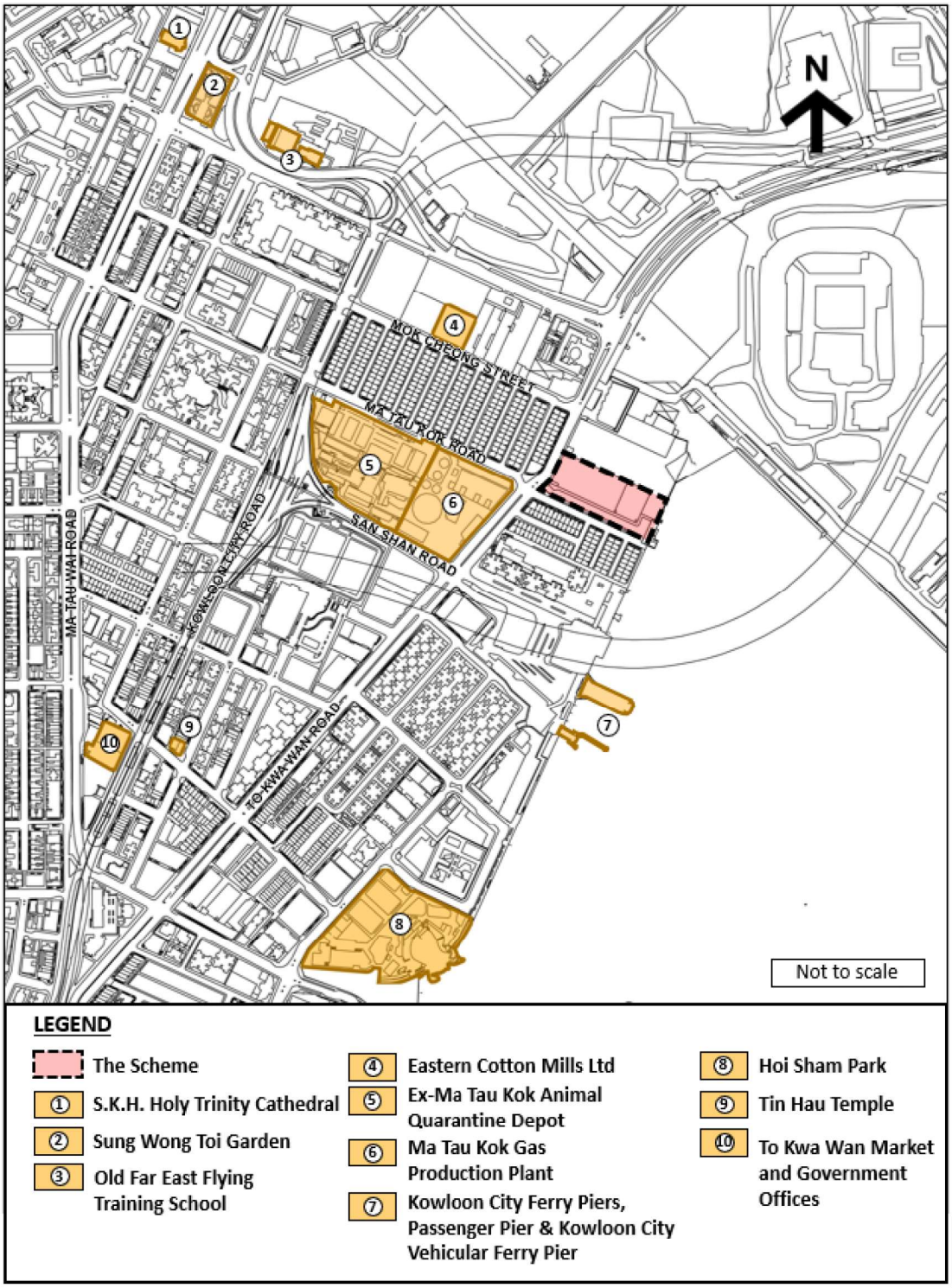


Figure 3.1 Places with Historical Background and Local Characters in To Kwa Wan

Source: KC DURF's URP and Geographic Information System on Hong Kong Heritage, as of June 2022.

Ex-Ma Tau Kok Animal Quarantine Depot

3.5 The ex-Ma Tau Kok Animal Quarantine Depot (commonly known as the "Cattle Depot") located at the further west of the Scheme was originally located in Hung Hom, which was moved to Ma Tau Kok due to the construction of Kowloon–Canton Railway and was built in 1908. It was owned by the Government and was used as a cattle quarantine and slaughter centre for more than 90 years. In 1999, the Cattle Depot was ceased operation due to expressed concerns by the neighbouring residents about hygiene problems. The Cattle Depot was renovated and developed into an artist village in 2001, and is now home of around 20 art groups. Under the "Revitalisation of the Rear Portion of the Cattle Depot" project proposed by the Kowloon City District Council (KCDC), the Cattle Depot Art Park provides a venue for recreational purpose and community art promotion. The Cattle Depot Art Park inherits the elements of its history as a cattle depot, the ex-Ma Tau Kok Animal Quarantine Depot is classified as Grade II historic building by the Antiquities Advisory Board (AAB).

Ma Tau Kok Gas Production Plant

3.6 The Ma Tau Kok Gas Production Plant (South Plant) was originally built in the 1930s at the location just south of KC-018. In the 1956, with the growing demand due to the increasing industrial activities it was then expanded to the other side of To Kwa Wan Road, namely the North Plant at its current location. The South Plant operates until 1994, and was subsequently redeveloped into a comprehensive residential development (named "Grand Waterfront") in early 2000's while the North Plant remains in operation till now but serve as a backup facility only. According to the website of The Hong Kong and China Gas Company Limited (Towngas), "In Hong Kong, town gas is produced at two production plants. *Over 98% is supplied from the Tai Po Plant, with the Ma Tau Kok Plant making up the rest*".

Kowloon City Ferry Piers, Passenger Pier & Kowloon City Vehicular Ferry Pier

3.7 Along the coastline of To Kwa Wan, the Passenger Pier and Vehicular Pier were completed in 1956 and 1965, witnessing the development of transportation and eastern Kowloon in the second half of the 20th century. The Passenger Pier was the first of its kind built in Hong Kong's urban areas after the World War II, with no notable or significant alterations made since its completion. Together with the adjacent bus terminus and car park, the Passenger Pier formed a public transport interchange serving commuters between the two sides of the Victoria Harbour, to various parts of the city and the former Kai Tak Airport. The Vehicular Pier was built to the typical design of vehicular Ferry piers in the 1950s to ease the demand of cross harbour vehicular ferry service in Central, and is one of the four vehicular ferry piers remaining in Hong Kong. The Passenger Pier and the Vehicular Ferry Pier have been graded the Grade II status by the AAB.

Themed Walking Trail of KC DURF

3.8 The URP of KC DURF has proposed a "Themed Walking Trail" to strengthen and highlight the historic and cultural characters of the district. The trail is sub-divided into four sub-trails in accordance with its characters, aiming to attract potential visitors and create a distinctive image for the district (refers to **Figure 3.2**).



Figure 3.2 Themed Walking Trail of KC DURF (Extract of the KC DURF URP)

4 POPULATION AND SOCIO-ECONOMIC CHARACTERISTICS

4.1 Based on non-obtrusive on-site observation, there is no residential population and household identified in the Scheme. It will be confirmed at the Stage 2 SIA.

4.2 As stated in paragraph 2.2, the Scheme is currently occupied by Newport Centre Phases I and II. According to the approved General Building Plans, the buildings are in general permitted for warehouses, showrooms, repair garage and offices. Hence, no household is included in the Scheme. Detailed information will be ascertained after FS and incorporated in the Stage 2 SIA report.

4.3 For socio-economic characteristics, the major business activities within the Newport Centre Phases I and II are warehouse with or without ancillary office use, storage, workshop, showroom and office use. It does not appear to anticipate any significant heavy manufacturing activities taking place. Besides, 11 units within Newport Centre are the subject of an approved planning application (No. A/K22/33) which were proposed to be converted into office uses. The said planning application was approved by the TPB on 18 March 2022.

5 HOUSING AND ENVIRONMENTAL CONDITIONS

5.1 No housing is located within the Scheme area. The degree of overcrowding in the Scheme area is not applicable.

Building Age and Building Conditions

5.2 The Scheme consists of Newport Centre Phases I and II, built in 1979 (43 years old) and 1981 (41 years old) respectively, and are both six storeys including one- basement level, lower and upper ground floors, and 1st to 3rd floor. Based on the ownership records in Land Registry as at July 2022, both Newport Centre Phases I and II are under multiple ownerships. According to Home Affairs Department's "Database of Private Buildings in Hong Kong" as at July 2022, the Newport Centre Phases I and II have Owners' Corporation (OC) for building management.

5.3 Based on the latest building conditions recorded by URA's Building Care Management Information System (BCMIS) and non-obtrusive site observation conducted in August 2022, Newport Centre Phases I and II are of "Varied" condition.

5.4 Phases I and II are internally connected and lifts services are available in both Phases. The two buildings are mainly for industrial/ commercial uses including offices, storage/godowns, workshops, showrooms and service providers such as electronics repair shops, etc. Detailed information on actual uses will be ascertained after the FS.

5.5 According to the latest Buildings Department (BD)'s records held by URA, there are no outstanding Fire Safety Notices (FSDN), Mandatory Building Inspection Statutory Notices building orders under S30B of Buildings Ordinance and outstanding building orders under S28 for Newport Centre Phases I and II.

Existing Pedestrian Network

5.6 The Scheme is located about 15 minutes walking distance away from both the MTR Sung Wong Toi Station and MTR To Kwa Wan Station. Public transport services, including buses and franchised buses are located in proximity of the Scheme area. Local residents of nearby residential development would walk along the two major pedestrian corridors on To Kwa Wan Road and Ma Tau Kok Road for public transport services.

5.7 The current pedestrian movement is mainly restricted to along the southern portion of Ma Tau Kok Road abutting the "5-Street" area (KC-018). Part the existing promenade area in the east is being fenced off and not accessible by the public.

Environmental and Hygiene Condition

5.8 The Scheme is envisaged to be subject to some traffic noise and air pollutants generated from the heavily trafficked road in To Kwa Wan Road.

5.9 The portion of Ma Tau Kok Road within the Scheme is a dead-end road which is often being occupied by vehicles and used for loading/unloading activities. The noise and hygiene issues caused by these on-street activities at Ma Tau Kok Street creates an unpleasant environment and nuisances to pedestrians.

Planning Intention under Outline Zoning Plan and Planned Developments in the Vicinity

5.10 The Scheme is currently zoned "Comprehensive Development Area" ("CDA") and also shown as "Road" on the Draft Kai Tak Outline Zoning Plan (OZP) No. S/K22/7. The "CDA" zone is intended for comprehensive development / redevelopment of the area for residential and/or commercial uses with the provision of waterfront promenade, open space and other supporting facilities. The "Road" zone is planned for future road widening of To Kwa Wan Road.

5.11 To the immediate south of the Scheme is known as the 5-Street area (KC-018). It consists of five-blocks of eight-storey tenement buildings along 5 public streets including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road. As mentioned in para. 2.3 above, it forms part of the proposed holistic redevelopment with the Scheme and to be implemented under the separate Ming Lun Street / Ma Tau Kok Road Development Scheme (KC-018).

5.12 To the immediate north is the reserved site for development of DRE which is currently zoned Residential (Group A)6" ("R(A)6") under the OZP. According to HKHS, about 1,101 units with commercial uses and G/IC facilities will be provided.

5.13 The Hong Kong Society for the Blind (HKSB) site located at the junction of To Kwa Wan Road and Mok Cheong Street will be redeveloped into a new welfare complex with a maximum building height of 100mPD. According to HKSB, the demolition works will tentatively commence in 2022 and the completion is expected to be in 2025.

5.14 The "Lok Sin Tong Modular Social Housing Scheme", a completed transitional housing project, is located at the proposed public housing site at the junction of Sung Wong Toi Road and To Kwa Wan Road. It is to provide affordable housing and family supporting services for low-income families that are queuing for public rental housing. According to the proposed amendment paper to the approved Ma Tau Kok Outline Zoning Plan No. S/K10/20 (MPC Paper No. 2/15), the site will be redeveloped into one residential block of public housing. With proposed building height of 100mPD, maximum domestic plot ratio of 7.5 or plot ratio of 9.0 for a building that is partly domestic and partly non-domestic, the proposed public housing project will provide about 600 flats.

5.15 To the further northwest of the Scheme along Mok Cheong Street are a number of factory buildings also zoned CDA. Among these, the Freder Centre and the K.K. Industrial Building are in operation and the former sites of the Eastern Cotton Mills and Good Harvest Air Freight Centre are

currently vacant. These land parcels fall within three different "CDA" sites. Planning applications (Nos. A/K10/256 and A/K10/259), submitted by different applicants, for comprehensive residential and commercial development at the "CDA(2)" site, with maximum building height of 100mPD, covering K.K. Industrial Building and Eastern Cotton Mills, have been approved with conditions by the TPB on 27 May 2016 and 7 December 2018, respectively. According to the proposed scheme of planning application no. A/K10/259, a portion of the front facade of Eastern Cotton Mill (a Grade III historic building) will be preserved and incorporated into the future development. Another planning application (No. A/K10/265) for comprehensive residential and commercial development at the "CDA(3)" site, with maximum building height of 100mPD, covering seven-land-lots, has also been approved with conditions by the TPB on 10 September 2021.

5.16 Ma Tau Kok Gas Production Plant located to the west of the Scheme across To Kwa Wan Road is currently zoned as "Residential (Group A)" ("R(A)") with a planning intention for residential use according to OZP. According to the URP prepared by KC DURF, it is recommended to explore the feasibility of relocating the gas plant in the long term.

5.17 To the northwest of the Scheme across To Kwa Wan Road is a cluster of tenements building which is known as the "13-Street area". The area is recommended as a "Proposed Redevelopment Priority Area" under DURF. To the further north and northeast of the Scheme is the Kai Tak Development Area (KTDA), which is under construction and the land is designated for a mix of residential, commercial, tourism, community uses, sports uses supported with infrastructure facilities.

6 CULTURAL AND LOCAL CHARACTERISTICS, AND CHARACTERISTICS OF LOCAL BUSINESS ACTIVITIES

6.1 The Scheme is located at an old urban district of Ma Tau Kok / To Kwa Wan area within the Kowloon City District, and its vicinity is predominantly mixed of residential, industrial and infrastructural developments. Most of the industrial buildings in the area appeared not actively engaged in manufacturing activities but mainly used for office, storage, warehouse, workshop and showroom uses.

6.2 To the immediate south is the 5-Street area which is under URA Project KC-018. It comprises of clusters of tenement buildings with ground floor shops mainly used for vehicular repairing services, workshops, eateries and shops mainly selling groceries, hardware and small electronic parts, and upper floors mainly for domestic uses. By non-obtrusive observation conducted in April and September 2022, no polluting industries are found operating inside the buildings.

6.3 To the further south of the Scheme is the Grand Waterfront, which comprises of a private residential estate and shopping mall named Grand Waterfront Plaza. With a number of chain stores, supermarket and shops provided in the Grand Waterfront Plaza, it is a major shopping hub for the local residents.

6.4 To the northwest of the Scheme across To Kwa Wan Road is the 13-Street area. It comprises of clusters of tenement buildings with ground floor eateries, vehicular repairing shops and shops mainly selling groceries, hardware and small electronic parts. To its north across Mok Cheong Street is a string of industrial buildings. By non-obtrusive observation conducted in April 2022, no polluting industries are found operating at these industrial buildings. As mentioned in para. 5.14, some of these industrial buildings are planned for redevelopments into residential / commercial uses.

6.5 As mentioned in para. 5.1 above, Newport Centre comprises of Phase I and II which are internally connected. The building is of 6 storeys high, including a basement level, lower and upper ground floors and 1st to 3rd floor. Based on non-obtrusive site visits conducted in June and September 2022 and information available at the building directory of Newport Centre Phases I and II, about 94 businesses were identified within the Scheme area. The main business activities are warehouse with or without ancillary office use, storage, showroom, workshop and office use. It does not appear to anticipate any significant heavy manufacturing activities taking place. Several units unidentified and were suspected to be vacant, as there were no evidence of operation in several attempts of site visits. The addresses and business activities on lower/upper ground floors of Newport Centre are listed in **Table 6.1** below. The exact number of non-domestic operators / details and nature of the businesses within the Scheme will be verified in the FS upon commencement of the Scheme and will be reported in the Stage 2 SIA.

Table 6.1 Business Activities at Lower Ground and Upper Ground Floors within the Scheme

	Address	Current Use*
1.	Lower Ground Floor, Newport Centre Phase I, 118 Ma Tau Kok Road, Kowloon	Carpark
2.	Workshop A, Upper Ground Floor, Newport Centre Phase I, 118 Ma Tau Kok Road, Kowloon	*(Unidentified)*
3.	Workshop B, Upper Ground Floor, Newport Centre Phase I, 118 Ma Tau Kok Road, Kowloon	*(Unidentified)*
4.	Workshop 1, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Workshop
5.	Workshop 2, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Showroom, Warehouse, Storage, Workshop
6.	Workshop 3, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	*(Unidentified)*
7.	Workshop 4, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	*(Unidentified)*

8.	Workshop 5, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Office
9.	Workshop 6, Lower Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	*(Unidentified)*
10.	Unit 1, Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Showroom, Office
11.	Units 2, 3 and 4 Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Showroom
12.	Unit 5, Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Workshop
13.	Unit 6, Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Showroom
14.	Units 7 and 8, Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Office
15.	Unit 9, Upper Ground Floor, Newport Centre Phase II, 116 Ma Tau Kok Road, Kowloon	Logistics, Warehouse

(Based on non-obtrusive site visits conducted in June and September 2022 and building directory at lift lobby)

** Nature / details of business activities are subject to FS and Stage 2 SIA*

6.6 In addition, the major uses and businesses activities at other levels of the building, including basement, 1/F to 3/F, identified based on non-obtrusive site visits conducted in June and September 2022 and building directory at the lift lobby, are listed in **Table 6.2** (see photo in **Appendix 1**). The exact number of non-domestic operators / details and nature of the businesses within the Scheme will be verified in the FS upon commencement of the Scheme and will be reported in the Stage 2 SIA.

Table 6.2 Business Activities at Basement, 1/F to 3/F within the Scheme

Floor	Existing Uses	No. of Businesses (About)
Basement	Car Park, Storage, Warehouse, Unidentified/Suspected vacant	8
1/F	Office, Warehouse, Storage, Workshop, Showroom, Wholesale,	22

	Research Centre, Unidentified/Suspected vacant	
2/F	Office, Warehouse, Storage, Workshop, Studio, Food Factory, Wholesale, Unidentified/Suspected vacant	27
3/F	Office, Warehouse, Storage, Workshop, Studio, Religious-related centre, Unidentified/Suspected vacant	22

(Based on non-obtrusive site visits conducted in June and September 2022 and building directory at the lift lobby)

** Nature / details of business activities are subject to FS and Stage 2 SIA*

7 RECREATIONAL, AMENITY AND COMMUNITY AND WELFARE FACILITIES

7.1 **Figure 7.1** shows the locations of various existing public open spaces, and GIC facilities within the 500m radius area of the Scheme. There are a number of public open spaces near the Scheme Area, the closest being Cattle Depot Art Park located to the west, To Kwa Wan Recreation Ground and To Kwa Wan Sports Centre located to the southwest, and Hoi Sham Park to the further south of the Scheme.

7.2 A number of planned public open spaces are within the 500m radius from the Scheme. The Kai Tak Sports Park located to the north of the Scheme area is currently under construction with target completion in 2023. With an area of around 28 hectares, the Sports Park will provide a wide variety of sports and leisure facilities to be enjoyed by the public. To the north of the Scheme area at the cove of Ma Tau Kok in between the DRE site and the Sports Park is zoned as "Open Space" ("O") on the OZP, with an intention to complement the Dining Cove with food and beverage uses for creating a vibrant waterfront environment and unique dining experience. Outdoor seating accommodation for alfresco dining may be provided under administrative mechanism. To the south of the Scheme area along the waterfront is also zoned as "O" on the OZP for optimising pedestrian and waterfront environment, as well as for future extension of cycle track network, the GreenWay Network.

7.3 Major GIC facilities within 500m radius of the Scheme include the HKSB and the To Kwa Wan Market and Government Offices. There are also a number of educational facilities, mainly primary schools within 500m of the Scheme.

7.4 For existing social welfare facilities and services (refer to **Table 7.1**), family and child welfare services, social security field units, services for the elderly and rehabilitation and medical social services, etc. are found in close proximity to the Scheme.

7.5 About 500 sq.m. non-domestic GFA will be reserved in the podium of the proposed Scheme for appropriate community uses to meet community needs, subject to consultation with relevant Government departments, views from local stakeholders and KCDC.

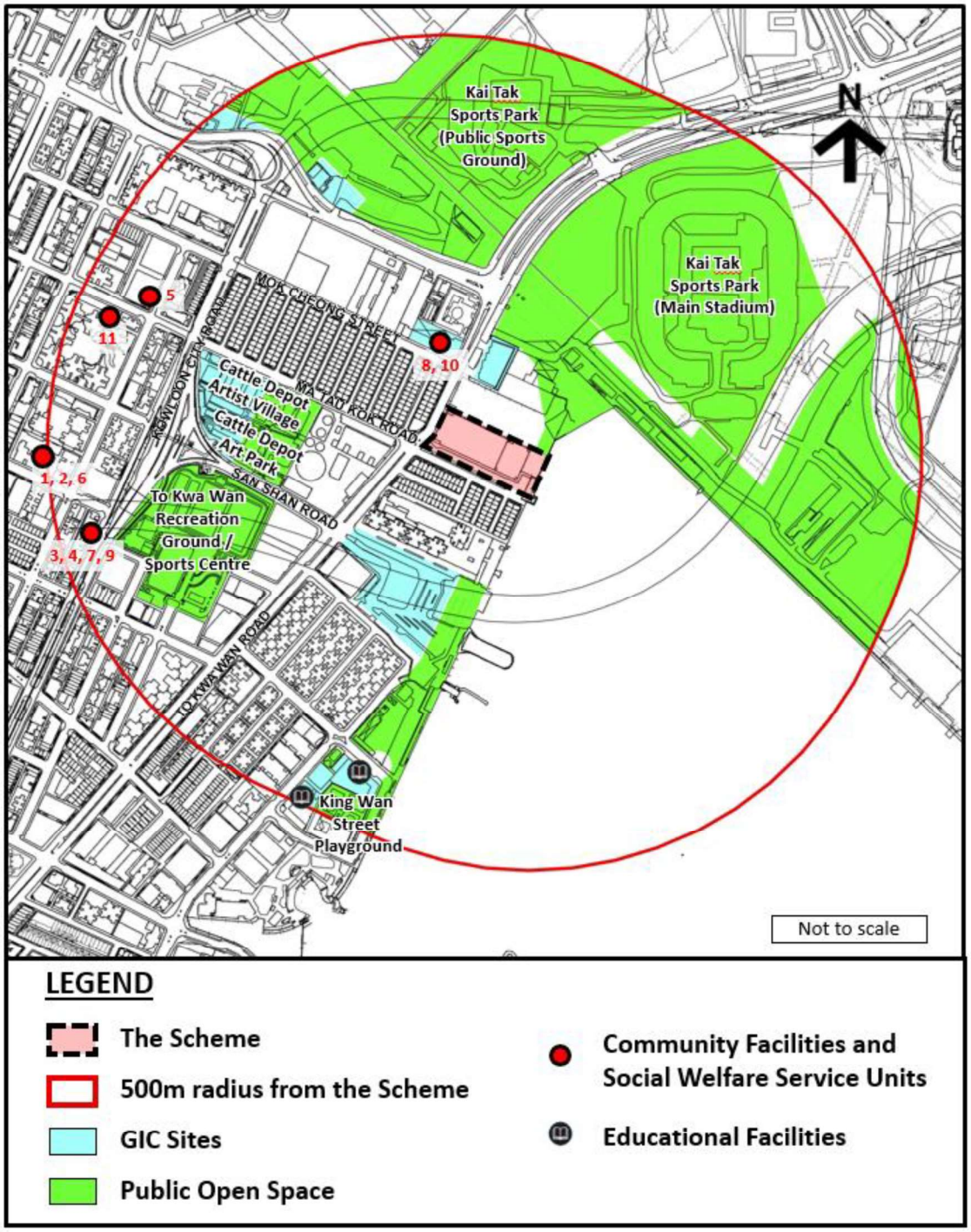


Figure 7.1 Existing Community Facilities, Amenity, and Social Welfare Service Units within 500m Radius from the Scheme

Source: Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Kowloon City) as of May 2022.

Table 7.1 Existing Community Facilities and Social Welfare Service Units within 500m Radius from the Scheme

Community Facility / Service Unit	Operator	Address
A. Family and Child Welfare Services		
Integrated Family Service Centres		
1. Kai Tak Integrated Family Service Centre	Social Welfare Department	Unit 3, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
2. Ma Tau Wai Integrated Family Service Centre	Social Welfare Department	Unit 3, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
Extended Hours Service		
3. Sik Sik Yuen - Ho Oi Day Nursery (EHS)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
Occasional Child Care Service		
4. Sik Sik Yuen - Ho Oi Day Nursery (OCCS)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
B. Social Security		
Integrated Employment Assistance Programme for Self-reliance		
5. Hong Kong Lutheran Social Service, the Lutheran Church - Hong Kong Synod Limited - Integrated Employment Assistance Programme for Self-reliance	Hong Kong Lutheran Social Service, the Lutheran Church - Hong Kong Synod Limited	Room A103,A108,A109, 8/F, Tung Nam Factory Building, 40 Ma Tau Kok Road, To Kwa Wan, Kowloon
Social Security Field Unit		
6. Kowloon City Social Security Field Unit	Social Welfare Department	Unit 2, 2/F, Chung Hwa Plaza, 5B-5F Ma Hang Chung Road, To Kwa Wan, Kowloon
C. Services for the Elderly		
Neighbourhood Elderly Centre		

Community Facility / Service Unit	Operator	Address
7. Hong Kong Family Welfare Society - Kowloon City Centre for Active Ageing	Hong Kong Family Welfare Society	1/F, Block 2, Harmony Garden, 55-61 Kowloon City Road, To Kwa Wan, Kowloon
D. Rehabilitation and Medical Social Services		
Care and Attention Home for the Aged Blind		
8. Hong Kong Society for the Blind (The) - Bradbury Care and Attention Home for the Aged Blind	Hong Kong Society for the Blind (The)	19 Mok Cheong Street, To Kwa Wan, Kowloon
Integrated Programme in Kindergarten-cum-Child Care Centre		
9. Sik Sik Yuen - Ho Oi Day Nursery (IP)	Sik Sik Yuen	Shop 1A, 1B 2A & 2B, G/F, Harmony Garden, No. 55-61 Kowloon City Road, Kowloon City, Kowloon
Sheltered Workshops		
10. Hong Kong Society for the Blind (The) - Factory for the Blind	Hong Kong Society for the Blind (The)	19 Mok Cheong Street, To Kwa Wan, Kowloon
11. Hong Chi Association - Ma Tau Kok Workshop	Hong Chi Association	Podium 2, Jubilant Place, 33 Ma Tau Kok Road, To Kwa Wan, Kowloon

Source: Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Kowloon City) as of May 2022.

8 INITIAL ASSESSMENT OF POTENTIAL SOCIAL IMPACT, AND MITIGATION MEASURES

Potential Social Impact

8.1 Based on non-obstructive site visits conducted in June 2022 and information on the business directory at the lift lobby of Newport Centre Phases I and II, the Scheme is estimated to affect about 94 businesses identified. The exact number of affected business operators will be verified in the Stage 2 SIA.

8.2 The Scheme, if implemented, will inevitably affect the non-domestic operators within the Scheme. The FS and SIA Questionnaire will help identifying needy cases. The Social Service Team (SST) commissioned by the Urban Renewal Fund (URF) is expected to provide assistance to those in need. This SST is independent of the URA and it will directly report to the Board of the URF.

Mitigation Measures and Acquisition Policies and Allowances for Industrial Properties

8.3 The acquisition policies of industrial properties and the allowances to owners and tenants are currently under review; the URA will communicate to the affected persons the prevailing policies before issuance of acquisition offers.

8.4 In principle, the URA will offer to an affected owner the market value of his/her property plus applicable allowances for owners for purchase of his/her property. For affected operators (either owner-occupiers or tenant-operators), the URA will offer applicable allowances to them. Alternatively, owner-occupiers and tenants may claim business loss in lieu of the allowances if the property is used for a user in compliance with the government lease.

8.5 The URA is conducting a feasibility study on making available to registered owner(s) who, as at the date of Notification of Commencement

of the Scheme gazetted by URA, own not less than the URA-prescribed quantity of properties in the Scheme and also satisfy the URA-prescribed criteria for participating in the development of the Scheme as an alternative other than receiving the market value and applicable allowances by selling their properties to URA. URA will announce further details to the owners of the Scheme after completion of the study.

8.6 The URA will arrange briefing session(s) / recording video(s) to the owners and tenants to explain the URA acquisition policies and the allowances. An in-house URA engagement team will visit the affected owners and tenants accordingly as to care for those who are unclear about the policies and require any other assistance.

8.7 If affected owners and/or business operators are not clear about the URA policies or future arrangement, the SST will endeavour to clarify their doubts with full support from the URA. If the affected owners and/or business operators are ethnic minorities who are not familiar with Chinese or English languages, the URA will arrange translation services as far as practicable to alleviate their concerns on the redevelopment.

8.8 If the Scheme is to be implemented, the URA will ensure the construction works follow and fulfil the mitigation measures and practices as stipulated by Environmental Protection Department for construction site. Appropriate measures will be proposed to mitigate potential noise and dust impact during the construction phase of the Scheme.

8.9 According to the new URS, if requested, the URA will help identify suitable premises in the district of the redevelopment projects to enable the affected operators to relocate and continue operation in the same district as far as practicable.

9 CONCLUSION

9.1 The local community and the surrounding neighbourhoods are likely to experience gains and losses due to the proposed redevelopment. Business operators and their employees within the Scheme will be affected in different ways and to various degrees depending on their particular circumstances. Various degrees of concerns and social impacts to the affected business operators and their employees within the Scheme will be assessed in the Stage 2 SIA in detail.

9.2 This Stage 1 SIA study has been modified to reflect the current uses/business activities of the building to be redeveloped. This Stage 1 SIA report can only provide a general profile of the Scheme and the surrounding area. Based on non-obtrusive observation and the available information, no occupiers for domestic use are observed and the business activities within the Scheme appear to be those commonly found within many industrial buildings in the vicinity which is possible for most of them to be relocated in the surrounding area.

9.3 The assumptions in this report will be verified by the Stage 2 SIA to be carried out after the Freezing Survey. The Stage 2 SIA will assess needs of the affected occupants and operators and to propose appropriate mitigation measures to minimise major adverse social impact, if any.

URBAN RENEWAL AUTHORITY
October 2022

Appendix 1: Directory at Newport Centre Phases I and II





Appendix 4

Traffic Impact Assessment

(TIA) Report

URA Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)

Traffic Impact Assessment

Final Report
September 2022

Prepared by: CKM Asia Limited

Prepared for: Urban Renewal Authority

URA Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)

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2.9 (H) Junction of Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road
2.10 (I) Junction of Ma Tau Chung Road / Ma Tau Kok Road
2.11 (J) Olympic Garden Roundabout
2.12 Existing peak hour traffic flows
2.13 Existing peak 15-minute pedestrian flows
2.14 Details of the public transport services in the vicinity of KC-018 and KC-019
3.1 Notional internal transport layout – ground to basement 1 floor
3.2 Notional internal transport layout – basement 2 floor
3.3 Notional internal transport layout – basement 3 floor
3.4 Swept paths of HGV entering KC-018 and KC-019
3.5 Visibility at the run-in / out of KC-018 and KC-019
4.1 2036 peak hour traffic flows without KC-018 and KC-019
4.2 2036 peak hour traffic flows with KC-018 and KC-019
4.3 Possible traffic improvement scheme for junction of (D)
4.4 2036 peak 15-minute pedestrian flows without KC-018 and KC-019
4.5 2036 peak 15-minute pedestrian flows with KC-018 and KC-019

1.0 INTRODUCTION

Background

1.1 Under a holistic planning approach, the Urban Renewal Authority (URA) has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment. These two sites will be redeveloped into residential developments with retail uses and Government, Institution or Community (G/IC) facilities.

1.2 KC-018 and KC-019 comprise of the old buildings bounded by at: (i) Ma Tau Kok Road; (ii) Ming Lun Street; (iii) Chung Sun Street; (iv) Hing Yin Street; and (v) Hing Yan Street. The locations of KC-018 and KC-019 are shown in Figure 1.1.

1.3 At present, KC-018 and KC-019 are zoned as *"Comprehensive Development Area"* (*"CDA"*) and shown as "Road" in the Kai Tak Outline Zoning Plan (OZP) No. S/K22/7. Under the Development Scheme Plan (DSP) submissions, it is proposed to rezone KC-018 and KC-019 as *"Residential (Group A)"* (*"R(A)"*) and to areas shown as "Road".

1.4 As part of the DSP submissions, CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned by the URA to prepare a Traffic Impact Assessment (TIA) in support of redevelopment of KC-018 and KC-019.

Scope of Study

1.5 The main objectives of this study are as follows:

- To assess the existing traffic issues in the vicinity of KC-018 and KC-019;
- To quantity the internal transport facilities for KC-018 and KC-019;
- To quantify the amount of traffic generated by KC-018 and KC-019;
- To examine the associated traffic impact on the local road network; and
- To identify deficiencies in the road network in accommodating the expected additional traffic associated with KC-018 and KC-019.

Contents of the Report

1.6 After this introduction, the remaining chapters contain the following:

chapter two – describes the existing conditions;
chapter three – presents the master layout plan for KC-018 and KC-019;
chapter four – describes the traffic and pedestrian impact; and
chapter five – gives the overall conclusion.

2.0 EXISTING SITUATION

Existing Road Network

2.1 The existing roads located in the vicinity of KC-018 and KC-019 includes the following:

- To Kwa Wan Road is a north-south road classified as District Distributor connecting Ma Tau Kok and Hung Hom. The section of To Kwa Wan Road between Ma Tau Wai Road and Ma Tau Kok Road is of dual carriageway 3-lane standard. The section between Sung Wong Toi Road and Ma Tau Kok Road is of single carriageway 4-lane standard.
- Mok Cheong Street is a single carriageway road and it is classified as a District Distributor. It has 2 eastbound lanes and connects Ma Tau Chung Road with To Kwa Wan Road.
- Ma Tau Kok Road is classified as a District Distributor, and is of single carriageway standard with 3 westbound traffic lanes. It connects with To Kwa Wan Road and Shing Tak Street.

Traffic and Pedestrian Surveys

2.2 Traffic and pedestrian counts were conducted on Thursday 9th January 2020 and Monday 6th September 2021. On the survey days, there were **no** public events, and **no** government announced school suspension or work-from-home arrangements.

Manual Classified Traffic Counts

2.3 To establish the peak hour traffic flows, manual classified counts were conducted during the AM and PM peak periods at junctions A – I, which are located in the vicinity of KC-018 and KC-019. The locations and layouts of the surveyed junctions are shown in Figure 2.1 and Figures 2.2 – 2.11 respectively.

TABLE 2.1 SURVEYED JUNCTIONS

Ref.	Junction Location	Figure No.
A	Kowloon City Road / Sung Wong Toi Road	2.2
B	Kowloon City Road / Mok Cheong Street	2.3
C	Kowloon City Road / Ma Tau Kok Road	2.4
D	To Kwa Wan Road / San Shan Road / San Ma Tau Street	2.5
E	To Kwa Wan Road / Ma Tau Kok Road	2.6
F	To Kwa Wan Road / Mok Cheong Street	2.7
G	To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	2.8
H	Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	2.9
I	Ma Tau Chung Road / Ma Tau Kok Road	2.10
J	Olympic Garden Roundabout (i.e. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street)	2.11

2.4 The traffic counts were classified by vehicle type to enable traffic flows in passenger car units (pcu) to be calculated. The AM and PM peak hour traffic flows were found to occur at 0800 – 0900 and 1730 – 1830 hours respectively, and the peak hour traffic flows are shown in Figure 2.12.

Existing Junction and Link Operational Performance

2.5 The existing operational performance of the surveyed junctions was calculated based on the observed traffic counts and the analysis method found in Volumes 2 and 4 of the Transport Planning and Design Manual (TPDM). The analysis results are summarised in Table 2.2 and detailed calculations are found in Appendix A.

TABLE 2.2 EXISTING JUNCTION OPERATIONAL PERFORMANCE

Ref.	Junction	Type of Junction	Performance Indicator	AM Peak	PM Peak
A	Kowloon City Road / Sung Wong Toi Road	Signal	RC	>100%	>100%
B	Kowloon City Road / Mok Cheong Street	Signal	RC	>100%	>100%
C	Kowloon City Road / Ma Tau Kok Road	Signal	RC	>100%	>100%
D	To Kwa Wan Road / San Shan Road / San Ma Tau Street	Signal	RC	55%	53%
E	To Kwa Wan Road / Ma Tau Kok Road	Signal	RC	>100%	>100%
F	To Kwa Wan Road / Mok Cheong Street	Signal	RC	>100%	99%
G	To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	Signal	RC	>100%	81%
H	Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	Signal	RC	64%	47%
I	Ma Tau Chung Road / Ma Tau Kok Road	Signal	RC	>100%	>100%
J	Olympic Garden Roundabout	Roundabout	RFC	0.683	0.643

Note: RC – Reserve Capacity RFC – Ratio-of-Flow to Capacity

2.6 The above results indicate that the analysed junctions currently operate with capacities during the AM and PM peak hours.

2.7 The existing link capacity for the local road network is assessed, and the link capacity analysis results are shown in Table 2.3.

TABLE 2.3 EXISTING LINK CAPACITY ASSESSMENT

Road Section	Direction	Capacity (veh/hr)	Traffic Flows (veh/hr)		Volume to Capacity Ratio	
			AM Peak	PM Peak	AM Peak	PM Peak
Ma Tau Kok Road	Westbound	2,700 [2]	332	475	0.12	0.18
Mok Cheong Street	Eastbound	1,800 [2]	382	480	0.21	0.27
San Shan Road	Two-way	2,200	912	772	0.41	0.35
Sung Wong Toi Road	Two-way	3,800	643	830	0.17	0.22
To Kwa Wan Road (fronting KC-018)	Northbound	3,240 [2]	662	868	0.20	0.27
	Southbound	3,240 [2]	675	626	0.21	0.19
To Kwa Wan Road (fronting KC-019)	Two-way	3,534 [1]	1,123	1,143	0.32	0.32
Kowloon City Road	Northbound	2,850	441	581	0.15	0.20

Note: [1] with reduction factor of 7% for heavy vehicle percentage between 15 – 20%
[2] with reduction factor of 10% for heavy vehicle percentage between 20 – 25%

2.8 Table 2.3 shows that the analysed road links currently operate with capacities during the AM and PM peak hours.

Level-of-Service of Pedestrian Facilities

2.9 To quantify the existing pedestrian flows, pedestrian counts were conducted during the weekday AM and PM peak periods at footpaths connecting KC-018 and KC-019 and Pak Tai Street, and these include the following:

F1 – Eastern footpath of To Kwa Wan Road (north of Ma Tau Kok Road)
F2 – Northern footpath of Mok Cheong Street (east of Kowloon City Road)
F3 – Northern footpath of Mok Cheong Street (west of Kowloon City Road)
F4 – Eastern footpath of Pak Tai Street
F5 – Eastern footpath of To Kwa Wan Road (south of Ma Tau Kok Road)
F6 – Southern footpath of Ma Tau Kok Road (east of Kowloon City Road)
F7 – Southern footpath of Ma Tau Kok Road (west of Kowloon City Road)

2.10 The level-of-service (LOS) of a pedestrian walkway is dependent on its width and number of pedestrians using the facility. Description of the LOS is obtained from Volume 6 of the TPDM, and is presented in Table 2.4.

TABLE 2.4 DESCRIPTION OF PEDESTRIAN WALKWAY LOS

LOS	Flow Rate (ped/min/m)	Description
A	≤ 16	Pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.
B	16 – 23	Sufficient space is provided for pedestrians to freely select their walking speeds, to bypass other pedestrians and to avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians and to respond to their presence in the selection of walking paths.
C	23 – 33	Sufficient space is available to select normal walking speeds and to bypass other pedestrians primarily in unidirectional stream. Where reverse direction or crossing movement exist, minor conflicts will occur, and speed and volume will be somewhat lower.
D	33 – 49	Freedom to select individual walking speeds and bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflicts is high and its avoidance requires changes of speeds and position. The LOS provides reasonable fluid flow; however considerable friction and interactions between pedestrians are likely to occur.
E	49 – 75	Virtually, all pedestrians would have their normal walking speeds restricted. At the lower range of this LOS, forward movement is possible only by shuffling. Space is insufficient to pass over slower pedestrians. Cross- and reverse-movement are possible only with extreme difficulties. Design volumes approach the limit of walking capacity with resulting stoppages and interruptions to flow.
F	> 75	Walking speeds are severely restricted. Forward progress is made only by shuffling. There are frequent and unavoidable conflicts with other pedestrians. Cross- and reverse-movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristics of queued pedestrians than of moving pedestrian streams.

Source: Volume 6 Chapter 10 of the TPDM

2.11 The peak 15-minute pedestrian flows are illustrated in Figure 2.13, and the corresponding LOS assessment is presented in Table 2.5.

TABLE 2.5 EXISTING LEVEL-OF-SERVICE ASSESSMENT

Ref.	Footpath	Total Width	Effective Width [1]	Peak Period	2-way Peak Pedestrian Flows [2]		LOS
					Flow (ped/ 15-min)	Rate (ped/ min/m) [3]	
F1	Eastern footpath of To Kwa Wan Road (north of Ma Tau Kok Road)	3.5m	2.5m	AM	145	3.87	A
				PM	131	3.49	A
F2	Northern footpath of Mok Cheong Street (east of Kowloon City Road)	3.5m	2.5m	AM	94	2.51	A
				PM	89	2.37	A
F3	Northern footpath of Mok Cheong Street (west of Kowloon City Road)	3m	2m	AM	97	3.23	A
				PM	90	3.00	A
F4	Eastern footpath of Pak Tai Street	3m	2m	AM	104	3.47	A
				PM	127	4.23	A
F5	Eastern footpath of To Kwa Wan Road (south of Ma Tau Kok Road)	3.5m	2.5m	AM	233	6.21	A
				PM	211	5.63	A
F6	Southern footpath of Ma Tau Kok Road (east of Kowloon City Road)	3m	2m	AM	166	5.53	A
				PM	145	4.83	A
F7	Southern footpath of Ma Tau Kok Road (west of Kowloon City Road)	3.5m	2.5m	AM	129	3.44	A
				PM	249	6.64	A

Note: [1] effective width = total width – (0.5m × 2)
[2] highest pedestrian flows along the whole section of footpath
[3] pedestrian flow rate = pedestrian flow ÷ 15 minutes ÷ effective width

2.12 The above results indicate that the surveyed footpaths currently operate with LOS A during the AM and PM peak hours. As stated in the TPDM, *"LOS C is desirable for most design at streets with dominant 'living' pedestrian activities"*. Hence, LOS A is considered as an acceptable level of service:

Public Transport Facilities

2.13 At present, KC-018 and KC-019 are well-served by various public transport services, including franchised bus, green minibus and public light bus. These services operate along Mok Cheong Street, Ma Tau Kok Road and To Kwa Wan Road. In addition, the Kowloon City Ferry Pier and bus terminus is located within 300m or equivalent to around 5 minutes' walk from KC-018 and KC-019.

2.14 Apart from the road-based public transport services, MTR Sung Wong Toi Station of Tuen Ma Line is located in the vicinity of KC-018 and KC-019, which is 700m or equivalent to within 10 minutes' walk away. Details of the public transport services operating close to KC-018 and KC-019 are presented in Figure 2.14 and Table 2.6.

TABLE 2.6 PUBLIC TRANSPORT SERVICES OPERATING CLOSE TO KC-018 AND KC-019

Route No.	Routing	Frequency (min)
KMB 2E	Kowloon City Ferry – Pak Tin	15 – 25
KMB 3B	Tsz Wan Shan (Central) – Hung Hom (Hung Luen Road)	12 – 25
KMB 5	Star Ferry – Fu Shan	7– 15
KMB 5A	Kai Tak (Kai Ching Estate) – Star Ferry	12 – 20
KMB 5C	Tsz Wan Shan (Central) – Star Ferry	6 – 12
KMB 5D	Telford Gardens – Hung Hom (Circular)	15 – 35
KMB 5P	Tsz Wan Shan (Central) – Star Ferry	AM & PM peak
KMB 6C	Kowloon City Ferry – Mei Foo	7 – 12
KMB 6F	Kowloon City Ferry – Lai Kok	20 – 30
KMB 11	Diamond Hill Station – Kowloon Station	9 – 20
KMB 11B	Kwun Tong (Tsui Ping Road) – Kowloon City Ferry	10 – 20
KMB 11K	Chuk Yuen Estate – Hung Hom Station	12 – 20
KMB 11X	Sau Mau Ping (Upper) – Hung Hom Station	10 – 20
KMB 12A	Whampoa Garden – Cheung Sha Wan (Sham Mong Road)	8 – 20
KMB 14	Lei Yue Mun Estate – China Ferry Terminal	12 – 20
KMB 15	Ping Tin – Hung Hom (Hung Luen Road)	12 – 20
KMB 15X	Lam Tin (Kwong Tin Estate) – Hung Hom Station	AM & PM peak
KMB 17	Kwun Tong (Yue Man Square) – Oi Man	5 – 20
KMB 21	Choi Wan – Hung Hom Station	15 – 20
KMB 26	Shun Tin – Tsim Sha Tsui East	7 – 20
KMB 28	Lok Wah – Tsim Sha Tsui East (Mody Road)	8 – 15
KMB 41	Cheung Ching – Kowloon City Ferry	20 – 35
KMB 45	Kowloon City Ferry – Lai Yiu	20 – 30
KMB 61X	Tuen Mun Central – Kowloon City Ferry	9 – 20
KMB 75X	Fu Shin Estate Bus Terminus – Kowloon City Ferry	8 – 15
KMB 85A	Kwong Yuen – Kowloon City Ferry	15 – 25
KMB 85B	Chun Shek – Kowloon City Ferry	AM & PM peak
KMB 85S	Yiu On – Hung Hom (Hung Luen Road)	AM peak
KMB 85X	Ma On Shan Town – Hung Hom (Hung Luen Road)	10 – 20
KMB 93K	Po Lam – Mong Kok East Station	15 – 25
KMB / NWB 101	Kwun Tong (Yue Man Square) – Kennedy Town	3 – 15
KMB / NWB 106	Wong Tai Sin – Siu Sai Wan (Island Resort)	4 – 12
KMB / NWB 106A	Wong Tai Sin – Tai Koo (Kornhill Plaza)	AM Peak
KMB / NWB 106P	Wong Tai Sin – Siu Sai Wan (Island Resort)	AM & PM peak
KMB / CTB 107	Kowloon Bay – Wah Kwai	5 – 20
KMB 108	Kai Yip – Braemar Hill	10 – 20
KMB / NWB 111	Ping Shek – Central (Macau Ferry)	3– 12
KMB / NWB 111P	Choi Hook – Central (Macau Ferry)	AM peak
KMB / NWB 115	Kowloon City Ferry – Central (Macau Ferry)	6 – 20
KMB / NWB 116	Tsz Wan Shan (Central) – Quarry Bay (Yau Man Street)	4 – 12
KMB 297	Hang Hau (North) – Hung Hom (Hung Luen Road)	12 – 25
KMB 297P	Hang Hau (North) – Hung Hom (Hung Luen Road)	AM peak
NWB 796X	Tseung Kwan O Industrial Centre – Tsim Sha Tsui East	11 – 25
CTB A22	Airport – Lam Tin Station	15 – 20
CTB E23	Airport – Tsz Wan Shan (South)	12 – 20
CTB N23	Tung Chung Station – Tsz Wan Shan (South)	overnight
KMB / NWB N121	Central (Macau Ferry) – Ngau Tau Kok	overnight
GMB 2	Whampoa Garden – Festival Walk	10 – 15
GMB 2A	Whampoa Garden – Festival Walk	10 – 15

TABLE 2.6 PUBLIC TRANSPORT SERVICES OPERATING CLOSE TO KC-018 AND KC-019 (CONT'D)

Route No.	Routing	Frequency (min)
GMB 13	Kowloon Tong (Broadcast Drive) – Hung Hom (Hung Luen Road)	10 – 15
GMB 28M	Wyler Gardens – Mong Kok Station	7 – 15
GMB 28MS	Wyler Gardens – Ho Man Tin Station	10 – 15
GMB 49	Shun Tin Estate – Kowloon City Ferry Pier	AM & PM peak
GMB 69	Laguna City – Kowloon City (Lion Rock Road)	12 – 20
GMB 69A	Laguna City – Prince Edward Station	15
GMB 105	Tseung Kwan O – To Kwa Wan	5 – 9
GMB 105S	Tseung Kwan O – To Kwa Wan	overnight
Sun Ferry	North Point – Kowloon City	30

Note: KMB – Kowloon Motor Bus NWB – New World First Bus
CTB – CityBus GMB – Green Minibus

2.15 In view of the comprehensive coverage and choice of public transport services, accessibility of KC-018 and KC-019 via the public transport services is considered convenient.

3.0 MASTER LAYOUT PLAN OF KC-018 AND KC-019

Development Schedule

3.1 The planned development parameters for KC-018 and KC-019 are presented in Table 3.1, and the residential flats are grouped into various unit size categories with details found in Table 3.2.

TABLE 3.1 DEVELOPMENT SCHEDULE FOR KC-018 AND KC-019

Item	Development Parameters (approx.)	
	KC-018	KC-019
Gross Site Area	11,430m^2	8,759m^2
Domestic Plot Ratio	6.5	6.5
Non-Domestic Plot Ratio	1.0	1.0
Domestic GFA	68,224m^2	50,804m^2
No. of Housing Block	2	2
No. of Residential Flat	1,276	950
Average Flat Size	around 53.5m^2	around 53.5m^2
GFA for Retail	10,496m^2	7,816m^2
GFA for G/IC	1,000m^2	500m^2
Completion Year	2033	2033

TABLE 3.2 UNIT SIZE CATEGORIES

Unit Size (in GFA)	No. of Residential Flat	
	KC-018	KC-019
< 40m^2	372	102
40 – 70m^2	692	775
70 – 100m^2	186	73
100 – 130m^2	26	0
Total	**1,276**	**950**

Internal Transport Facilities

3.2 The internal transport facilities for the residential and retail uses within KC-018 and KC-019 are provided in accordance to the Hong Kong Planning Standards and Guidelines (HKPSG) and are presented in Tables 3.3.

TABLE 3.3 INTERNAL TRANSPORT FACILITIES

Item	Type	HKPSG Recommendations	KC-018		KC-019	
			Calculation [1]	Provision	Calculation [1]	Provision
Private Car	**Residential**	GPS × R1 × R2 × R3 GPS = 1 car space per 4 – 7 flats R1 = 0.5 for flat size ≤ 40m² = 1.2 for flat size 40 – 70m² = 2.4 for flat size 70 – 100m² = 4.1 for flat size 100 – 130m² R2 = 1 for development outside 500m of rail station R3 = 0.9 for domestic plot ratio 5 – 8	Min = (372 × 0.5 + 692 × 1.2 + 186 × 2.4 + 26 × 4.1) ÷ 7 × 0.9 = 202 nos. Max = (372 × 0.5 + 692 × 1.2 + 186 × 2.4 + 26 × 4.1) ÷ 4 × 0.9 = 354 nos.	354 nos.	Min = (102 × 0.5 + 775 × 1.2 + 73 × 2.4) ÷ 7 × 0.9 = 149 nos. Max = (102 × 0.5 + 775 × 1.2 + 73 × 2.4) ÷ 4 × 0.9 = 261 nos.	261 nos.
	Visitors	5 visitor car parking spaces for developments with more than 75 units per block	No. = 2 × 5 = 10 nos.	10 nos.	No. = 2 × 5 = 10 nos.	10 nos.
	Retail	1 space per 150 – 300m² GFA	Min = 10496 ÷ 300 = 35 nos. Max = 10496 ÷ 150 = 70 nos.	70 nos.	Min = 7816 ÷ 300 = 27 nos. Max = 7816 ÷ 150 = 53 nos.	53 nos.
	Total		**Min = 202 + 10 + 35 = 247 nos.** **Max = 354 + 10 + 70 = 434 nos.**	**434 nos. [2]**	**Min = 149 + 10 + 27 = 186 nos.** **Max = 261 + 10 + 53 = 324 nos.**	**324 nos. [3]**
Goods Vehicle	**Residential**	Minimum 1 bay for every 800 flats or part thereof, subject to minimum 1 bay for each housing block	No. = 2 nos.	2 nos. (2 HGV)	No. = 2 nos.	2 nos. (2 HGV)
	Retail	1 space per 800 – 1,200m², or part thereof, of GFA	Min = 10496 ÷ 1200 = 9 nos. Max = 10496 ÷ 800 = 14 nos.	14 nos. (5 HGV + 9 LGV)	Min = 7816 ÷ 1200 = 7 nos. Max = 7816 ÷ 800 = 10 nos.	10 nos. (4 HGV + 6 LGV)
	Total		**Min = 2 + 9 = 11 nos.** **Max = 2 + 14 = 16 nos.**	**16 nos. (7 HGV + 9 LGV)**	**Min = 2 + 7 = 9 nos.** **Max = 2 + 10 = 12 nos.**	**12 nos. (6 HGV + 6 LGV)**
Motorcycle	**Residential**	1 space per 100 – 150 flats	Min = 1276 ÷ 150 = 9 nos. Max = 1276 ÷ 100 = 13 nos.	13 nos.	Min = 950 ÷ 150 = 7 nos. Max = 950 ÷ 100 = 10 nos.	10 nos.
	Retail	5 – 10% of total provision of car parking space	Min = 70 × 5% = 4 nos. Max = 70 × 10% = 7 nos.	7 nos.	Min = 53 × 5% = 3 nos. Max = 53 × 10% = 6 nos.	6 nos.
	Total		**Min = 9 + 4 = 13 nos.** **Max = 13 + 7 = 20 nos.**	**20 nos.**	**Min = 7 + 3 = 10 nos.** **Max = 10 + 6 = 16 nos.**	**16 nos.**

Note: [1] Min – Minimum Max – Maximum
[2] include 5 car parking spaces for persons with disabilities for KC-018
[3] include 4 car parking spaces for persons with disabilities for KC-019

3.3 Subject to the detailed design, the internal transport facilities for KC-018 and KC-019 would comply with the **higher end of the HKPSG recommendations**.

3.4 The HKPSG has **no** recommendation on the provision of internal transport facilities for welfare facilities, i.e. G/IC use. To meet the operational needs, URA would liaise with Social Welfare Department during the detailed design stage on the provision of internal transport facilities.

Internal Transport Layout

3.5 The notional layout plan showing the internal transport facilities, i.e. basement 1st – 3rd floors, are presented in Figures 3.1 – 3.3. Access to the basement car parks is via the vehicle ramps.

3.6 KC-018 and KC-019 are individual project sites and will be redeveloped under two urban renewal projects. Hence, separate run-in / out is required for each development site. The run-in / out of KC-018 is provided at To Kwa Wan Road around 30m south of Ma Tau Kok Road, and the run-in / out of KC-019 is provided at To Kwa Wan Road around 30m north of Ma Tau Kok Road.

3.7 According to Volume 2 of TPDM, *"the width of run-ins should be kept to the minimum compatible with satisfactory operation of vehicles using the run-in. The minimum width should be such that a vehicle can enter the run in from the near side lane without encroachment onto an adjacent lane"*. As shown in Figure 3.4, the 8m run-in / out is required so that HGV could enter KC-018 and KC-019 **without encroaching into the adjacent traffic lane along To Kwa Wan Road**.

3.8 According to the TPDM, the visibility distance should be at least 50m for a road with speed of 50km/h. As shown in Figure 3.5, the measured visibility distances from the run-in / outs of KC-018 and KC-019 are more than 50m, which agree with the TPDM requirement.

3.9 The CAD-based swept path analysis programme, *Autodesk Vehicle Tracking*, was used to check the ease of manoeuvring of vehicles, and are found to have no problems. The swept path analysis drawings are found in Appendix B of the revised TIA report.

Potential Widening of To Kwa Wan Road

3.10 The Kai Tak OZP No. S/K22/7 indicates that a strip of area zoned as *"Road"* is provided along the eastern side of To Kwa Wan Road between Sung Wong Toi Road and Ma Tau Kok Road which is reserved for potential road widening. Extract of the Kai Tak OZP is found in Appendix C.

3.11 To be in-line with the OZP, KC-018 and KC-019 are located adjoining the *"Road"* zone and the two redevelopment projects provide opportunities to widen the existing To Kwa Wan Road from a single carriageway 4-lane road to a dual carriageway 3-lane road when the need arises in future.

4.0 TRAFFIC IMPACT

Design Year

4.1 It is expected that KC-018 and KC-019 will be completed in 2033, thus, the design year adopted for the capacity analysis is 2036, i.e. 3 years after its planned completion.

4.2 In order to produce the traffic and pedestrian forecasts up to year 2036, reference is made to the latest *"Territorial Population and Employment Data Matrix"* ("TPEDM") published by Planning Department, and the projected population and employment data is summarised in Table 4.1.

TABLE 4.1 TPEDM DATA FOR KOWLOON CITY AND KWUN TONG

Year	Population	Employment	Total
2019	1,123,200	607,350	**1,730,550**
2026	1,220,500	648,450	**1,868,950**
2031	1,161,350	636,100	**1,797,450**
Annual Growth Rate			**0.32%**

4.3 Table 4.1 shows that the annual growth rate obtained from TPEDM is modest, i.e. 0.32%. Hence, the traffic and pedestrian growth rate is assumed to be 0.5% per annum.

Traffic Generation

4.4 To estimate traffic generation of KC-018 and KC-019, trip generation rates for residential and retail found in Volume 1 of the TPDM are adopted. The TPDM has no trip generation rates for G/IC use, therefore, reference is made to the Data Record (DR) No. 439, published by Transport Department. The adopted trip generation rates are presented in Table 4.2.

TABLE 4.2 TRIP GENERATION RATES

Use	Unit	Trip Generation Rates			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Residential (average flat size = 60m^2) [1]	pcu/hour/flat	0.0425	0.0718	0.0370	0.0286
Retail [1]	pcu/hour/100m^2	0.2434	0.2296	0.3563	0.3100
G/IC [2]	pcu/hour/100m^2	0.2350	0.2350	0.1150	0.1150

Note: [1] extracted from Volume 1 of TPDM
[2] extracted from DR 439

4.5 The trip generation rates presented in Table 4.2 are used to calculate the traffic generated associated with KC-018 and KC-019, and the calculated traffic generation is presented in Table 4.3.

TABLE 4.3 TRAFFIC GENERATION OF KC-018 AND KC-019

Site	Use	Quantity	Traffic Generation (pcu/hour)			
			AM Peak		PM Peak	
			IN	OUT	IN	OUT
KC-018	Residential	1,276 flats	55	92	48	37
	Retail	10,496m² GFA	26	25	38	33
	G/IC	1,000m² GFA	3	3	2	2
	Total [a]		**84**	**120**	**88**	**72**
KC-019	Residential	950 flats	41	69	36	28
	Retail	7,816m² GFA	20	18	28	25
	G/IC	500m² GFA	2	2	1	1
	Total [b]		**63**	**89**	**65**	**54**
Overall [a + b]			**147**	**209**	**153**	**126**

Traffic Forecast

4.6 KC-018 and KC-019 are located within the K2 Base District Traffic Model (BDTM), and the BDTM traffic forecast for 2026 is used as the base. To produce the traffic forecast for year 2036, traffic flows are estimated with reference to the following:

i. 2026 peak hour traffic models from the BDTM;
ii. traffic growth rates from 2026 to 2036, i.e. 0.5% per annum;
iii. planned developments located in the vicinity; and
iv. traffic generation of KC-018 and KC-019.

4.7 It should be noted that the completion of Shatin-Central Link has been included in the BDTM. Hence, East West Line (EWL) and North South Line (NSL) of the Shatin-Central Link, i.e. currently known as Tuen Ma Line and East Rail Line Cross-Harbour Extension, have been taken into account in the traffic forecast.

4.8 The 2036 peak hour traffic flows without and with KC-018 and KC-019 are shown in Figures 4.1 and 4.2 respectively.

Planned Developments

4.9 According to the *"Agreement No. TD 302/2015 – Base District Traffic Models for the Urban Area – 2016 Update"* (the *"BDTM Study"*) obtained from Transport Department, Kai Tak Development (KTD) has been included in the 2026 BDTM.

4.10 With reference to Town Planning Board (TPB) Paper No. 10192: *"Review Study of Kai Tak Development"* published in 2016 and MPC Paper No. 9/21: *"Proposed Amendments to the Approved Kai Tak Outline Zoning Plan No. S/K22/6"* published in 2021, it is noted that the development intensity of each site in KTD has been increased.

4.11 The increase of development parameters for each site under the KTD Studies are attached in Appendix D. To reflect the increase of traffic generation from KTD, the BDTM was updated by applying the corresponding growths.

4.12 Apart from the KTD, other major planned developments in the vicinity of KC-018 and KC-019 are summarised in Table 4.4.

TABLE 4.4 DETAILS OF MAJOR PLANNED DEVELOPMENTS

Ref.	Location	Land Use	Development Parameters (Approx.)
A	URA Project at Kai Ming Street (DL-8:KC)	Private Housing	around 72 flats and retail GFA of around 308m^2
B	URA Project at Pak Tai Street / San Shan Road (KC-006)	Private Housing	around 228 flats and retail GFA of around 1,630m^2
C	URA Project at Kowloon City Road / Sheung Heung Road (KC-007)	Private Housing	around 294 flats and retail GFA of around 2,076m^2
D	URA Project at Chun Tin Street / Sung Chi Street (KC-008A)	Private Housing	around 260 flats and retail GFA of around 1,447m^2
E	URA Project at Bailey Street / Wing Kwong Street (KC–009)	Private Housing	around 1,150 flats and retail GFA of around 11,105m^2
F	URA Project at Hung Fook Street / Ngan Hon Street (KC-010)	Private Housing	around 750 flats and retail GFA of around 6,843m^2
G	URA Project at Hung Fook Street / Kai Ming Street (KC-011)	Private Housing	around 400 flats and retail GFA of around 3,660m^2
H	URA Project at Kai Ming Street / Wing Kwong Street (KC-012 and KC-013)	Private Housing	around 414 flats and retail GFA of around 3,721m^2
I	URA Project at Wing Kwong Street / Sung On Street (KC-014)	Private Housing	around 560 flats and retail GFA of around 4,286m^2
J	URA Project at Ma Tau Wai Road / Chun Tin Street (TKW/1/002)	Private Housing	around 493 flats and retail GFA of around 3,114m^2
K	5 Mok Cheong Street	Private Housing	around 825 flats and retail GFA of around 9,262m^2
L	3 – 5 San Ma Tau Street	Mixed Use	office GFA of around 18,479m^2 and retail GFA of around 5,979m^2
M	New Kowloon Inland Lot No. 6607, Shing Kai Road	Mixed Use	office GFA of around 14,450m^2, retail GFA of around 1,550m^2 and not more than 440 hotel rooms
N	Junction of Sung Wong Toi Road / To Kwa Wan Road	Public Housing	around 600 flats
O	URA Project at To Kwa Wan Road / Wing Kwong Street (KC-016)	Private Housing	around 900 flats and retail GFA of around 8,322m^2
P	Dedicated Rehousing Estate at Ma Tau Kok (by HK Housing Society)	Subsidised Housing	around 1,100 flats and retail GFA of around 8,500m^2
Q	9 – 17 Mok Cheong Street (A/K10/265)	Private Housing	around 746 flats and retail GFA of around 7,599m^2
R	URA Project at Shing Tak Street / Ma Tau Chung Road (CBS-1:KC)	Private Housing	residential GFA of around 32,243m^2 and retail GFA of around 6,449m^2
S	URA Project at Kau Pui Lung Road / Chi Kiang Street (CBS-2:KC)	Private Housing	residential GFA of around 122,263m^2 and retail GFA of around 12,232m^2
T	60 Ko Shan Road	Subsidised Housing	around 110 flats
U	21 Yuk Yat Street	Private Housing	around 110 flats and retail GFA of around 810m^2
V	17 Yuk Yat Street	Private Housing	around 208 flats and retail GFA of around 700m^2

4.13 The major planned developments listed in Table 4.4 have been included in the traffic forecast.

2036 Junction and Link Capacity Analysis

4.14 The 2036 junction capacity analysis for the cases without and with KC-018 and KC-019 are summarised in Table 4.5, and detailed calculations are found in Appendix A.

TABLE 4.5 2036 JUNCTION OPERATIONAL PERFORMANCE

Ref.	Junction [1]	Without KC-018 and KC-019		With KC-018 and KC-019	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Kowloon City Road / Sung Wong Toi Road	89%	85%	86%	83%
B	Kowloon City Road / Mok Cheong Street	> 100%	> 100%	> 100%	> 100%
C	Kowloon City Road / Ma Tau Kok Road	> 100%	93%	>100%	78%
D	To Kwa Wan Road / San Shan Road / San Ma Tau Street	32%	33%	15% (27%) [1]	22% (31%) [1]
E	To Kwa Wan Road / Ma Tau Kok Road	> 100%	> 100%	> 100%	> 100%
F	To Kwa Wan Road / Mok Cheong Street	64%	58%	50%	48%
G	To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	40%	32%	34%	29%
H	Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	35%	28%	35%	27%
I	Ma Tau Chung Road / Ma Tau Kok Road	89%	> 100%	94%	> 100%
J	Olympic Garden Roundabout	0.778	0.766	0.782	0.770

Note: [1] refer to Table 2.2 on the type of junction and performance indicator
[2] ( ) – reserve capacity with traffic improvement scheme as shown in Figure 4.3

4.15 A possible traffic improvement scheme is identified for Junction D as shown in Figure 4.3. The operational performance could be improved by (i) widening and realignment of the existing traffic lanes at San Shan Road; and (ii) realignment of central divider at San Ma Tau Street to provide an additional traffic lane.

4.16 The 2036 link capacity for the local road network is also assessed and the results are shown in Table 4.6.

TABLE 4.6 2036 LINK CAPACITY ASSESSMENT

Road Section	Direction	Without KC-018 and KC-019				With KC-018 and KC-019			
		Traffic Flows (veh/hr)		V/C Ratio[1][2]		Traffic Flows (veh/hr)		V/C Ratio[1][2]	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Ma Tau Kok Road	WB	394	525	0.15	0.19	431	501	0.16	0.19
Mok Cheong Street	EB	527	600	0.29	0.33	555	632	0.31	0.35
San Shan Road	Two-way	1129	981	0.51	0.45	1172	993	0.53	0.45
Sung Wong Toi Road	Two-way	1425	1609	0.38	0.42	1426	1622	0.38	0.43
To Kwa Wan Road (fronting KC-018)	NB	900	1130	0.28	0.35	976	1193	0.30	0.37
	SB	921	860	0.28	0.27	1010	896	0.31	0.28
To Kwa Wan Road (fronting KC-019)	Two-way	1563	1592	0.44	0.45	1623	1638	0.46	0.46
Kowloon City Road	NB	562	738	0.20	0.26	638	805	0.22	0.28

Note: EB – eastbound SB – southbound
WB – westbound NB – northbound
[1] V/C Ratio – Volume to Capacity Ratio
[2] refer to Table 2.3 for the capacity of each road

4.17 The above results indicate that the analysed junctions and road links are expected to operate with capacities during the peak hours in 2036. The junctions and links analysed have sufficient capacity to accommodate the (i) expected traffic growth; and (ii) traffic generated by KC-018 and KC-019.

4.18 The design year queue length analyses for critical junctions are conducted as shown in Appendix E. As shown in the queue length diagrams, vehicle queues at the signalised junctions do not block their upstream junctions, and no operational issue is anticipated.

4.19 It can be concluded that KC-018 and KC-019 will **not** have adverse traffic impact to the surrounding road network. In addition, the potential widening of To Kwa Wan Road as described in Paragraphs 3.10 and 3.11 is **not** necessary for the redevelopment of KC-018 and KC-019.

Pedestrian Generation

4.20 The pedestrian generation of KC-018 and KC-019 is estimated based on pedestrian generation surveys conducted at similar developments. The surveyed developments are comparable in terms of use, class and accessibility to public transport services. The adopted pedestrian generation rates are presented in Table 4.7.

TABLE 4.7 PEDESTRIAN GENERATION RATES

Use	Unit	Pedestrian Generation Rates			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Residential [(1)]	ped/15-min/flat	0.0202	0.0875	0.0853	0.0348
Retail [(2)]	ped/15-min/100m^2 GFA	1.0561	0.9571	1.4604	1.1799
G/IC [(3)]	ped/15-min/100m^2 GFA	0.2651	0.0482	0.2048	0.2892

Source: [(1)] Survey at Grand Waterfront (with 1,782 flats and average flat size of around 51m^2) at 38 San Ma Tau Street in To Kwa Wan
[(2)] Survey at Grand Waterfront Plaza (with retail GFA of around 12,120m^2) at 38 San Ma Tau Street in To Kwa Wan
[(3)] Survey at Caritas Community Centre – Tsuen Wan (with GFA of around 8,300m^2) at 9 Shing Mun Road, Tsuen Wan

4.21 The pedestrian generation rates presented in Table 4.7 are used to calculate the pedestrian generated by KC-018 and KC-019, and the calculated pedestrian generation is presented in Table 4.8.

TABLE 4.8 PEDESTRIAN GENERATION OF KC-018 AND KC-019

Site	Use	Quantity	Pedestrian Generation (ped/15-min)			
			AM Peak		PM Peak	
			IN	OUT	IN	OUT
KC-018	Residential	1,276 flats	26	112	109	45
	Retail	10,496m² GFA	111	101	154	124
	G/IC	1,000m² GFA	3	1	3	3
	Total [a]		**140**	**214**	**266**	**172**
KC-019	Residential	950 flats	20	84	82	34
	Retail	7,816m² GFA	83	75	115	93
	G/IC	500m² GFA	2	1	2	2
	Total [b]		**105**	**160**	**199**	**129**
Overall [a + b]			**245**	**374**	**465**	**301**

2036 Level-of-Service Assessment

4.22 Prior to completion of Exit C of MTR Sung Wong Toi Station at Pak Tai Street, passengers would use Olympic Avenue and the signal crossing near Tam Kung Road to / from Exit D. To reflect the change in walking pattern after completion of Exit C, the pedestrian flows using the signal crossing near Tam Kung Road have been added into the 2036 level-of-service assessment.

4.23 The 2036 peak 15-minute pedestrian flows without and with KC-018 and KC-019 are shown in Figures 4.4 and 4.5 respectively, and the corresponding LOS assessment is presented in Table 4.9.

TABLE 4.9 2036 LEVEL-OF-SERVICE ASSESSMENT

Ref.	Footpath	Peak Period	2-way Peak Pedestrian Flows [1]					
			Without KC-018 and KC-019			With KC-018 and KC-019		
			Flow (ped/ 15-min)	Rate (ped/ min/m)	LOS	Flow (ped/ 15-min)	Rate (ped/ min/m)	LOS
F1	Eastern footpath of To Kwa Wan Road	AM	473	12.6	A	889	23.7	C
		PM	527	14.1	A	1,106	29.5	C
F2	Northern footpath of Mok Cheong Street (east of Kowloon City Road)	AM	240	6.4	A	505	13.5	A
		PM	265	7.1	A	593	15.8	A
F3	Northern footpath of Mok Cheong Street (west of Kowloon City Road)	AM	244	8.1	A	509	17.0	B
		PM	266	8.9	A	594	19.8	B
F4	Eastern footpath of Pak Tai Street	AM	371	12.4	A	636	21.2	B
		PM	414	13.8	A	742	24.7	C
F5	Eastern footpath of To Kwa Wan Road (south of Ma Tau Kok Road)	AM	271	7.2	A	625	16.7	B
		PM	245	6.5	A	683	18.2	B
F6	Southern footpath of Ma Tau Kok Road (east of Kowloon City Road)	AM	367	12.2	A	721	24.0	C
		PM	381	12.7	A	819	27.3	C
F7	Southern footpath of Ma Tau Kok Road (west of Kowloon City Road)	AM	324	8.6	A	678	18.1	B
		PM	502	13.4	A	940	25.1	C

Note: [1] highest pedestrian flows along the whole section of footpath

4.24 The above results indicate that the analysed footpaths are expected to operate with LOS A to C during the peak periods in 2036. The results show that the footpaths analysed have sufficient capacity to accommodate the (i) expected pedestrian growth; and (ii) additional pedestrians generated by KC-018 and KC-019.

5.0 CONCLUSION

5.1 KC-018 and KC-019 comprise of the old buildings bounded by at: (i) Ma Tau Kok Road; (ii) Ming Lun Street; (iii) Chung Sun Street; (iv) Hing Yin Street; and (v) Hing Yan Street. The URA intends to rezone KC-018 and KC-019 in Ma Tau Kok from *"CDA" and 'Road'* to *"R(A)" and 'Road'*. The two sites will be redeveloped into residential developments with retail uses and G/IC facilities.

5.2 Subject to the detailed design, the internal transport facilities provided for KC-018 and KC-019 comply with the **higher end of the HKPSG recommendations** as summarised in Table 5.1.

TABLE 5.1 SUMMARY OF INTERNAL TRANSPORT FACILITIES

Item	KC-018	KC-019	Overall
Car Parking Space	434 [(1)]	324 [(2)]	**758**
HGV Loading / Unloading Bay	7	6	**13**
LGV Loading / Unloading Bay	9	6	**15**
Motorcycle Parking Space	20	16	**36**

Note: [(1)] include 5 car parking spaces for persons with disabilities
[(2)] include 4 car parking spaces for persons with disabilities

5.3 Manual classified counts were conducted at key junctions, which are located in the vicinity of KC-018 and KC-019 in order to establish the existing traffic flows during the AM and PM peak hours. The 2036 design traffic flows are derived with reference to the BDTM and have taken into account the planned developments and road network in the vicinity.

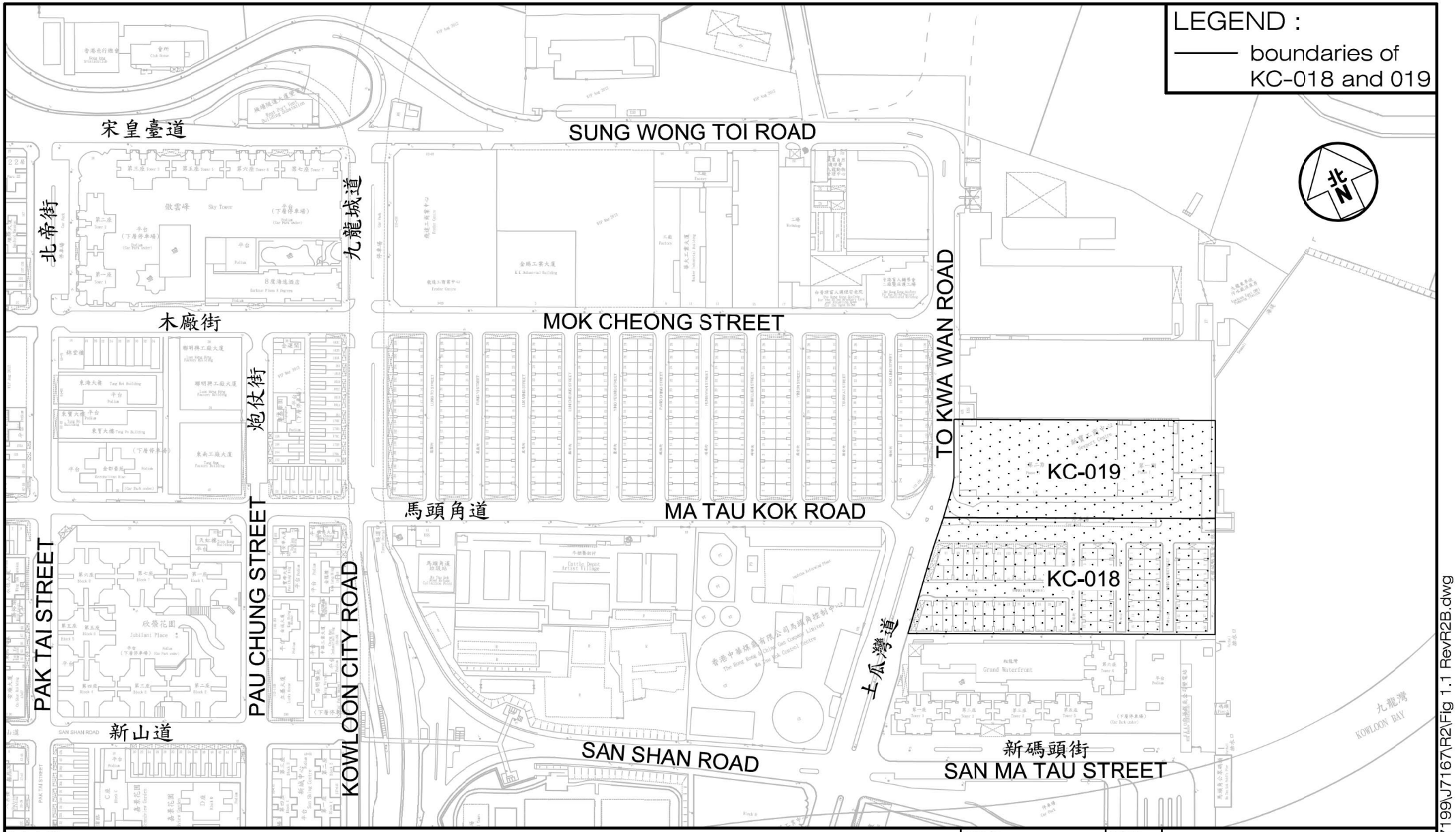
5.4 To be in line with the OZP, the redevelopment of KC-018 and KC-019 adjoining the *"Road"* zone provides an opportunity to widen the existing To Kwa Wan Road from a single carriageway 4-lane road to a dual carriageway 3-lane road when the need arises in future.

5.5 The 2036 junction capacity analysis was undertaken for the cases with and without KC-018 and KC-019. The junctions analysed have sufficient capacity to accommodate the expected 2036 traffic flows and the traffic generated by KC-018 and KC-019. Hence, the potential widening of To Kwa Wan Road is **not** necessary for redevelopment of KC-018 and KC-019.

5.6 Pedestrian counts were conducted at the footpaths in the vicinity of the subject site in order to estimate the future pedestrian flows during the AM and PM peak periods. The LOS assessment demonstrates that the analysed footpaths have sufficient capacity to accommodate the estimated pedestrian flows in 2036.

5.7 The TIA concludes that KC-018 and KC-019 will result in **no** adverse traffic impact to the surrounding planned road network, and is acceptable from traffic engineering grounds.

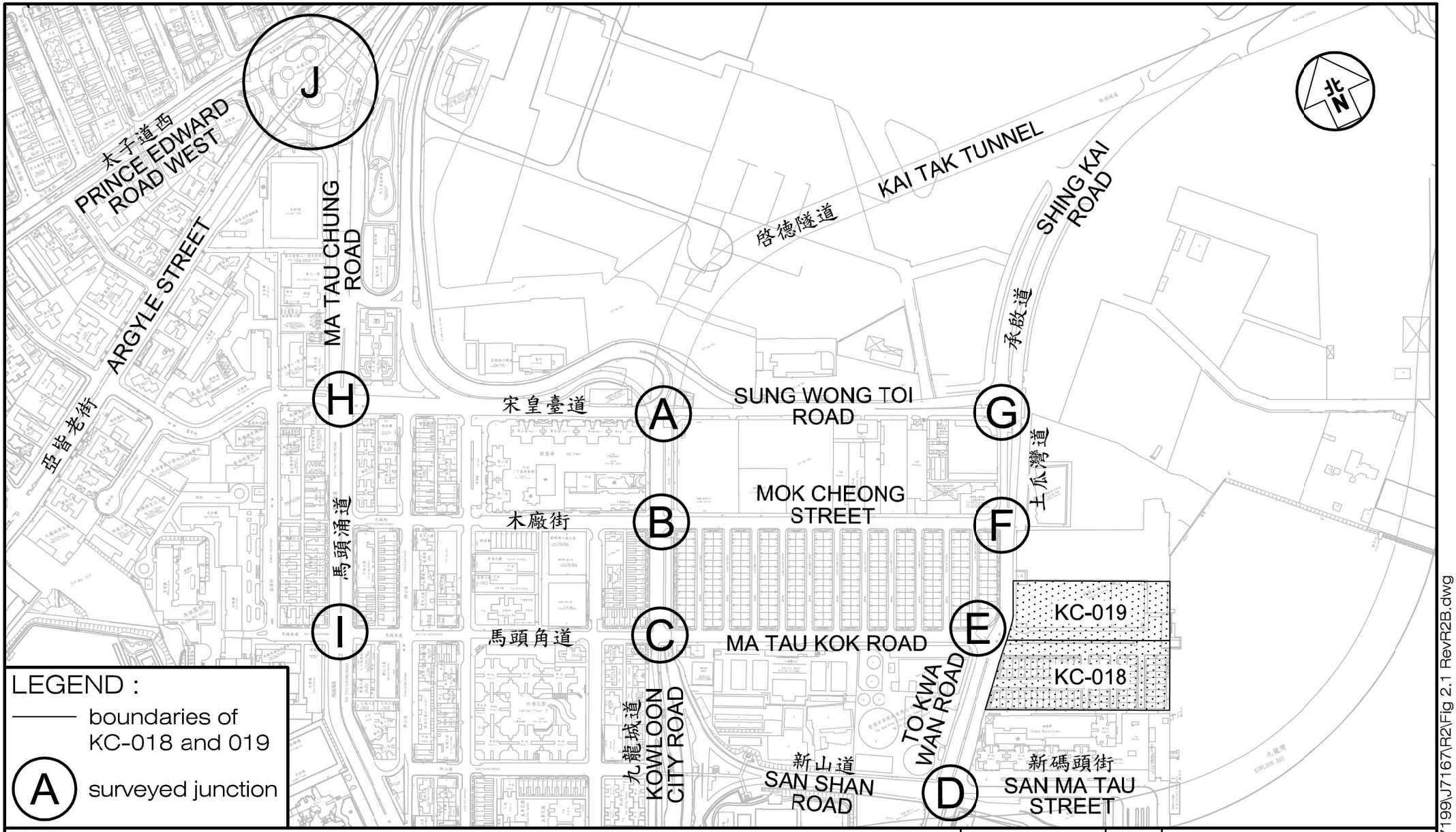
Figures



Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 1.1	Revision R2B
Figure Title: LOCATION OF KC-018 AND KC-019		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A4: 1 : 3,000	Date: 29 SEP 2022

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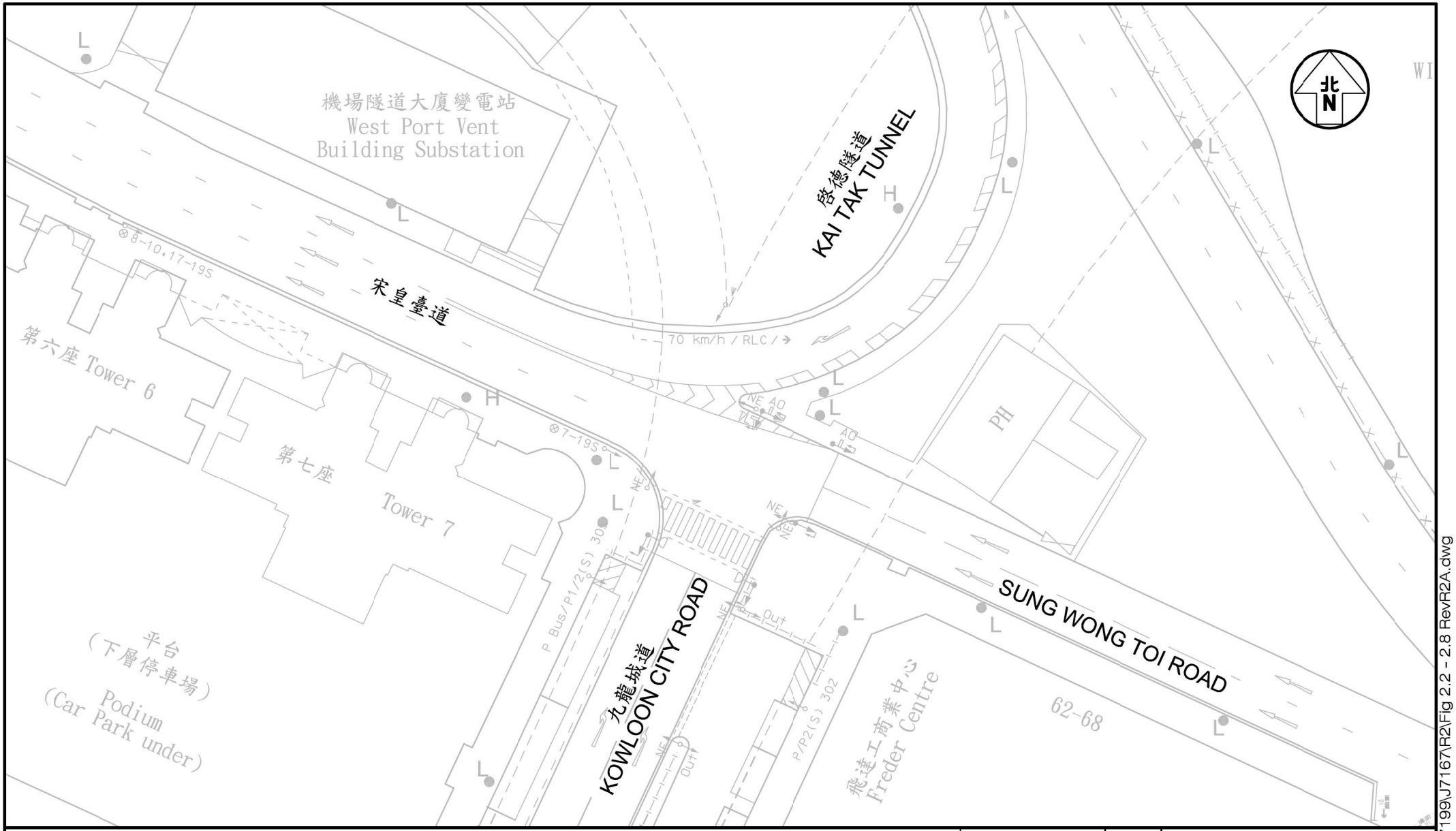
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.1	Revision R2B
Figure Title: SURVEYED JUNCTIONS		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A4: 1 : 4,000	Date: 29 SEP 2022

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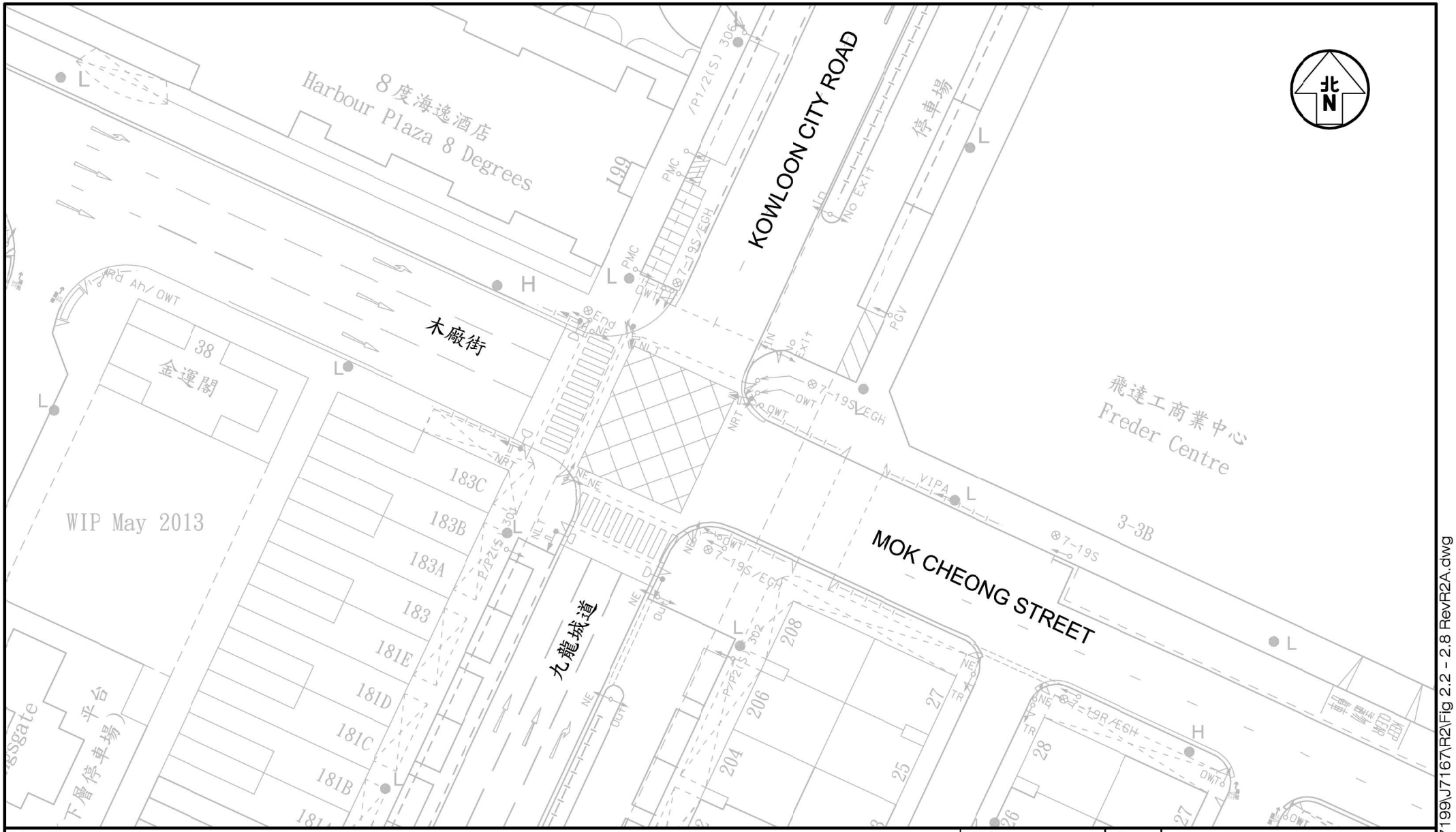
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.2	Revision R2A
Figure Title: (A) JUNCTION OF KOWLOON CITY ROAD / SUNG WONG TOI ROAD		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A4: 1 : 500	Date: 21 SEP 2022

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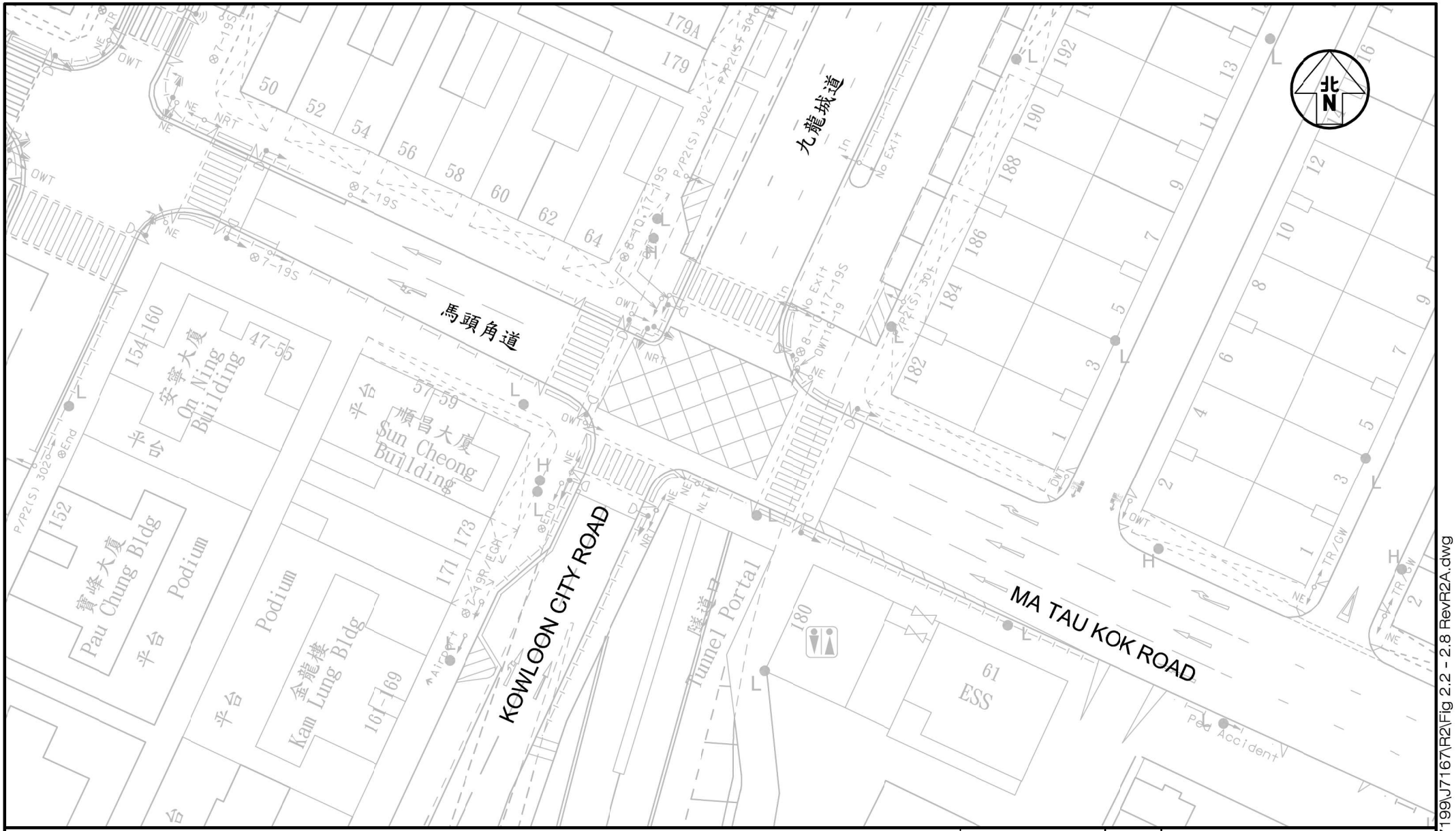
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.3	Revision R2A
Figure Title: (B) JUNCTION OF KOWLOON CITY ROAD / MOK CHEONG STREET		Designed by THC / Drawn by CCL / Checked by KC	Scale in A4: 1 : 500 / Date: 21 SEP 2022

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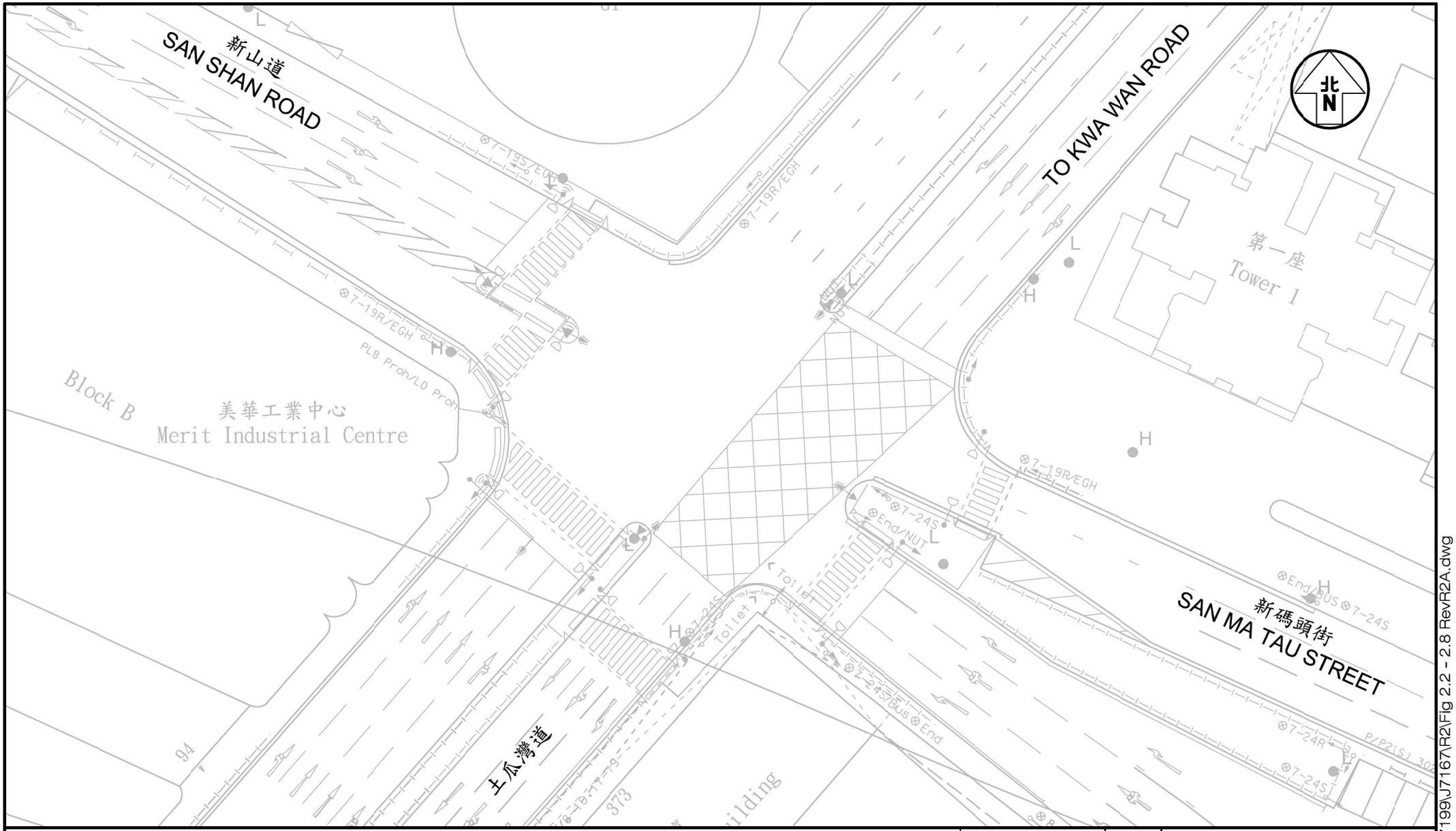
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.4	Revision R2A
Figure Title: (C) JUNCTION OF KOWLOON CITY ROAD / MA TAU KOK ROAD		Designed by THC / Drawn by CCL / Checked by KC	
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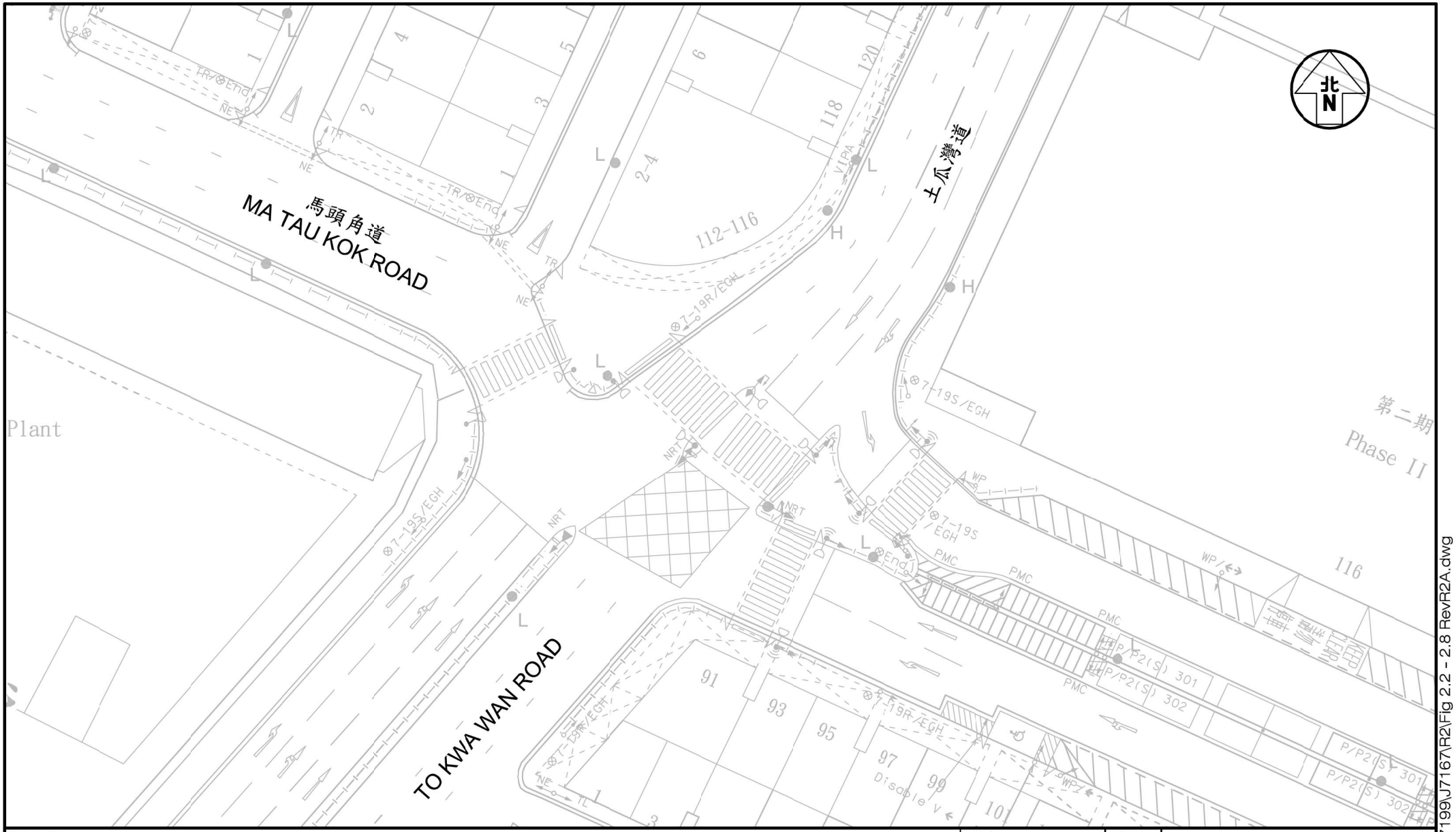
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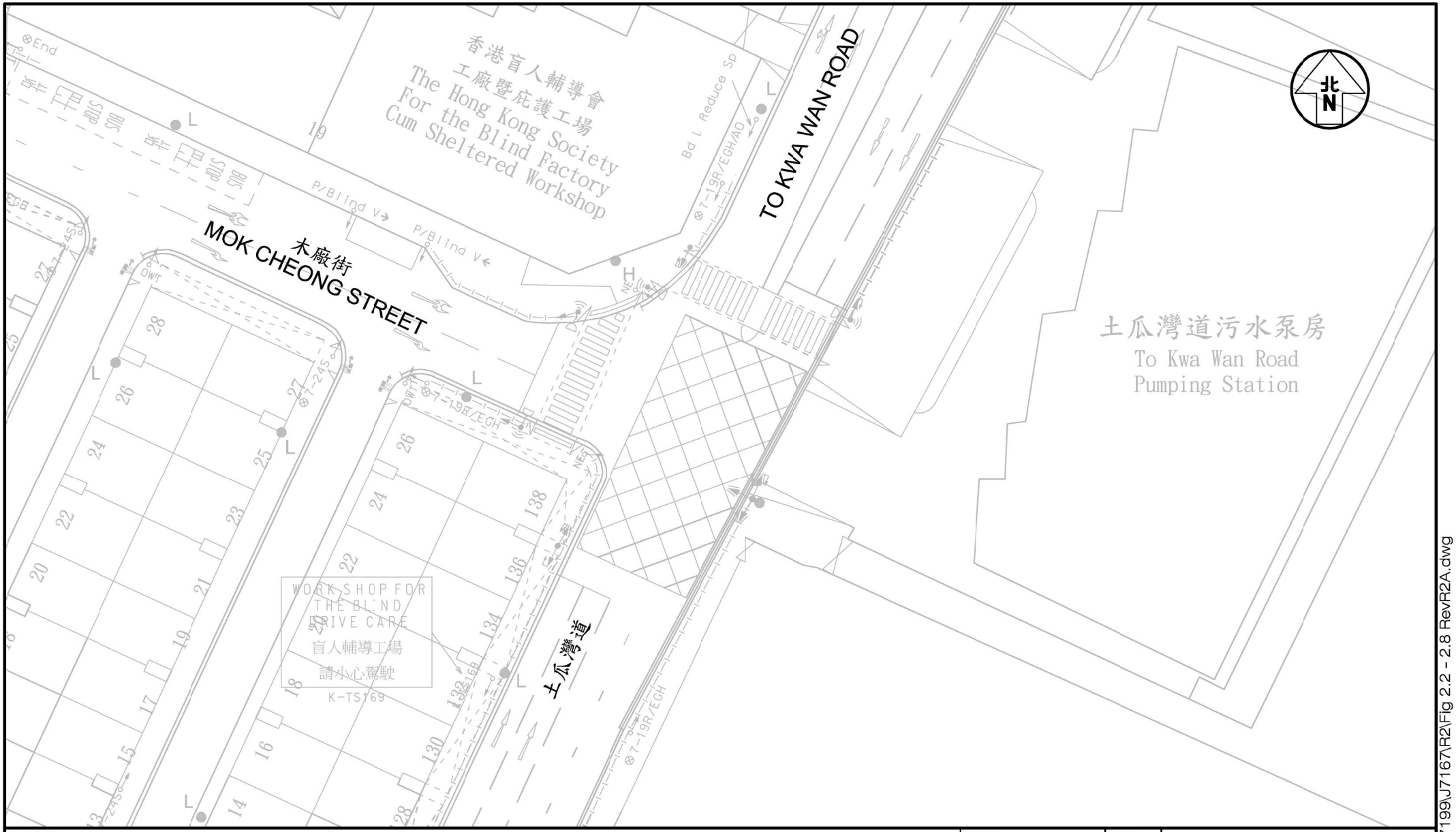
Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.5	Revision R2A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title	(D) JUNCTION OF TO KWA WAN ROAD / SAN SHAN ROAD / SAN MA TAU STREET		Designed by THC / Drawn by CCL / Checked by KC Scale in A4 1 : 500 / Date 21 SEP 2022		

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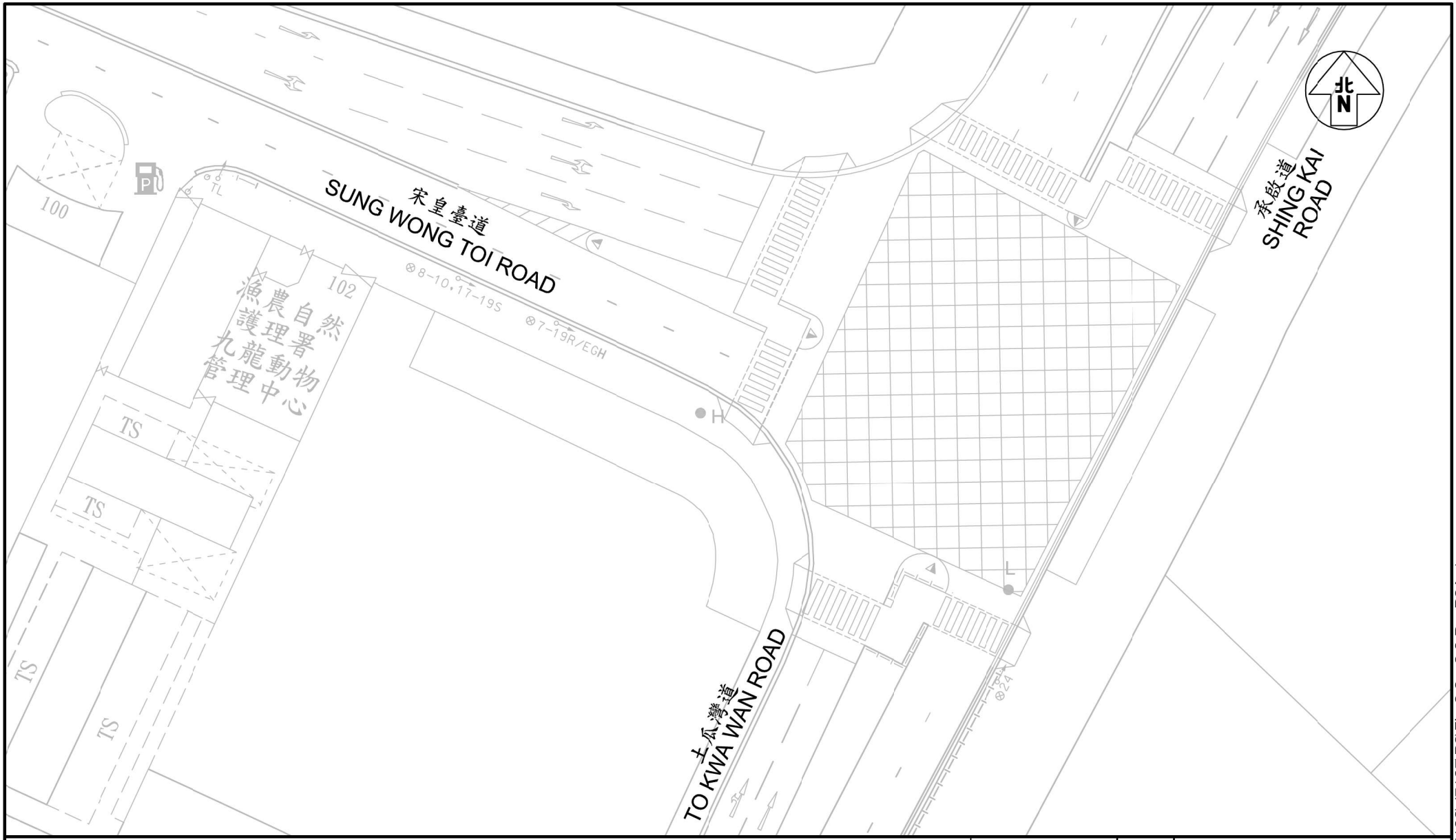
Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.6	Revision R2A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title: (E) JUNCTION OF TO KWA WAN ROAD / MA TAU KOK ROAD		Designed by THC / Drawn by CCL / Checked by KC Scale in A4: 1 : 500 Date: 21 SEP 2022		

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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.7	Revision R2A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title: (F) JUNCTION OF TO KWA WAN ROAD / MOK CHEONG STREET		Designed by T H C / Drawn by C C L / Checked by K C Scale in A4 1 : 500 / Date 21 SEP 2022		

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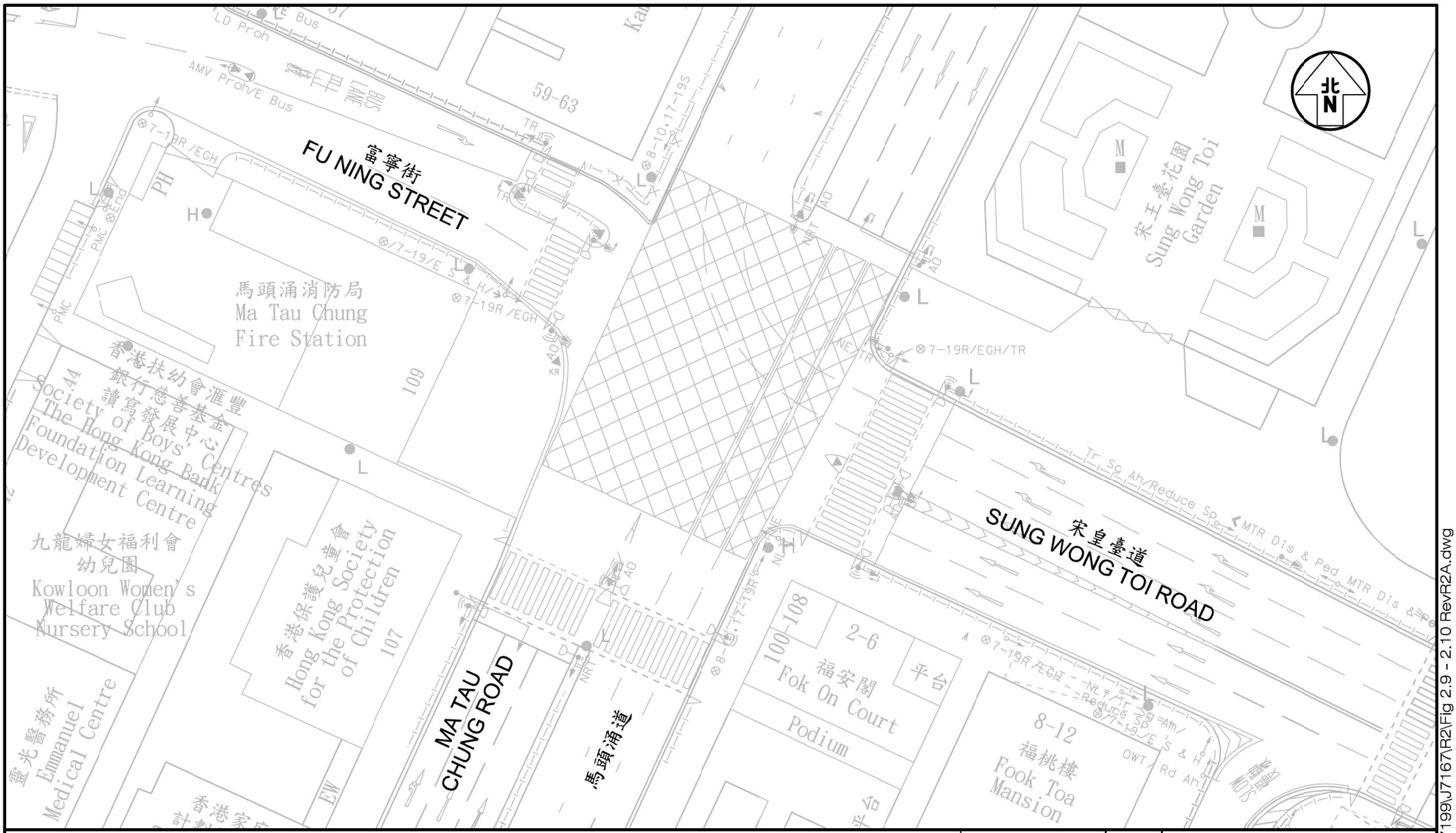


Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	(G) JUNCTION OF TO KWA WAN ROAD / SHING KAI ROAD / SUNG WONG TOI ROAD		

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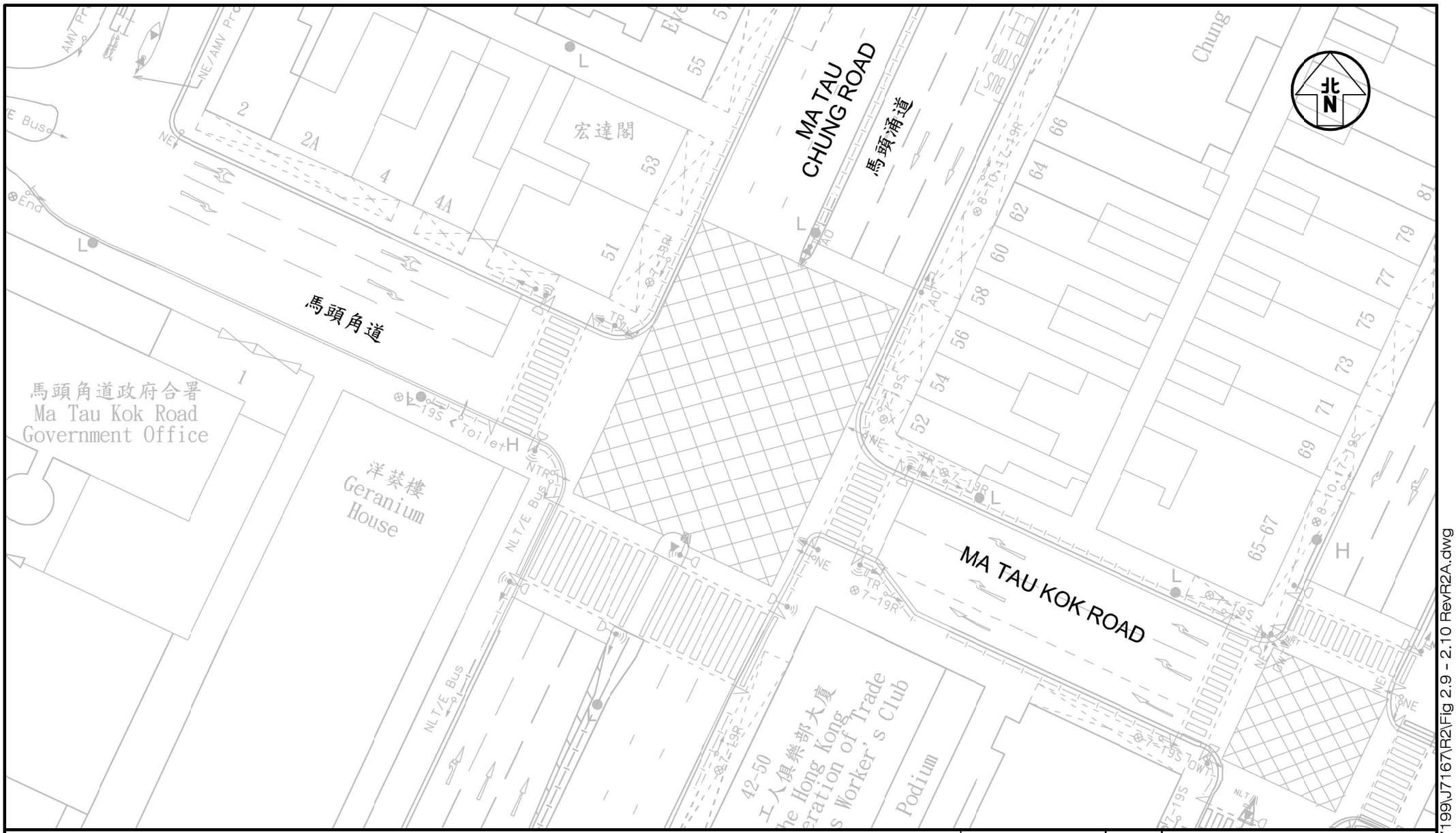
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.9	Revision R2A	CKM Asia Limited Traffic and Transportation Planning Consultants
Figure Title: (H) JUNCTION OF MA TAU CHUNG ROAD / FU NING STREET / SUNG WONG TOI ROAD		Designed by THC / Drawn by CCL / Checked by KC Scale in A4: 1 : 500 / Date: 21 SEP 2022		21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk

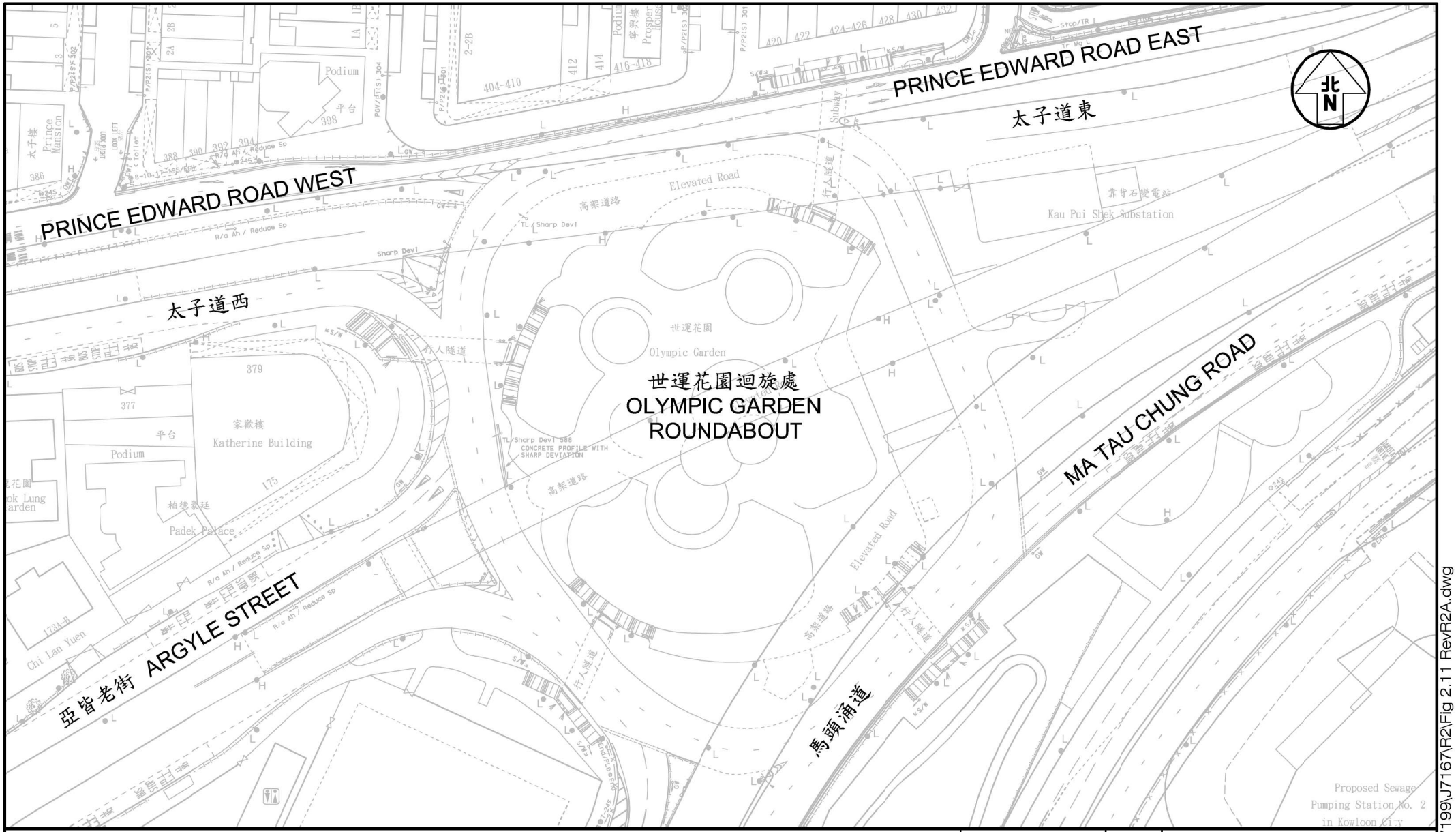
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: 2.10	Revision: R2A
Figure Title: (I) JUNCTION OF MA TAU CHUNG ROAD / MA TAU KOK ROAD		Designed by: T H C; Drawn by: C C L; Checked by: K C	
		Scale in A4: 1 : 500; Date: 21 SEP 2022	

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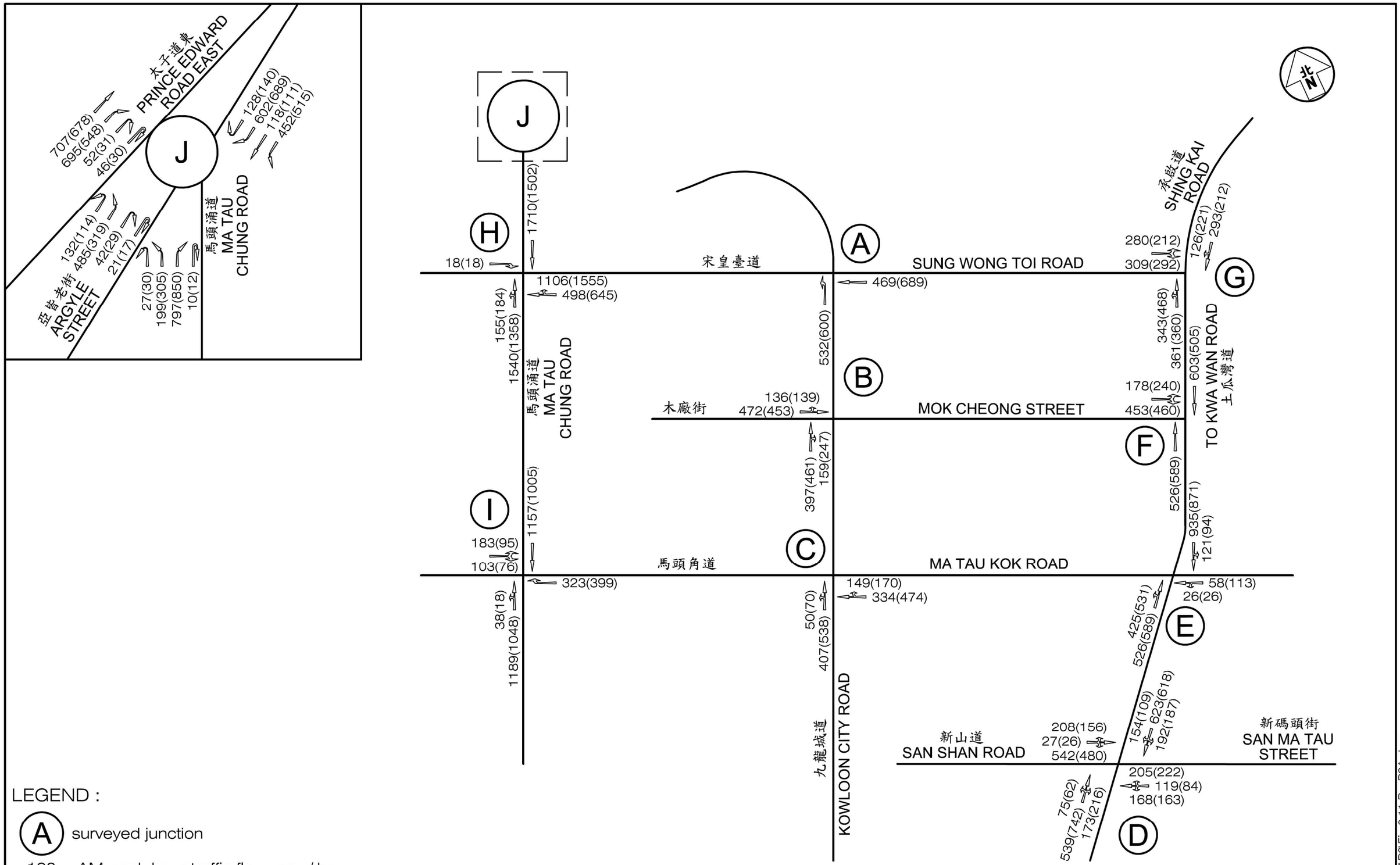
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.11	Revision R2A
Figure Title: (J) OLYMPIC GARDEN ROUNDABOUT		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A4: 1 : 1,000	Date: 21 SEP 2022

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LEGEND :

(A) surveyed junction

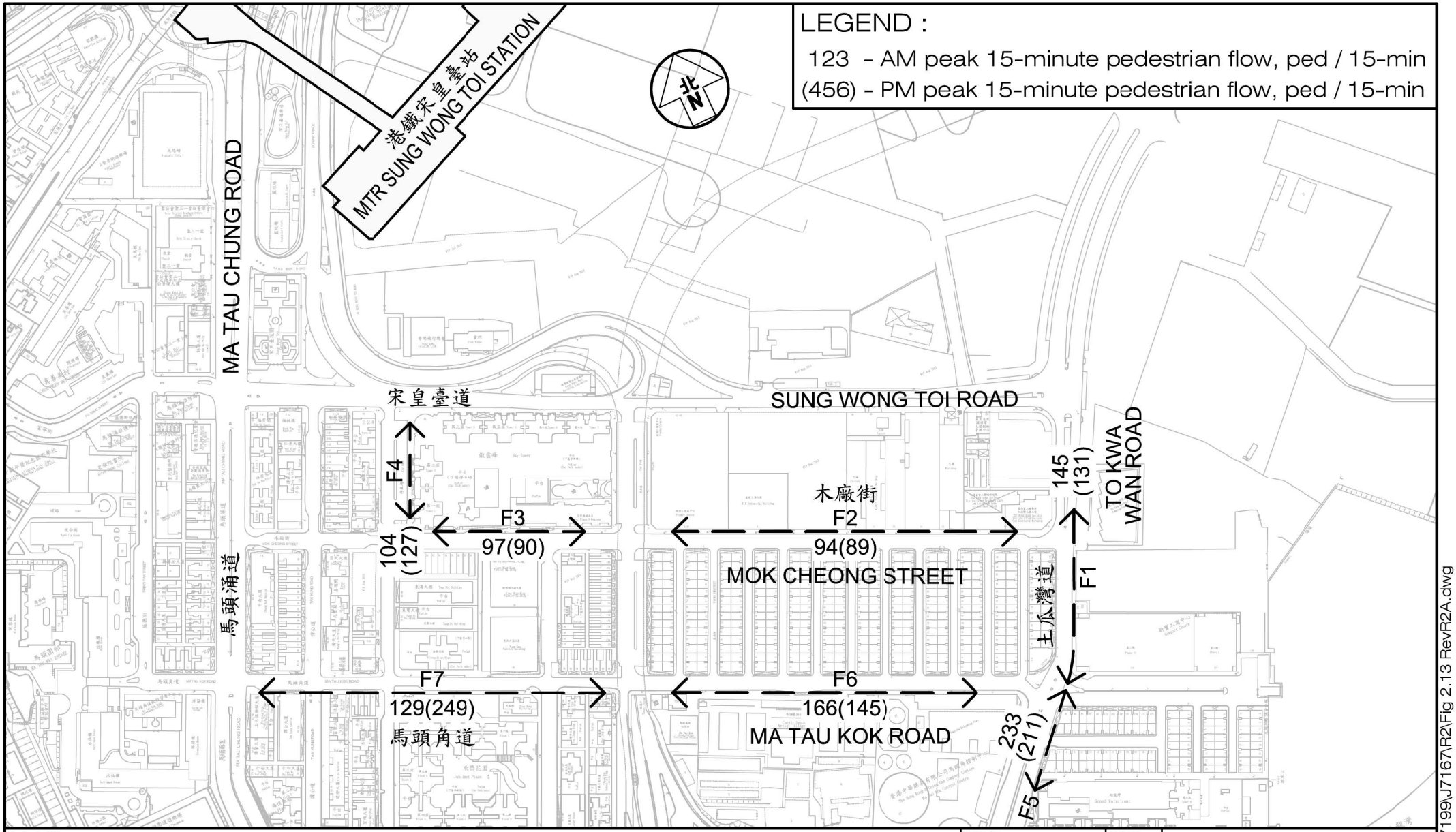
123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.12	Revision R2A
Figure Title: EXISTING PEAK HOUR TRAFFIC FLOWS		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A3 N.T.S. / Date 21 SEP 2022	

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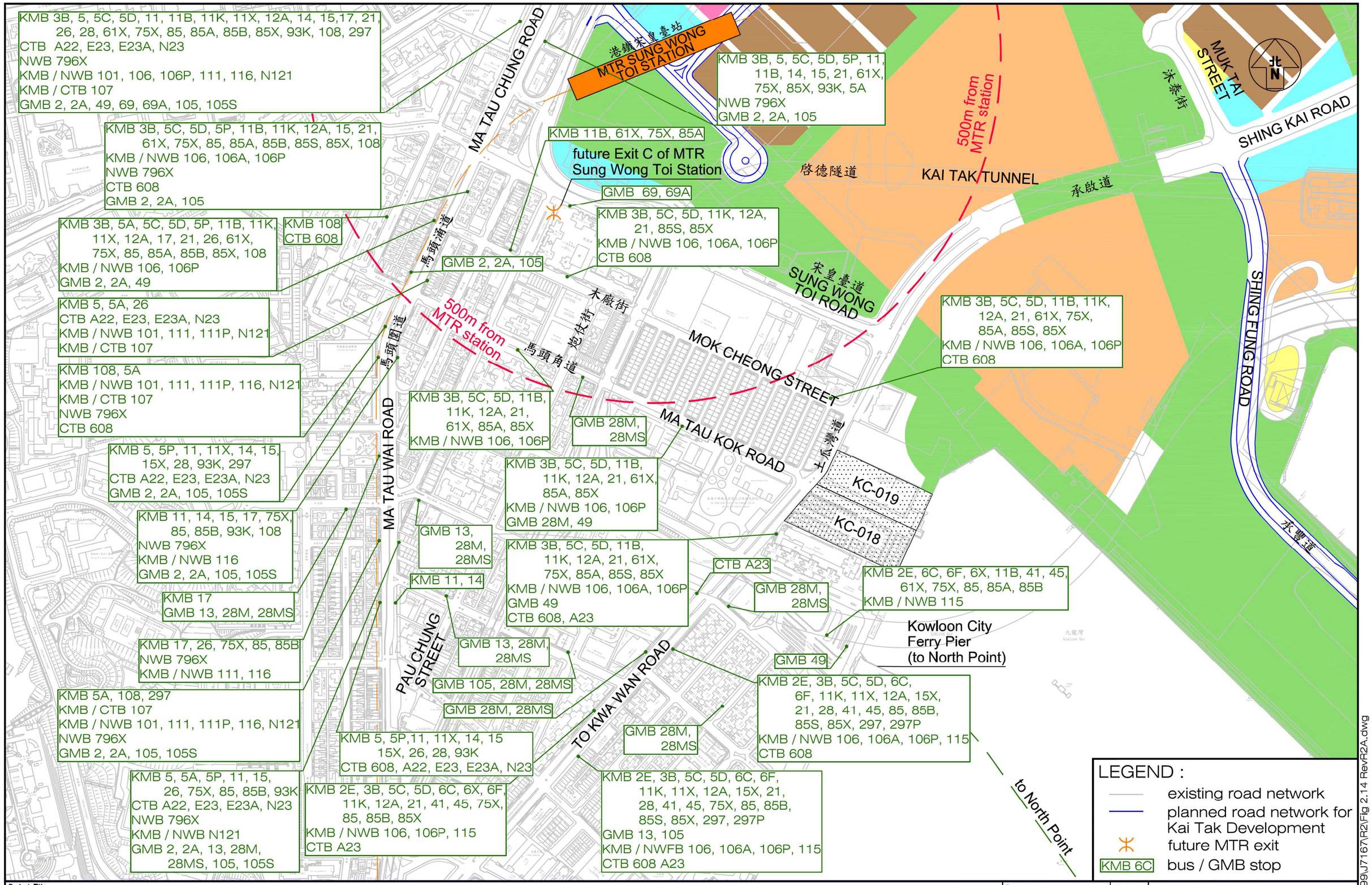
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 2.13	Revision R2A
Figure Title: EXISTING PEAK 15-MINUTE PEDESTRIAN FLOWS		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A4: 1 : 4,000	Date: 21 SEP 2022

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure No. 2.14 | Revision R2A

Figure Title

DETAILS OF THE PUBLIC TRANSPORT SERVICES IN THE VICINITY OF KC-018 AND KC-019

Designed by	Drawn by	Checked by
T H C	C C L	K C

Scale in A3: N.T.S.

Date: 21 SEP 2022

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INTERNAL TRANSPORT FACILITIES :

MOTORCYCLE PARKING SPACE
@2.4m(L) X 1m(W) X 2.4m(H)

P1 CAR PARKING SPACE
@5m(L) X 2.5m(W) X 2.4m(H)

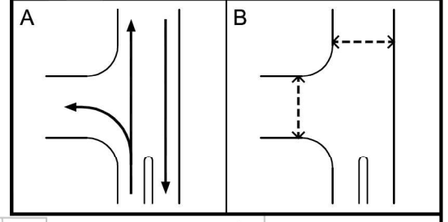
CAR PARKING SPACE FOR
PERSONS WITH DISABILITIES
@5m(L) X 3.5m(W) X 2.4m(H)

L1 LGV LOADING / UNLOADING BAY
@7m(L) x 3.5m(W) x 3.6m(H)

H1 HGV LOADING / UNLOADING BAY
@11m(L) x 3.5m(W) x 4.7m(H)

RCV RCV LOADING / UNLOADING BAY
@12m(L) X 5m(W) X 4.5m(H)

PROPOSED METHOD OF CONTROL



8m run-in / out
for KC-019

signal junction
to be modified

"Road" zone reserved
for potential road
widening (by others)

8m run-in / out
for KC-018

TO KWA
WAN ROAD

土瓜灣道

RAMP
1:10

RAMP
1:8

RAMP
1:10

RAMP
1:8

KC-019

KC-018

LEGEND :
boundaries of
KC-018 and 019
"Road" zone

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 3.1	Revision R2B
Figure Title: NOTIONAL INTERNAL TRANSPORT LAYOUT – GROUND TO BASEMENT 1 FLOOR		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A3: 1 : 600 / Date: 29 SEP 2022	

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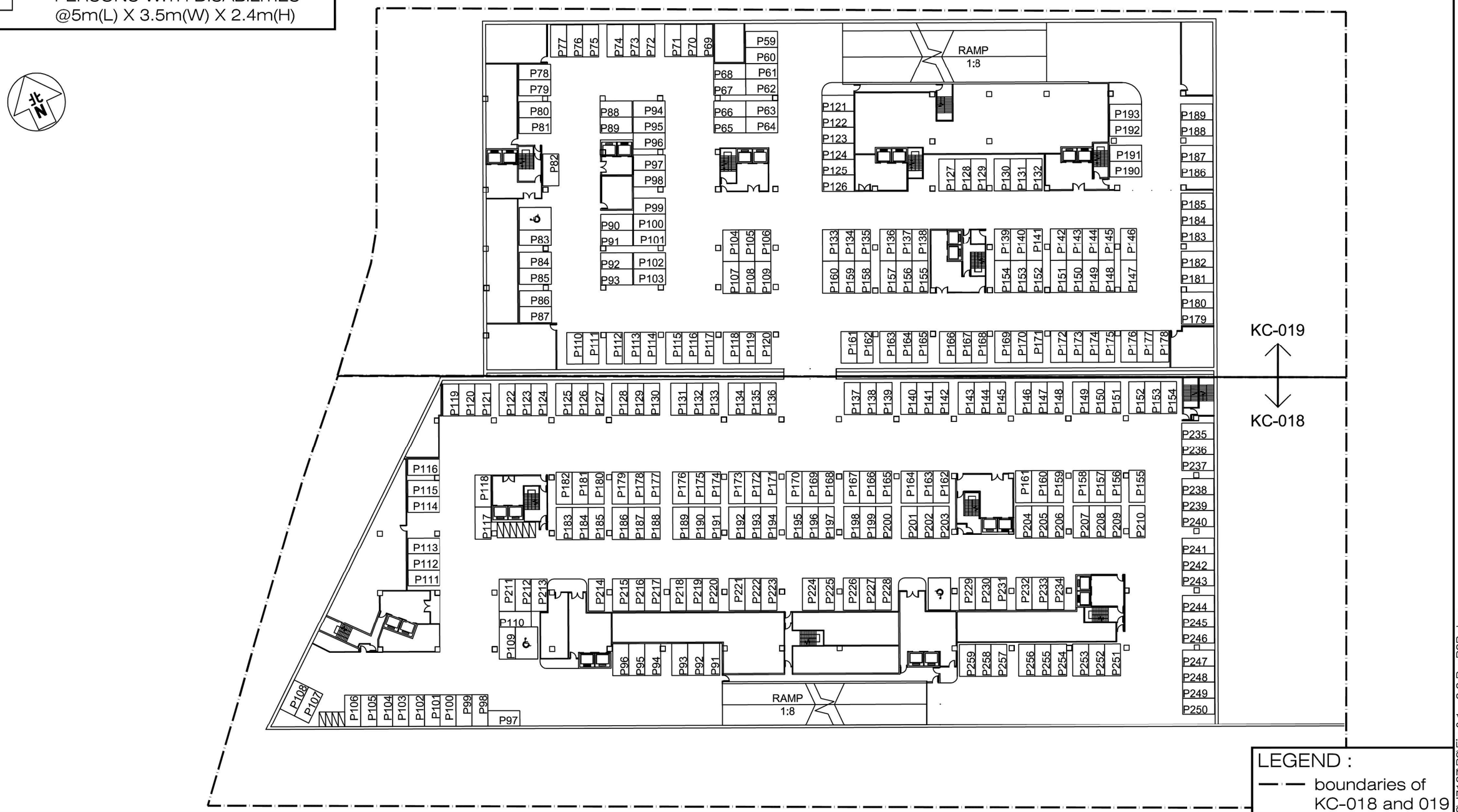
T:\JOB\J7150-J7199\J7167\R2\Fig 3.1 - 3.3 RevR2B.dwg

INTERNAL TRANSPORT FACILITIES :

MOTORCYCLE PARKING SPACE
@2.4m(L) X 1m(W) X 2.4m(H)

P1 CAR PARKING SPACE
@5m(L) X 2.5m(W) X 2.4m(H)

CAR PARKING SPACE FOR
PERSONS WITH DISABILITIES
@5m(L) X 3.5m(W) X 2.4m(H)



LEGEND :

boundaries of
KC-018 and 019

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 3.2	Revision R2B
Figure Title: NOTIONAL INTERNAL TRANSPORT LAYOUT – BASEMENT 2 FLOOR		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A3: 1 : 600	Date: 29 SEP 2022

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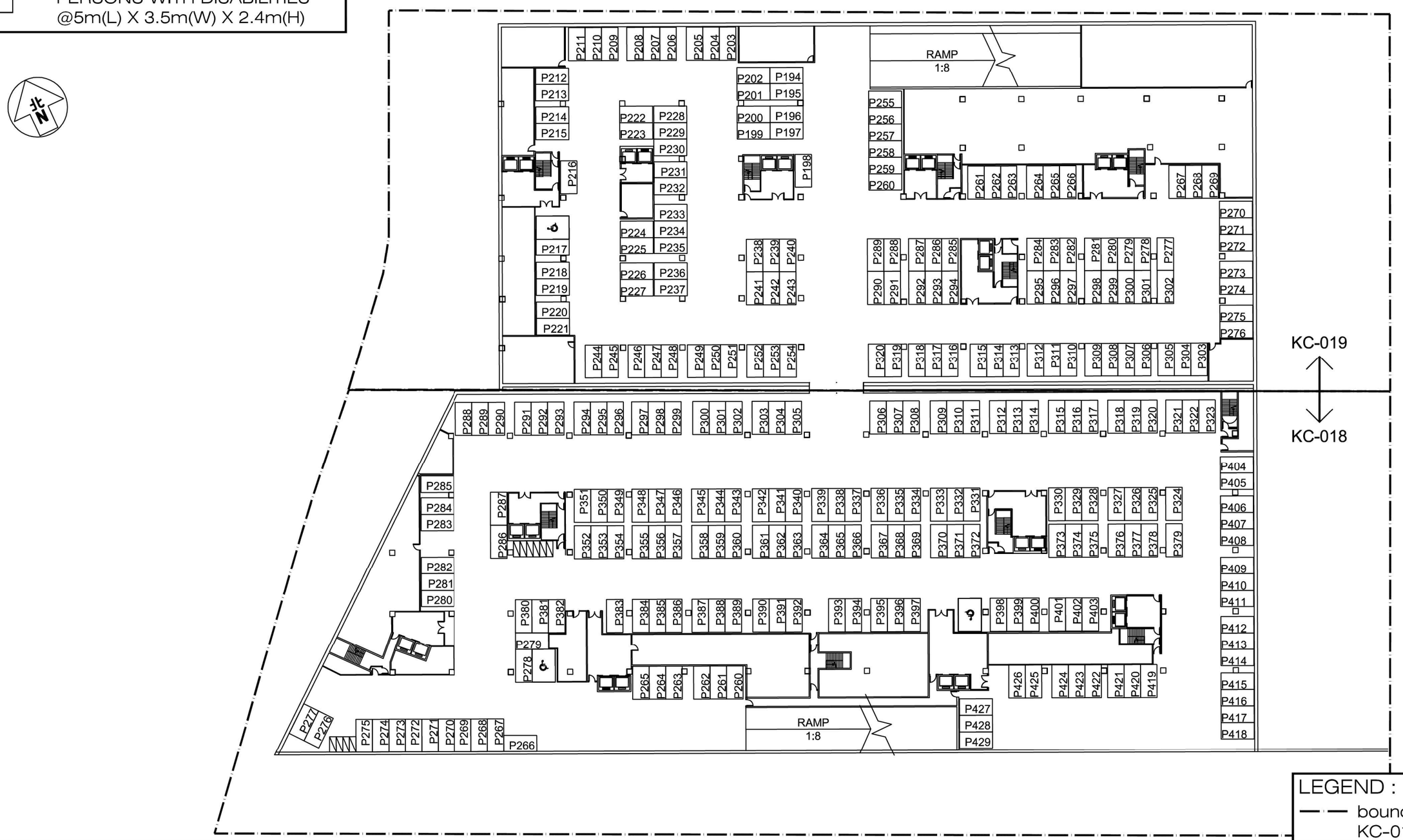
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INTERNAL TRANSPORT FACILITIES :

MOTORCYCLE PARKING SPACE
@2.4m(L) X 1m(W) X 2.4m(H)

P1 CAR PARKING SPACE
@5m(L) X 2.5m(W) X 2.4m(H)

CAR PARKING SPACE FOR
PERSONS WITH DISABILITIES
@5m(L) X 3.5m(W) X 2.4m(H)



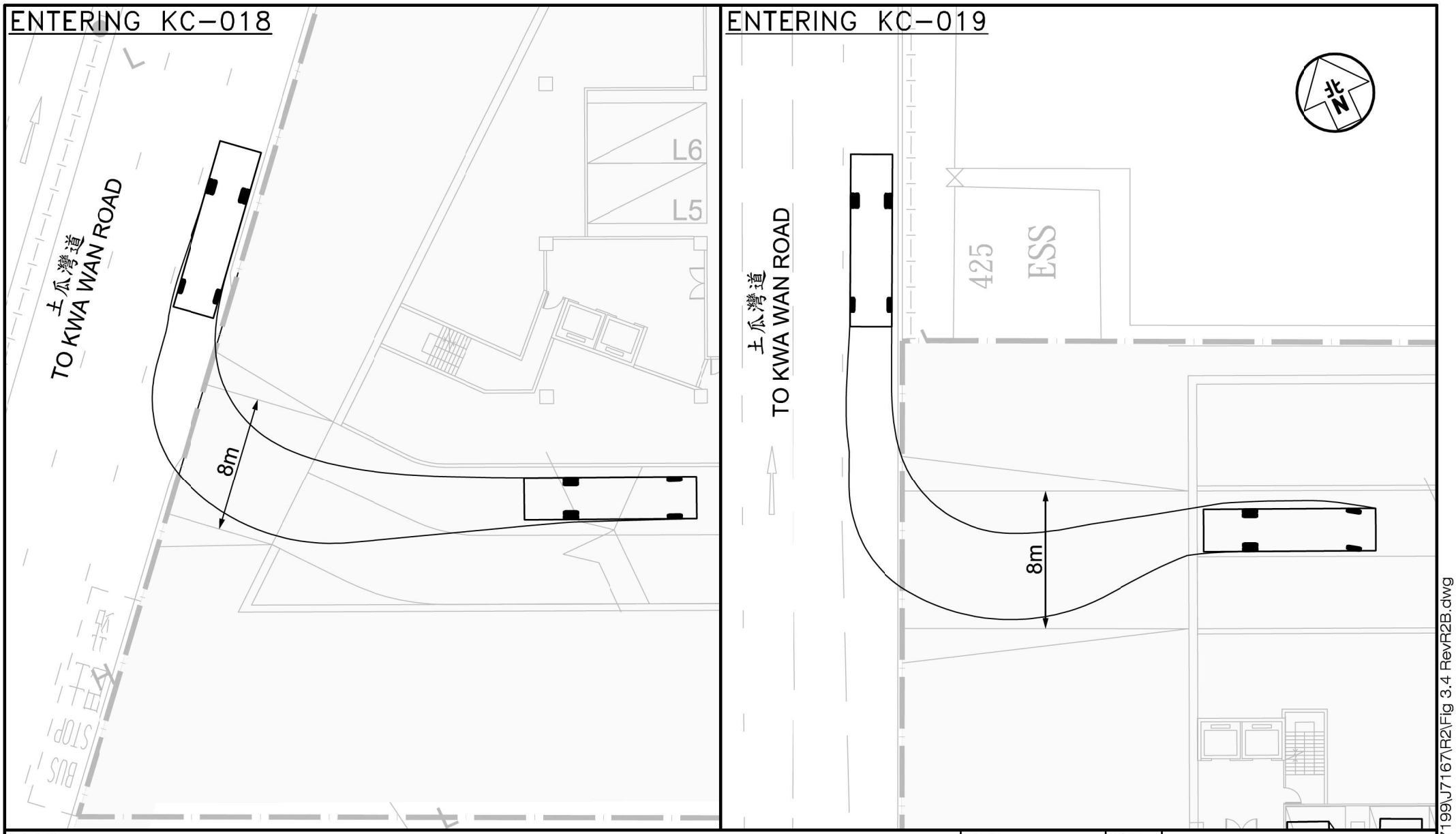
LEGEND :

boundaries of KC-018 and 019

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 3.3	Revision R2B
Figure Title: NOTIONAL INTERNAL TRANSPORT LAYOUT – BASEMENT 3 FLOOR		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A3: 1 : 600	Date: 29 SEP 2022

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATHS OF HGV ENTERING KC-018 AND KC-019

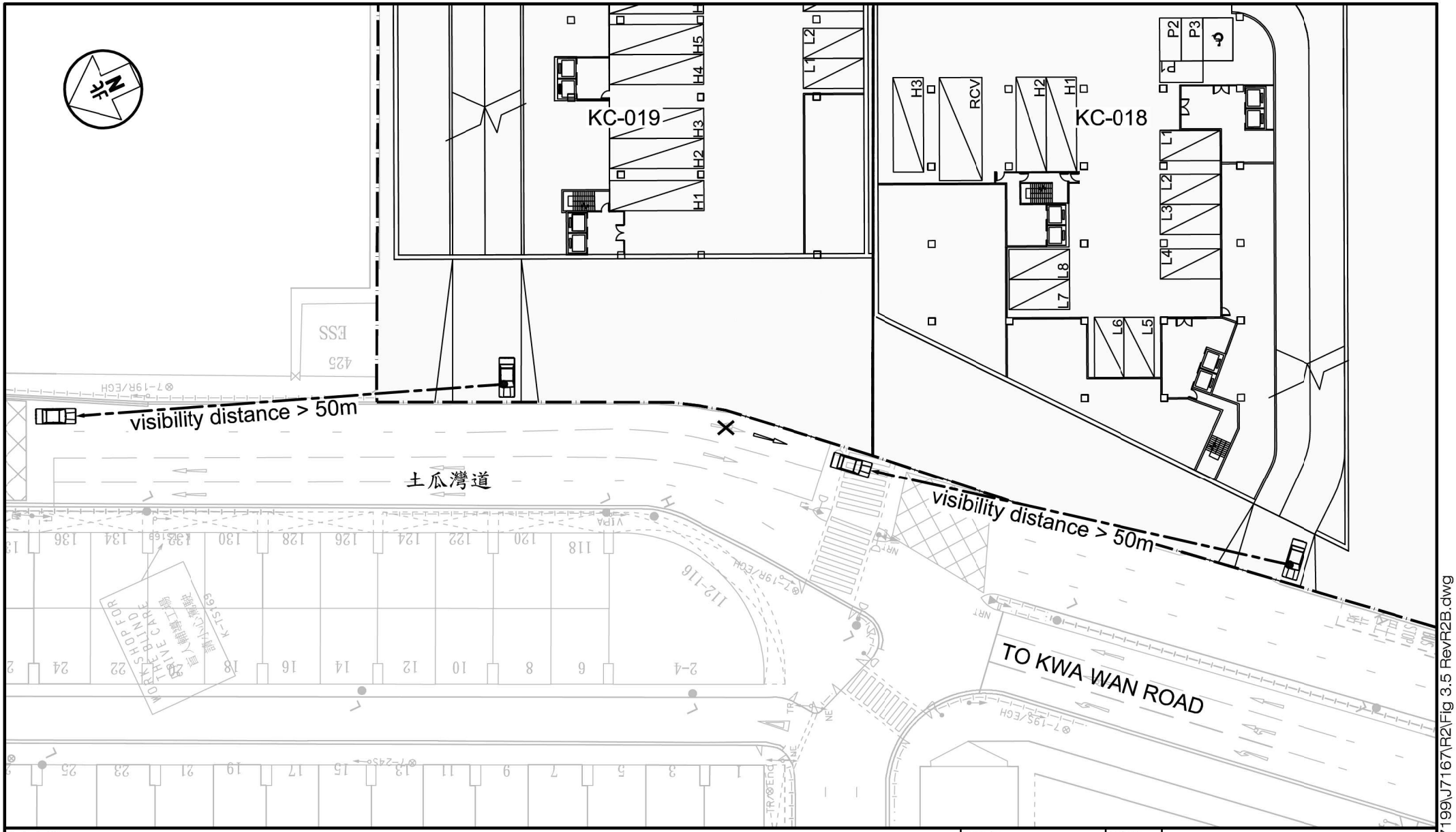
Figure No.	Revision
3.4	R2B

Designed by	Drawn by	Checked by
T H C	C C L	K C

Scale in A4	Date
1 : 300	29 SEP 2022

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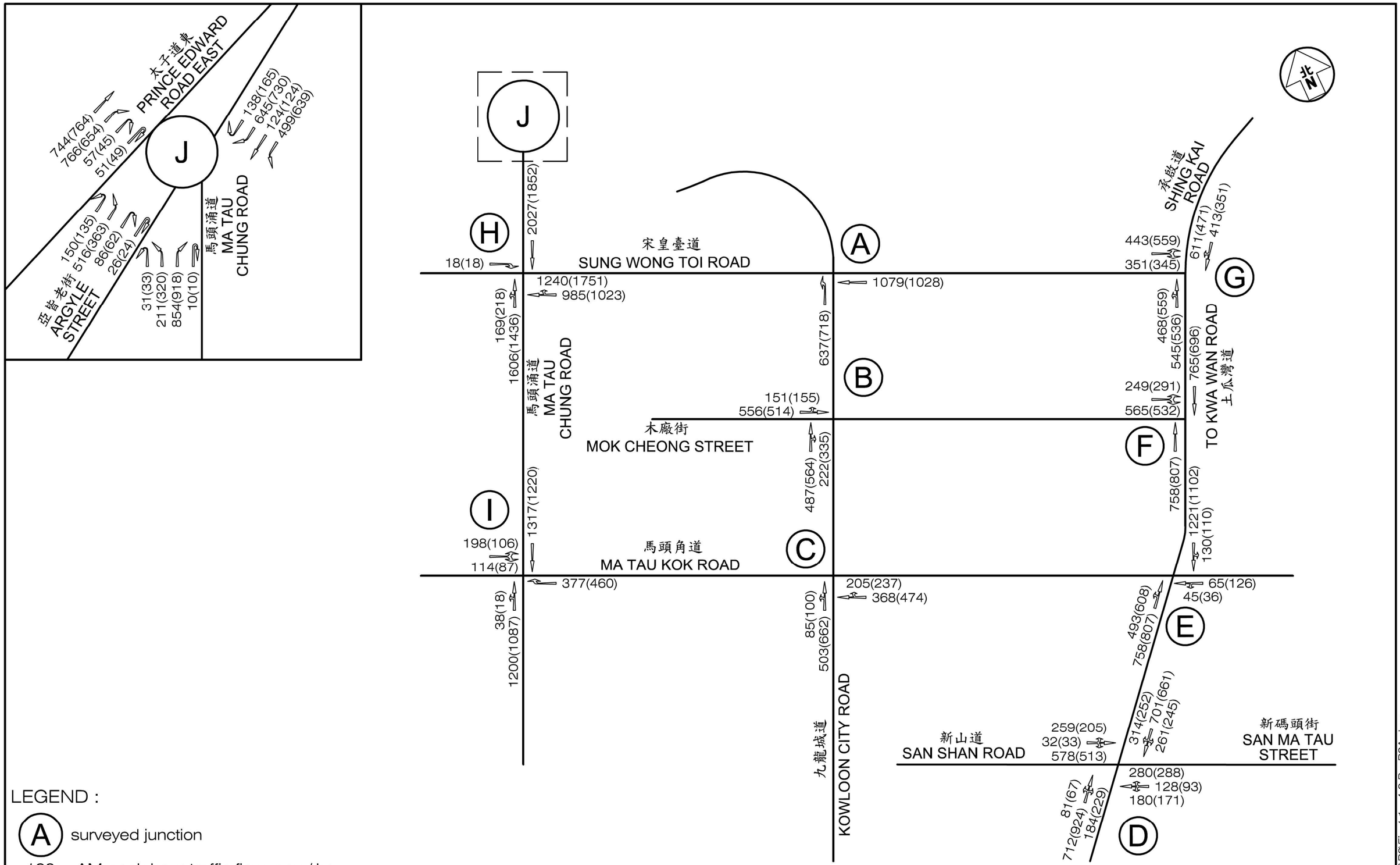
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 3.5	Revision R2B
Figure Title: VISIBILITY AT THE RUN-IN / OUT OF KC-018 AND KC-019		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A4: 1 : 600	Date: 29 SEP 2022

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LEGEND :

A surveyed junction

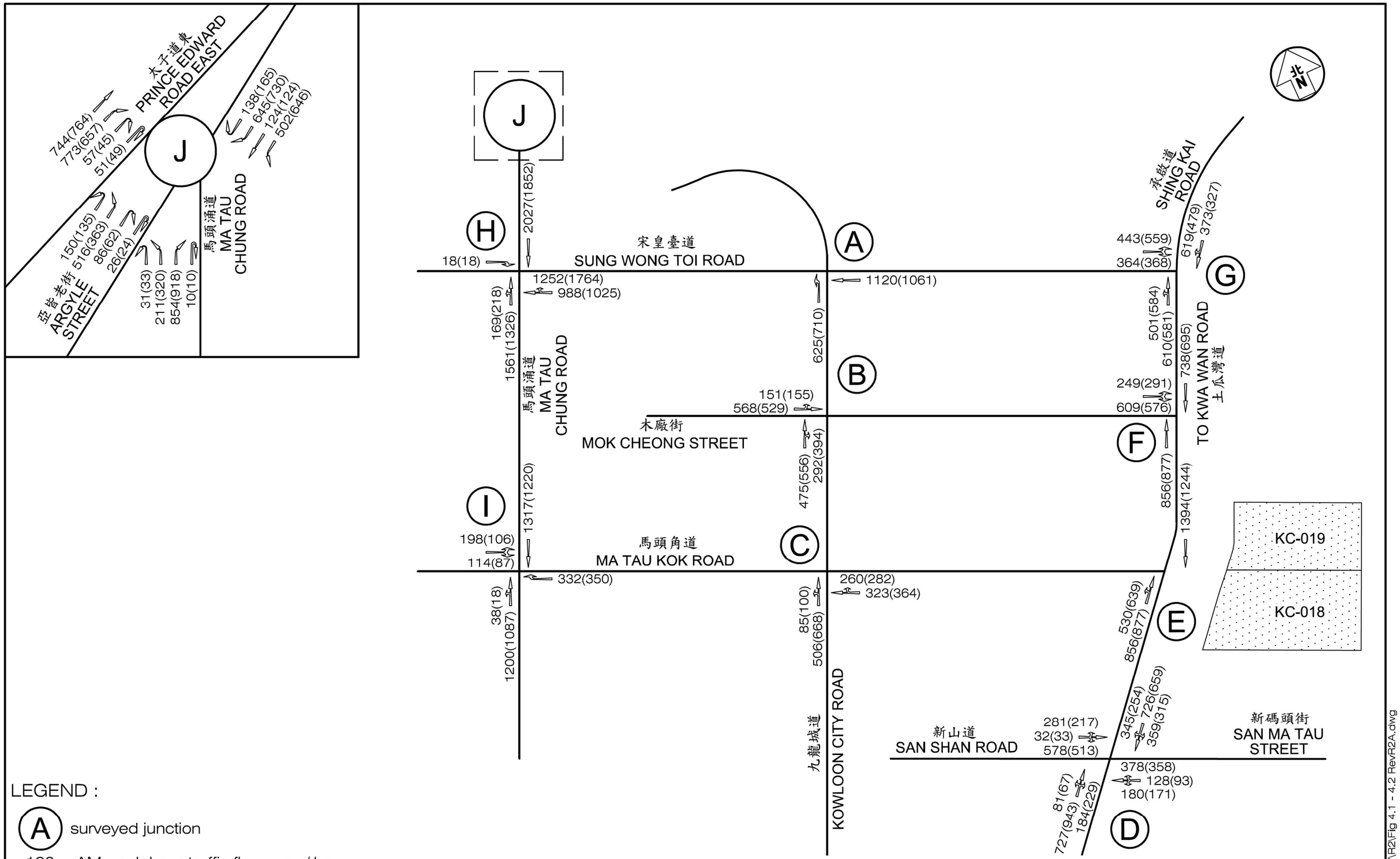
123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 4.1	Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITHOUT KC-018 AND KC-019		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A3: N.T.S. / Date: 21 SEP 2022	

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LEGEND :

(A) surveyed junction

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 4.2	Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITH KC-018 AND KC-019		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A3: N.T.S. / Date: 21 SEP 2022	

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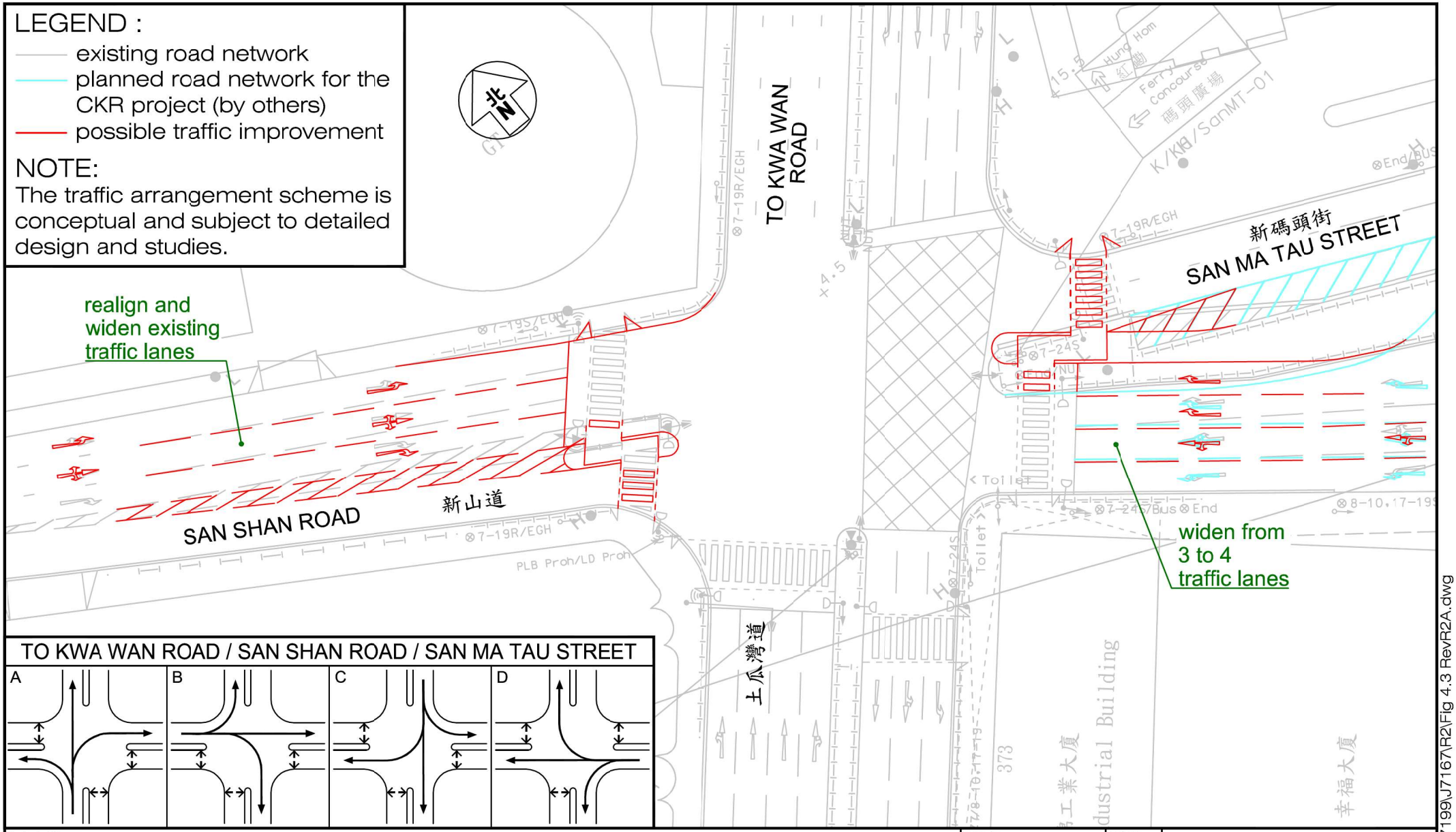
existing road network

planned road network for the CKR project (by others)

possible traffic improvement

NOTE:

The traffic arrangement scheme is conceptual and subject to detailed design and studies.

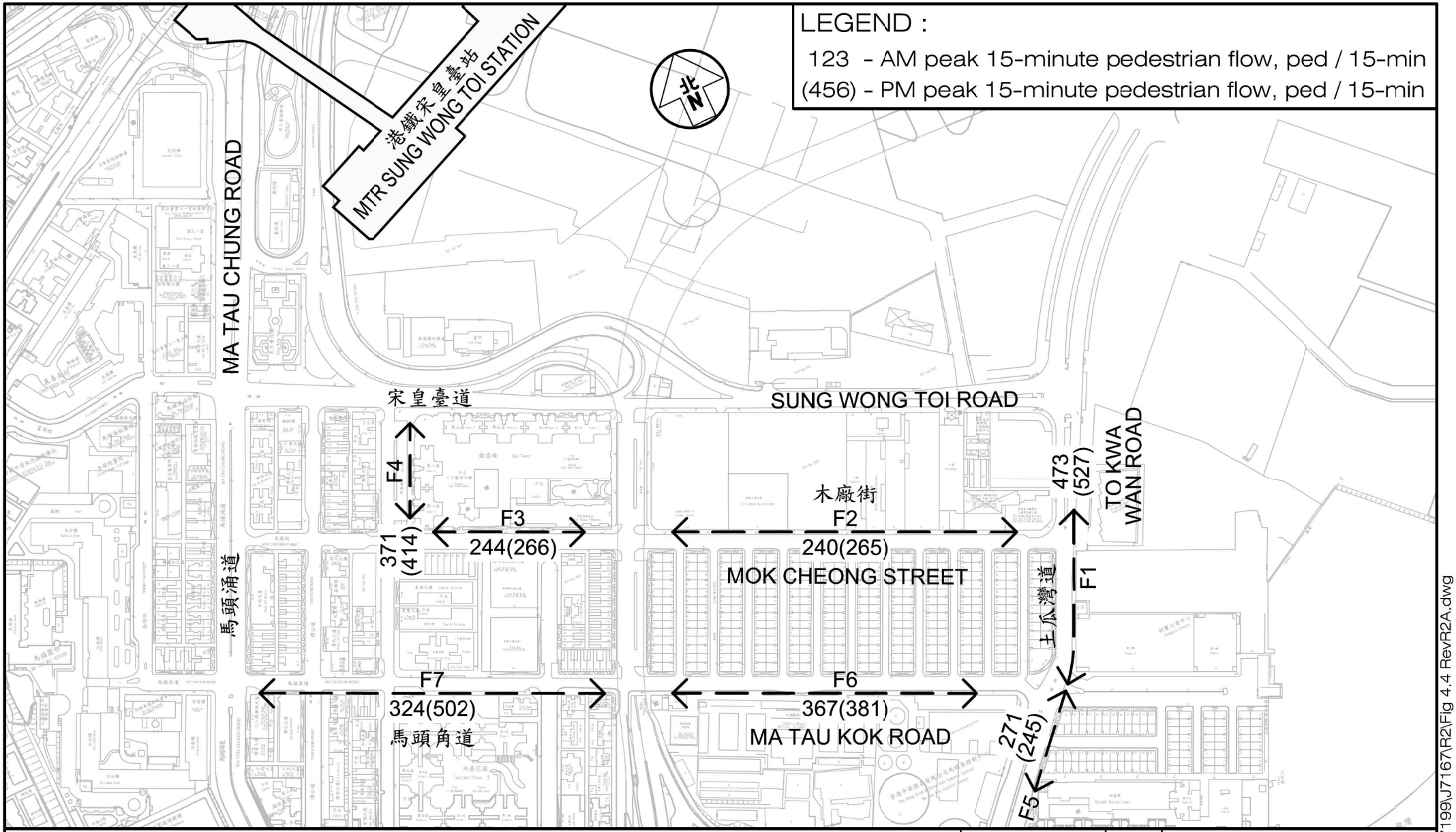


TO KWA WAN ROAD / SAN SHAN ROAD / SAN MA TAU STREET

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK			J7167	Figure No. 4.3 / Revision R2A
Figure Title: POSSIBLE TRAFFIC IMPROVEMENT SCHEME FOR JUNCTION (D)	Designed by T H C	Drawn by C C L	Checked by K C	
	Scale in A4 1 : 500	Date 21 SEP 2022		

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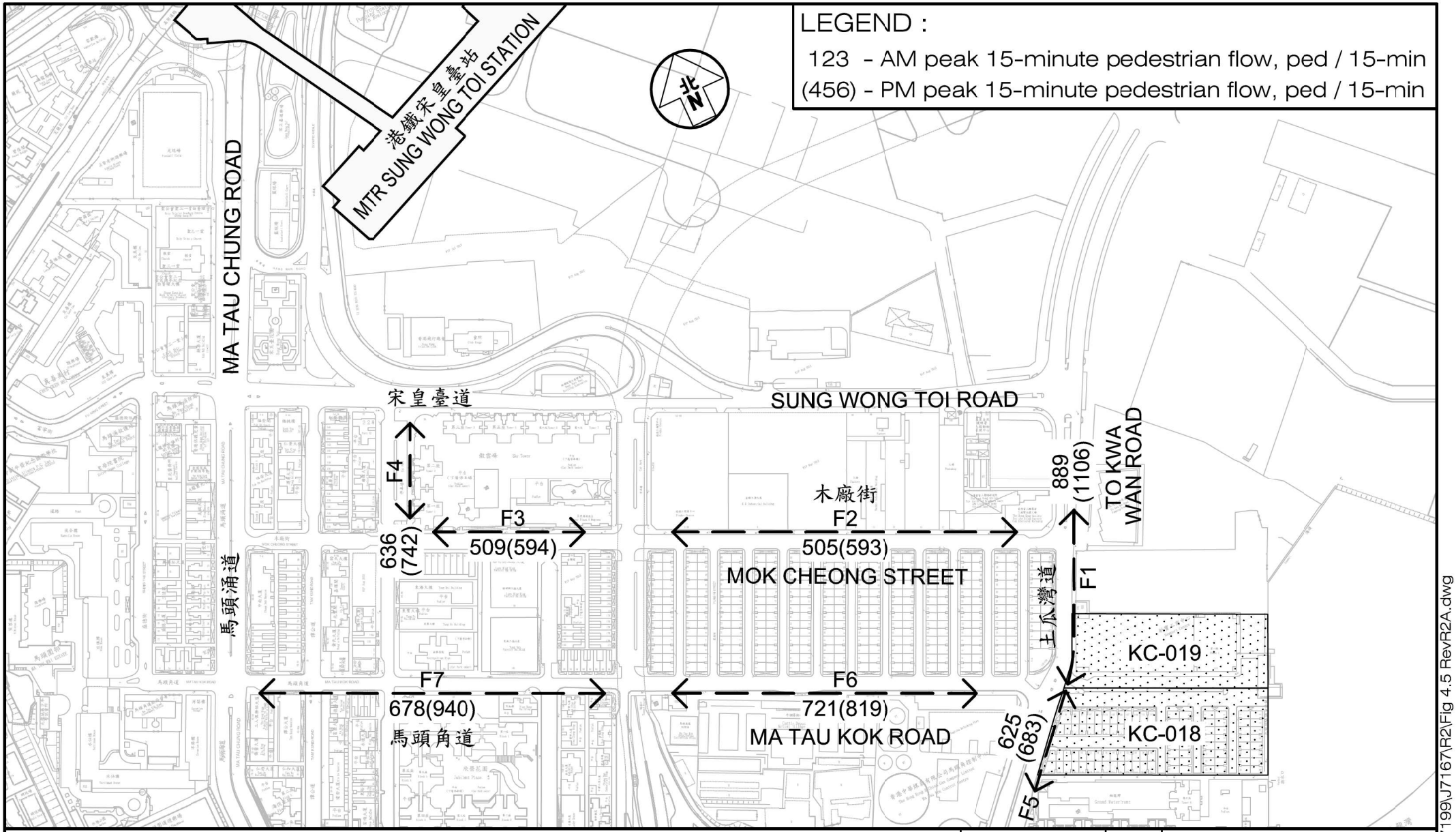


Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	2036 PEAK 15-MINUTE PEDESTRIAN FLOWS WITHOUT KC-018 AND KC-019		

Figure No.	4.4	Revision	R2A
Designed by	THC	Drawn by	CCL
Checked by	KC		
Scale in A4	1 : 4,000	Date	21 SEP 2022

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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. 4.5	Revision R2A
Figure Title: 2036 PEAK 15-MINUTE PEDESTRIAN FLOWS WITH KC-018 AND KC-019		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A4: 1 : 4,000	Date: 21 SEP 2022

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Appendix A – Junction Capacity Analysis

Signal Junction Analysis

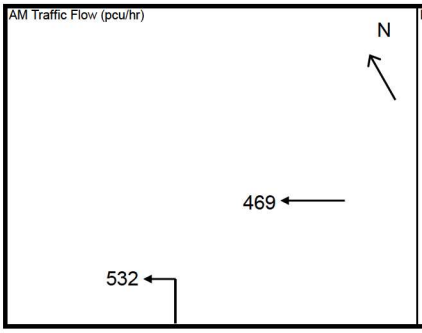
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: existing condition — R2 / P.1-1

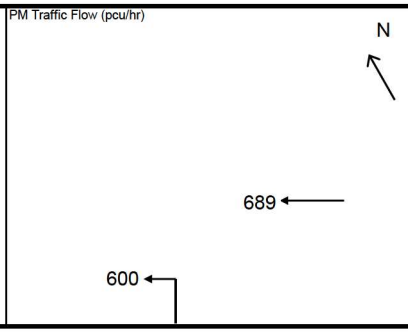
Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	260	0.145		100	1796	293	0.163	
	LT	A2	1	4.50	15.0		100	1877	272	0.145	0.145	100	1877	307	0.164	0.164
Sung Wong Toi Road	SA	B1	2	3.50				2105	243	0.115	0.115		2105	356	0.169	0.169
	SA	B2	2	3.50				1965	226	0.115			1965	333	0.169	
pedestrian phase		P1	2		min crossing time =		10	sec GM +		11		sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.260		0.333	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	219%		150%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

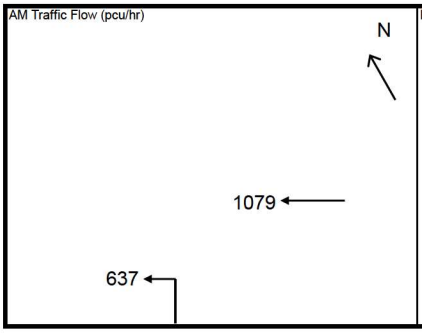
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: without KC-018 and KC-019 — R2 / P.1-2

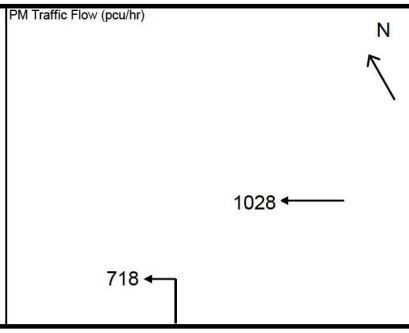
Design Year: 2036 — Designed By: _____ — Checked By: _____ — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	311	0.173		100	1796	351	0.195	
	LT	A2	1	4.50	15.0		100	1877	326	0.174	0.174	100	1877	367	0.195	0.195
Sung Wong Toi Road	SA	B1	2	3.50				2105	558	0.265			2105	532	0.253	0.253
	SA	B2	2	3.50				1965	521	0.265	0.265		1965	496	0.252	
pedestrian phase		P1	2		min crossing time =		10	sec GM +		11	sec FGM =		21	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.439		0.448	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	89%		85%	

Note:



AM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	

Signal Junction Analysis

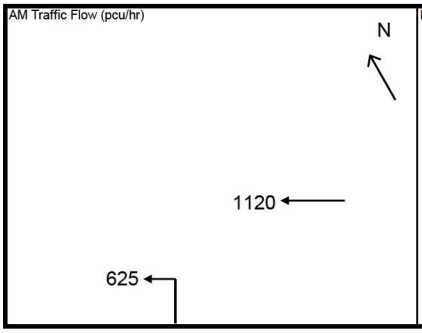
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: with KC-018 and KC-019 — R2 / P.1-3

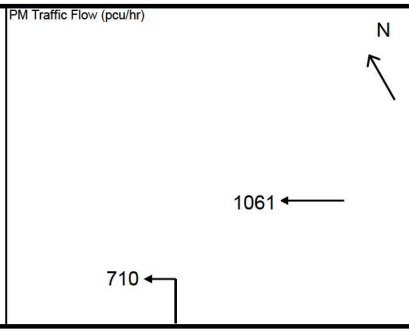
Design Year: 2036 — Designed By: _____ — Checked By: _____ — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	306	0.170	0.170	100	1796	347	0.193	
	LT	A2	1	4.50	15.0		100	1877	319	0.170		100	1877	363	0.193	0.193
Sung Wong Toi Road	SA	B1	2	3.50				2105	579	0.275			2105	549	0.261	0.261
	SA	B2	2	3.50				1965	541	0.275	0.275		1965	512	0.261	
pedestrian phase		P1	2		min crossing time =		10	sec GM +			11	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.446		0.454	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	86%		83%	

Note:



AM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	

Signal Junction Analysis

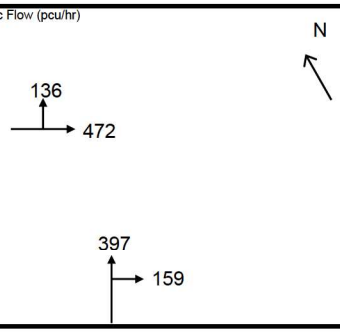
Junction: B. Kowloon City Road / Mok Cheong Street Job Number: J7167

Scenario: existing condition R2 / P.2-1

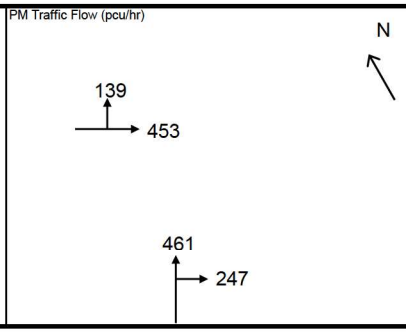
Design Year: 2019 Designed By: Checked By: Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	192	0.099			1945	222	0.114	
	SA	A2	1	3.30				2085	205	0.098			2085	239	0.115	
	RT	A3	1	3.30	5.0		100	1496	159	0.106	0.106	100	1496	247	0.165	0.165
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	136	0.077		100	1761	139	0.079	
	SA	B2	2	4.10				2165	244	0.113	0.113		2165	234	0.108	0.108
	SA	B3	2	4.10				2025	228	0.113			2025	219	0.108	
pedestrian phase		P3	2		min crossing time =			5	sec GM +		14	sec FGM =		19	sec	
		P4	1		min crossing time =			7	sec GM +		14	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.219		0.273	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	279%		204%	

Note:



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

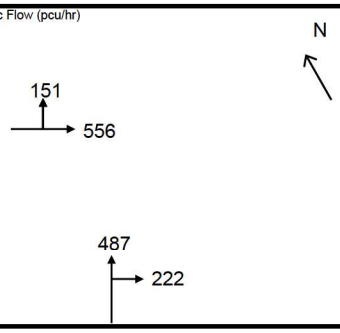
Junction: B. Kowloon City Road / Mok Cheong Street Job Number: J7167

Scenario: without KC-018 and KC-019 R2 / P.2-2

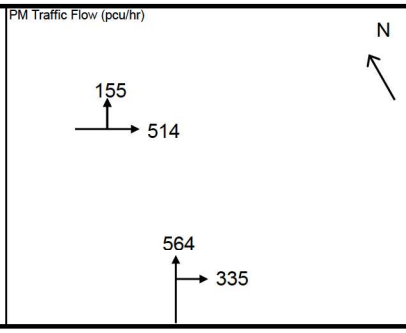
Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	235	0.121			1945	272	0.140	
	SA	A2	1	3.30				2085	252	0.121			2085	292	0.140	
	RT	A3	1	3.30	5.0		100	1496	222	0.148	0.148	100	1496	335	0.224	0.224
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	287	0.133			2165	266	0.123	0.123
	SA	B3	2	4.10				2025	269	0.133	0.133		2025	248	0.122	
pedestrian phase		P3	2		min crossing time =			5	sec GM +		14	sec FGM =		19	sec	
		P4	1		min crossing time =			7	sec GM +		14	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

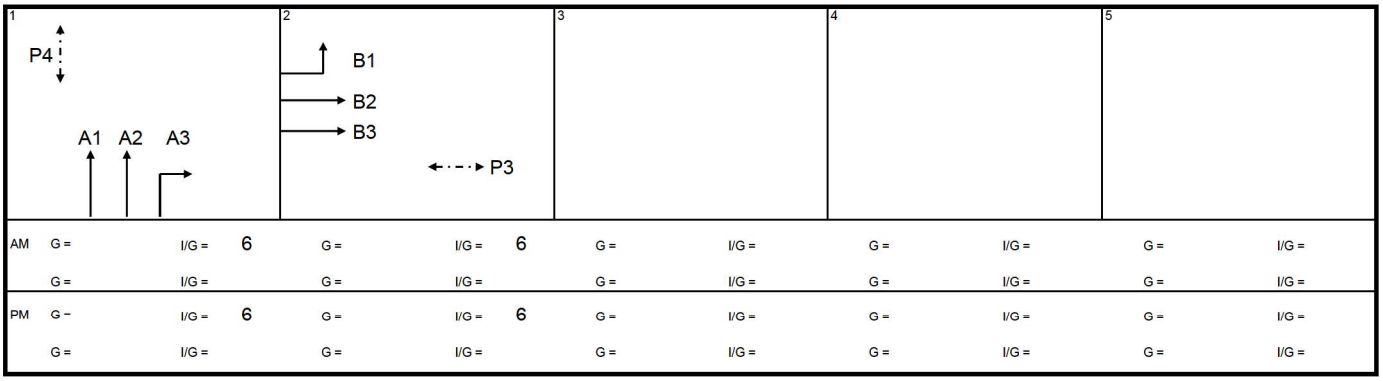


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.281		0.347	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	195%		140%	

Note:



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

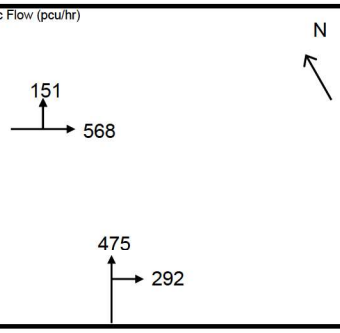
Junction: B. Kowloon City Road / Mok Cheong Street Job Number: J7167

Scenario: with KC-018 and KC-019 R2 / P.2-3

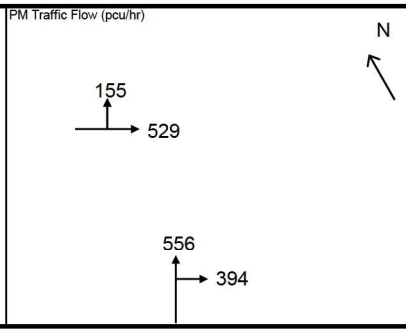
Design Year: 2036 Designed By: _____ Checked By: _____ Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	229	0.118			1945	268	0.138	
	SA	A2	1	3.30				2085	246	0.118			2085	288	0.138	
	RT	A3	1	3.30	5.0		100	1496	292	0.195	0.195	100	1496	394	0.263	0.263
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	293	0.135			2165	273	0.126	
	SA	B3	2	4.10				2025	275	0.136	0.136		2025	256	0.126	0.126
pedestrian phase		P3	2		min crossing time =			5	sec GM +		14	sec FGM =		19	sec	
		P4	1		min crossing time =			7	sec GM +		14	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

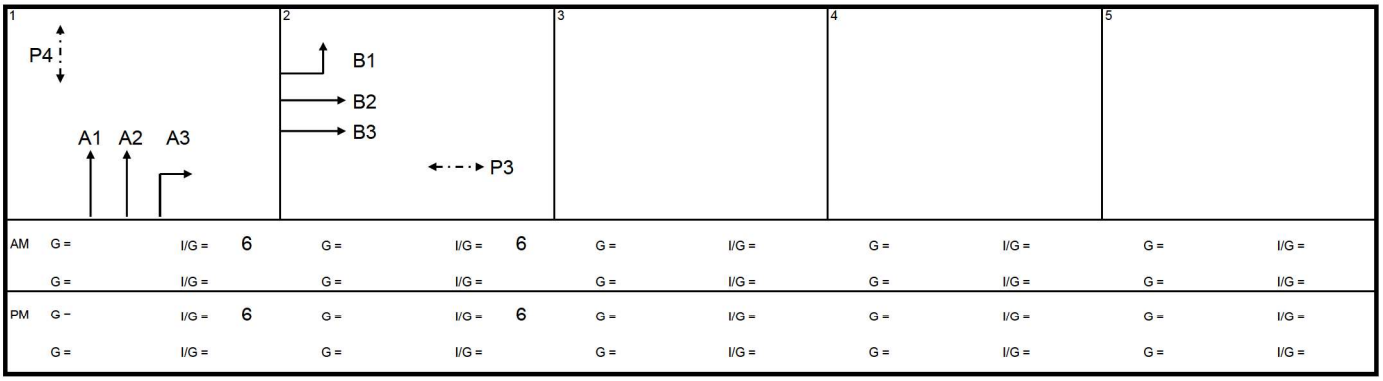


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.331		0.390	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	151%		113%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		

Signal Junction Analysis

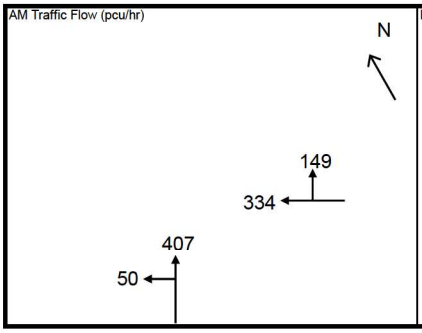
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: existing condition — R2 / P.3-1

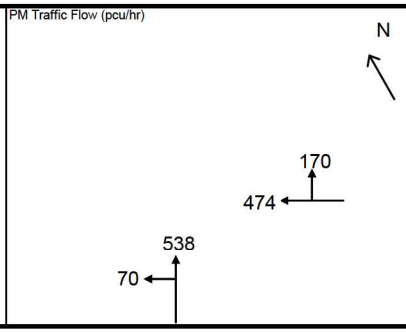
Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		23	1815	221	0.122	0.122	24	1810	293	0.162	
	SA	A2	1	3.25				1940	236	0.122			1940	315	0.162	0.162
Ma Tau Kok Road	SA	B1	2	3.50				1965	161	0.082			1965	229	0.117	0.117
	SA	B2	2	3.50				2105	173	0.082			2105	245	0.116	
	RT	B3	2	3.70	10.0		100	1726	149	0.086	0.086	100	1726	170	0.098	
pedestrian phase		P3	1, 3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2, 3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

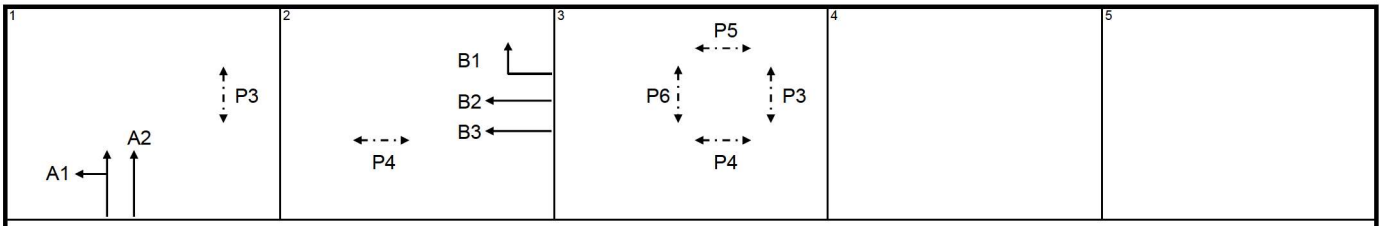


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.208		0.279	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	216%		136%	

Note:



AM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

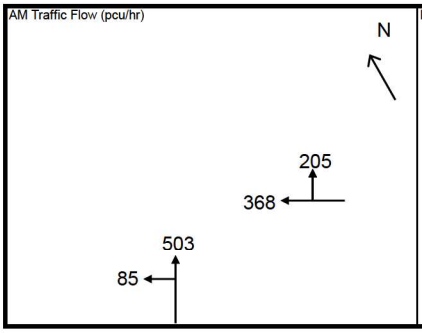
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: without KC-018 and KC-019 — R2 / P.3-2

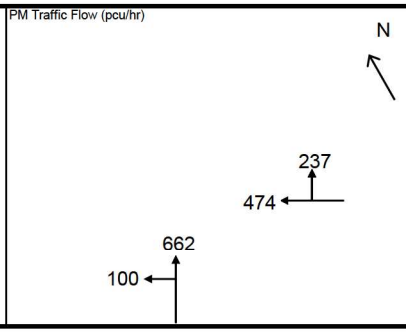
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		30	1780	281	0.158		27	1795	366	0.204	
	SA	A2	1	3.25				1940	307	0.158	0.158		1940	396	0.204	0.204
Ma Tau Kok Road	SA	B1	2	3.50				1965	178	0.091			1965	229	0.117	
	SA	B2	2	3.50				2105	190	0.090			2105	245	0.116	
	RT	B3	2	3.70	10.0		100	1726	205	0.119	0.119	100	1726	237	0.137	0.137
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

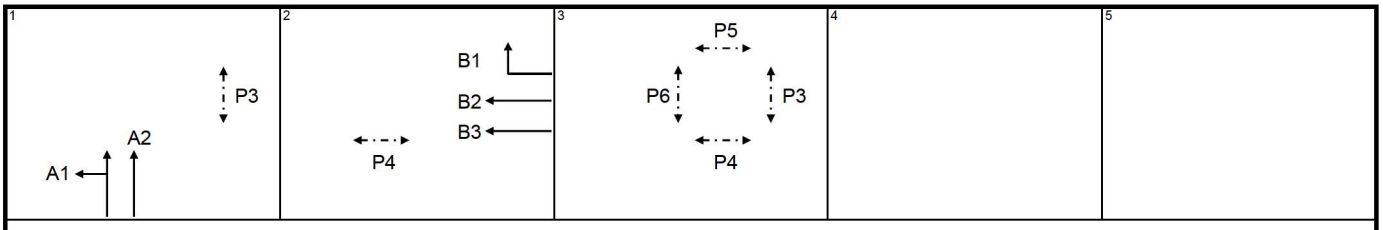


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.277		0.341	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	137%		93%	

Note:



		1		2		3		4		5	
AM	G =		I/G = 8	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =		I/G = 8	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

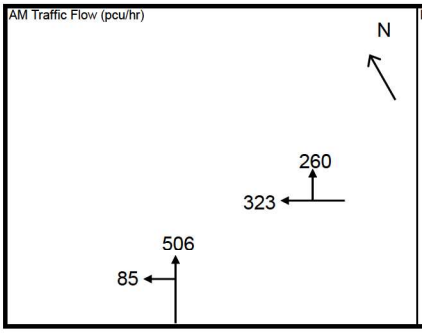
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: with KC-018 and KC-019 — R2 / P.3-3

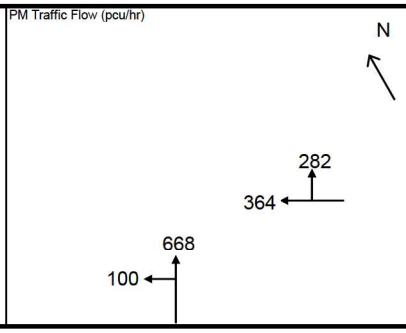
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		30	1780	283	0.159	0.159	27	1795	369	0.206	
	SA	A2	1	3.25				1940	308	0.159			1940	399	0.206	0.206
Ma Tau Kok Road	SA	B1	2	3.50				1965	156	0.079			1965	176	0.090	
	SA	B2	2	3.50				2105	167	0.079			2105	188	0.089	
	RT	B3	2	3.70	10.0		100	1726	260	0.151	0.151	100	1726	282	0.163	0.163
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

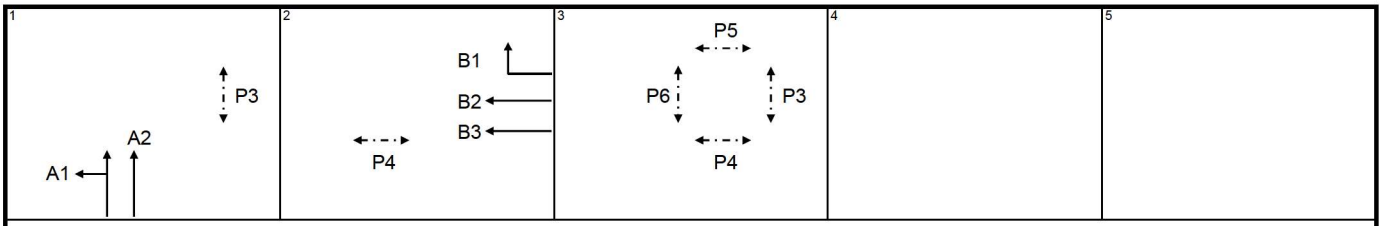


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.310		0.369	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	112%		78%	



AM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

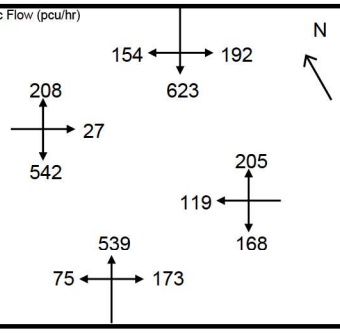
Scenario: existing condition — R2 / P.4-1

Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

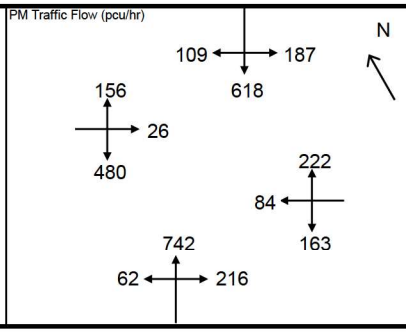
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		42	1802	180	0.100		26	1843	238	0.129	
	SA	A2	1	3.00				2055	206	0.100			2055	265	0.129	
	SA	A3	1	3.00				2055	206	0.100			2055	265	0.129	
	RT+SA	A4	1	3.00	25.0		89	1951	195	0.100	0.100	86	1954	252	0.129	0.129
San Shan Road	LT+SA	B1	2	3.00	10.0		89	1689	235	0.139		86	1696	182	0.107	
	RT+SA	B2	2	3.00	16.0		100	1879	267	0.142		100	1879	237	0.126	
	RT	B3	2	3.00	24.0		100	1934	275	0.142	0.142	100	1934	243	0.126	0.126
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		80	1710	239	0.140		79	1712	237	0.138	0.138
	SA	C2	3	3.00				2055	288	0.140	0.140		2055	284	0.138	
	SA	C3	3	3.00				2055	288	0.140			2055	284	0.138	
	RT	C4	3	3.00	30.0		100	1957	154	0.079		100	1957	109	0.056	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	145	0.087		100	1665	139	0.083	
	LT+SA+RT	D2	4	3.40	16.0		32	2034	176	0.087		49	2003	167	0.083	
	RT	D3	4	3.40	24.0		100	1972	171	0.087	0.087	100	1972	163	0.083	0.083

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	8	sec FGM =	13	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

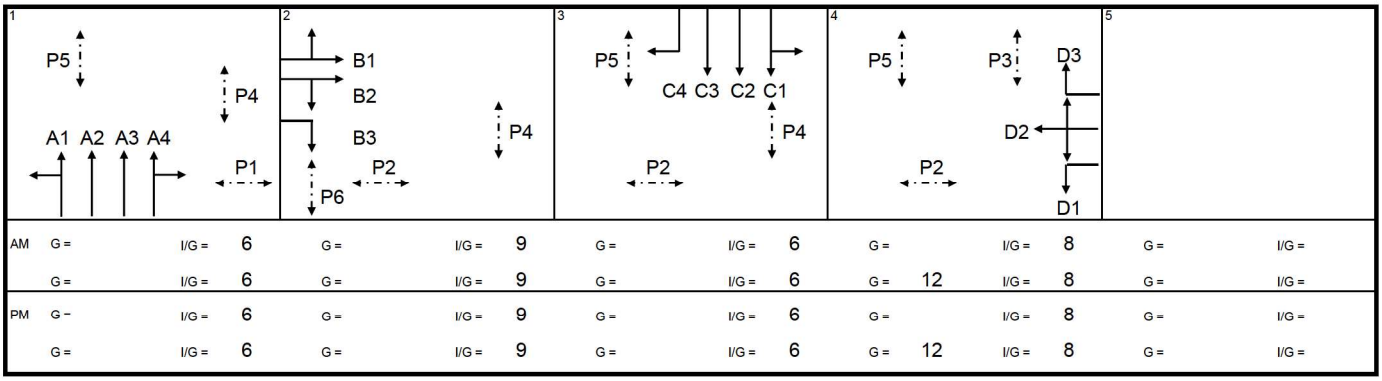


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.469	0.383	0.476	0.394
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	55%	66%	53%	62%



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

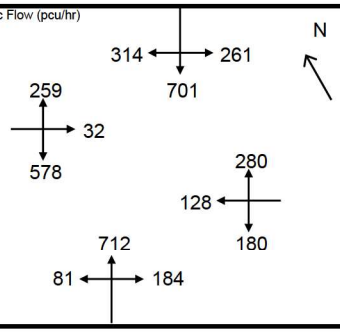
Scenario: without KC-018 and KC-019 — R2 / P.4-2

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

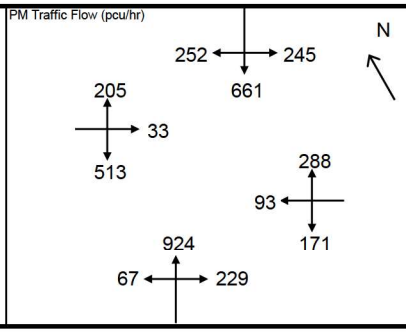
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		36	1817	225	0.124		24	1848	285	0.154	0.154
	SA	A2	1	3.00				2055	254	0.124			2055	316	0.154	
	SA	A3	1	3.00				2055	254	0.124			2055	316	0.154	
	RT+SA	A4	1	3.00	25.0		75	1967	244	0.124	0.124	76	1965	303	0.154	
San Shan Road	LT+SA	B1	2	3.00	10.0		98	1670	264	0.158		89	1689	230	0.136	
	RT+SA	B2	2	3.00	16.0		91	1893	299	0.158		97	1884	257	0.136	
	RT	B3	2	3.00	24.0		100	1934	306	0.158	0.158	100	1934	264	0.136	0.136
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		94	1678	279	0.166		93	1681	263	0.156	
	SA	C2	3	3.00				2055	342	0.166	0.166		2055	322	0.157	0.157
	SA	C3	3	3.00				2055	341	0.166			2055	321	0.156	
	RT	C4	3	3.00	30.0		100	1957	314	0.160		100	1957	252	0.129	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	173	0.104		100	1665	163	0.098	
	LT+SA+RT	D2	4	3.40	16.0		39	2021	210	0.104		53	1996	196	0.098	
	RT	D3	4	3.40	24.0		100	1972	205	0.104	0.104	100	1972	193	0.098	0.098

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	8	sec FGM =	13	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

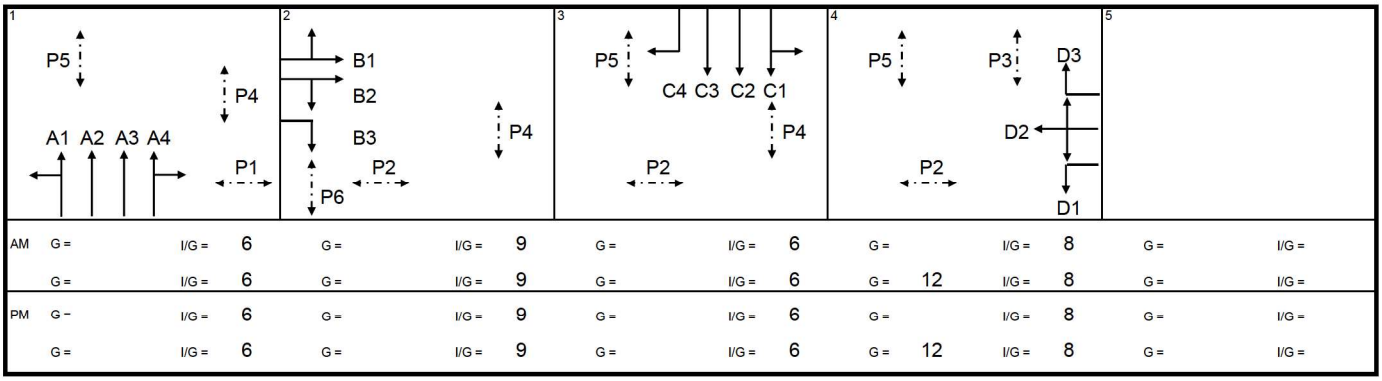


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.553	0.449	0.545	0.447
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	32%	42%	33%	42%



AM	G =	I/G = 6	G =	I/G = 9	G =	I/G = 6	G =	I/G = 8	G =	I/G =
	G =	I/G = 6	G =	I/G = 9	G =	I/G = 6	G = 12	I/G = 8	G =	I/G =
PM	G =	I/G = 6	G =	I/G = 9	G =	I/G = 6	G =	I/G = 8	G =	I/G =
	G =	I/G = 6	G =	I/G = 9	G =	I/G = 6	G = 12	I/G = 8	G =	I/G =

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

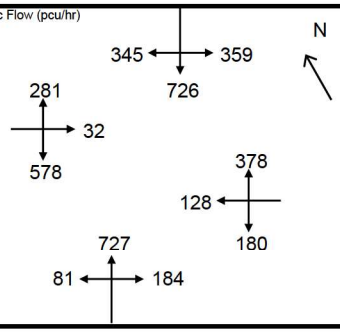
Scenario: with KC-018 and KC-019 — R2 / P.4-3

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

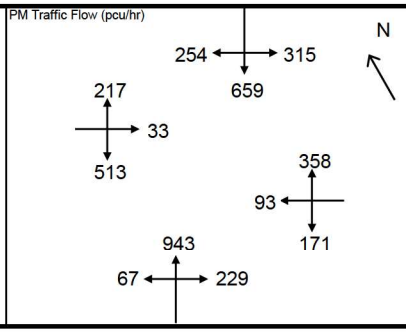
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		36	1817	228	0.125		23	1851	289	0.156	
	SA	A2	1	3.00				2055	258	0.126			2055	321	0.156	
	SA	A3	1	3.00				2055	258	0.126			2055	321	0.156	
	RT+SA	A4	1	3.00	25.0		74	1968	248	0.126	0.126	74	1968	308	0.157	0.157
San Shan Road	LT+SA	B1	2	3.00	10.0		100	1665	281	0.169	0.169	93	1681	233	0.139	
	RT+SA	B2	2	3.00	16.0		89	1897	302	0.159		94	1889	262	0.139	0.139
	RT	B3	2	3.00	24.0		100	1934	308	0.159		100	1934	268	0.139	
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		100	1665	359	0.216	0.216	100	1665	315	0.189	0.189
	SA	C2	3	3.00				2055	363	0.177			2055	330	0.161	
	SA	C3	3	3.00				2055	363	0.177			2055	329	0.160	
	RT	C4	3	3.00	30.0		100	1957	345	0.176		100	1957	254	0.130	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	202	0.121		100	1665	184	0.110	
	LT+SA+RT	D2	4	3.40	16.0		48	2005	244	0.122		58	1987	220	0.111	0.111
	RT	D3	4	3.40	24.0		100	1972	240	0.122	0.122	100	1972	218	0.111	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec	
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P4	1, 2, 3		min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec	
	P6	2		min crossing time =	5	sec GM +	8	sec FGM =	13	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

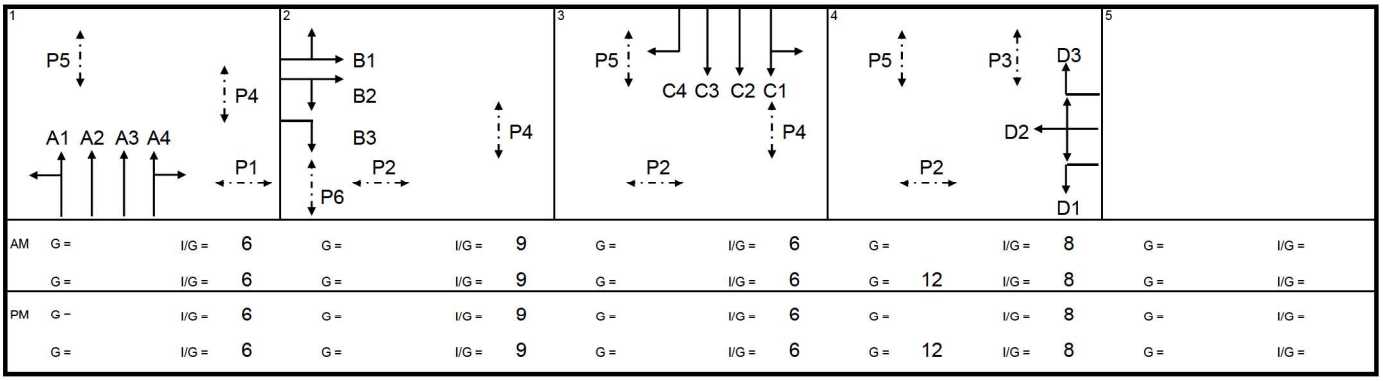


S=1940+100(W–3.25) S=2080+100(W–3.25)

S_M=S÷(1+1.5f/r) S_M=(S–230)÷(1+1.5f/r)

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.632	0.510	0.595	0.484
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	15%	25%	22%	31%



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

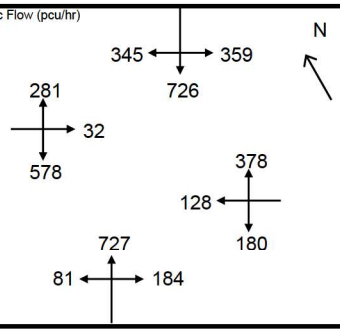
Scenario: with KC-018 and KC-019 (with improvement scheme) — R2 / P.4-4

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

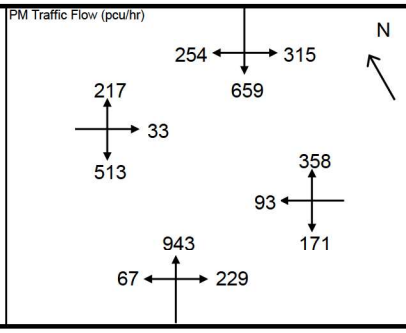
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		36	1817	228	0.125		23	1851	289	0.156	
	SA	A2	1	3.00				2055	258	0.126			2055	321	0.156	
	SA	A3	1	3.00				2055	258	0.126			2055	321	0.156	
	RT+SA	A4	1	3.00	25.0		74	1968	248	0.126	0.126	74	1968	308	0.157	0.157
San Shan Road	LT	B1	2	3.00	10.0		100	1665	270	0.162		100	1665	231	0.139	
	LT+SA+RT	B2	2	3.00	16.0		90	1895	307	0.162		87	1900	264	0.139	
	RT	B3	2	3.00	24.0		100	1934	314	0.162	0.162	100	1934	268	0.139	0.139
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		117	1629	308	0.189		114	1635	277	0.169	
	SA	C2	3	3.00				2055	389	0.189	0.189		2055	348	0.169	
	SA	C3	3	3.00				2055	388	0.189			2055	349	0.170	0.170
	RT	C4	3	3.00	30.0		100	1957	345	0.176		100	1957	254	0.130	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	138	0.083		100	1665	119	0.071	
	LT+SA	D2	4	3.40	16.0		25	2047	170	0.083		36	2027	145	0.072	
	RT	D3	4	3.40	24.0		100	1972	190	0.096		100	1972	180	0.091	0.091
	RT	D4	4	3.40	20.0		100	1949	188	0.096	0.096	100	1949	178	0.091	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



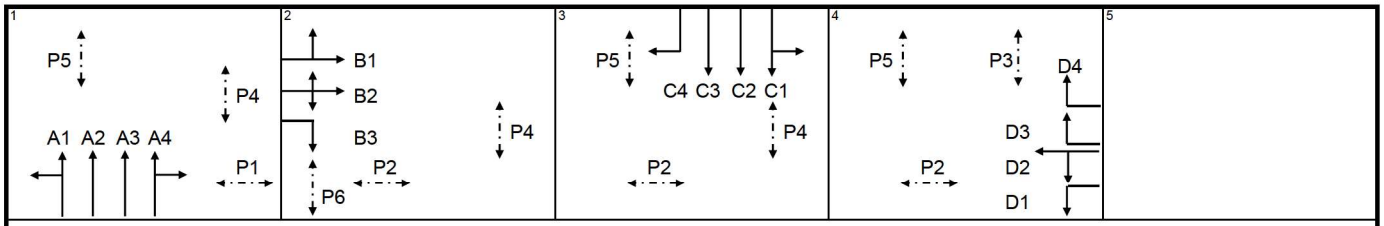
$S_M = S \div (1+1.5f/r)$ $S = 1940+100(W-3.25)$

$S_M = (S-230) \div (1+1.5f/r)$ $S = 2080+100(W-3.25)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.574	0.478	0.556	0.465
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	27%	33%	31%	37%

Note:

with possible improvement scheme for San Ma Tau Street and San Shan Road



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

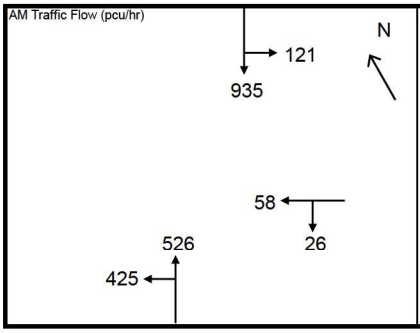
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: existing condition — R2 / P.5-1

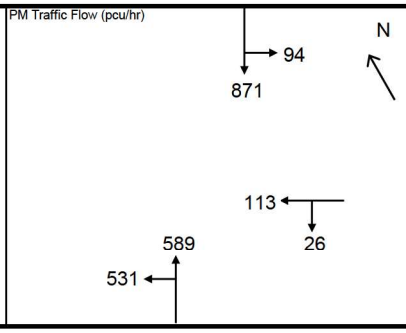
Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Kok Road	LT	A1	3	5.00	10.0		100	1839	26	0.014		100	1839	26	0.014	
	SA	A2	3	5.00				2255	58	0.026	0.026		2255	113	0.050	0.050
To Kwa Wan Road NB	LT	C1	1	3.75	13.0		100	1784	293	0.164		100	1784	346	0.194	
	LT+SA	C2	1	3.25	15.0		40	2000	329	0.165		48	1985	385	0.194	
	SA	C3	1	2.50				2005	329	0.164			2005	389	0.194	
To Kwa Wan Road SB	LT+SA	D1	1, 2	3.50	10.0		24	1897	501	0.264	0.264	20	1908	459	0.241	0.241
	SA	D2	1, 2	3.50				2105	555	0.264			2105	506	0.240	
pedestrian phase		P5	1, 2		min crossing time =		5	sec GM +		8		sec FGM =		13	sec	
		P6	2		min crossing time =		5	sec GM +		8		sec FGM =		13	sec	
		P7	3		min crossing time =		8	sec GM +		8		sec FGM =		16	sec	
		P8	3		min crossing time =		5	sec GM +		8		sec FGM =		13	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

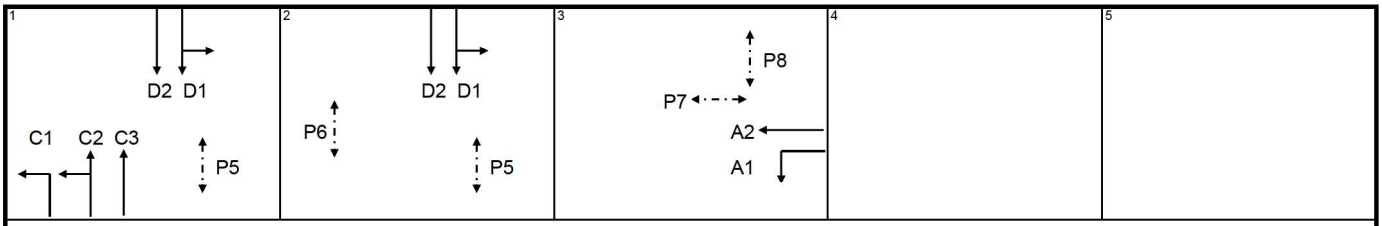


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.290	0.264	0.291	0.241
L (s)	8	23	8	23
C (s)	130	130	130	130
practical y	0.845	0.741	0.845	0.741
R.C. (%)	191%	180%	191%	208%



AM	G =	I/G =	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	5	G =	16	I/G =	3	G =	I/G =	G =	I/G =
PM	G =	I/G =	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	5	G =	16	I/G =	3	G =	I/G =	G =	I/G =

Signal Junction Analysis

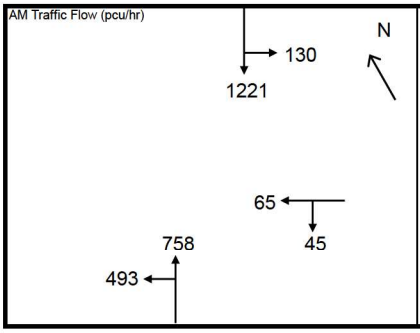
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: without KC-018 and KC-019 — R2 / P.5-2

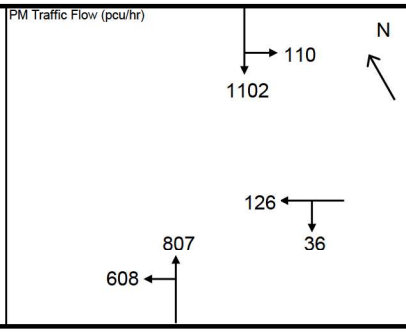
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Kok Road	LT	A1	3	5.00	10.0		100	1839	45	0.024		100	1839	36	0.020	
	SA	A2	3	5.00				2255	65	0.029	0.029		2255	126	0.056	0.056
To Kwa Wan Road NB	LT	C1	1	3.75	13.0		100	1784	384	0.215		100	1784	435	0.244	
	LT+SA	C2	1	3.25	15.0		25	2029	436	0.215		35	2010	490	0.244	
	SA	C3	1	2.50				2005	431	0.215			2005	490	0.244	
To Kwa Wan Road SB	LT+SA	D1	1, 2	3.50	10.0		20	1908	642	0.337		19	1911	577	0.302	0.302
	SA	D2	1, 2	3.50				2105	709	0.337	0.337		2105	635	0.302	
pedestrian phase		P5	1, 2		min crossing time =		5	sec GM +	8	sec FGM =	13	sec				
		P6	2		min crossing time =		5	sec GM +	8	sec FGM =	13	sec				
		P7	3		min crossing time =		8	sec GM +	8	sec FGM =	16	sec				
		P8	3		min crossing time =		5	sec GM +	8	sec FGM =	13	sec				

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

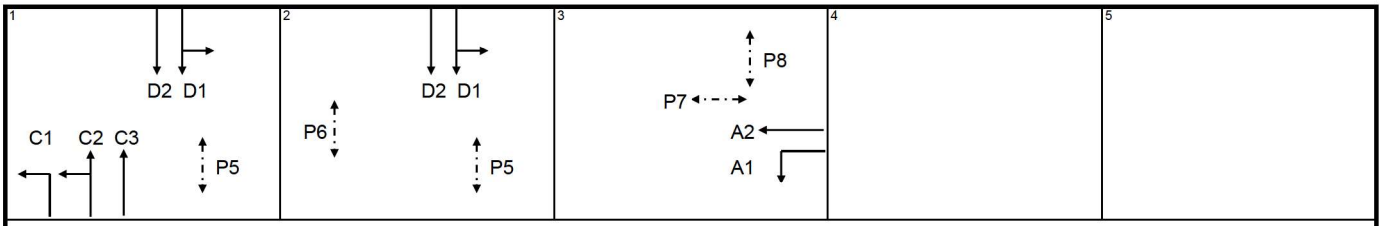


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.366	0.337	0.358	0.302
L (s)	8	23	8	23
C (s)	130	130	130	130
practical y	0.845	0.741	0.845	0.741
R.C. (%)	131%	120%	136%	145%



AM	G =	I/G =	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	5	G =	16	I/G =	3	G =	I/G =	G =	I/G =
PM	G =	I/G =	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	5	G =	16	I/G =	3	G =	I/G =	G =	I/G =

Signal Junction Analysis

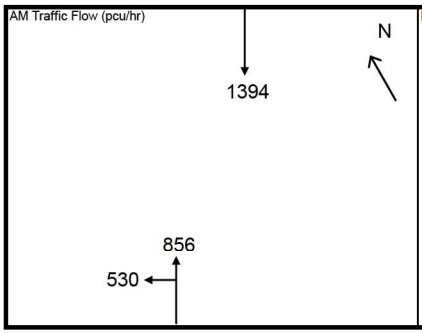
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: with KC-018 and KC-019 — R2 / P.5-3

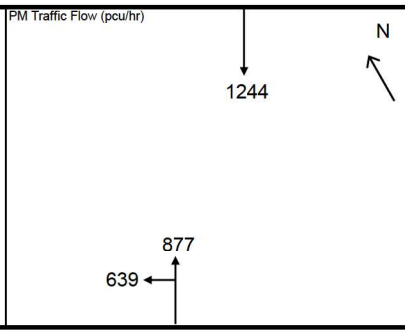
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT	C1	1	3.80	13.0		100	1789	415	0.232		100	1789	450	0.252	
	LT+SA	C2	1	3.65	15.0		24	2070	480	0.232			2120	533	0.251	
	SA	C3	1	3.65				2120	491	0.232			2120	533	0.251	
To Kwa Wan Road SB	SA	D1	2	3.50				1965	673	0.342			1966	601	0.306	0.306
	SA	D2	2	3.50				2105	721	0.343	0.343		2106	643	0.305	
pedestrian phase		P6	1		min crossing time =		5	sec GM +		8	sec FGM =		13	sec		
		P7	2		min crossing time =		8	sec GM +		8	sec FGM =		16	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.343		0.306	
L (s)	23		23	
C (s)	130		130	
practical y	0.741		0.741	
R.C. (%)	116%		142%	

Note:



AM	G =		I/G =	5	G =	16	I/G =	3	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
AM	G =		I/G =	5	G =	16	I/G =	3	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

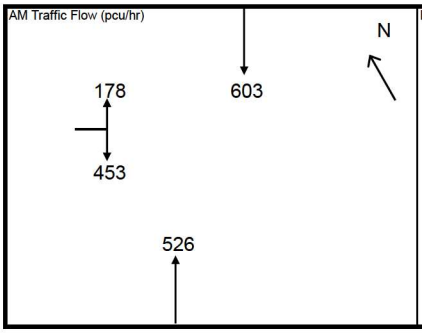
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: existing condition — R2 / P.6-1

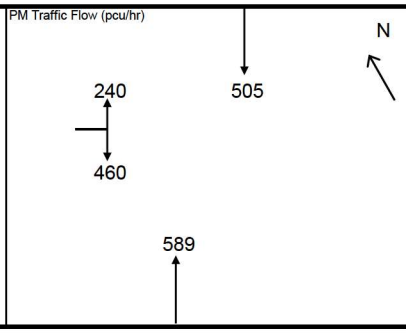
Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	SA	A1	1	2.75				1890	254	0.134			1890	284	0.150	0.150
	SA	A2	1	2.75				2030	272	0.134			2030	305	0.150	
Mok Cheong Street	LT+RT	B1	2	5.50	15.0		100	1968	324	0.165		100	1968	360	0.183	0.183
	RT	B2	2	4.30	15.0		100	1859	307	0.165	0.165	100	1859	340	0.183	
To Kwa Wan Road SB	SA	A3	1	3.50				1965	295	0.150	0.150		1965	247	0.126	
	SA	A4	1	3.00				2055	308	0.150			2055	258	0.126	
pedestrian phase		P3	3		min crossing time =		6	sec GM +		12		sec FGM =		18	sec	
		P4	1,3		min crossing time =		7	sec GM +		12		sec FGM =		19	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

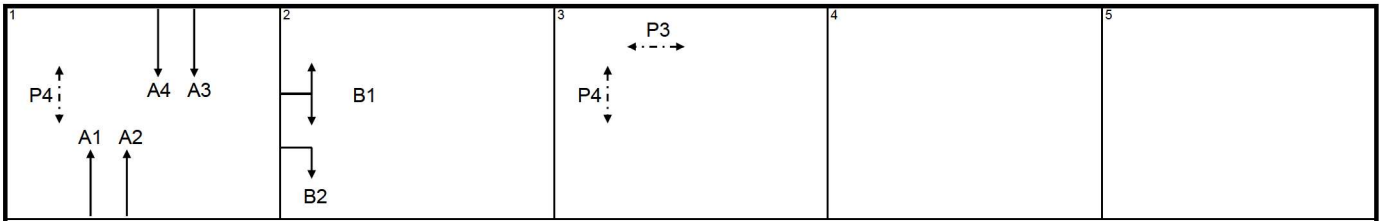


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.315		0.333	
L (s)	34		34	
C (s)	130		130	
practical y	0.665		0.665	
R.C. (%)	111%		99%	

Note:



AM	G =	I/G = 7	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						
PM	G =	I/C = 7	C =	I/C = 8	C = 18	I/C = 3	C =	I/C =	C =	I/C =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						

Signal Junction Analysis

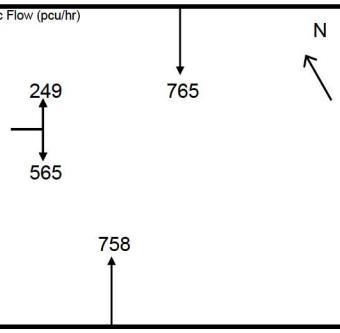
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: without KC-018 and KC-019 — R2 / P.6-2

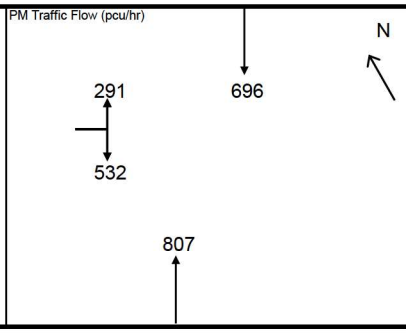
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	SA	A1	1	2.75				1890	365	0.193			1890	389	0.206	
	SA	A2	1	2.75				2030	393	0.194	0.194		2030	418	0.206	0.206
Mok Cheong Street	LT+RT	B1	2	5.50	15.0		100	1968	419	0.213	0.213	100	1968	423	0.215	
	RT	B2	2	4.30	15.0		100	1859	395	0.212		100	1859	400	0.215	0.215
To Kwa Wan Road SB	SA	A3	1	3.50				1965	374	0.190			1965	340	0.173	
	SA	A4	1	3.00				2055	391	0.190			2055	356	0.173	
pedestrian phase		P3	3		min crossing time =		6	sec GM +		12	sec FGM =		18	sec		
		P4	1,3		min crossing time =		7	sec GM +		12	sec FGM =		19	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

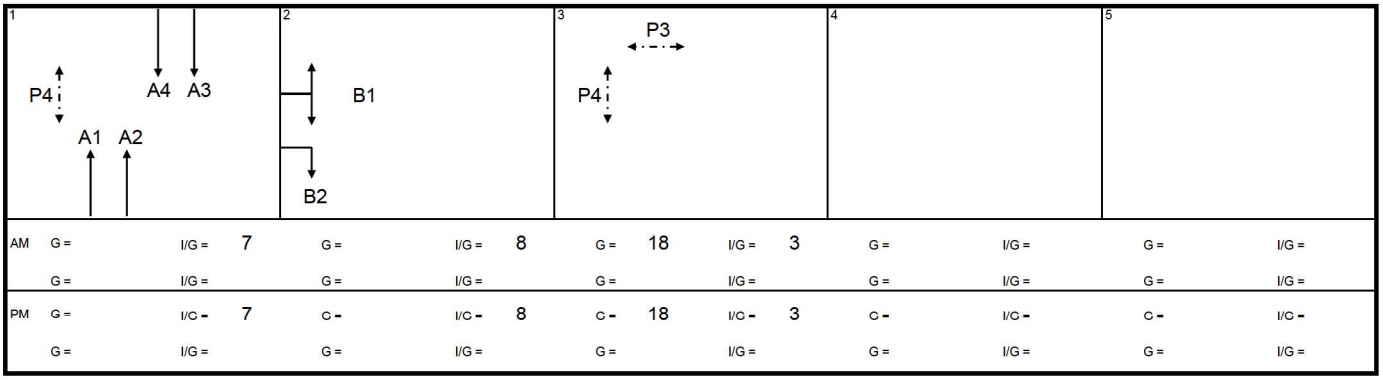


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.406		0.421	
L (s)	34		34	
C (s)	130		130	
practical y	0.665		0.665	
R.C. (%)	64%		58%	

Note:



		1		2		3		4		5	
AM	G =		I/G = 7	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =		I/C - 7	C -	I/C - 8	C - 18	I/C - 3	C -	I/C -	C -	I/C -
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

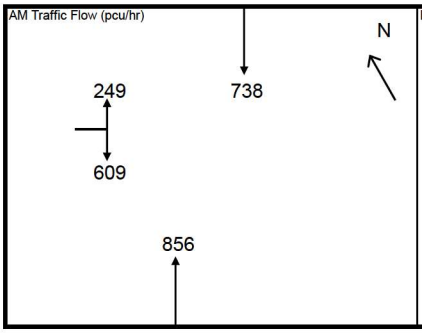
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: with KC-018 and KC-019 — R2 / P.6-3

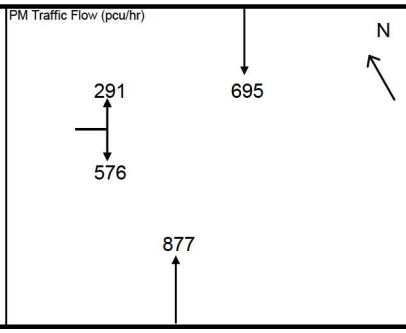
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	SA	A1	1	2.75				1890	413	0.219	0.219		1890	423	0.224	0.224
	SA	A2	1	2.75				2030	443	0.218			2030	454	0.224	
Mok Cheong Street	LT+RT	B1	2	5.50	15.0		100	1968	441	0.224		100	1968	446	0.227	0.227
	RT	B2	2	4.30	15.0		100	1859	417	0.224	0.224	100	1859	421	0.226	
To Kwa Wan Road SB	SA	A3	1	3.50				1965	361	0.184			1965	340	0.173	
	SA	A4	1	3.00				2055	377	0.183			2055	355	0.173	
pedestrian phase		P3	3		min crossing time =			6	sec GM +		12	sec FGM =		18	sec	
		P4	1,3		min crossing time =			7	sec GM +		12	sec FGM =		19	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

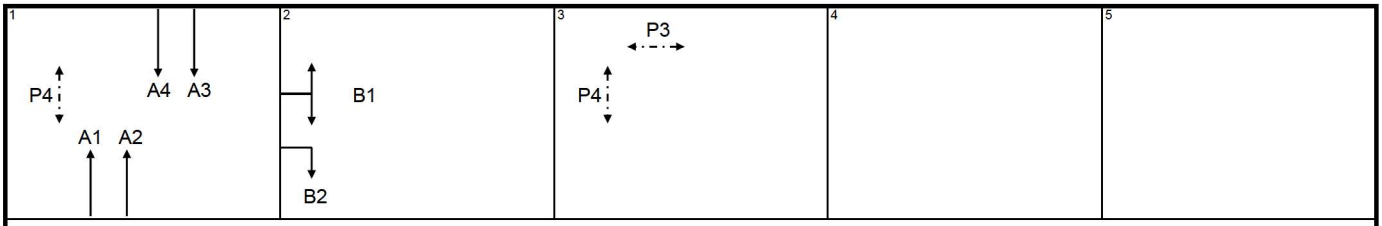


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.443		0.450	
L (s)	34		34	
C (s)	130		130	
practical y	0.665		0.665	
R.C. (%)	50%		48%	

Note:



AM	G =	I/G = 7	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						
PM	G =	I/C = 7	C =	I/C = 8	C = 18	I/C = 3	C =	I/C =	C =	I/C =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road Job Number: J7167

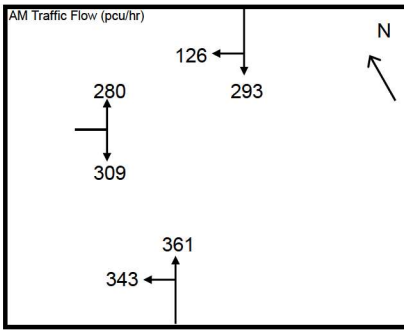
Scenario: existing condition R2 / P.7-1

Design Year: 2019 Designed By: Checked By: Date: 19 September 2022

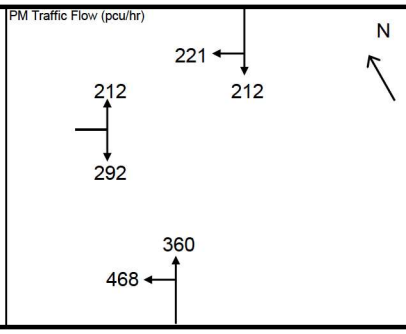
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT+SA	A1	3	4.00	18.0		100	1860	343	0.184	0.184	100	1860	468	0.252	0.252
	SA	A2	3	4.00				2155	361	0.168			2155	360	0.167	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	180	0.101		100	1781	154	0.086	
	LT+RT	B2	2	3.80	25.0		100	2014	204	0.101	0.101	100	2014	174	0.086	
	RT	B3	2	3.80	28.0		100	2026	205	0.101		100	2026	176	0.087	0.087
Shing Kai Road	SA	C1	1	3.50				1965	141	0.072			1965	142	0.072	0.072
	RT+SA	C2	1	3.50	25.0		0	2105	152	0.072	0.072	52	2041	147	0.072	
	RT	C3	1	3.50	30.0		100	2005	126	0.063		100	2005	144	0.072	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

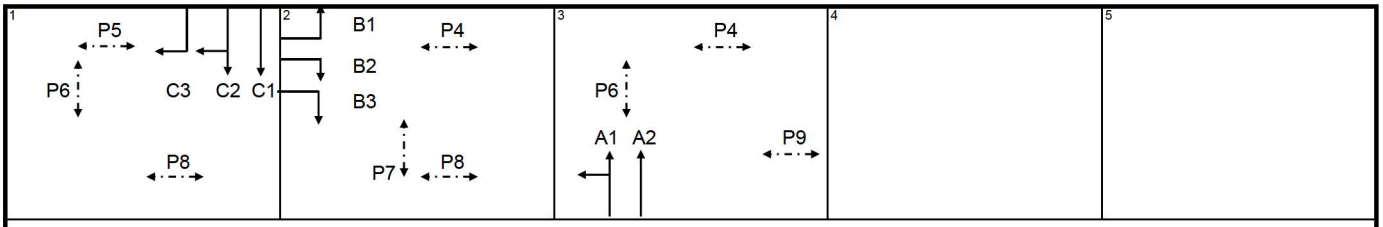


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.358	0.286	0.411	0.338
L (s)	13	32	13	32
C (s)	100	100	100	100
practical y	0.783	0.612	0.783	0.612
R.C. (%)	119%	114%	91%	81%



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =	

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road Job Number: J7167

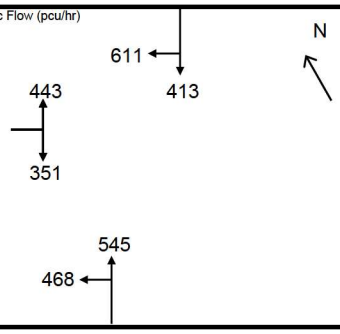
Scenario: without KC-018 and KC-019 R2 / P.7-2

Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

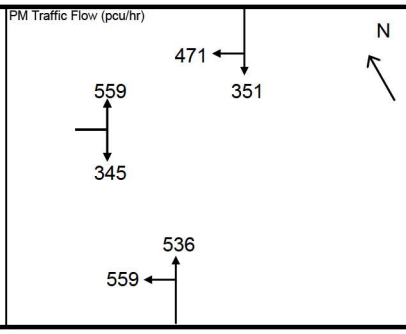
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT+SA	A1	3	4.00	18.0		100	1860	469	0.252	0.252	100	1860	559	0.301	0.301
	SA	A2	3	4.00				2155	544	0.252			2155	536	0.249	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	243	0.136		100	1781	277	0.155	0.155
	LT+RT	B2	2	3.80	25.0		100	2014	275	0.137	0.137	100	2014	313	0.155	
	RT	B3	2	3.80	28.0		100	2026	276	0.136		100	2026	314	0.155	
Shing Kai Road	SA	C1	1	3.50				1965	336	0.171			1965	270	0.137	0.137
	RT+SA	C2	1	3.50	25.0		78	2011	344	0.171		71	2019	277	0.137	
	RT	C3	1	3.50	30.0		100	2005	344	0.172	0.172	100	2005	275	0.137	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

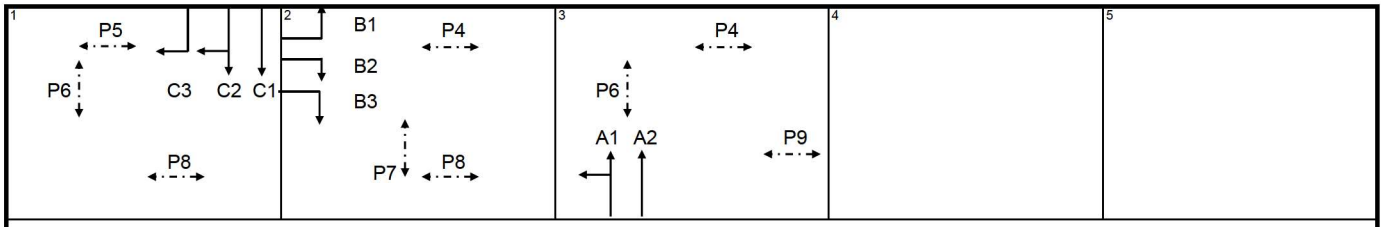


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.560	0.424	0.593	0.438
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	40%	40%	32%	40%



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =	

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road Job Number: J7167

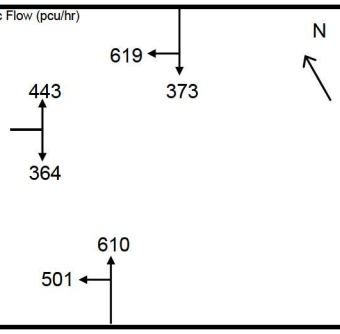
Scenario: with KC-018 and KC-019 R2 / P.7-3

Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

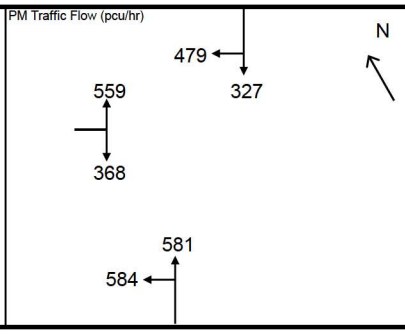
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT+SA	A1	3	4.00	18.0		97	1864	515	0.276		100	1860	584	0.314	0.314
	SA	A2	3	4.00				2155	596	0.277	0.277		2155	581	0.270	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	247	0.139		100	1781	284	0.159	0.159
	LT+RT	B2	2	3.80	25.0		100	2014	279	0.139		100	2014	321	0.159	
	RT	B3	2	3.80	28.0		100	2026	281	0.139	0.139	100	2026	322	0.159	
Shing Kai Road	SA	C1	1	3.50				1965	326	0.166			1965	265	0.135	0.135
	RT+SA	C2	1	3.50	25.0		86	2002	333	0.166	0.166	77	2012	271	0.135	
	RT	C3	1	3.50	30.0		100	2005	333	0.166		100	2005	270	0.135	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

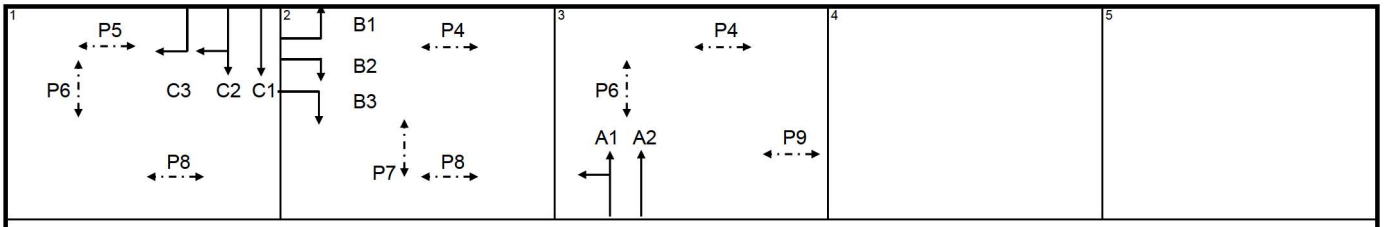


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.582	0.443	0.608	0.449
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	35%	34%	29%	36%



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =		G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =		G =		I/G =	

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road — Job Number: J7167

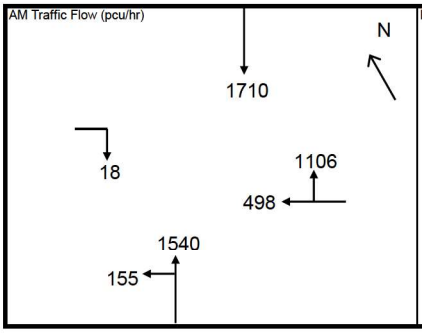
Scenario: existing condition — R2 / P.8-1

Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

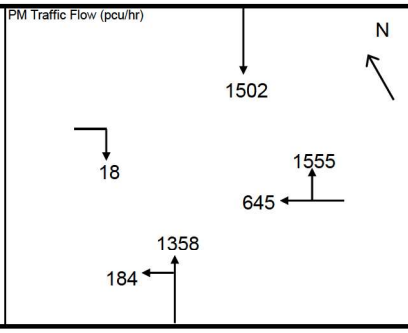
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		29	1910	529	0.277	0.277	38	1893	478	0.253	
	SA	A2	1	3.50				2105	583	0.277			2105	532	0.253	
	SA	A3	1	3.50				2105	583	0.277			2105	532	0.253	0.253
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.010	0.010	100	1854	18	0.010	0.010
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	544	0.277			1965	478	0.243	
	SA	C2	1	3.50				2105	583	0.277			2105	512	0.243	
	SA	C3	1	3.50				2105	583	0.277			2105	512	0.243	
Sung Wong Toi Road	SA	D1	2	3.20				1935	237	0.122			1935	307	0.159	
	SA	D2	2	3.75				2130	261	0.123			2130	338	0.159	
	RT	D3	2, 3	3.00	30.0		100	1957	374	0.191		100	1957	526	0.269	
	RT	D4	2, 3	3.50	26.0		100	1990	380	0.191		100	1990	535	0.269	0.269
	RT	D5	2, 3	3.50	22.0		100	1840	352	0.191	0.191	100	1840	494	0.269	

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

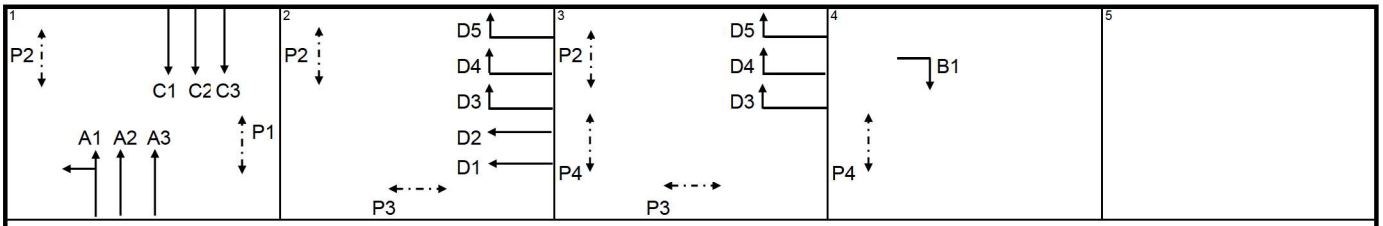


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.478		0.531	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	64%		47%	

Note:



AM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			
PM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road Job Number: J7167

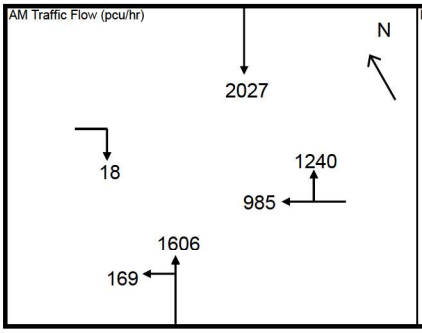
Scenario: without KC-018 and KC-019 R2 / P.8-2

Design Year: 2036 Designed By: _____ Checked By: _____ Date: 19 September 2022

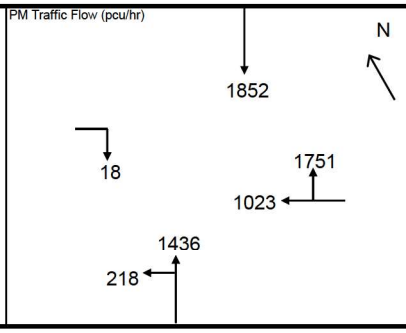
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	553	0.290		43	1884	511	0.271	
	SA	A2	1	3.50				2105	611	0.290			2105	571	0.271	
	SA	A3	1	3.50				2105	611	0.290			2105	572	0.272	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.010	0.010	100	1854	18	0.010	0.010
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	645	0.328			1965	589	0.300	
	SA	C2	1	3.50				2105	691	0.328			2105	631	0.300	0.300
	SA	C3	1	3.50				2105	691	0.328	0.328		2105	632	0.300	
Sung Wong Toi Road	SA	D1	2	3.20				1935	469	0.242			1935	487	0.252	
	SA	D2	2	3.75				2130	516	0.242	0.242		2130	536	0.252	
	RT	D3	2, 3	3.00	30.0		100	1957	419	0.214		100	1957	592	0.302	
	RT	D4	2, 3	3.50	26.0		100	1990	426	0.214		100	1990	602	0.302	
	RT	D5	2, 3	3.50	22.0		100	1840	395	0.215		100	1840	557	0.303	0.303

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

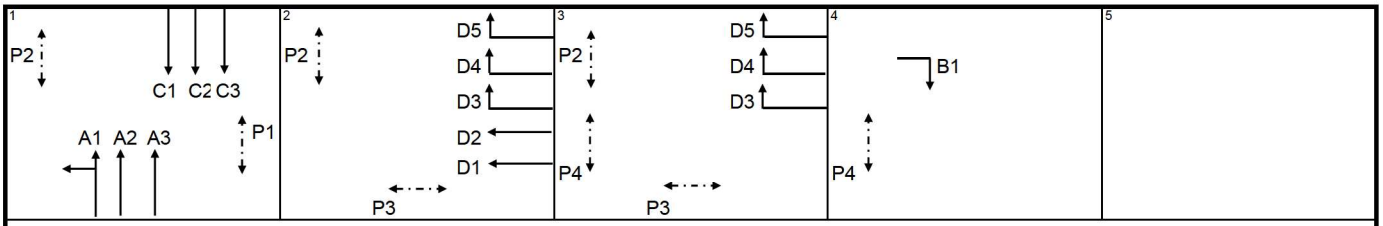


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.580		0.612	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	35%		28%	

Note:



AM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			
PM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road Job Number: J7167

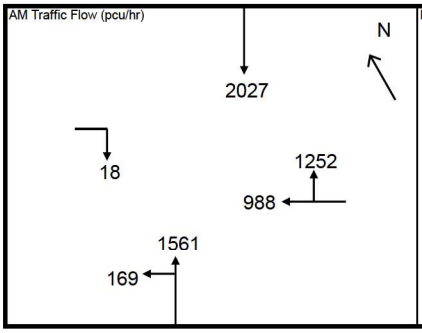
Scenario: with KC-018 and KC-019 R2 / P.8-3

Design Year: 2036 Designed By: _____ Checked By: _____ Date: 19 September 2022

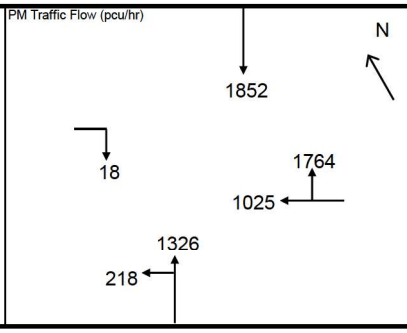
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	539	0.283		46	1879	476	0.253	
	SA	A2	1	3.50				2105	595	0.283			2105	534	0.254	
	SA	A3	1	3.50				2105	596	0.283			2105	534	0.254	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.010	0.010	100	1854	18	0.010	0.010
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	645	0.328			1965	589	0.300	
	SA	C2	1	3.50				2105	691	0.328			2105	631	0.300	0.300
	SA	C3	1	3.50				2105	691	0.328	0.328		2105	632	0.300	
Sung Wong Toi Road	SA	D1	2	3.20				1935	470	0.243			1935	488	0.252	
	SA	D2	2	3.75				2130	518	0.243	0.243		2130	537	0.252	
	RT	D3	2, 3	3.00	30.0		100	1957	423	0.216		100	1957	597	0.305	0.305
	RT	D4	2, 3	3.50	26.0		100	1990	431	0.217		100	1990	607	0.305	
	RT	D5	2, 3	3.50	22.0		100	1840	398	0.216		100	1840	560	0.304	

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

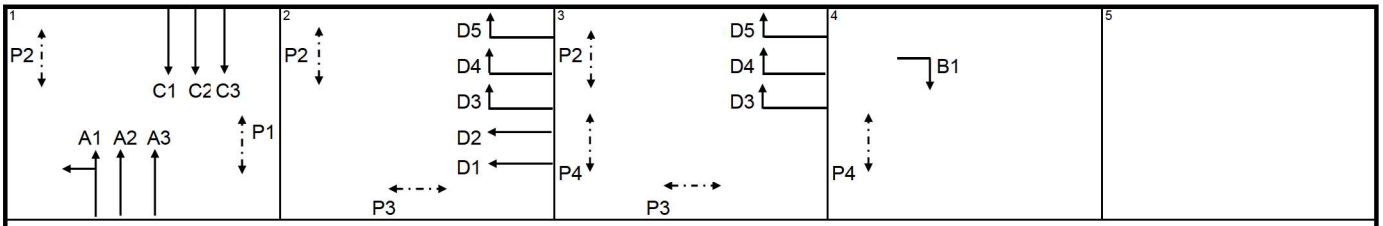


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.581		0.615	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	35%		27%	

Note:



AM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			
PM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			

Signal Junction Analysis

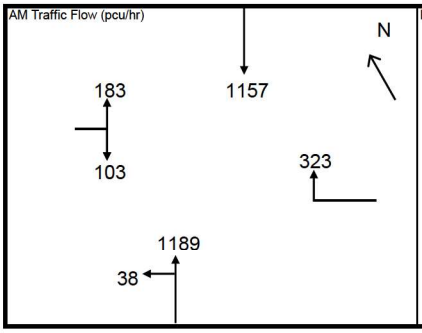
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: existing condition — R2 / P.9-1

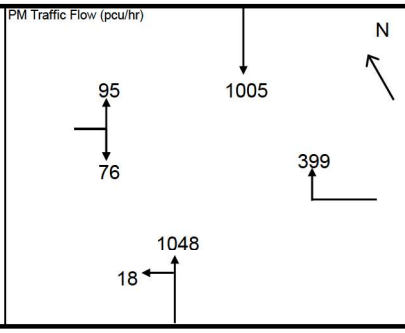
Design Year: 2019 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	387	0.199		5	1953	338	0.173	
	SA	A2	1	3.50				2105	420	0.200			2105	364	0.173	
	SA	A3	1	3.50				2105	420	0.200	0.200		2105	364	0.173	0.173
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	157	0.083		100	1898	194	0.102	
	RT	B2	2	4.50	15.0		100	2005	166	0.083	0.083	100	2005	205	0.102	0.102
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	368	0.187			1965	320	0.163	
	SA	C2	1	3.50				2105	394	0.187			2105	343	0.163	
	SA	C3	1	3.50				2105	395	0.188			2105	342	0.162	
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	183	0.103	0.103	100	1768	95	0.054	0.054
	RT	D2	3	3.30	15.0		100	1895	103	0.054		100	1895	76	0.040	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		12	sec FGM =		24	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

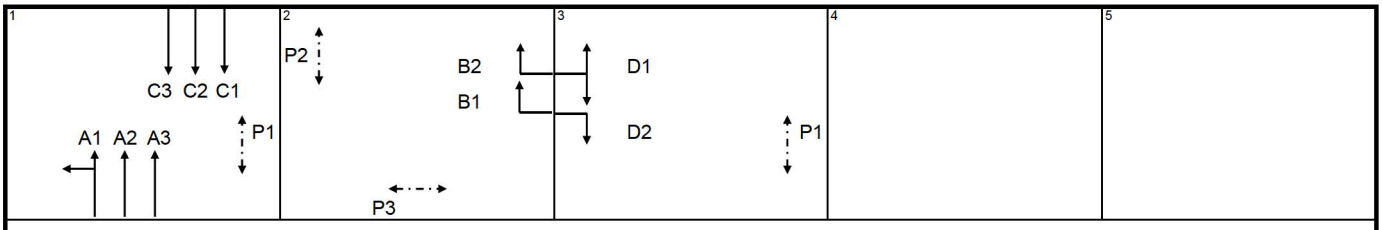


$S_M = S \div (1+1.5f/r)$ $S = 1940+100(W-3.25)$

$S_M = (S-230) \div (1+1.5f/r)$ $S = 2080+100(W-3.25)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.386		0.329	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	106%		142%	



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =

Signal Junction Analysis

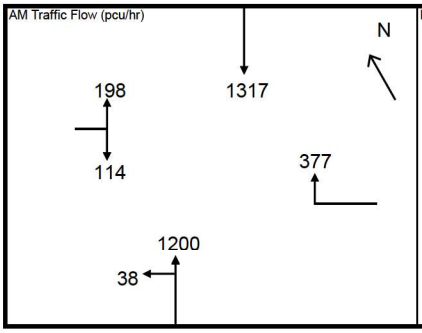
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: without KC-018 and KC-019 — R2 / P.9-2

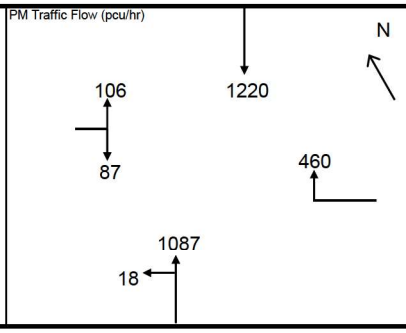
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
	SA	A2	1	3.50				2105	424	0.201			2105	377	0.179	
	SA	A3	1	3.50				2105	423	0.201			2105	378	0.180	
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	183	0.096		100	1898	224	0.118	0.118
	RT	B2	2	4.50	15.0		100	2005	194	0.097	0.097	100	2005	236	0.118	
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213			1965	388	0.197	
	SA	C2	1	3.50				2105	449	0.213	0.213		2105	416	0.198	
	SA	C3	1	3.50				2105	449	0.213			2105	416	0.198	0.198
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	198	0.112	0.112	100	1768	106	0.060	0.060
	RT	D2	3	3.30	15.0		100	1895	114	0.060		100	1895	87	0.046	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		9	sec FGM =		21	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

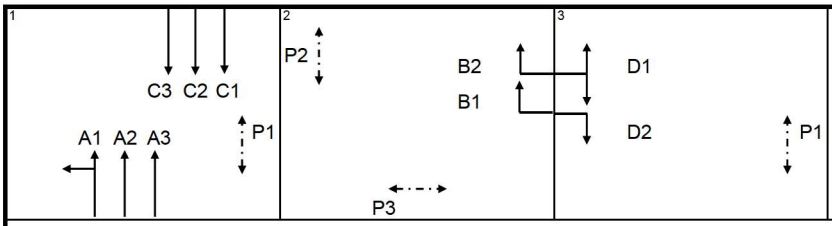


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.422		0.376	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	89%		112%	

Note:



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =

Signal Junction Analysis

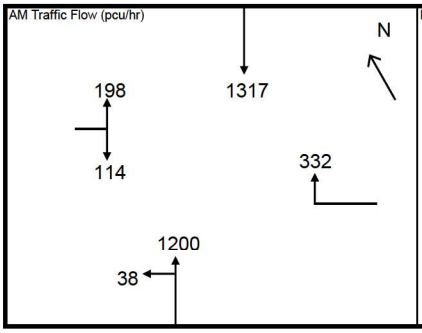
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: with KC-018 and KC-019 — R2 / P.9-3

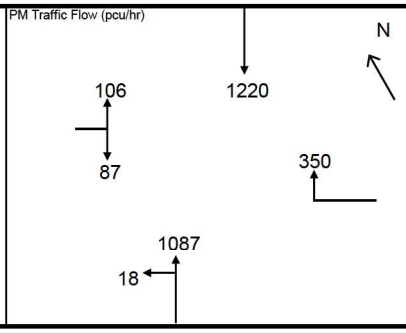
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
	SA	A2	1	3.50				2105	424	0.201			2105	377	0.179	
	SA	A3	1	3.50				2105	423	0.201			2105	378	0.180	
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	161	0.085		100	1898	170	0.090	
	RT	B2	2	4.50	15.0		100	2005	171	0.085	0.085	100	2005	180	0.090	0.090
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213	0.213		1965	388	0.197	
	SA	C2	1	3.50				2105	449	0.213			2105	416	0.198	
	SA	C3	1	3.50				2105	449	0.213			2105	416	0.198	0.198
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	198	0.112	0.112	100	1768	106	0.060	0.060
	RT	D2	3	3.30	15.0		100	1895	114	0.060		100	1895	87	0.046	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		12	sec FGM =		24	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

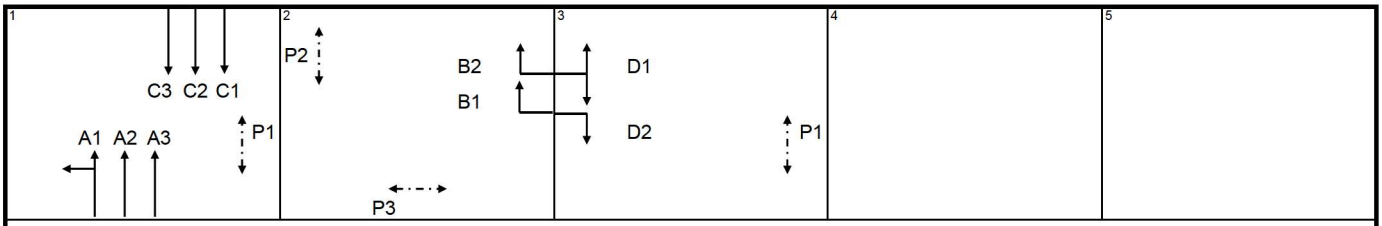


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.411		0.347	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	94%		129%	



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Roundabout Analysis

Location J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street R2 / P.10-1

Scenario existing condition

Design Year 2019 Job Number J7167 Date 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	27	199	797					1033	967
From B	42	21	132	485					680	1782
From C	695	52	46	466					1259	1483
From D	452	118	602	128					1300	866
From E										
From F										
From G										
From H										
Total	1199	218	979	1876					4272	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	12	30	305	850					1197	1018
From B	29	17	114	319					479	2026
From C	548	31	30	448					1057	1367
From D	515	111	689	140					1455	667
From E										
From F										
From G										
From H										
Total	1104	189	1138	1757					4188	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100	40	0.4
From B	7.8	5.4	25.0	6.6	100	20	0.6
From C	9.6	7.2	100.0	12.6	100	30	0.3
From D	9.6	7.2	100.0	60.0	100	60	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2114	2085	1033	1197	0.489	0.574
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1152	1028	680	479	0.590	0.466
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1842	1912	1259	1057	0.683	0.553
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2151	2264	1300	1455	0.604	0.643
From E												
From F												
From G												
From H												

Roundabout Analysis

Location J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street R2 / P.10-2

Scenario without KC-018 and KC-019

Design Year 2036 Job Number J7167 Date 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	86	26	150	516					778	1909
From C	766	57	51	491					1365	1630
From D	499	124	645	138					1406	996
From E										
From F										
From G										
From H										
Total	1361	238	1057	1999					4655	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	62	24	135	363					584	2192
From C	654	45	49	504					1252	1542
From D	639	124	730	165					1658	844
From E										
From F										
From G										
From H										
Total	1365	226	1234	1950					4775	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	778	584	0.715	0.619
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1754	1807	1365	1252	0.778	0.693
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2077	2163	1406	1658	0.677	0.766
From E												
From F												
From G												
From H												

Roundabout Analysis

Location J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street R2 / P.10-3

Scenario with KC-018 and KC-019

Design Year 2036 Job Number J7167 Date 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	86	26	150	516					778	1909
From C	773	57	51	491					1372	1630
From D	502	124	645	138					1409	1003
From E										
From F										
From G										
From H										
Total	1371	238	1057	1999					4665	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	62	24	135	363					584	2192
From C	657	45	49	504					1255	1542
From D	646	124	730	165					1665	847
From E										
From F										
From G										
From H										
Total	1375	226	1234	1950					4785	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

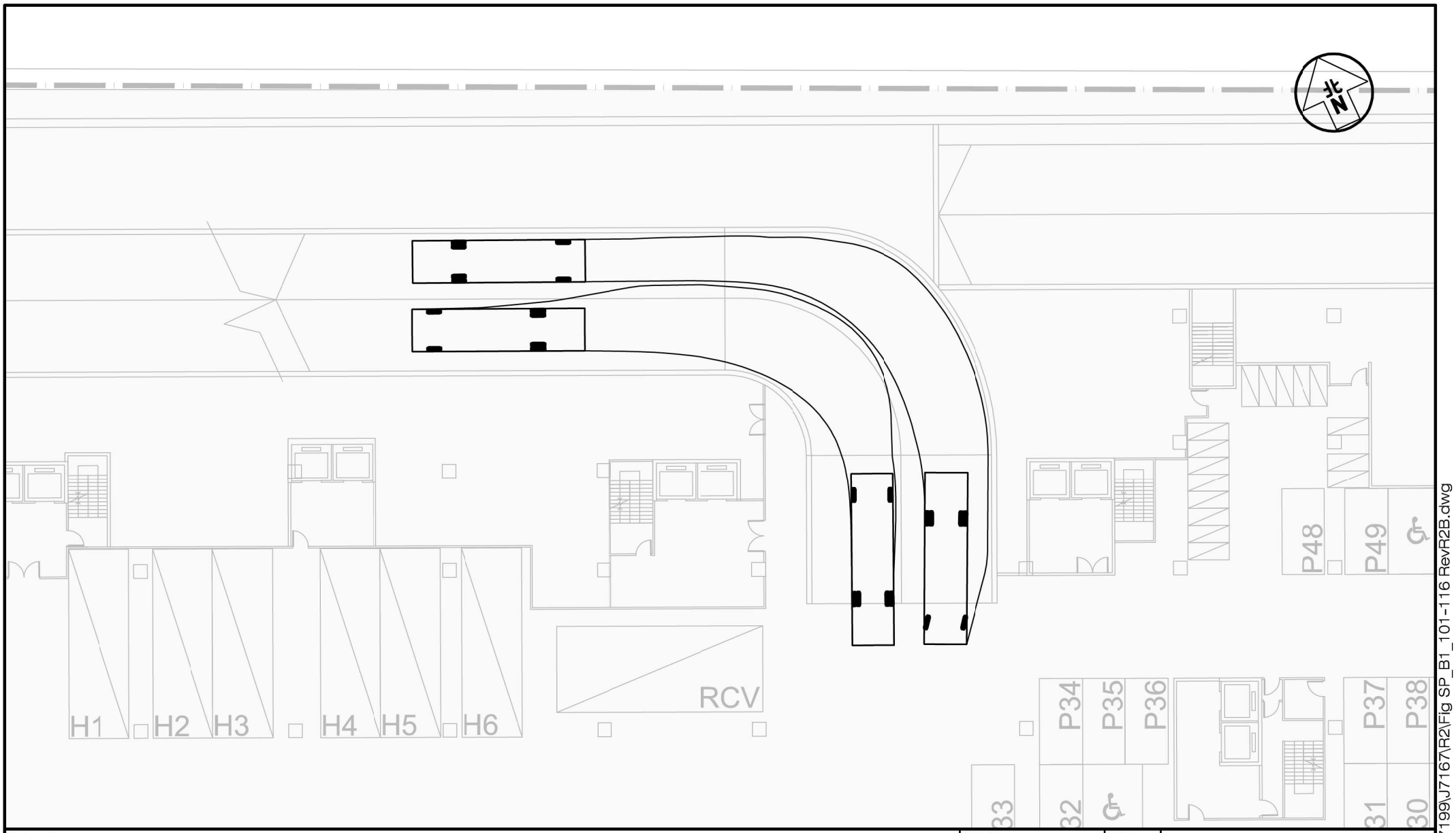
Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	778	584	0.715	0.619
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1754	1807	1372	1255	0.782	0.695
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2073	2162	1409	1665	0.680	0.770
From E												
From F												
From G												
From H												

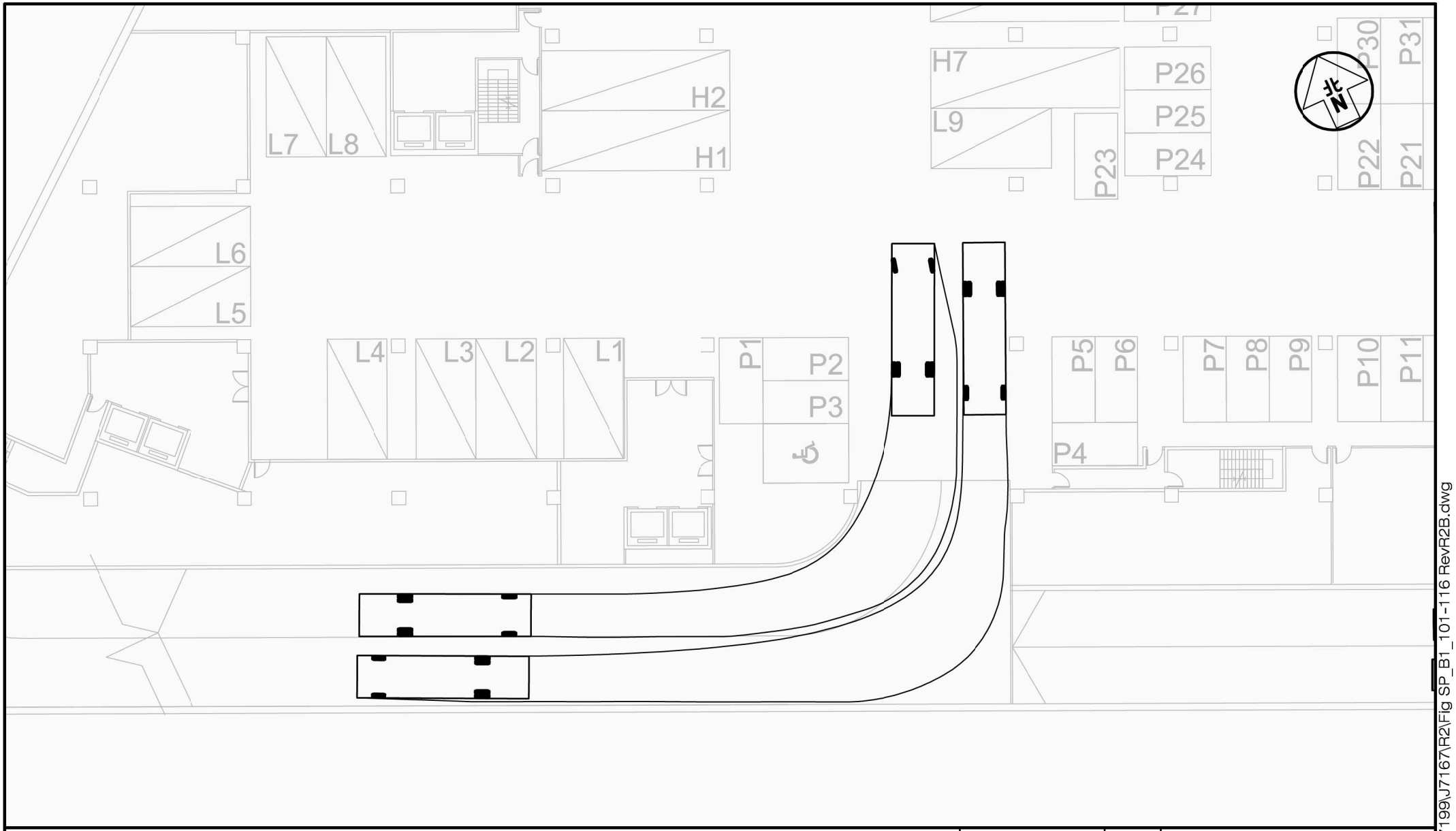
Appendix B – Swept Path Analysis



Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B1/101	Revision: R2B
Figure Title: SWEPT PATHS OF HGV AT RAMP TO B1/F IN KC-019		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A4: 1 : 300	Date: 29 SEP 2022

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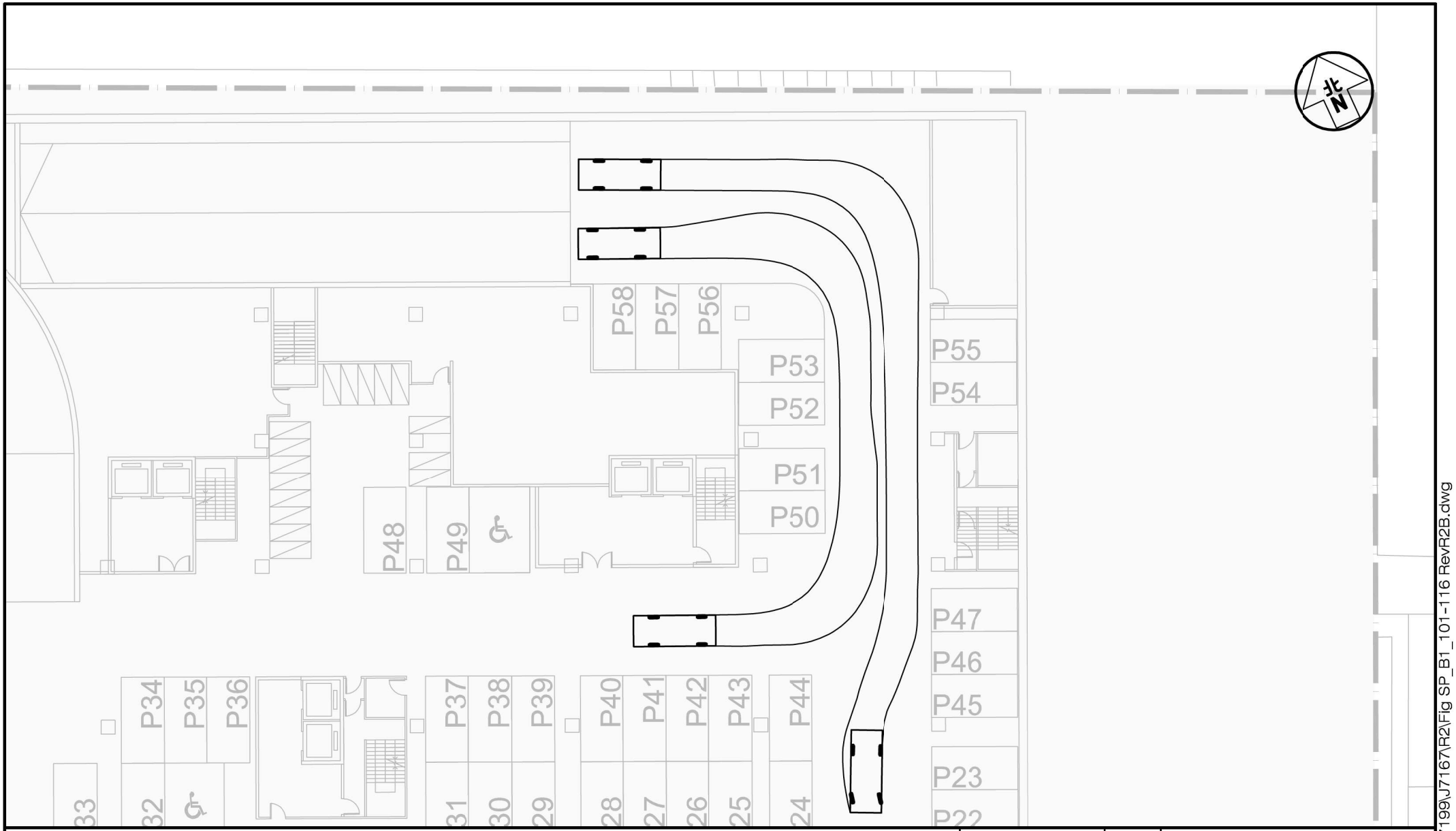
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B1/102	Revision: R2B
Figure Title: SWEPT PATHS OF HGV AT RAMP TO B1/F IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A4: 1 : 300	Date: 29 SEP 2022

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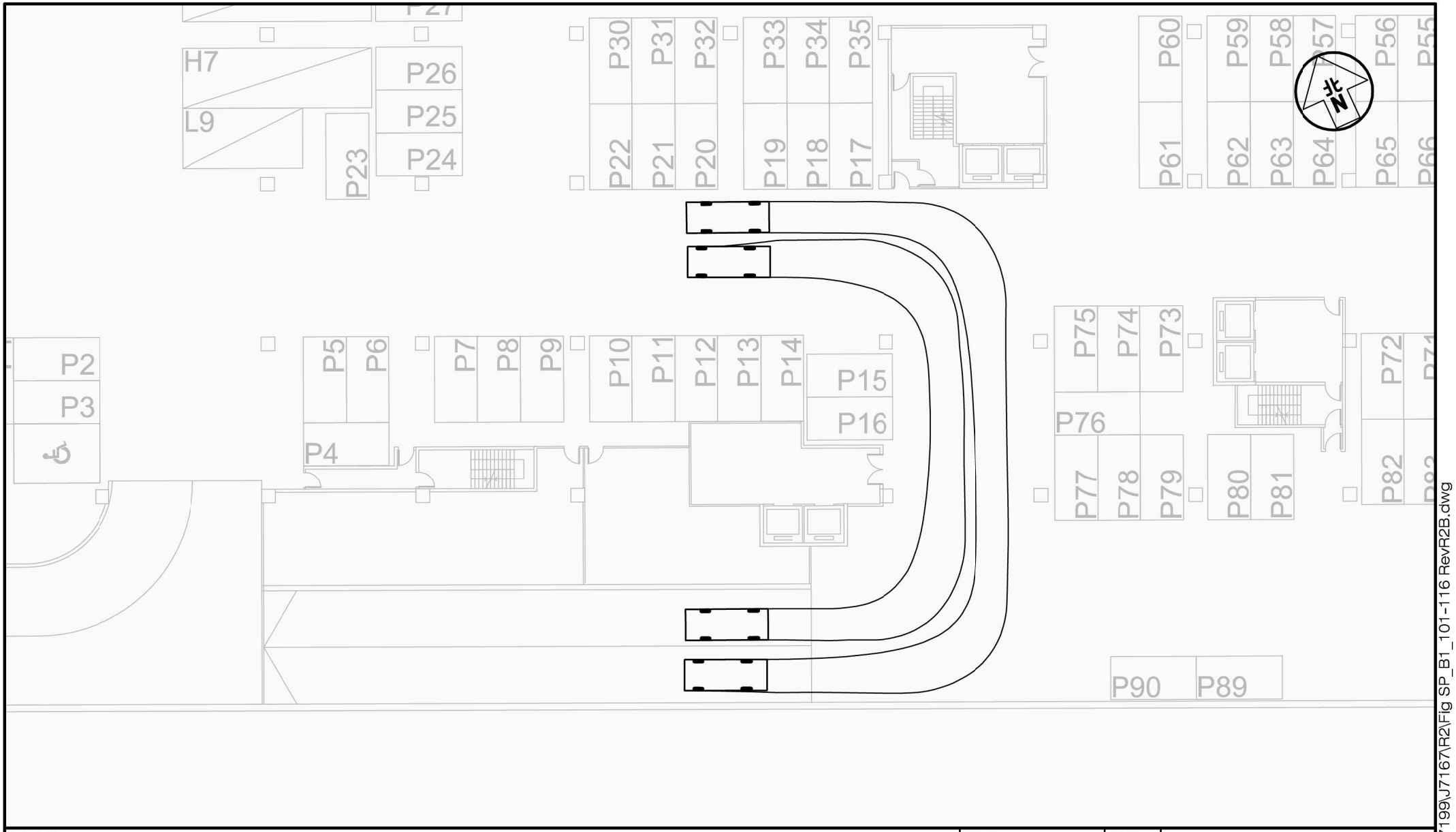
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B1/103	Revision: R2B
Figure Title: SWEPT PATHS OF PRIVATE CAR ON B1/F IN KC-019		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A4: 1 : 300	Date: 29 SEP 2022

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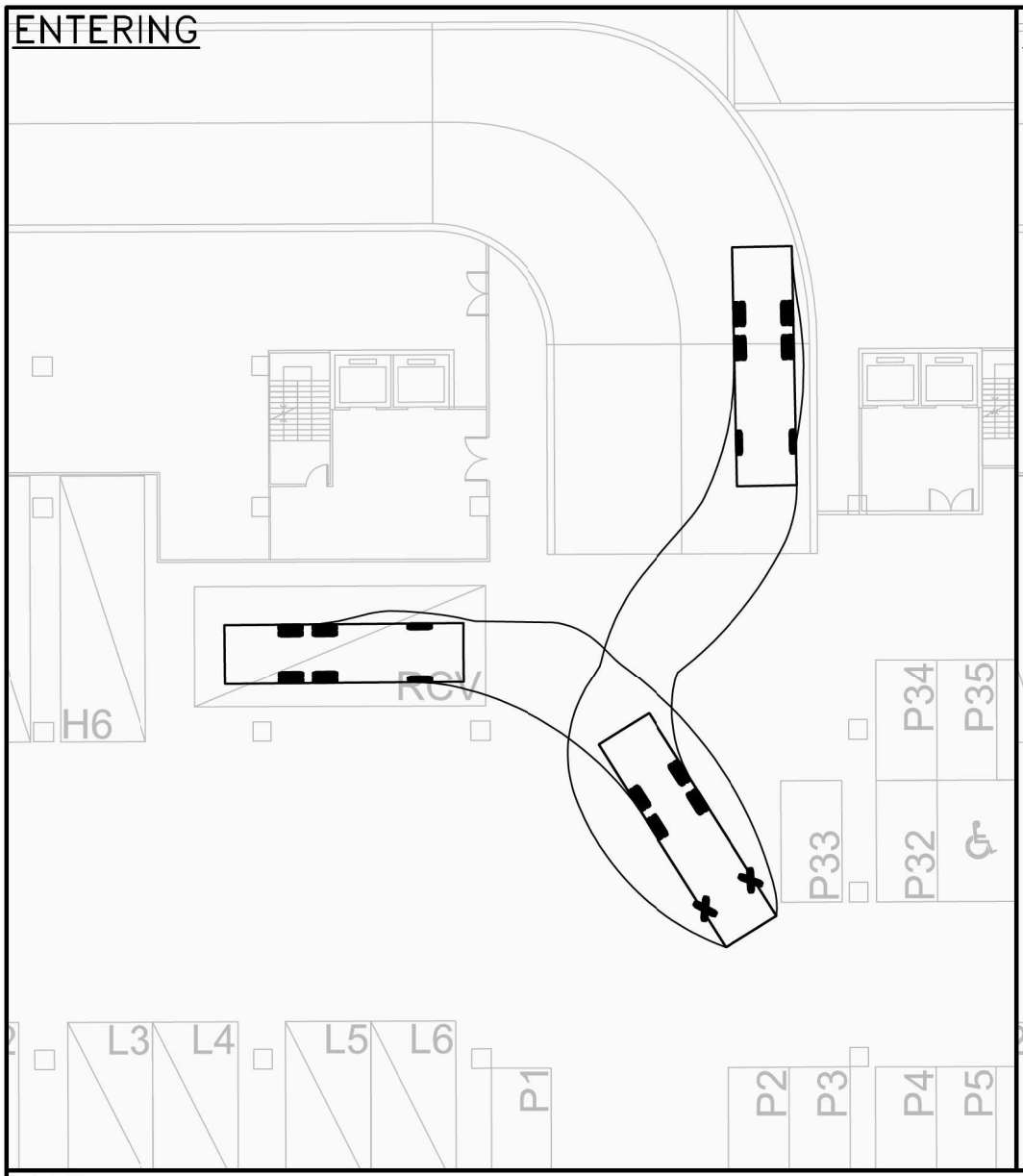
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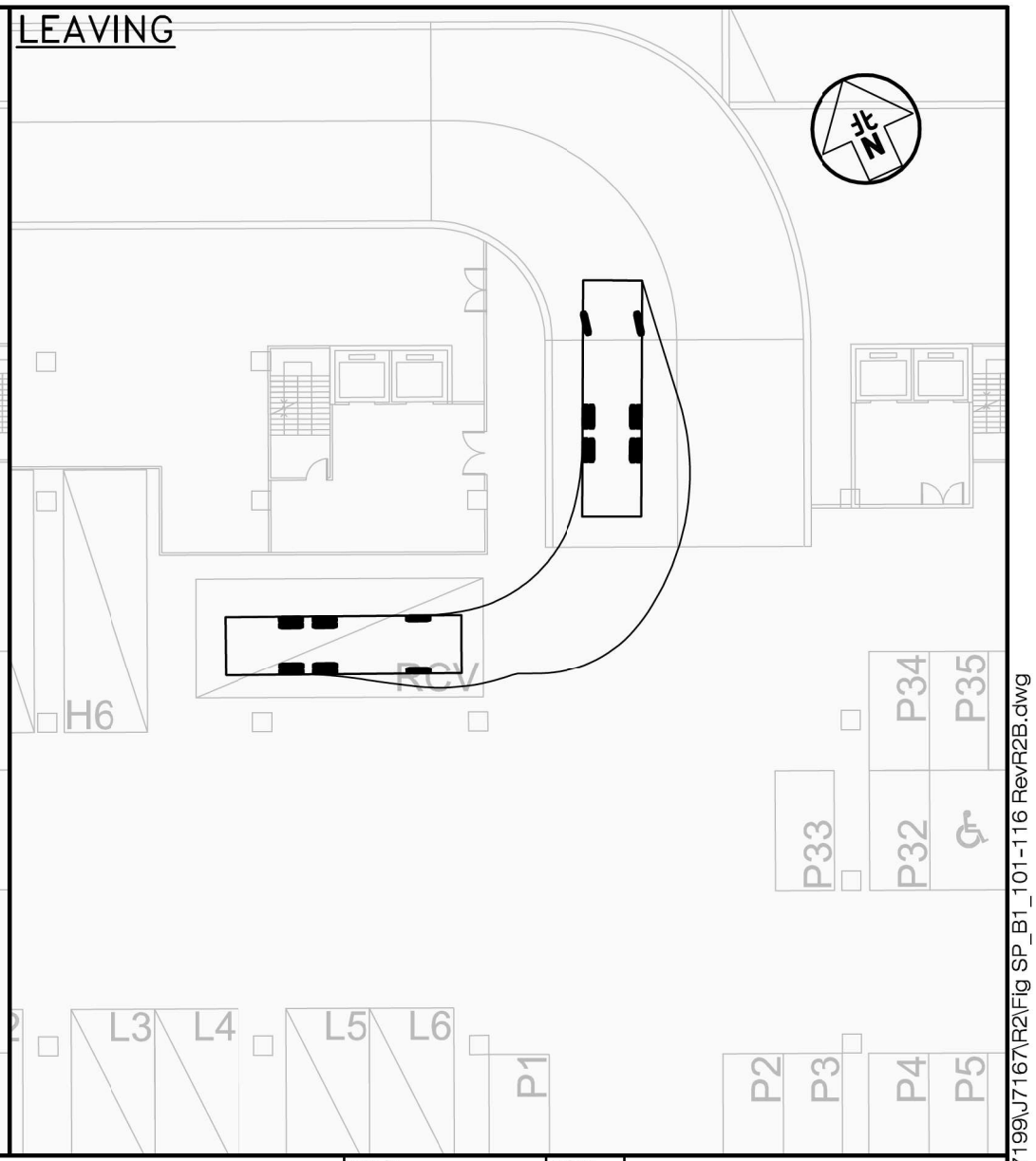


Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B1/104	Revision: R2B
Figure Title: SWEPT PATHS OF PRIVATE CAR ON B1/F IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure No. SP/B1/105

Revision R2B

Figure Title

SWEPT PATH OF RCV ENTERING AND LEAVING RCV BAY IN KC-019

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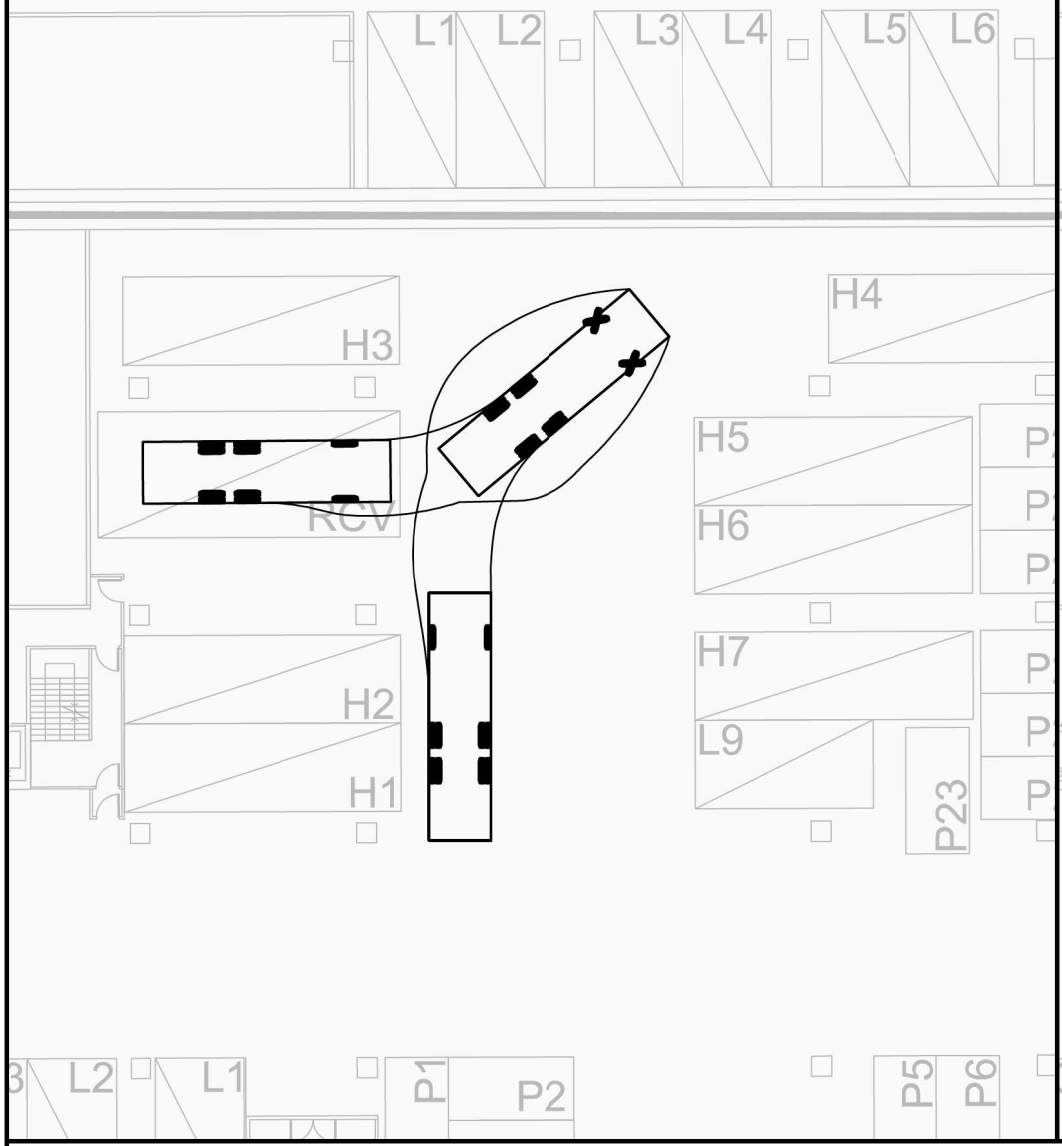
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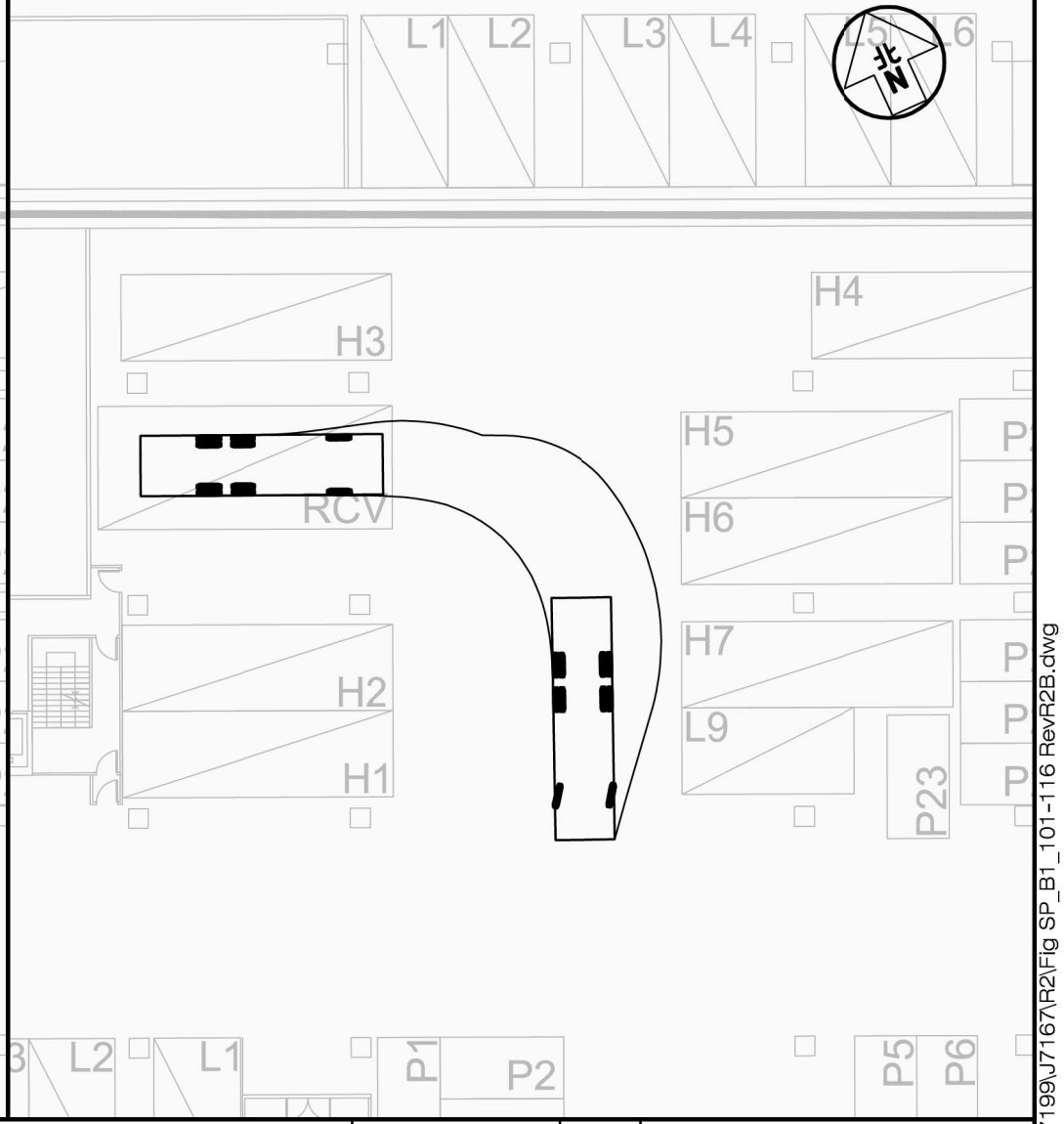
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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATH OF RCV ENTERING AND LEAVING RCV BAY IN KC-018

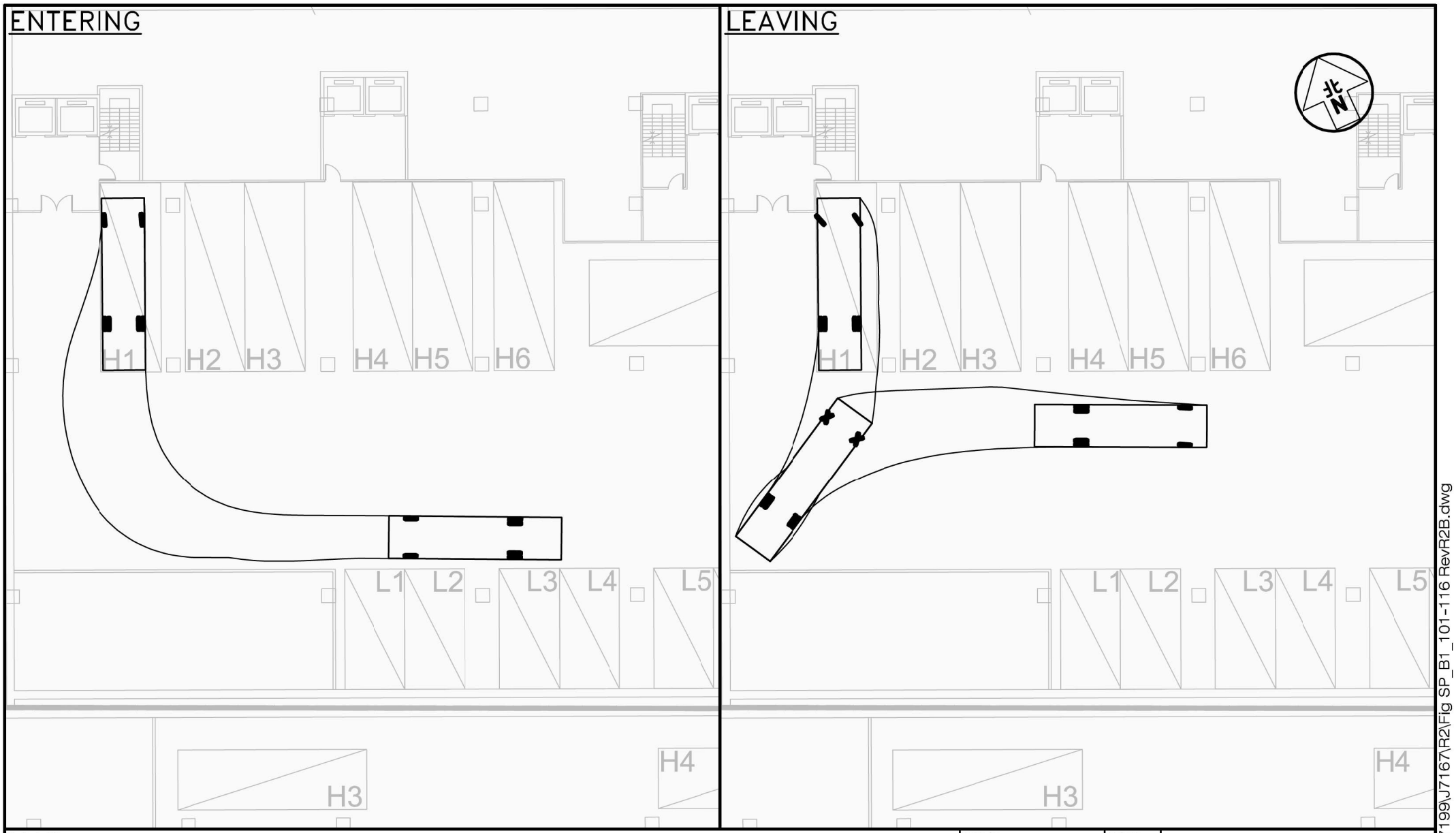
Figure No.	Revision
SP/B1/106	R2B

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure No. SP/B1/107

Revision R2B

Figure Title

SWEPT PATH OF HGV ENTERING AND LEAVING H1 IN KC-019

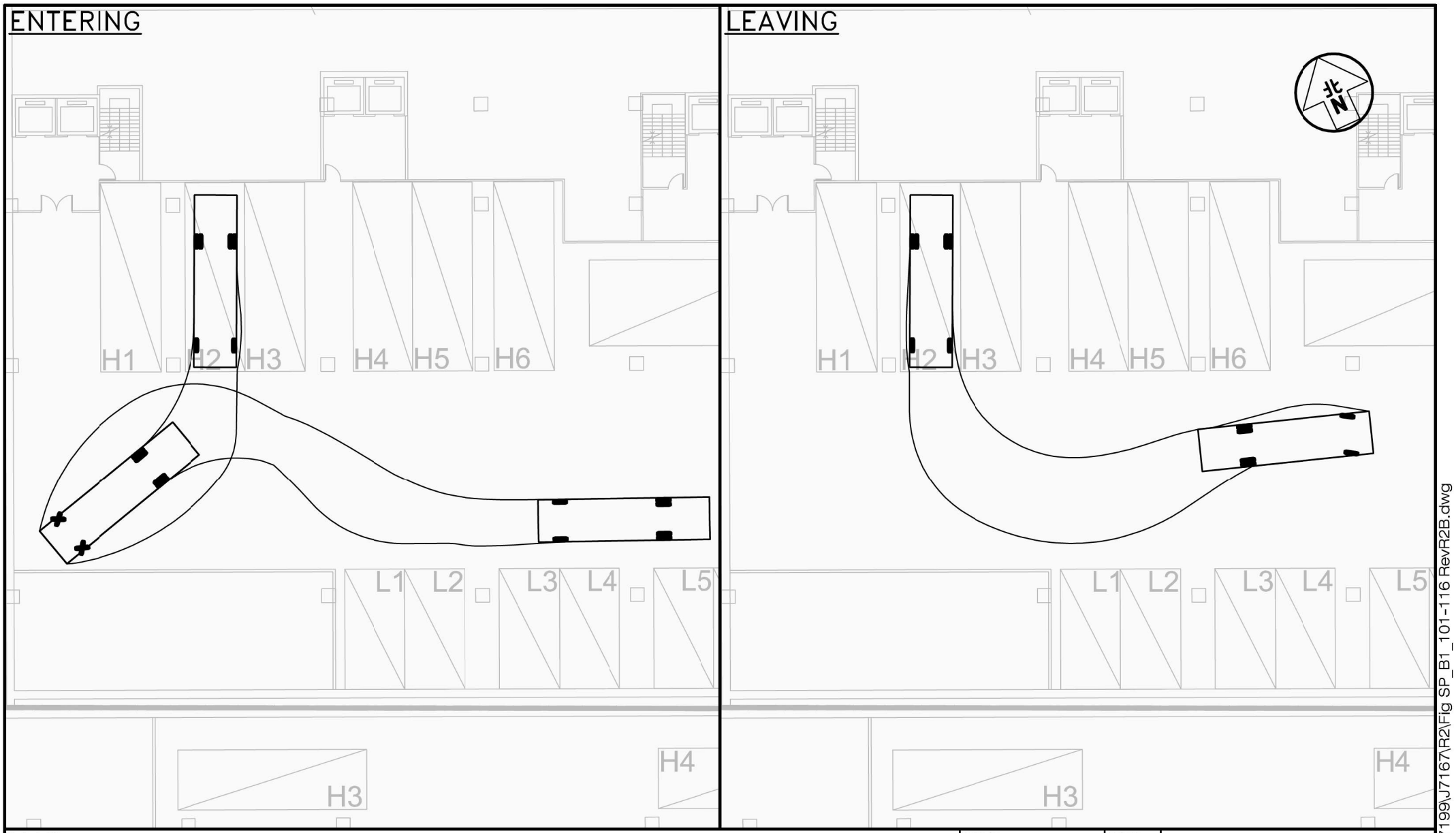
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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure No. SP/B1/108

Revision R2B

Figure Title

SWEPT PATH OF HGV ENTERING AND LEAVING H2 IN KC-019

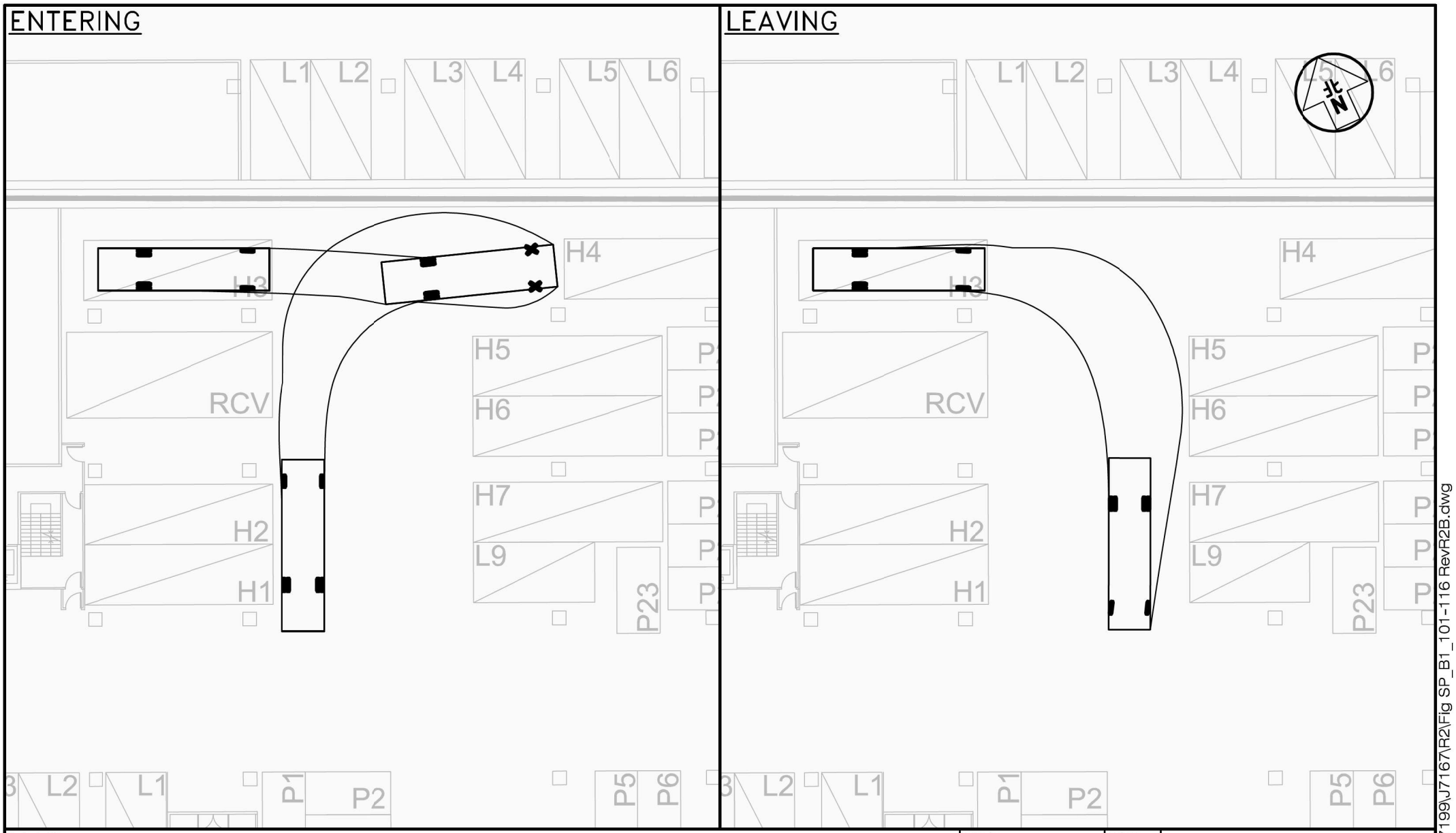
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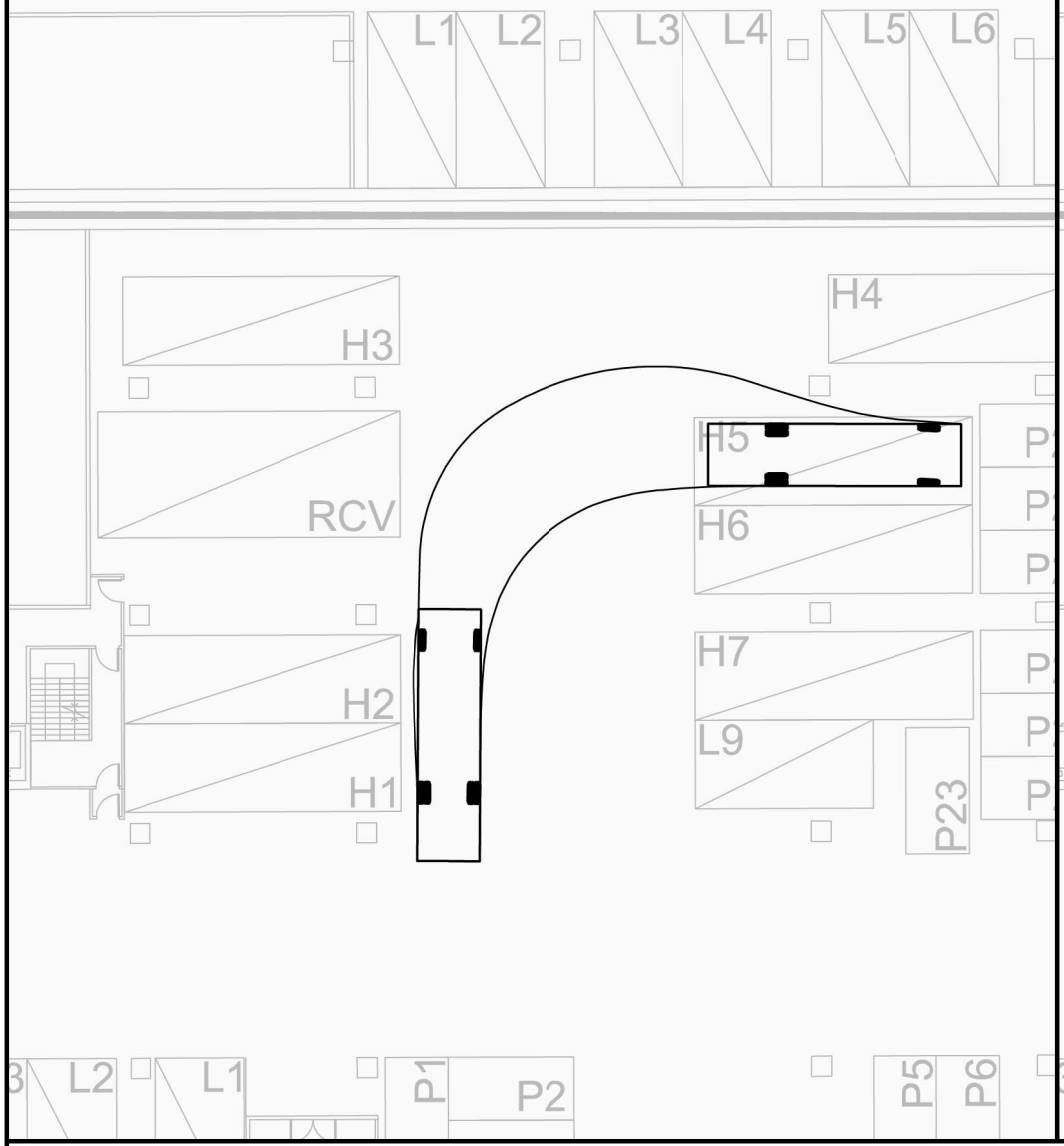


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Figure Title: SWEPT PATH OF HGV ENTERING AND LEAVING H3 IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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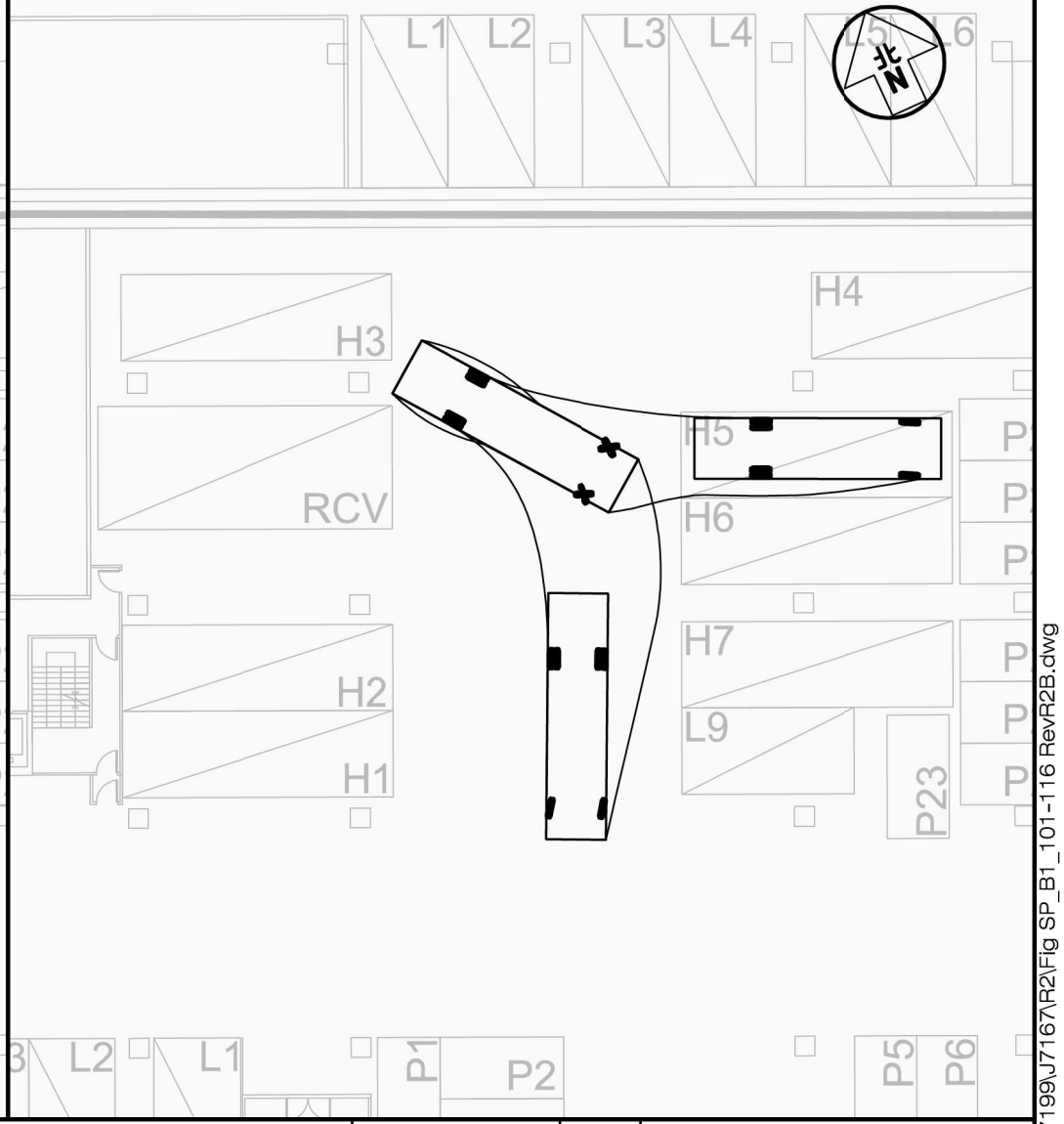
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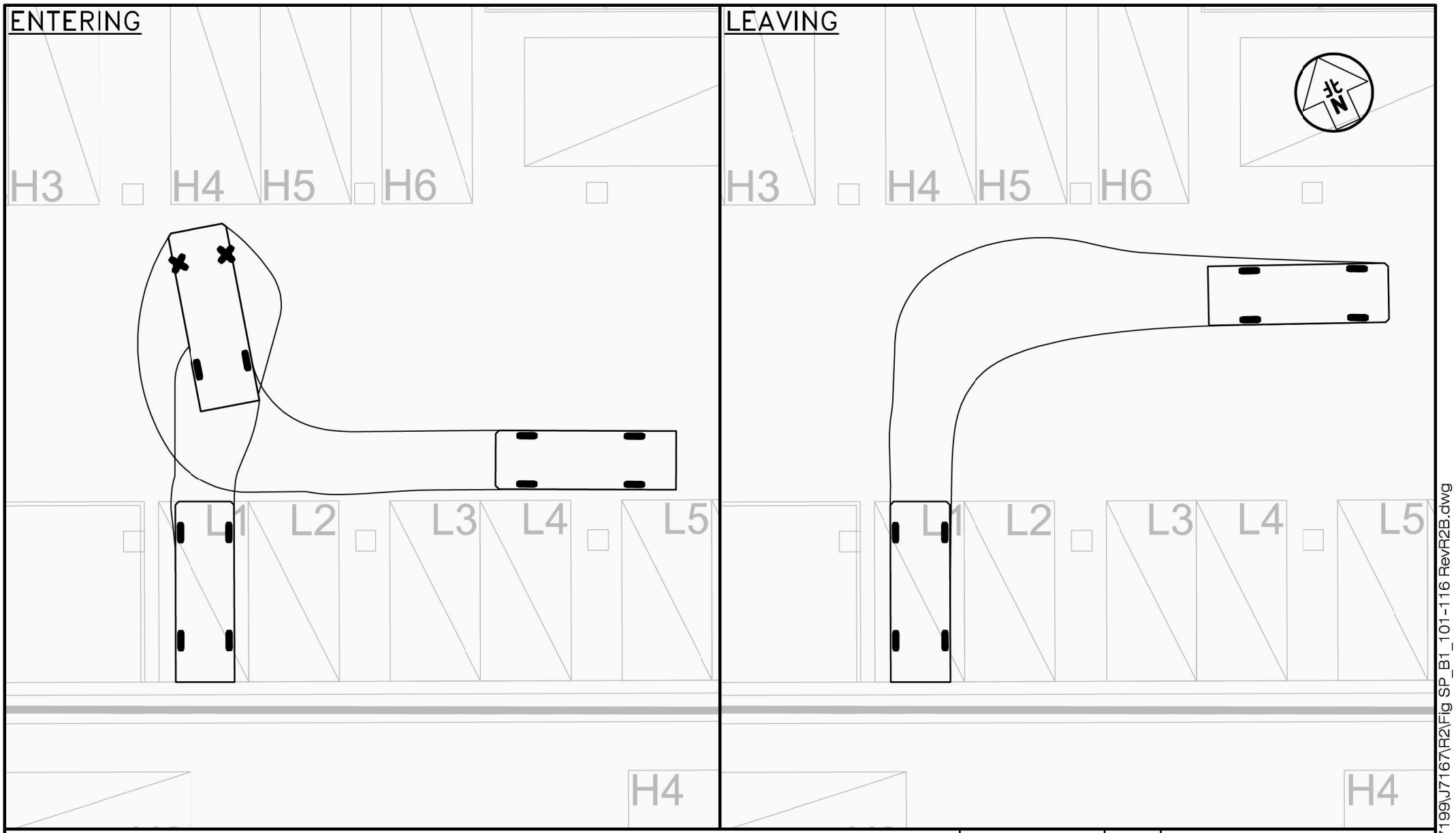
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B1/110	Revision: R2B
Figure Title: SWEPT PATH OF HGV ENTERING AND LEAVING H5 IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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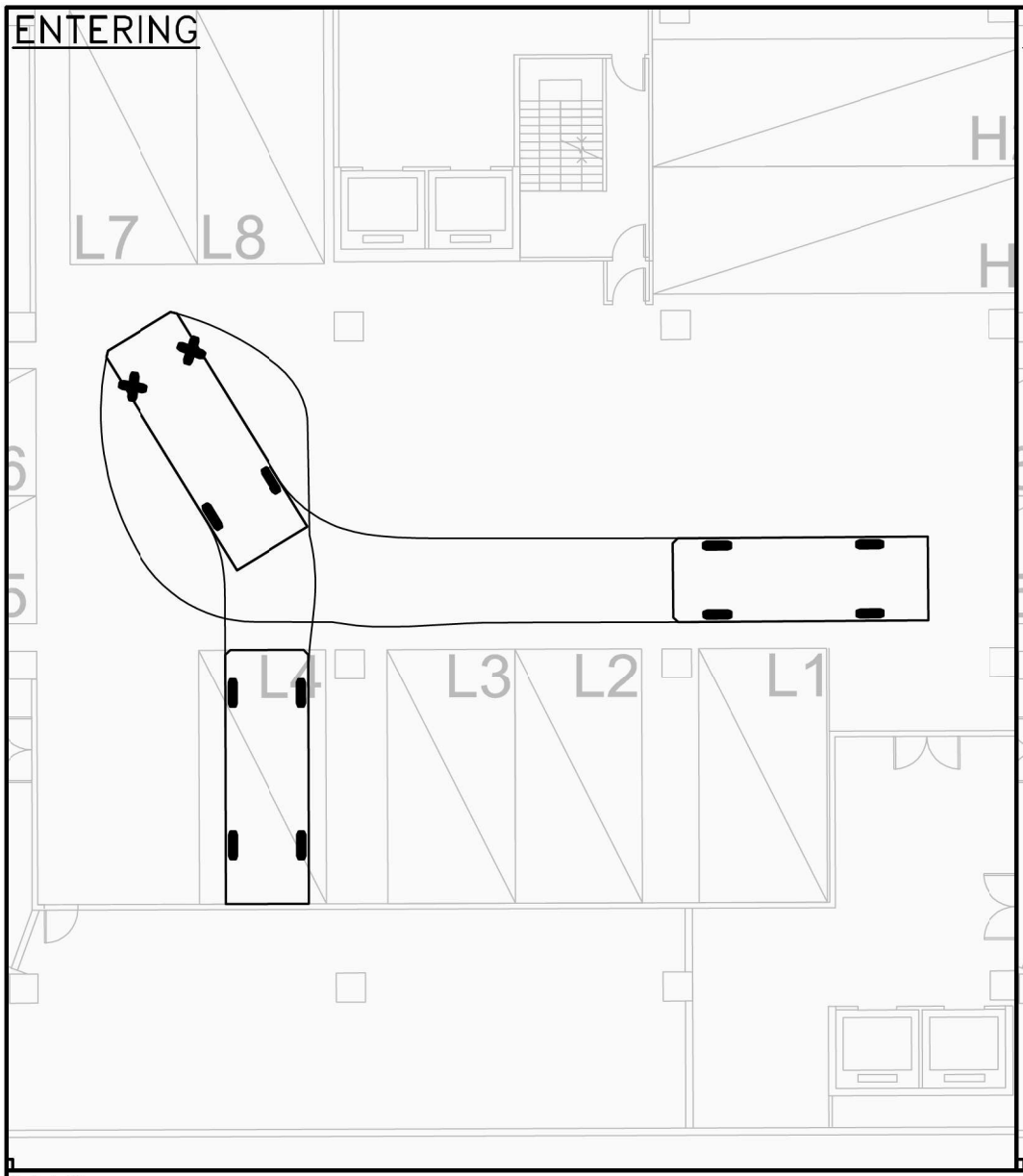
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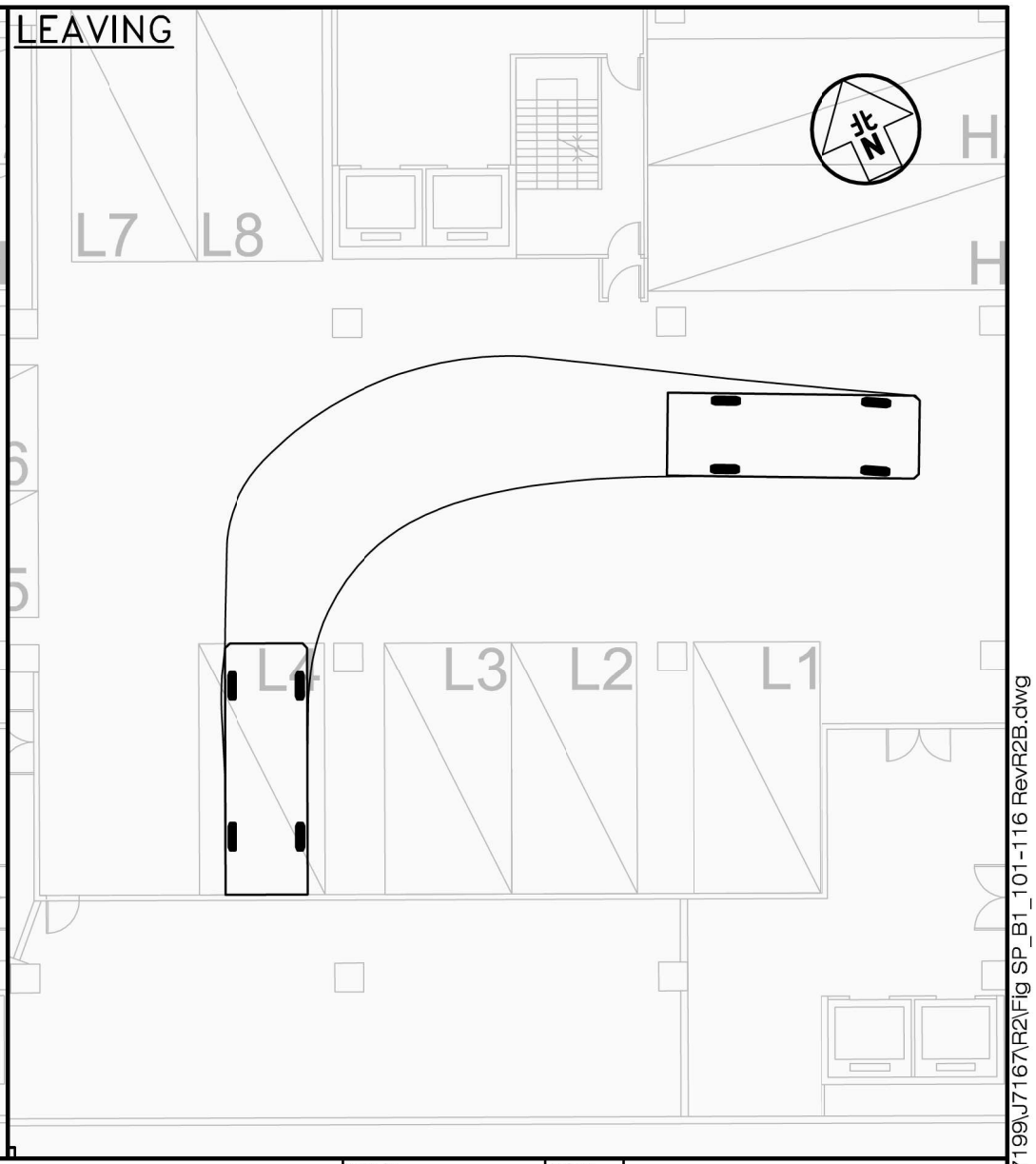


Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. SP/B1/111	Revision R2B
Figure Title: SWEPT PATH OF LGV ENTERING AND LEAVING L1 IN KC-019		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A4: 1 : 200	Date: 29 SEP 2022

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATH OF LGV ENTERING AND LEAVING L4 IN KC-018

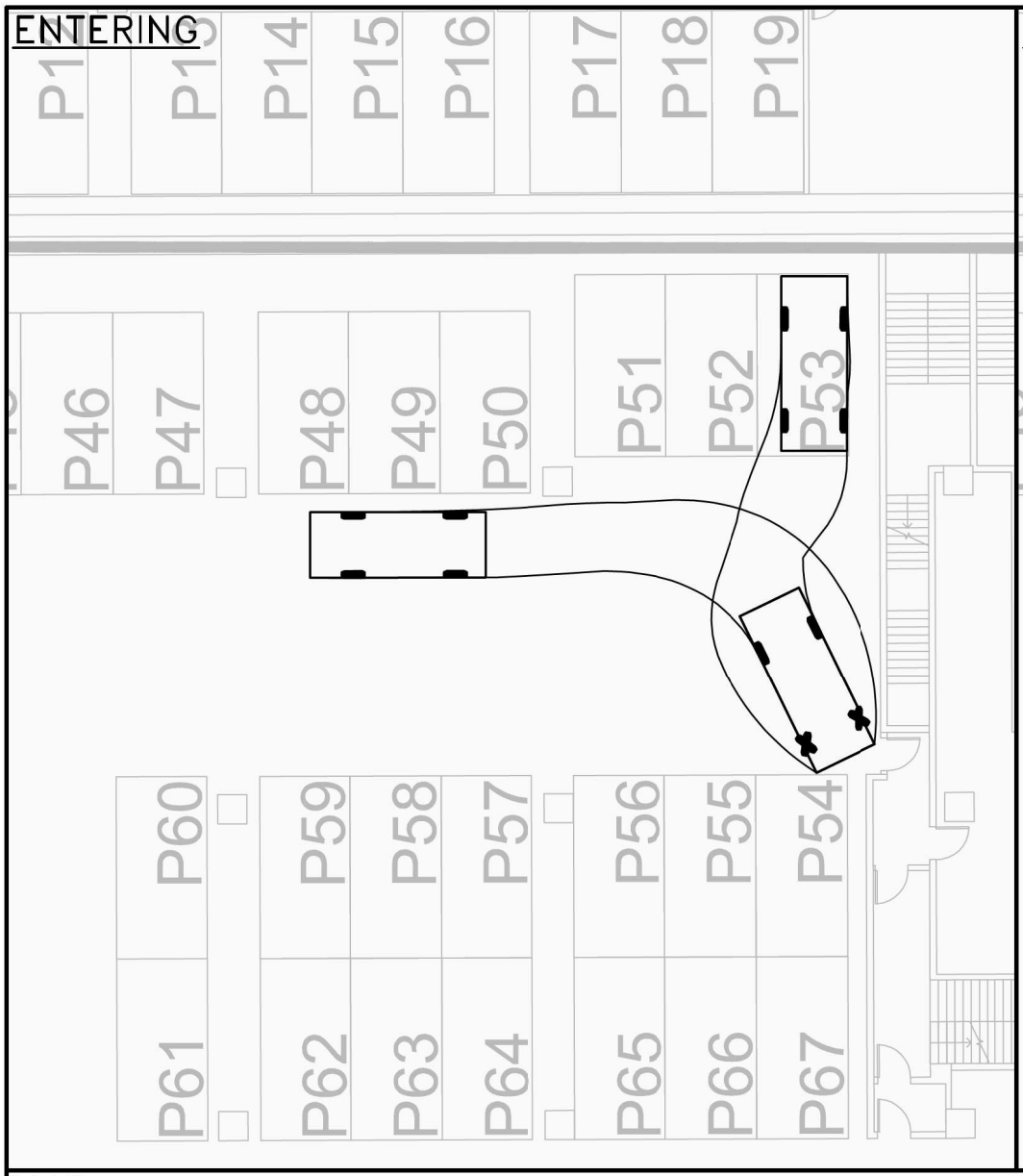
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SP/B1/112	R2B

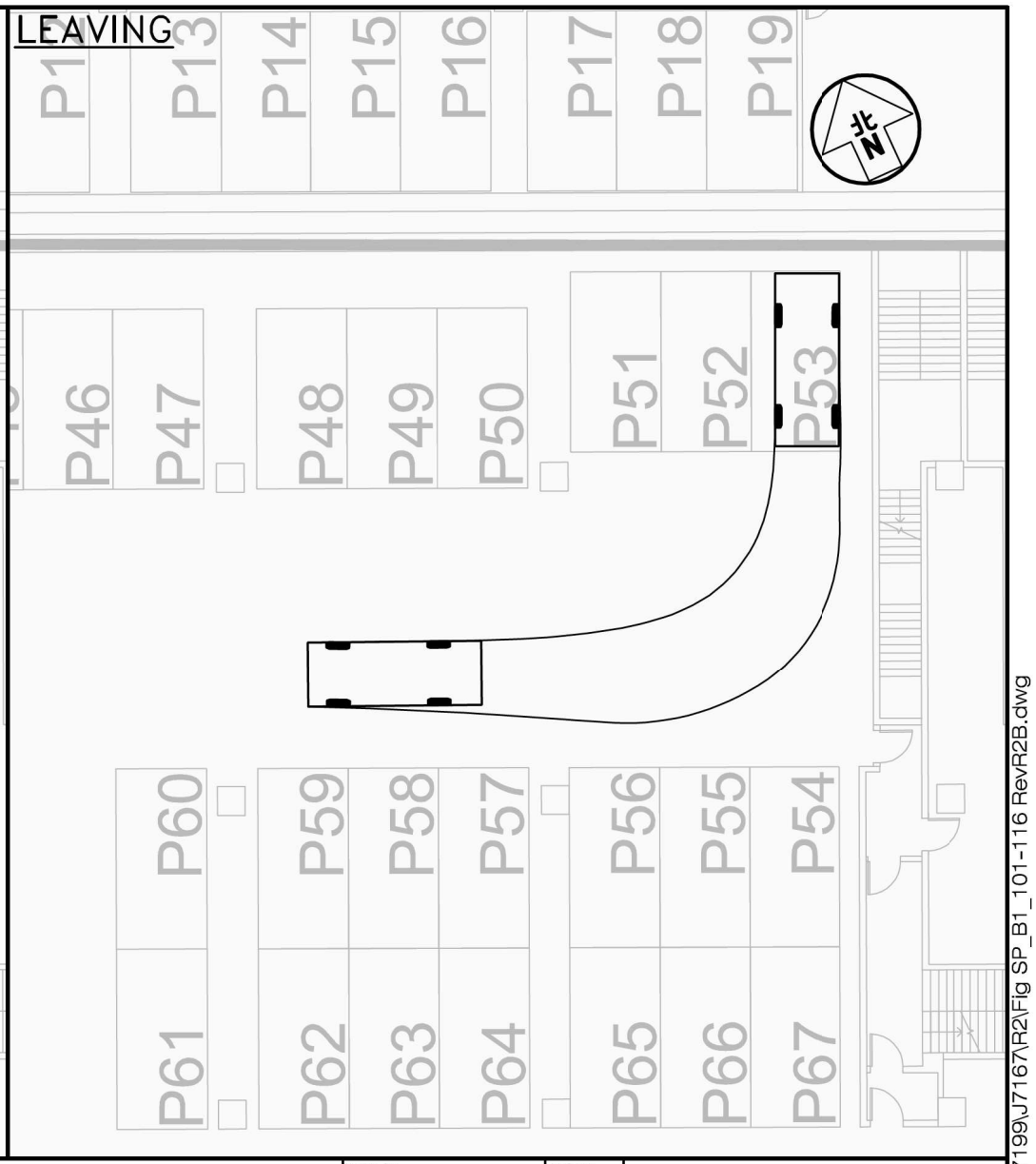
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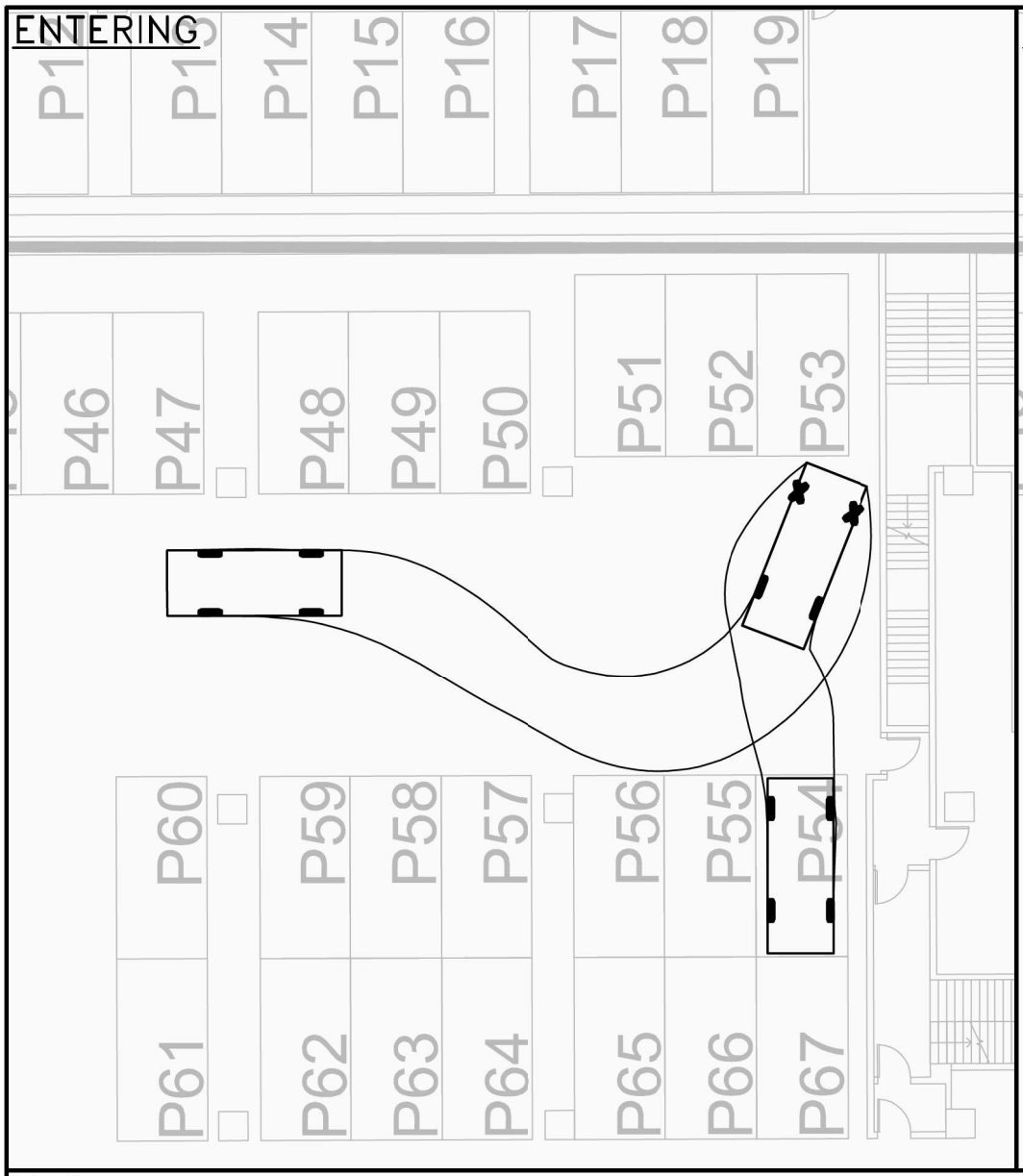


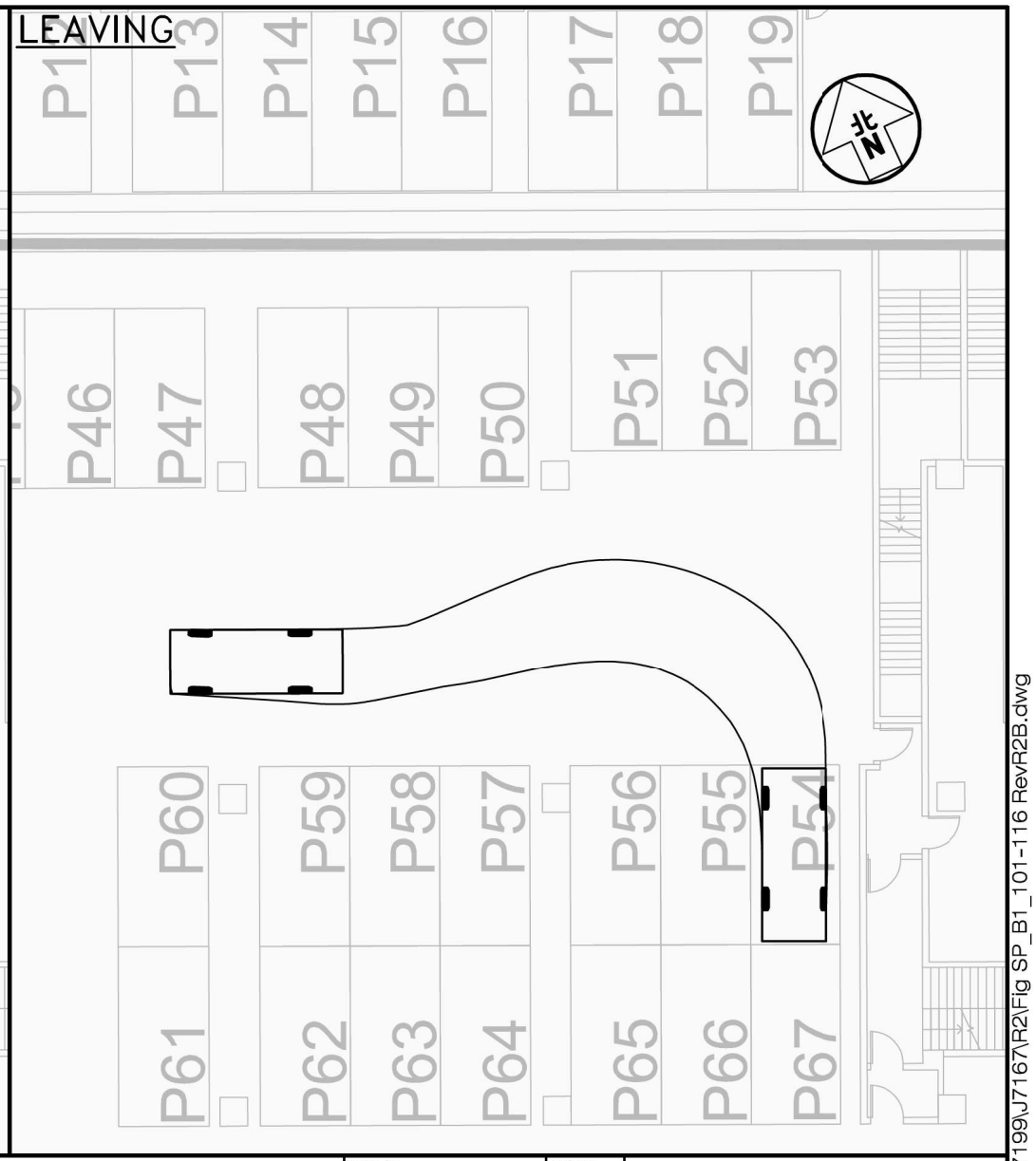


Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. SP/B1/113 Revision R2B
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P53 IN KC-018		Designed by THC Drawn by CCL Checked by KC Scale in A4 1 : 200 Date 29 SEP 2022

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P54 IN KC-018

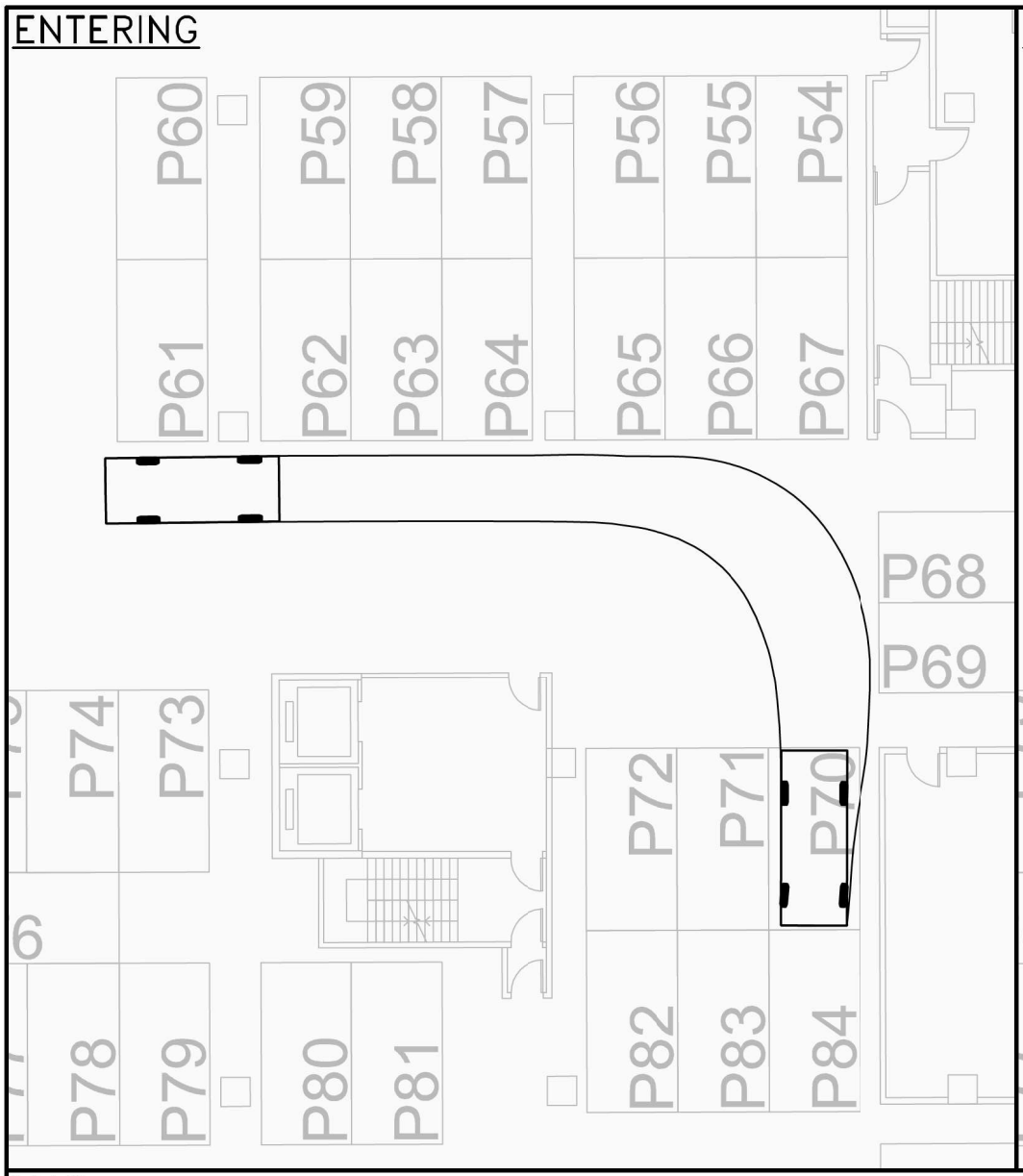
Figure No.	Revision
SP/B1/114	R2B

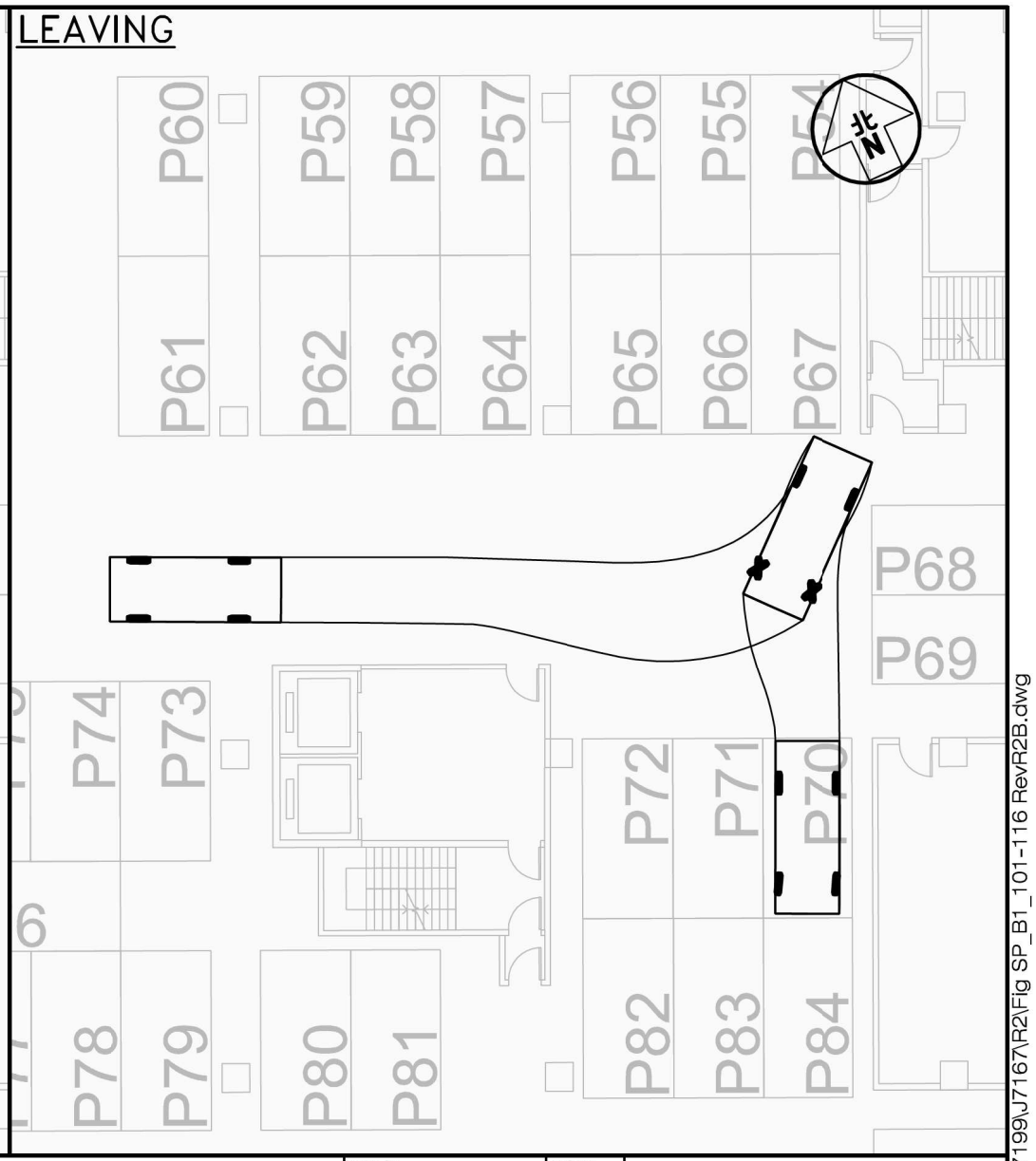
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1 : 200	29 SEP 2022

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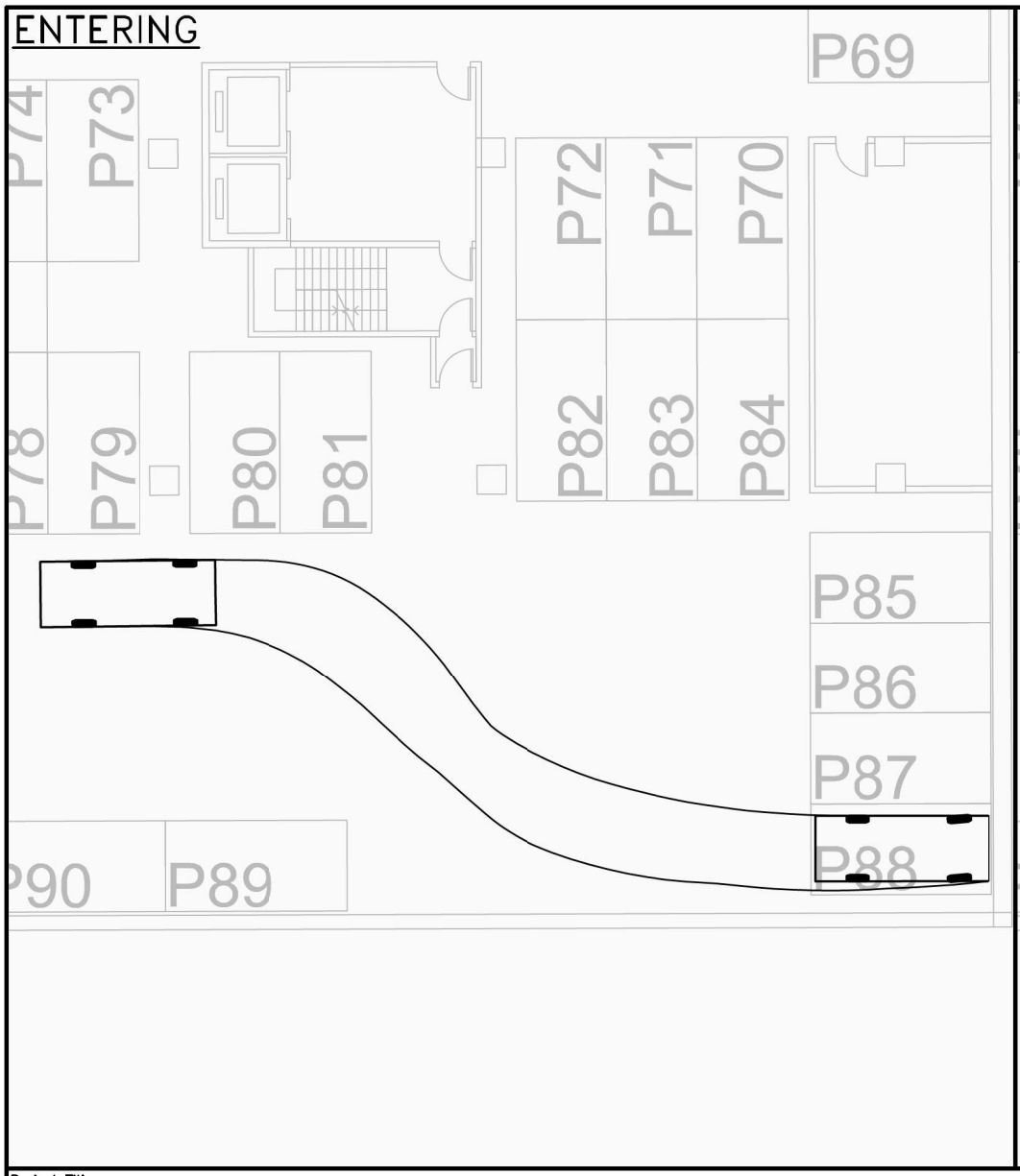


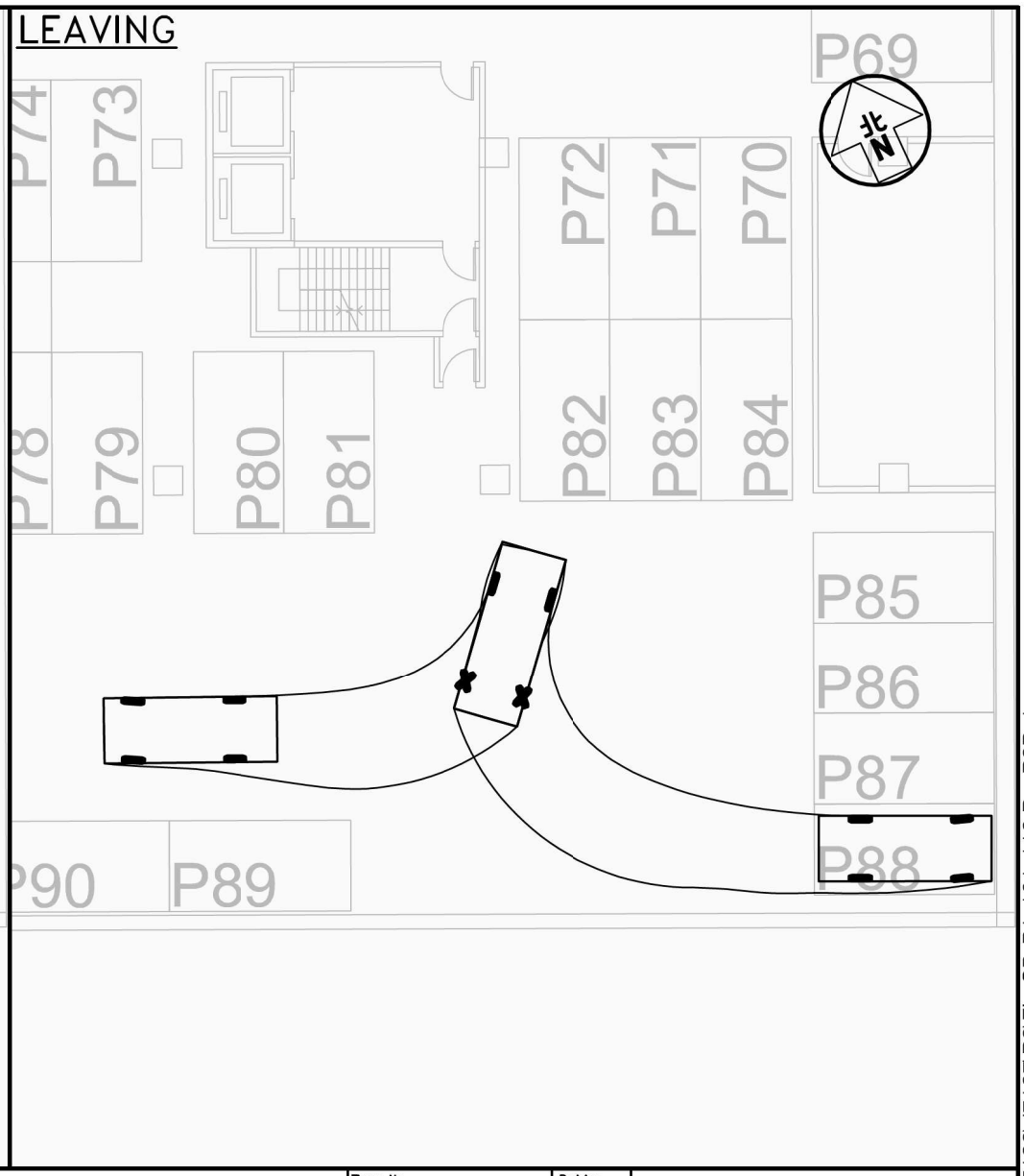


Project Title: URA KC-018 AND KC-019 IN MA TAU KOK			J7167	Figure No. SP/B1/115 Revision R2B
Figure Title: SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P70 IN KC-018	Designed by T H C	Drawn by C C L	Checked by K C	
	Scale in A4 1 : 200	Date 29 SEP 2022		

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P88 IN KC-018

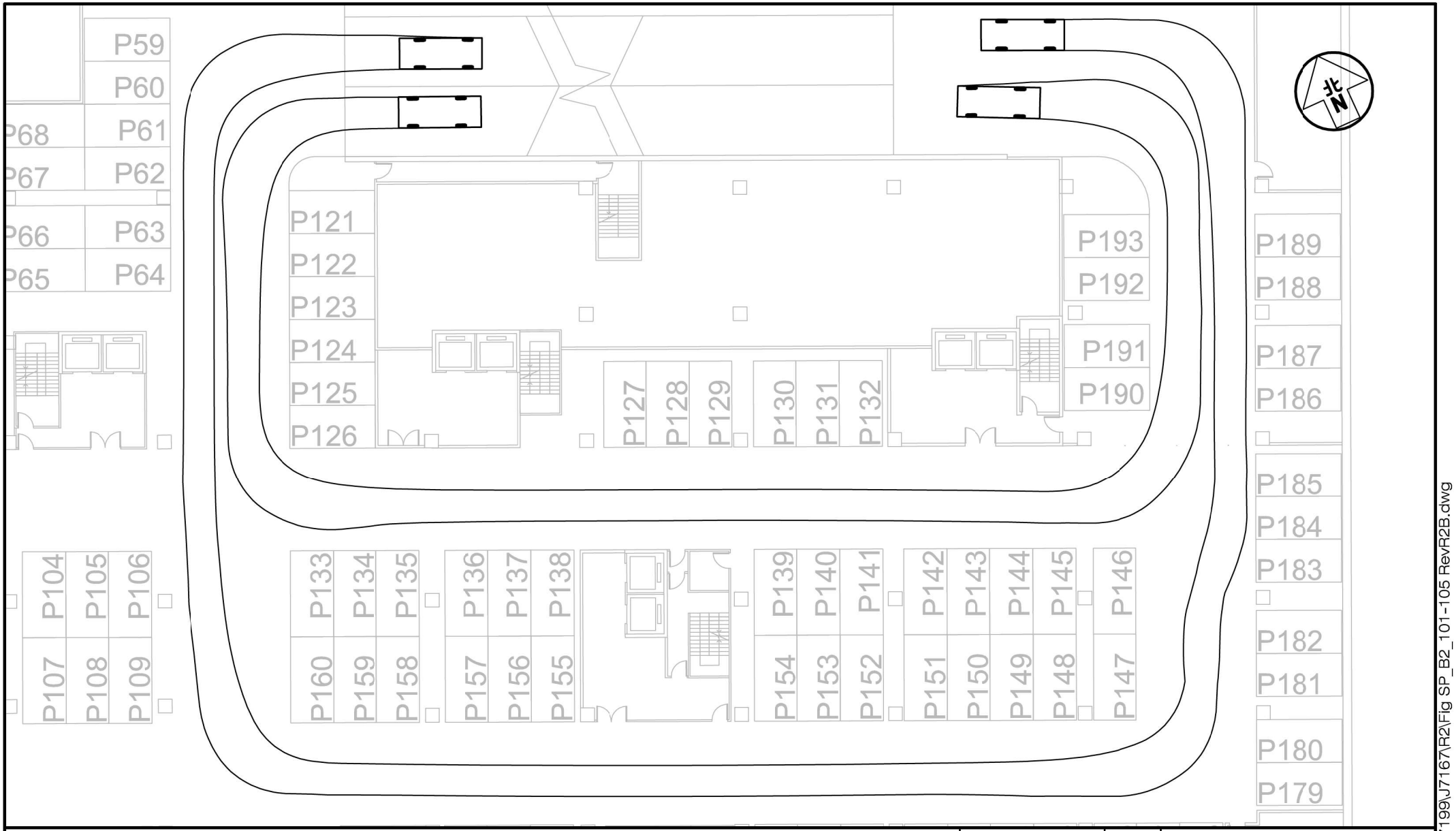
Figure No.	Revision
SP/B1/116	R2B

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T H C	C C L	K C

Scale in A4	Date
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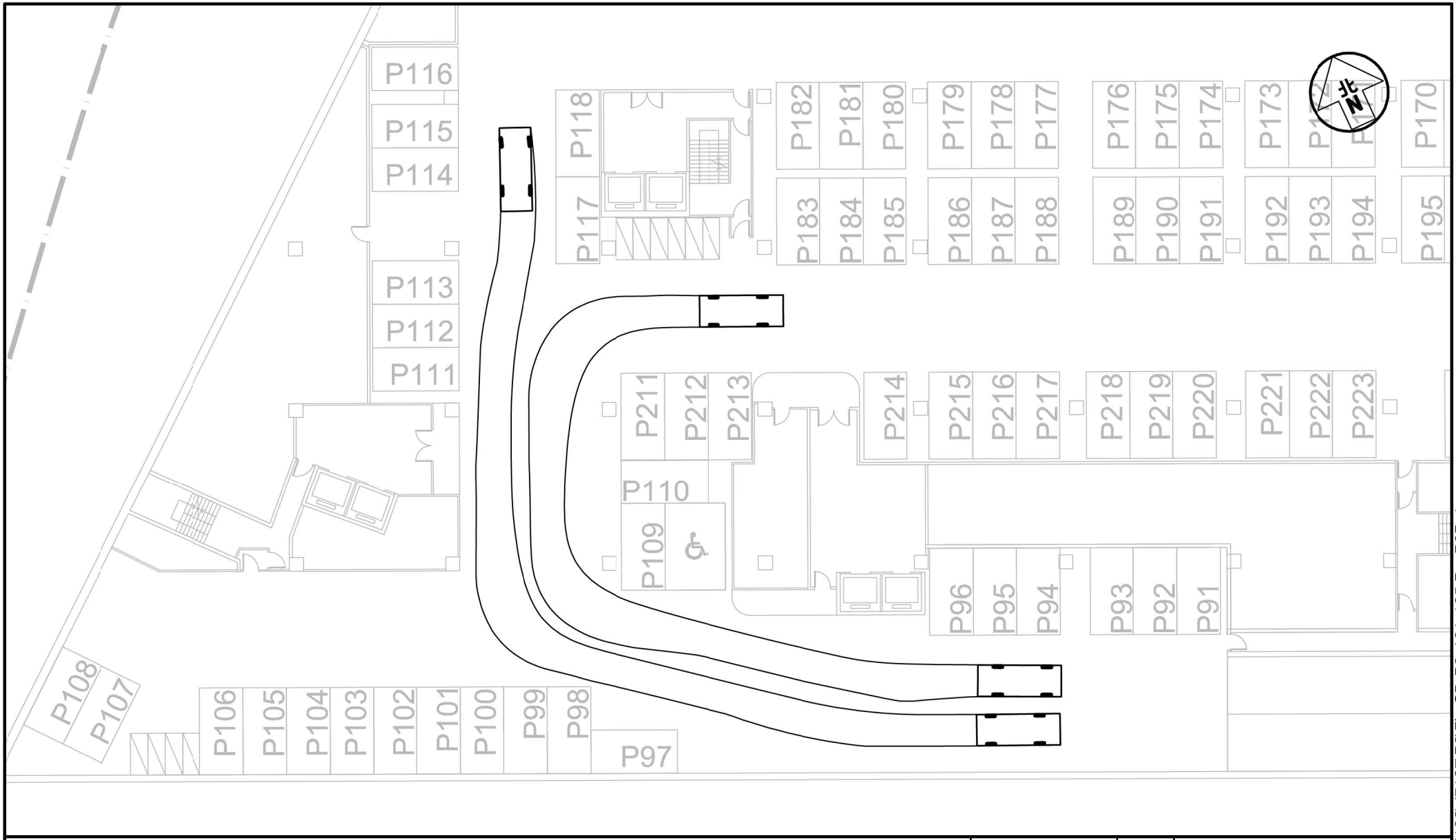
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B2/101	Revision: R2B
Figure Title: SWEPT PATHS OF PRIVATE CAR ON B2/F IN KC-019		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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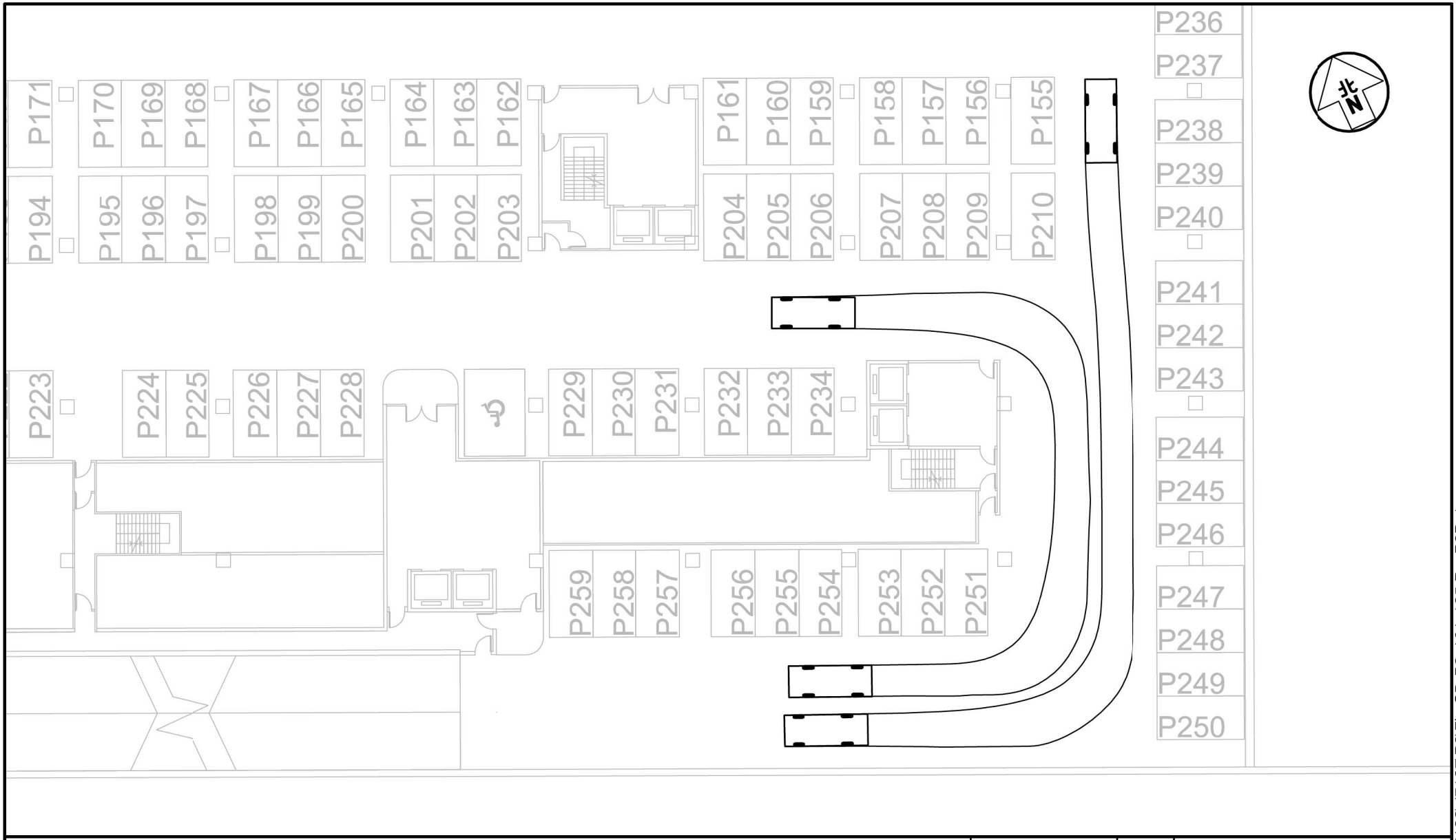
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B2/102	Revision: R2B
Figure Title: SWEPT PATHS OF PRIVATE CAR ON B2/F IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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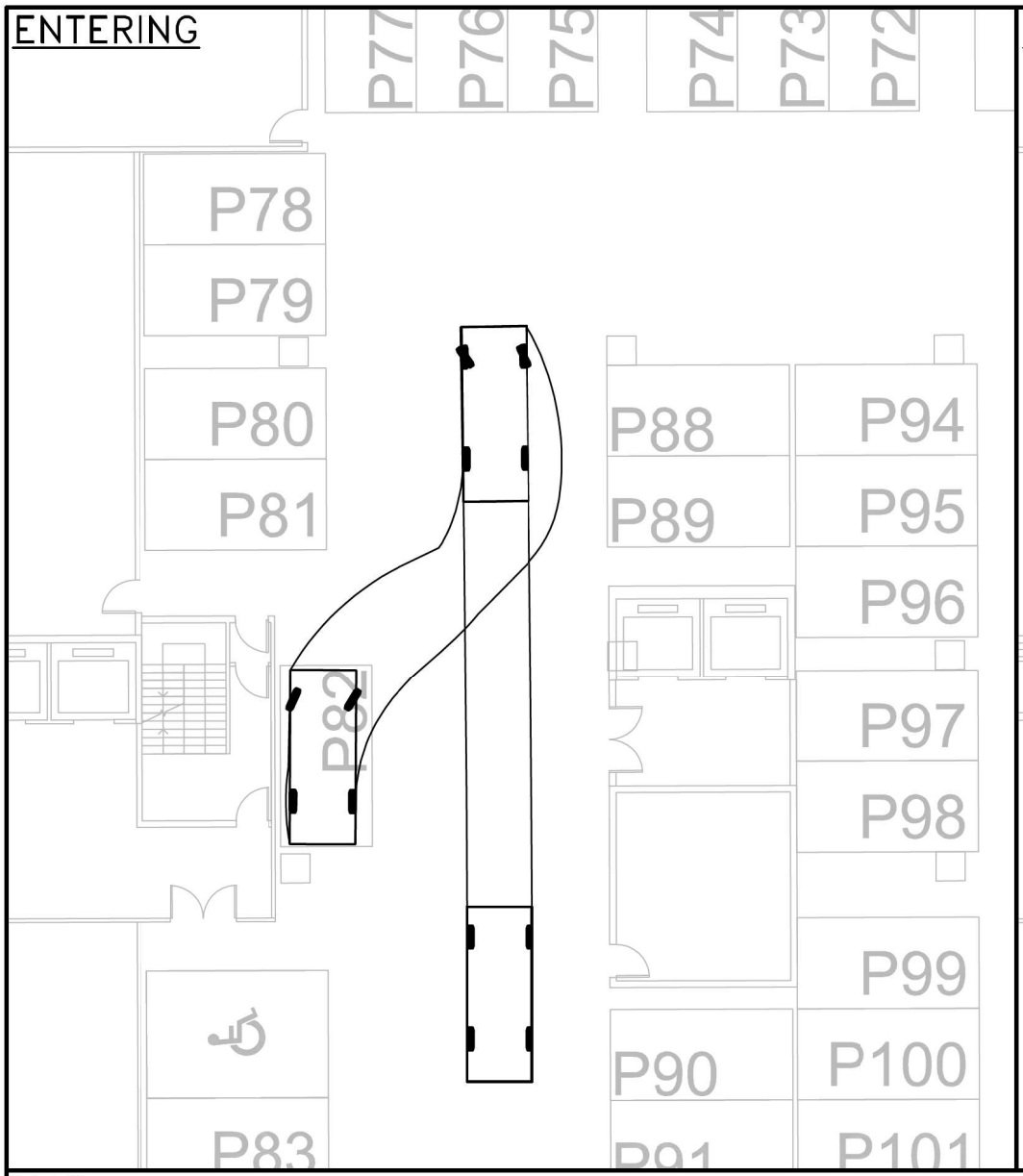
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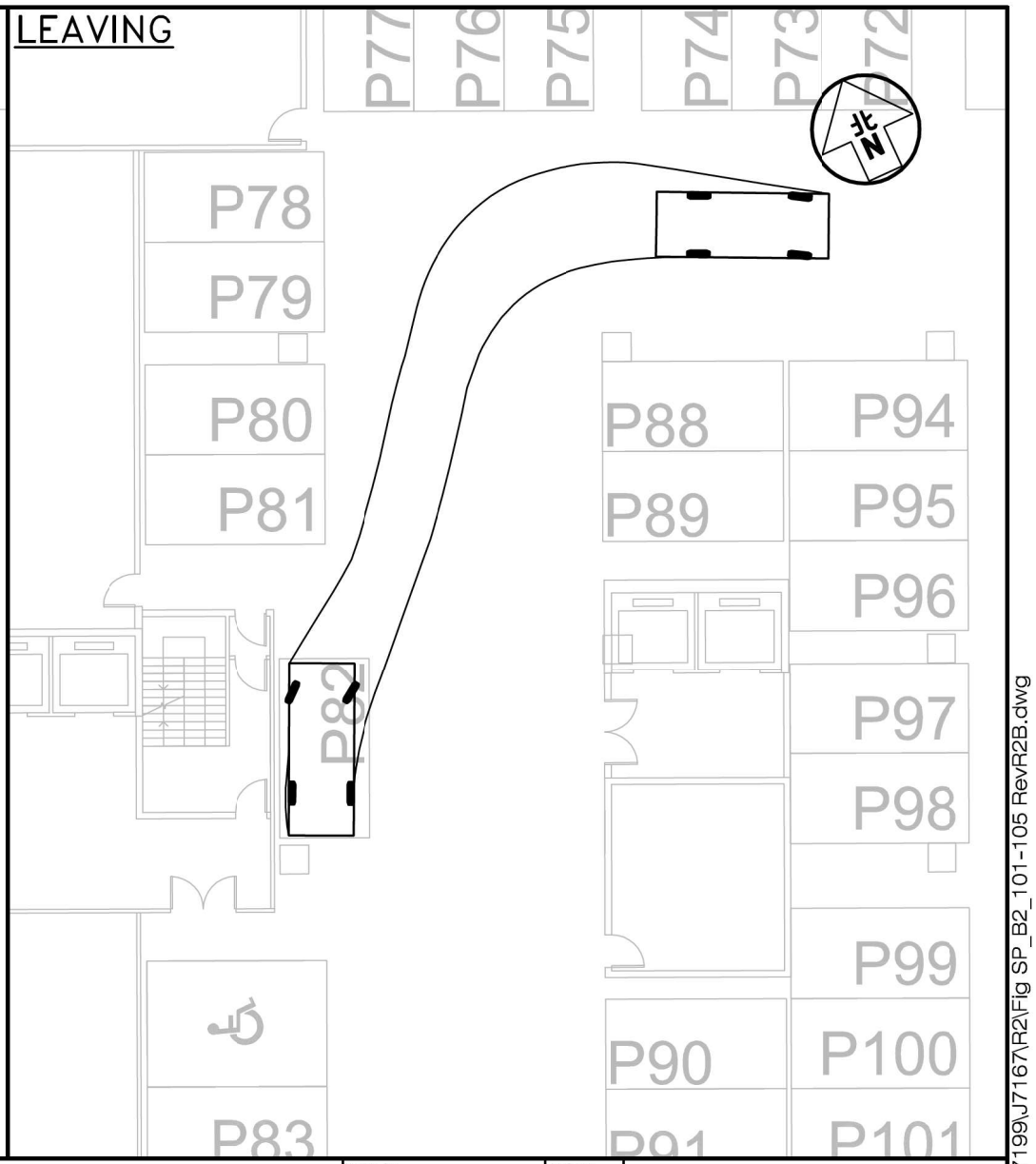


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Figure Title: SWEPT PATHS OF PRIVATE CAR ON B2/F IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C	
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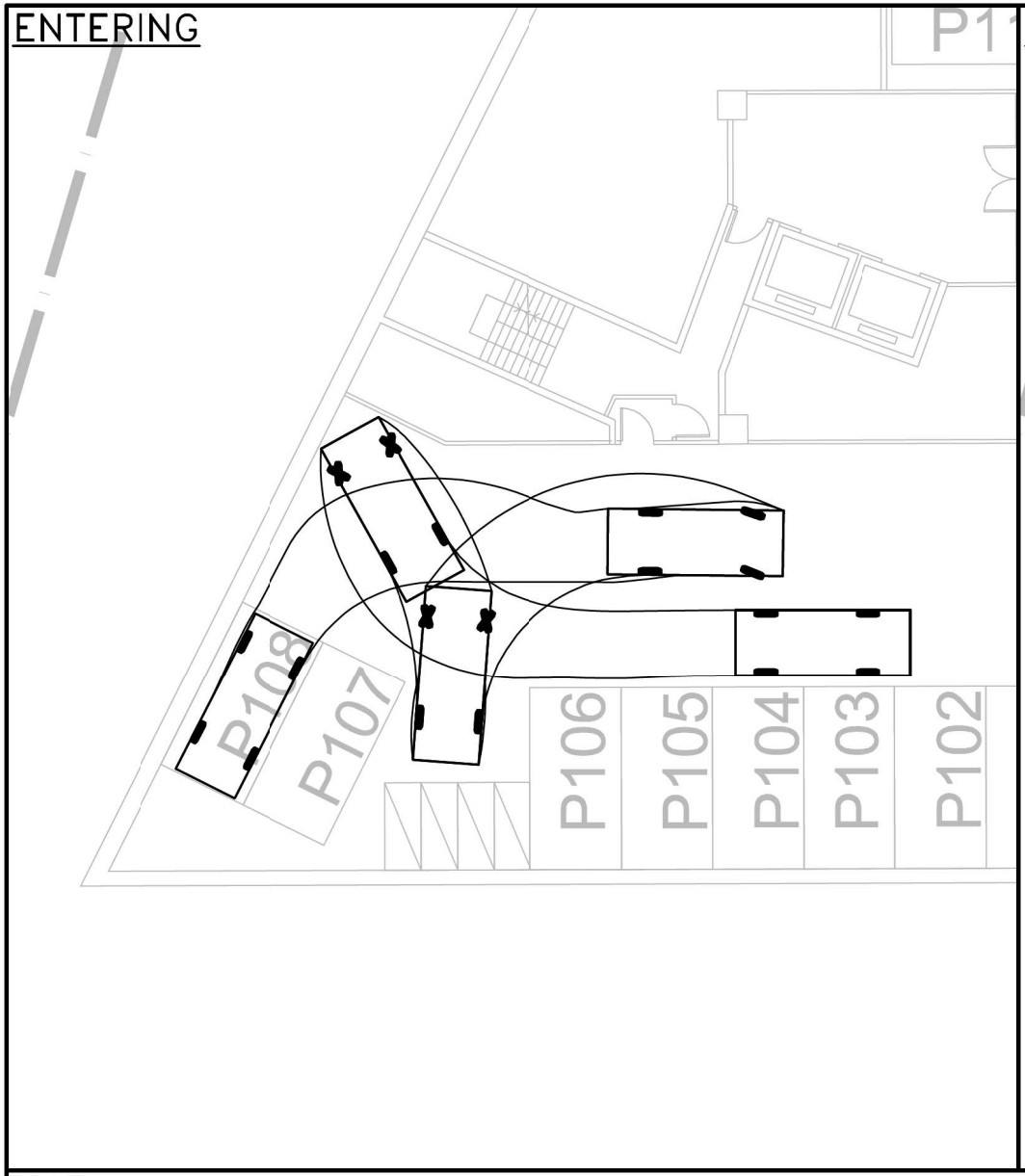


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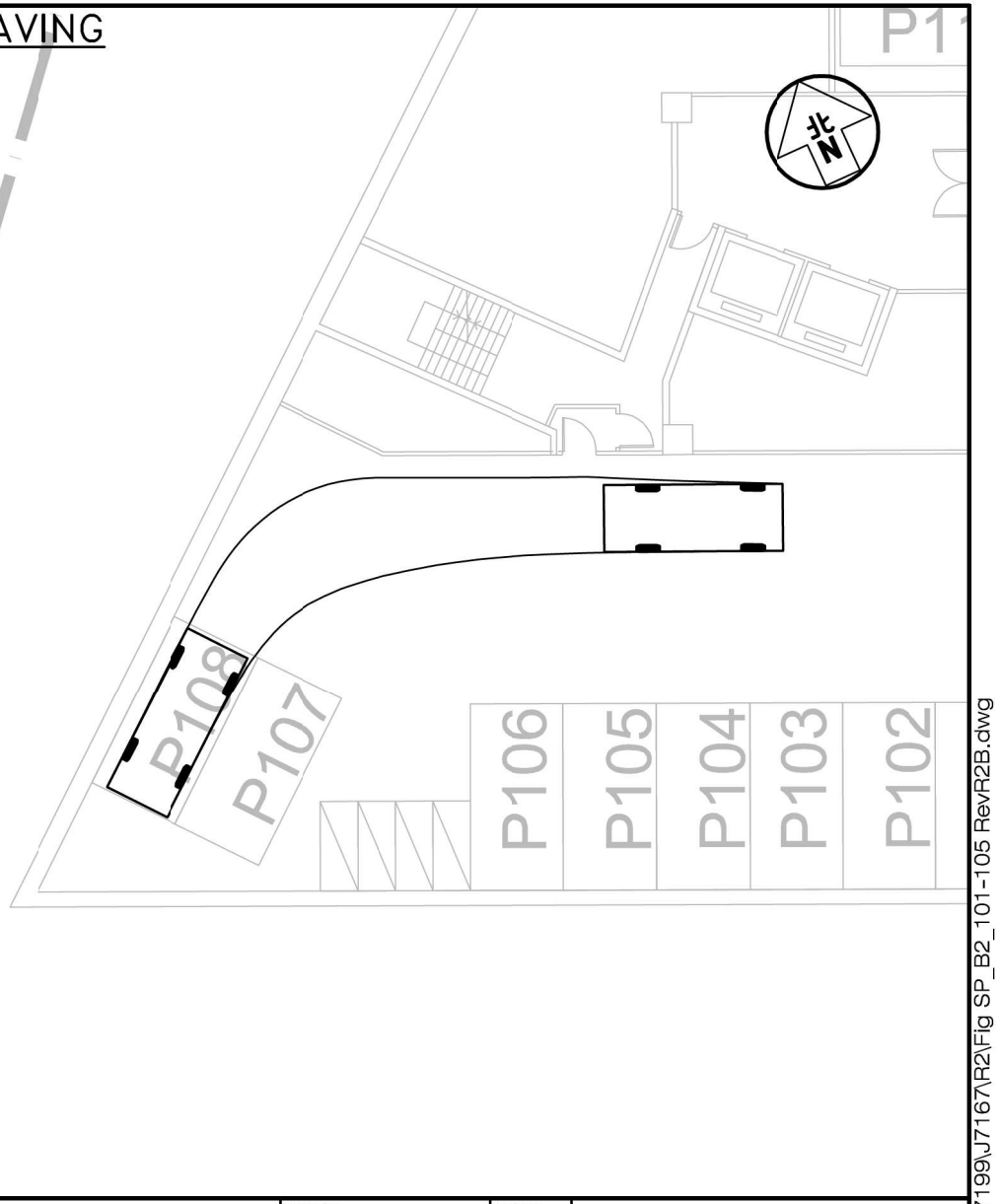
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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P108 IN KC-018

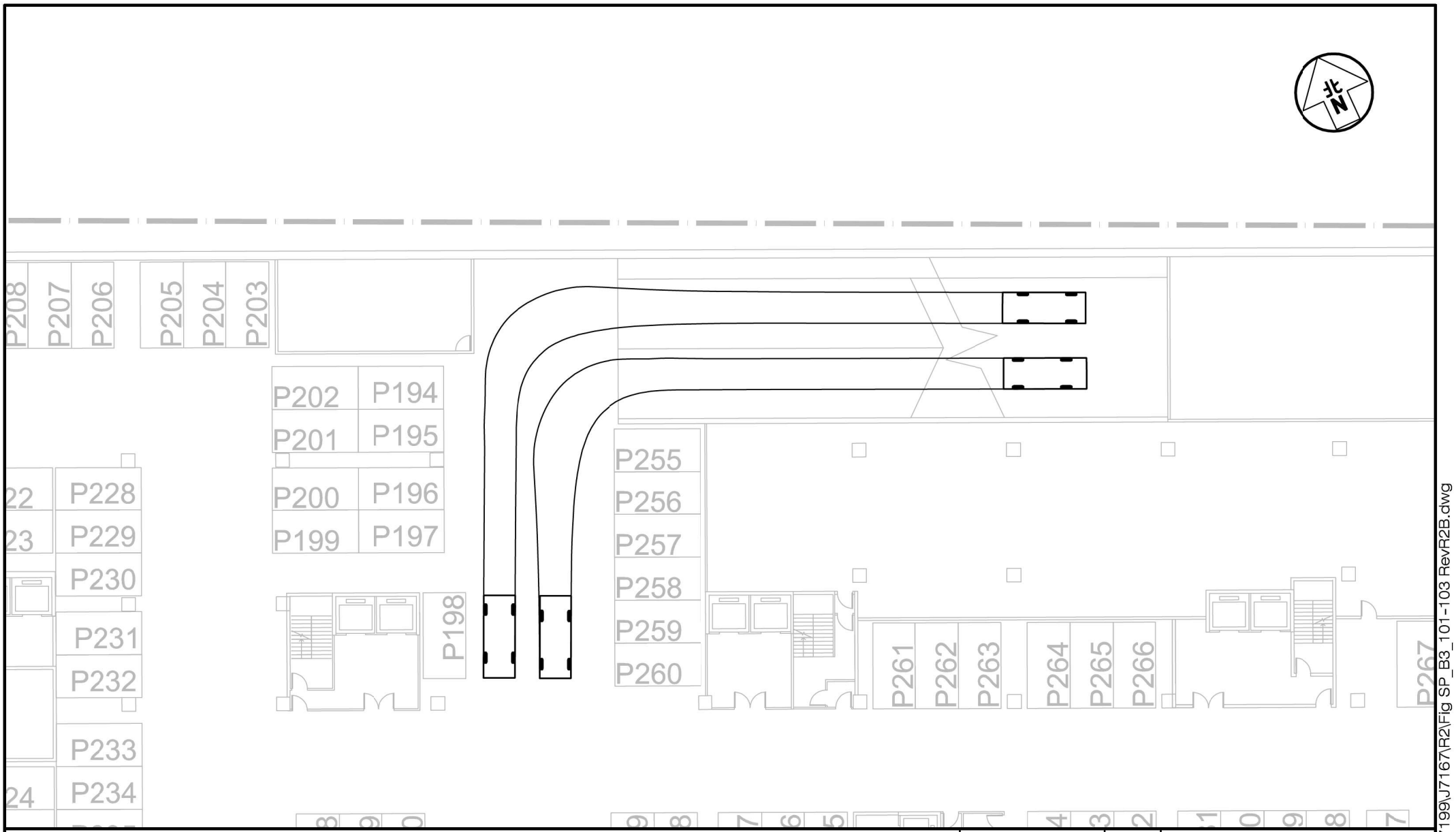
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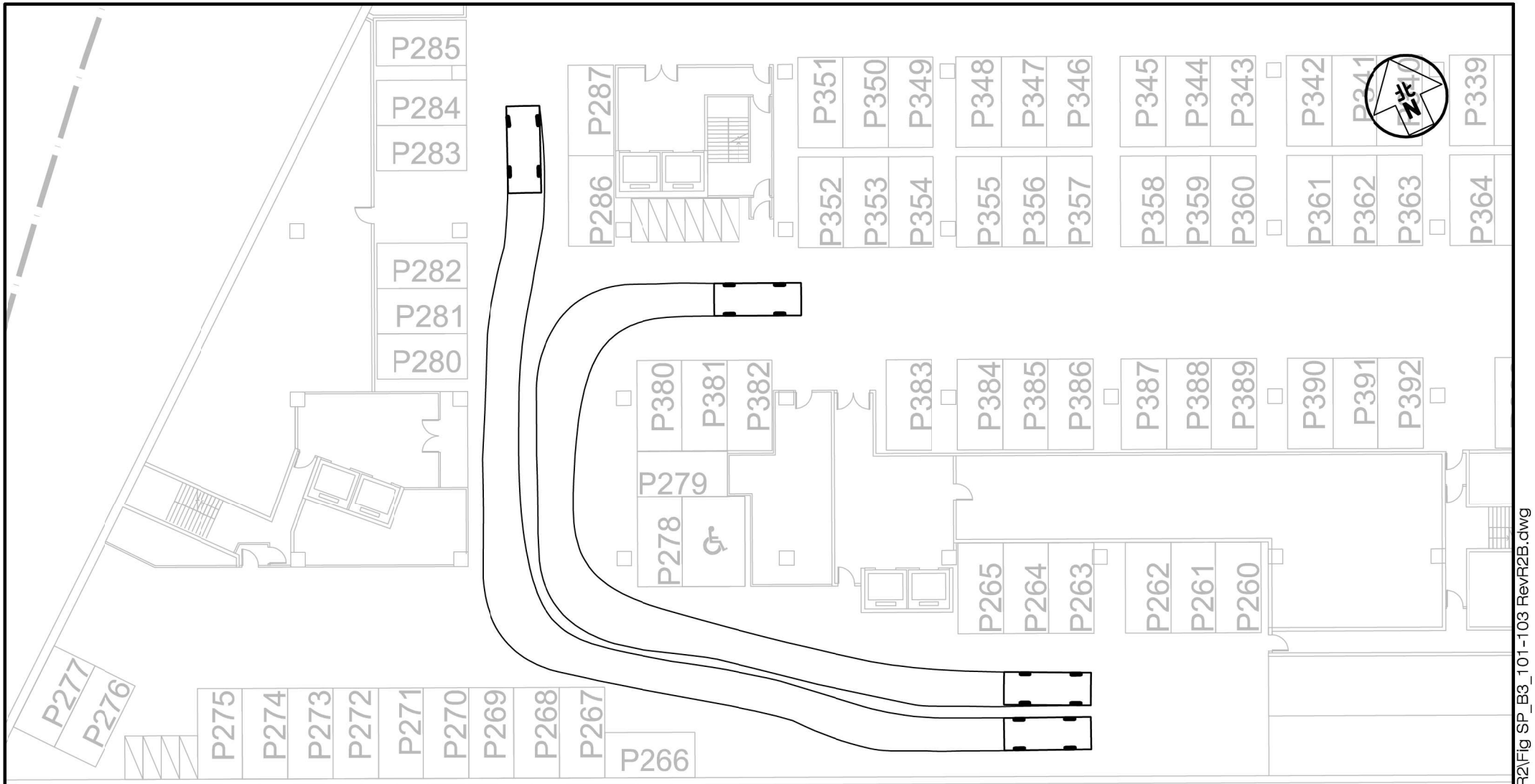


Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	SWEPT PATHS OF PRIVATE CAR ON B3/F IN KC-019		

Figure No.	SP/B3/101	Revision	R2B
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Checked by	KC		
Scale in A4	1 : 300	Date	29 SEP 2022

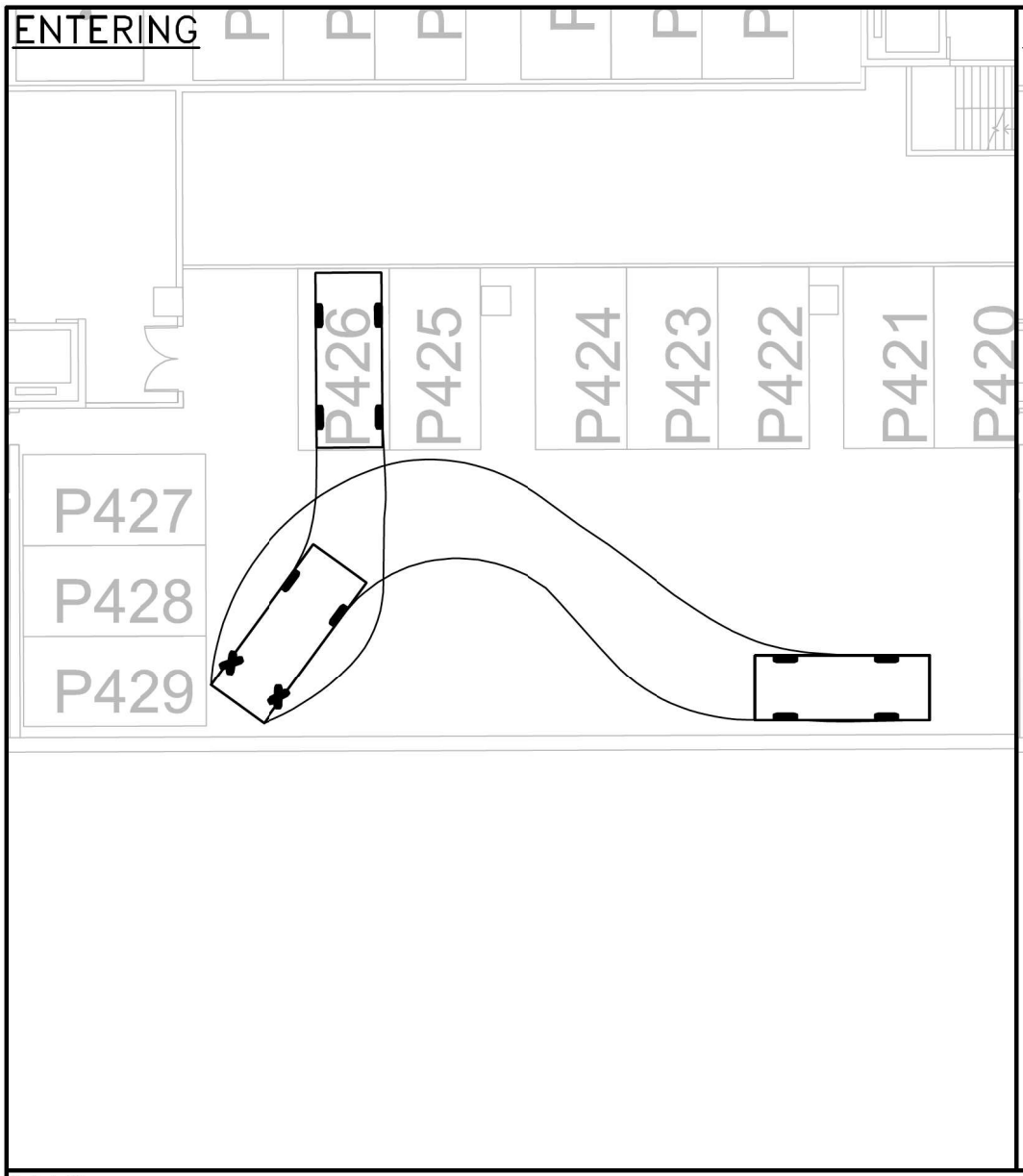
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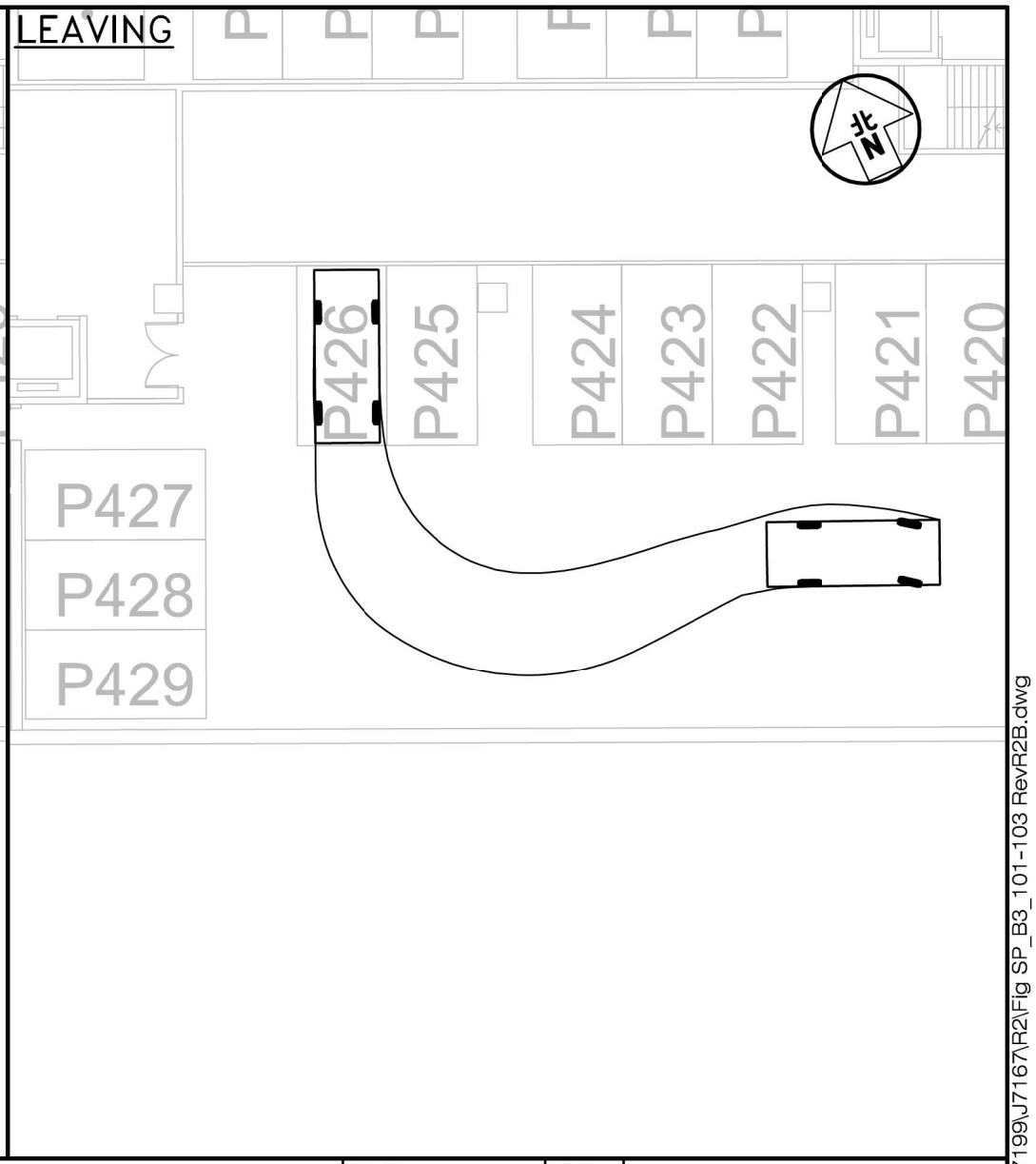
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: SP/B3/102	Revision: R2B	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title: SWEPT PATHS OF PRIVATE CAR ON B3/F IN KC-018		Designed by: T H C / Drawn by: C C L / Checked by: K C Scale in A4: 1 : 300 / Date: 29 SEP 2022		

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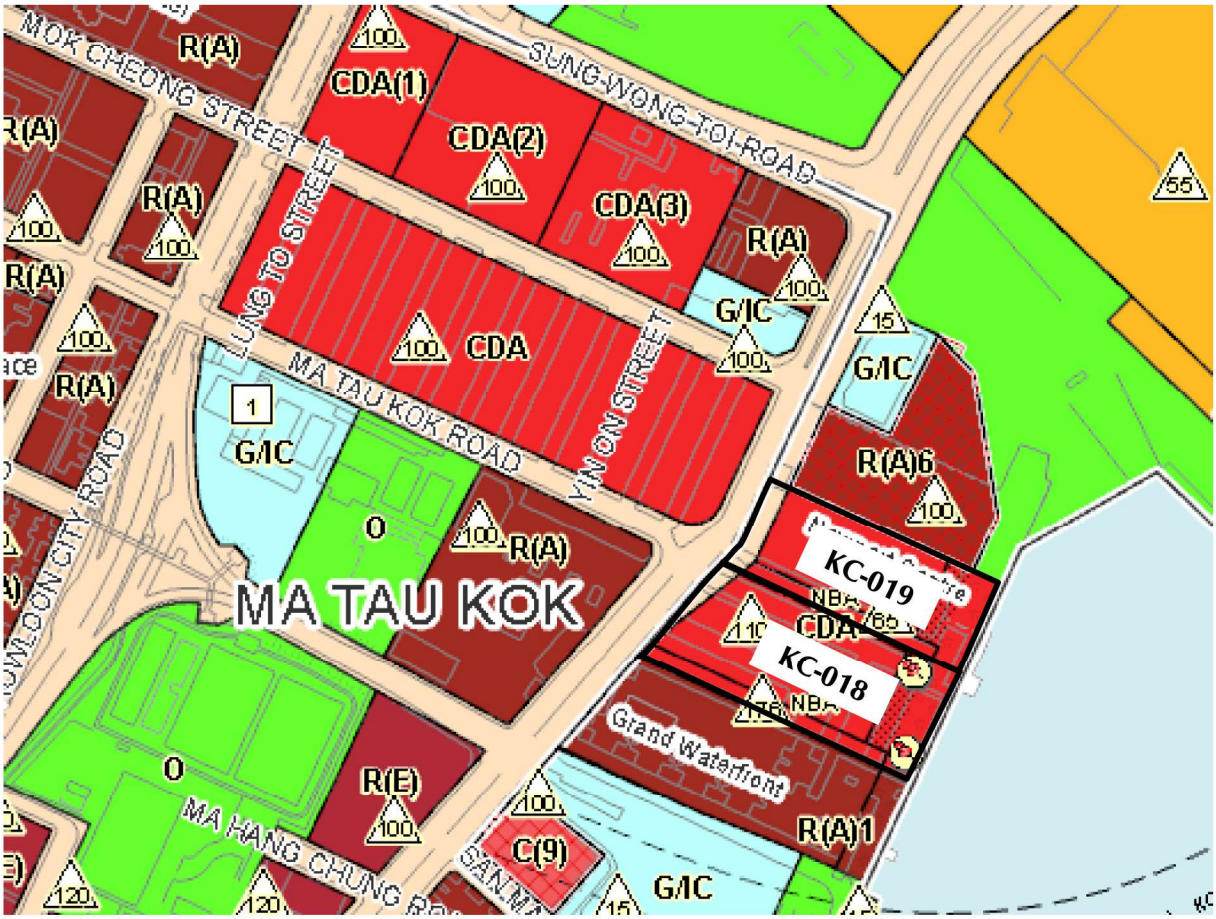
Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. SP/B3/103 Revision R2B
Figure Title	SWEPT PATH OF PRIVATE CAR ENTERING AND LEAVING P426 IN KC-018		Designed by THC / Drawn by CCL / Checked by KC Scale in A4 1 : 200 / Date 29 SEP 2022

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Appendix C – Extract from Kai Tak OZP No. S/K22/7

KAI TAK OUTLINE ZONING PLAN



Appendix D – Development Parameters of KTD (Extract from TPB Paper No. 10192 and MPC Paper No. 9/21)

Appendix I

of TPB Paper No. 10192

Comparisons of Development Parameters for Sites under Review Study

Sites	Zoning		Maximum PR				BHR (mPD)			
	OZP	Proposed	OZP	Approved s.16	Proposed	Change[#]	OZP	Approved s.16	Proposed	Change[#]
2A1	CDA		5	-	6.5	+1.5	80	-	100	+20
2A2	CDA		4.5	-	6.5	+2	70	-	90	+20
2A3	C		4.5	-	6.5	+2	70	-	90	+20
2A4	C		4.5	-	6.5	+2	60	-	80	+20
2A5	C	2A5(A): G/IC	4.5	-	-	-	60	-	45	-15
		2A5(B): C			6.5	+2			80	+20
2A6	C	2A10: C	4.5	-	6.5	+2	60	-	80	+20
2A7	G/IC		-			-	30			+50
2B1	CDA		5	-	6.5 + 0.3*	+1.8	110	-	135	+25
2B2	R		5	-	6.5 + 0.1*	+1.6	100	-	125	+25
2B3	R		5	-	6.5 + 0.1*	+1.6	85	-	115	+30
2B4	R		5	-	6.5 + 0.1*	+1.6	85	-	115	+30
2B5	R		5	-	6.5 + 0.1*	+1.6	85	-	100	+15
2B6	R		5	-	6.5 + 0.1*	+1.6	85	-	100	+15
3A6	G/IC	C	-	-	8	-	45	-	100	+55
3B1			-	-	5.8	-	45	-	80	+35
3B2			-	-	5.8	-	45	-	80	+35
3B3			-	-	5.8	-	45	-	80	+35
3B4			-	-	5.8	-	45	-	80	+35
3E1	C	R	9.5	-	4.5	-5	100	-	100	0
3E2	OU/O		-	-		-	15	-	80	+65
4A1	R		3	3.4	6.5	+3.1	65/80	80	90	+10
4B1	R		3	3.8	6.5	+2.7	55	65	75	+10
4B2	R		3	4.4	6.5	+2.1	55	75	85	+10
4B3	R		3	3.9	6.5	+2.6	65	75	80	+5
4B4	R		3	3.7	6.5	+2.8	55	65	75	+10
4B5	R	C	3	-	6.3	+3.3	45	-	65	+20
4A2	C	R	4	5	6.5 + 0.15*	+1.65	45	55	80	+25
4C1	C	R	4	5	6.5 + 0.15*	+1.65	45	55	75	+20
4C2	C	R	4	5.9	6.5 + 0.15*	+0.75	55	65	75	+10
4E1	O	R	-	-	6.5	-	-	-	80	-
4E2	O	R	-	-	6.5 + 0.15*	-	-	-	80	-

*non-domestic PR for proposed residential sites [#] comparison with OZP or approved s.16 applications

Bundle	Site	Site Area[b]	Current				Proposed				
			Zoning	Max. PR	Max. SC	Max. BH	Zoning	Max. Dom. PR[c]	Max. Non-dom. PR[c]	Max. SC	Max. BH
1	**2A2**	6,270m^2	"CDA(4)" [commercial]	6.6	65%	90mPD	"CDA(4)" [residential]	6.5[d]	1.0[d]	65%	125mPD[e]
	2A3	5,968m^2	"C(3)"	6.5	65%	90mPD	"R(A)6"	6.5	1.0	65%	125mPD
2	**2A4**[a]	6,555m^2	"C(3)"	6.5	65%	80mPD	"R(A)5"	6.5	1.5	65%	125mPD
	2A5(B)[a]	3,374m^2	"C(3)"	6.5	65%	80mPD					115mPD
	2A10[a]	6,100m^2	"C(3)"	6.5	65%	80mPD					100mPD

Notes:

[a] Sites 2A4, 2A5(B) and 2A10 to be under the same "R(A)5" zoning are proposed to be indicated as a linked single site on the OZP for the purpose of determination of the maximum PR. Individual sites should each be subject to the proposed maximum SC of 65%.

[b] Site areas are subject to detailed survey.

[c] Floor spaces for (i) railway facilities in the "R(A)5" zone (which is to cater for the existing railway facilities in Site 2A10); and (ii) government, institutional or community (GIC) facilities in the "CDA(4)", "R(A)5" and "R(A)6" zones, as required by the Government, are proposed to be disregarded from PR calculation.

[d] A maximum PR of 7.5 is proposed to be stipulated in the Notes of the OZP for the "CDA(4)" zone. The recommended maximum domestic PR of 6.5 and maximum non-domestic PR of 1.0 are to be stipulated under planning brief and land sale conditions.

[e] The retail belt area of the "CDA(4)" zone abutting the LTSBPC (**Plan 9a**) is subject to a maximum BH of 2 storeys in accordance with the Notes of the OZP.

4.3 The proposed increase in the maximum BHs for the five individual sites from 80 to 90mPD to 100 to 125mPD is for ensuring that the residential use at the sites, which is subject to a lower permissible SC under the Building (Planning) Regulations than non-domestic use, could achieve the proposed maximum domestic PR of 6.5. Such an increase in BHs is still in keeping with the general stepped BH profile of the locality which is descending progressively from the northeast to the southwest[8] (**Plan 9a**), and is in line with the broad urban design framework of KTD on creating a dynamic skyline.

4.4 To accord with the policy initiative of providing more welfare facilities in private development sites, a certain amount of gross floor area (GFA) (equivalent to not less than 5% of the proposed domestic GFA of the site in general) for provision of government/social welfare facilities mainly based on the wish-list of the Social Welfare Department (SWD) has been incorporated in the notional schemes of the reviewed sites and assumed to be disregarded from PR/GFA calculation for testing in the Review Study, such that the maximum permissible PR for the sites would not be compromised. For the two bundled sites, upon consulting SWD, the following welfare facilities have been reserved at the sites for addressing the needs of the local and the community on the services:

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8 The highest BH of 135mPD in the locality of Area 2 relates to the proposed public housing development at Site 2B1, with the BHs of the adjacent residential sites descending progressively from the northeast to the southwest to the levels of 125mPD, 115mPD and 100mPD.

"R(B)7" with maximum PRs of 5.5/6.1/7.0, and have all been sold for private residential developments. To the south and further southeast of the three reviewed sites are the existing Kai Tak Cruise Terminal (KTCT) and a site zoned "OU" annotated "Tourism Related Uses to include Commercial, Hotel and Entertainment" ("OU(TRU)") intended for the development of the proposed Tourism Node (TN). While Sites 4B5 and 4C4 are currently vacant, Site 4C5 is occupied as a temporary depot for franchised buses.

Rezoning Proposals

4.8 The Review Study recommended the three reviewed sites to be rezoned from commercial to residential use subject to maximum domestic PRs of 5.7/6.6/7.0 (average domestic PR of 6.5), maximum non-domestic PRs of 0.3/0.5, maximum SC of 40% and maximum BH of 95/108mPD (same as now) for production of about 3,000 private housing units. Similar to the two bundled sites at the former north apron area, GFAs for GIC/social welfare facilities (equivalent to not less than 5% of the proposed domestic GFA of the site in general) have also been reserved at these sites and are proposed to be disregarded from PR calculation. Site 4B5 is proposed to be rezoned from "C(4)" to "R(B)8" (**Item F** on **Plan 6**), Site 4C4 from "C(7)" to "R(B)9" (**Item G** on **Plan 6**) and Site 4C5 from "C(5)" to "R(B)10" (**Item H** on **Plan 6**). The proposed zonings and development restrictions for the sites are summarised as follows:

Site	Site Area[a]	Current				Proposed			
		Zoning	Max. PR	Max. SC	Max. BH	Zoning	Max. PR[b]	Max. SC	Max. BH
4B5	13,953m^2	"C(4)"	6.5	80%	108mPD	"R(B)8"	7.5[c]	40%	108mPD
4C4	10,692m^2	"C(7)"	7.5	80%	95mPD	"R(B)9"	6.9[d]	40%	95mPD
4C5	9,480m^2	"C(5)"	6.0	80%	95mPD	"R(B)10"	5.7[e]	40%	95mPD

Notes:

[a] Site areas are subject to detailed survey.

[b] Floor spaces for GIC facilities in the "R(B)8", "R(B)9" and "R(B)10" zones, as required by the Government, are proposed to be disregarded from PR calculation.

[c] The proposed maximum PR of 7.5 comprises a maximum domestic PR of 7.0 and a maximum non-domestic PR of 0.5 which are to be stipulated under land sale conditions.

[d] The proposed maximum PR of 6.9 comprises a maximum domestic PR of 6.6 and a maximum non-domestic PR of 0.3 which are to be stipulated under land sale conditions.

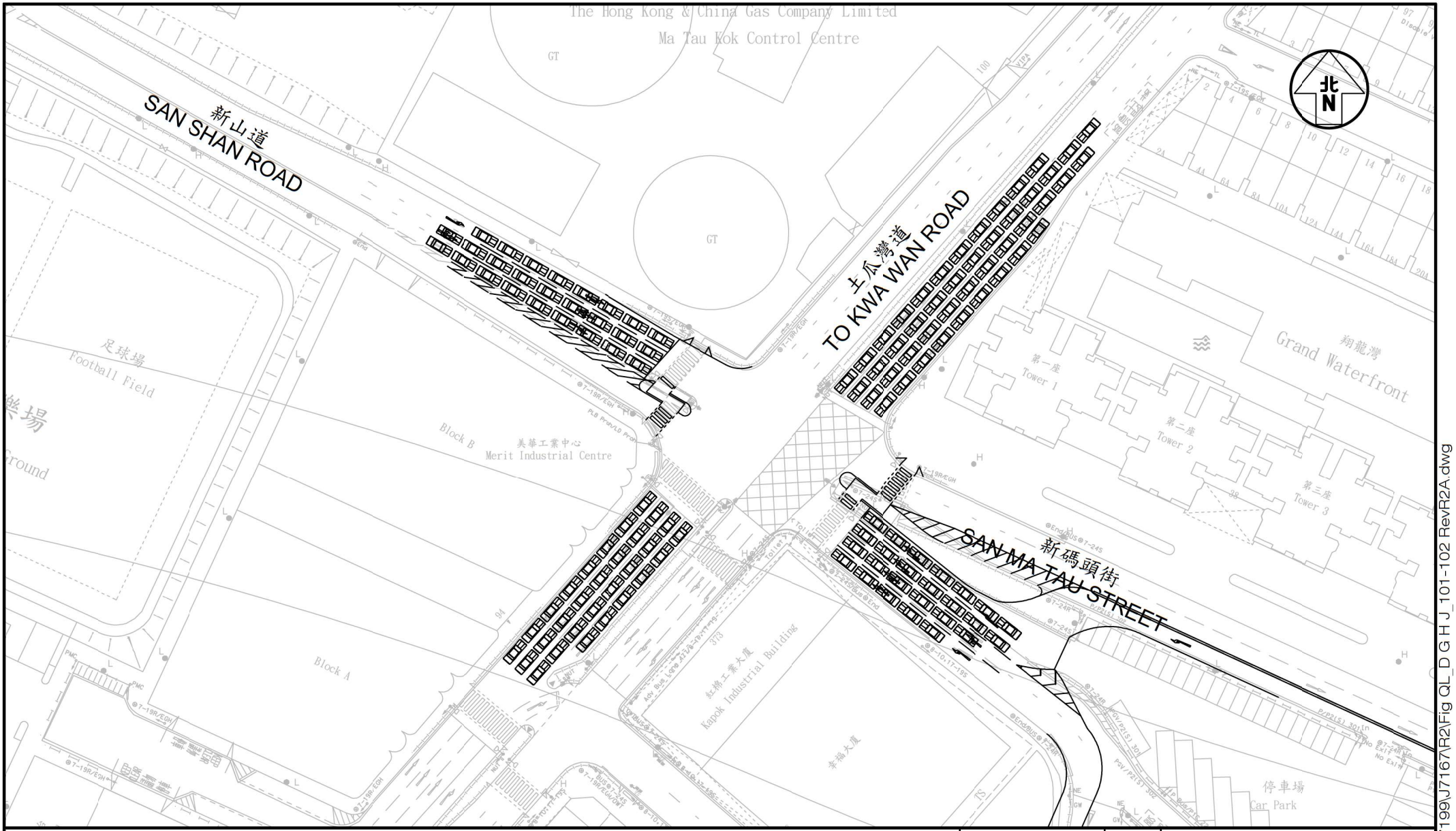
[e] The proposed maximum PR of 5.7 is for residential use only.

4.9 To maintain the feature of an undulating and varied BH profile in the former runway area, with the tallest band of developments in the middle portion and BHs of the developments stepping down on the two sides towards the Metro Park and the runway tip (**Plan 12d**), the BHs of Sites 4B5, 4C4 and 4C5 are proposed to remain unchanged. In proportion to the BH and in consideration of specific site constraints (including the proximity of Site 4C5 to KTCT), the PRs for the three sites have been carefully designed[10] to achieve an average maximum domestic PR of 6.5.

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10 Site 4C5 is proposed with a smaller maximum domestic PR of 5.7 as half of its south-western site boundary is abutting the existing structure of KTCT and its site configuration is relatively elongated. Site 4B5, which has a more regular site configuration and is subject to a higher maximum BH among the three reviewed sites, is proposed with a larger maximum domestic PR of 7.0.

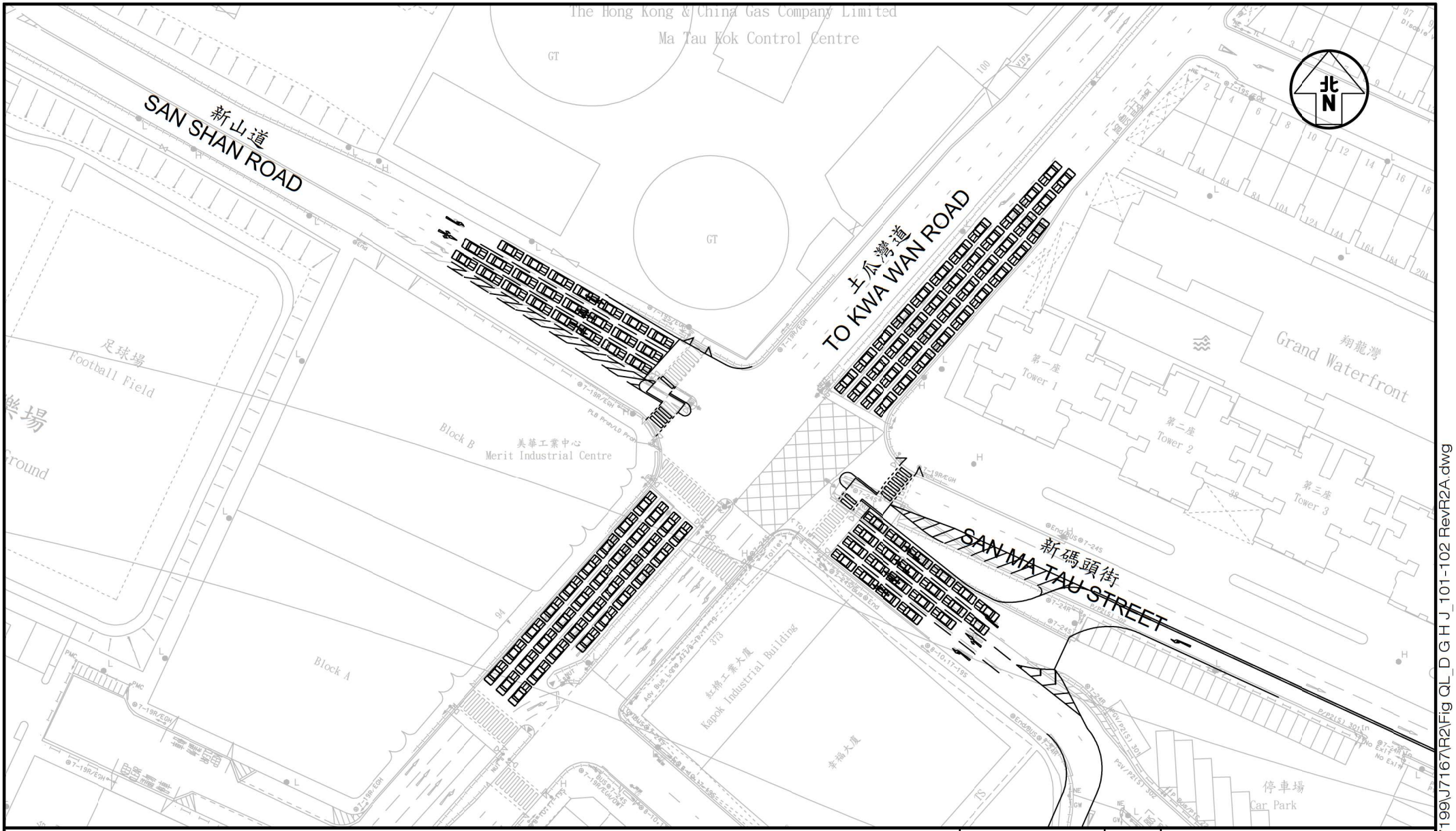
Appendix E – Queue Length Analysis



Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. QL/D/101 Revision R2A
Figure Title	JUNCTION D - QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : AM PEAK)		Designed by THC Drawn by CCL Checked by KC Scale in A4 1 : 1,000 Date 21 SEP 2022

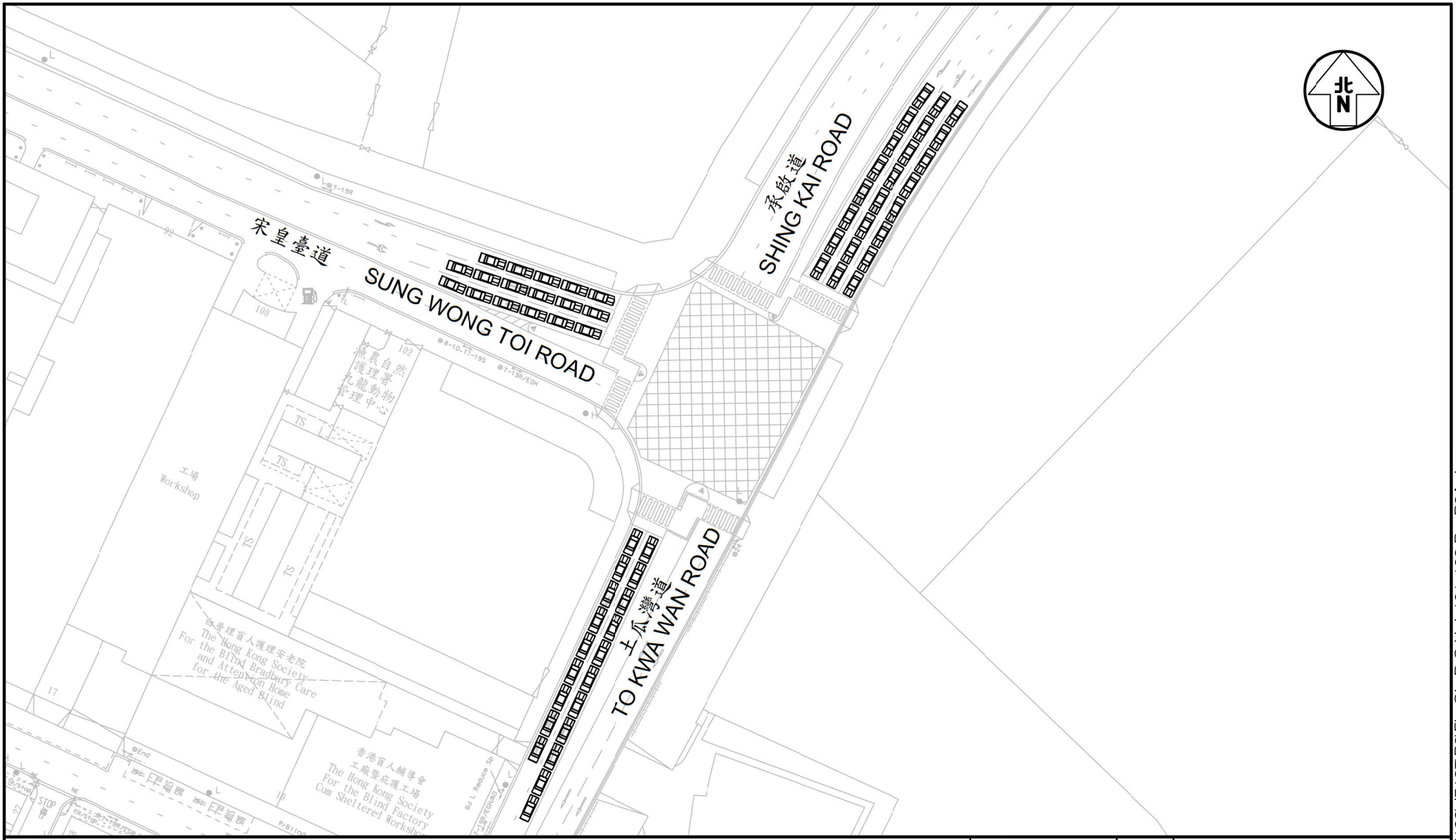
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. QL/D/102	Revision R2A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title: JUNCTION D – QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : PM PEAK)		Designed by: T H C / Drawn by: C C L / Checked by: K C		
		Scale in A4: 1 : 1,000	Date: 21 SEP 2022	

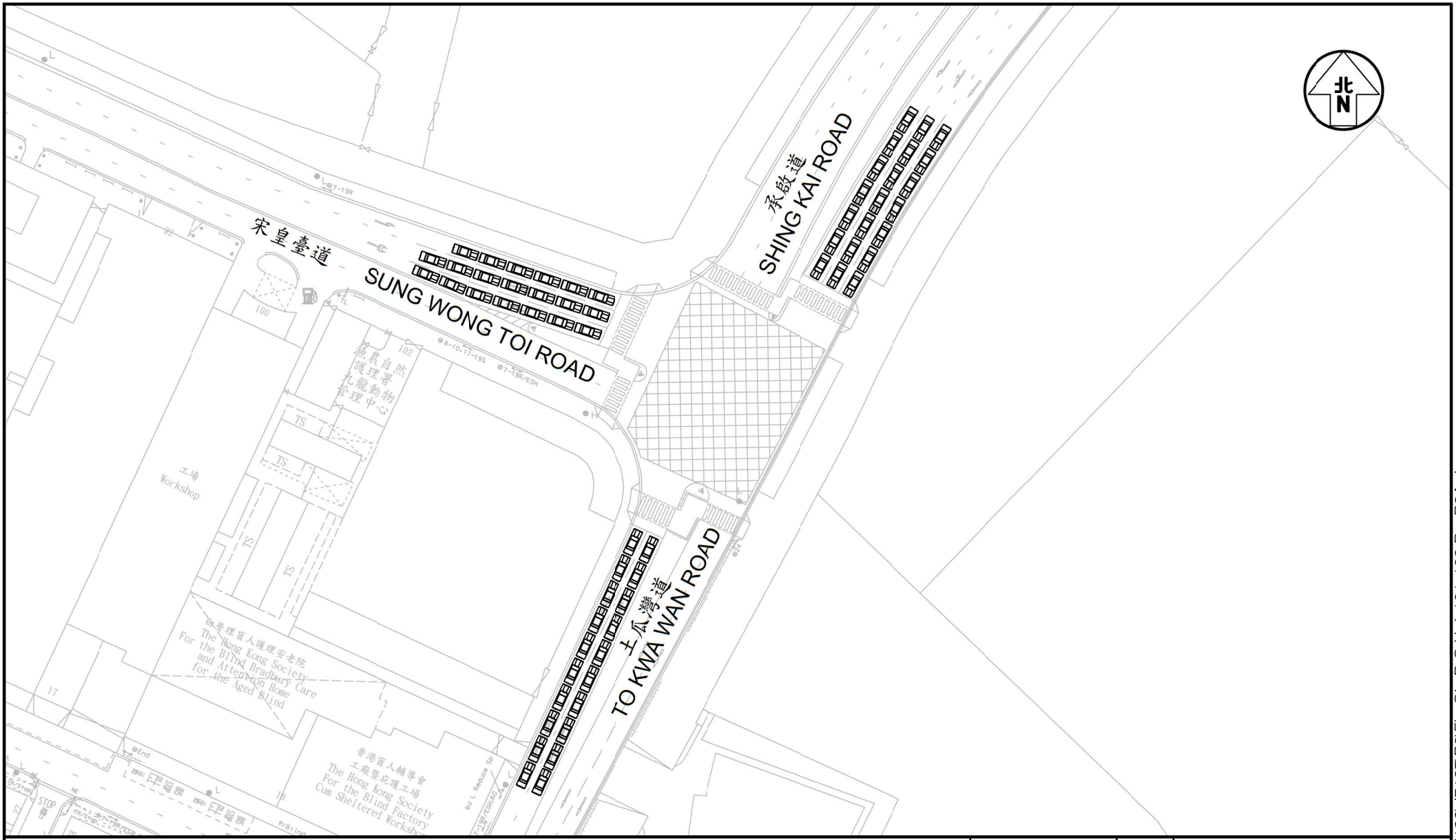
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Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. QL/G/101	Revision R2A
Figure Title: JUNCTION G – QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : AM PEAK)		Designed by T H C / Drawn by C C L / Checked by K C	
		Scale in A4: 1 : 500	Date: 21 SEP 2022

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Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

JUNCTION G - QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : PM PEAK)

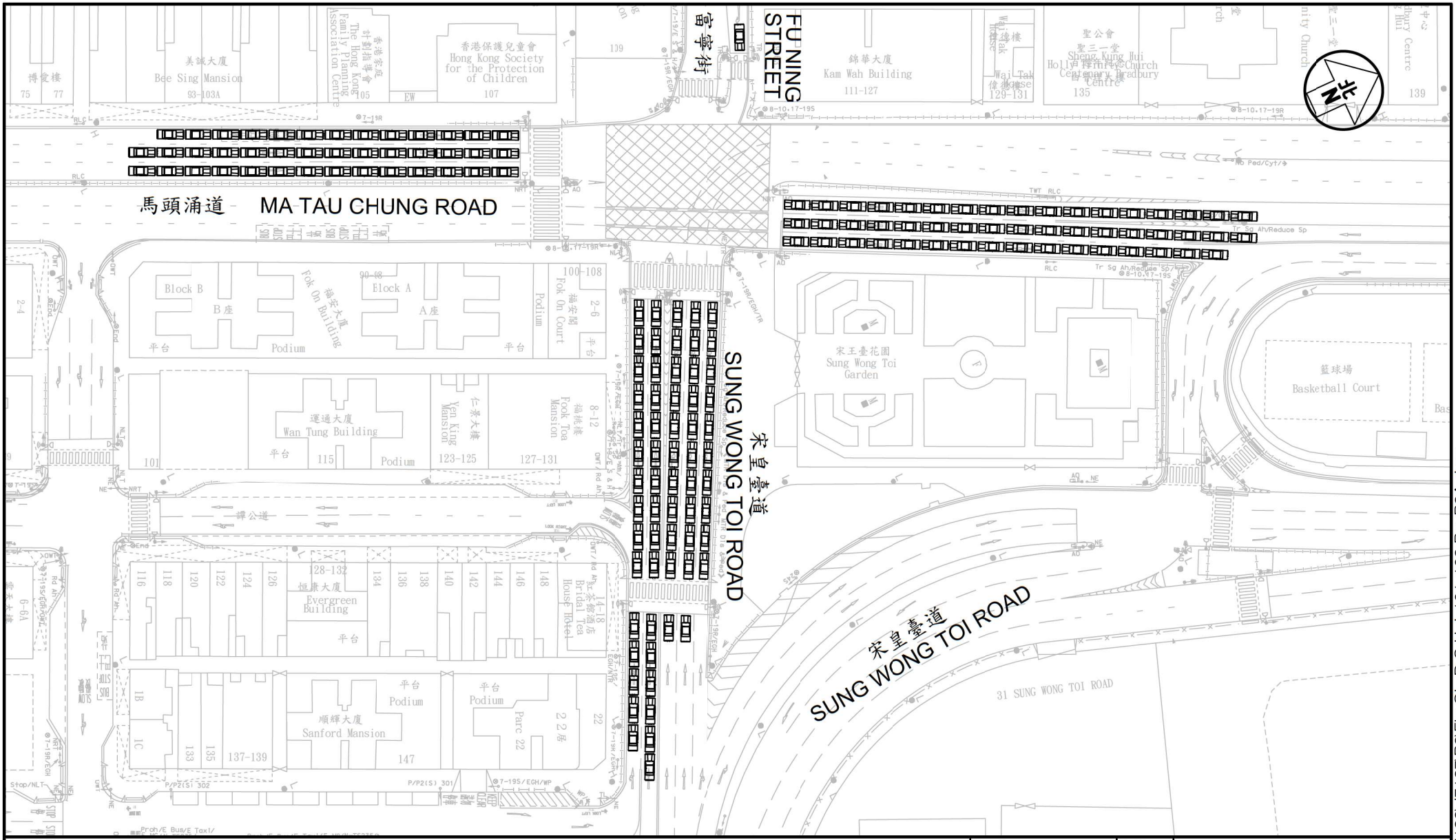
Figure No.	Revision
QL/G/102	R2A

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Scale in A4	Date
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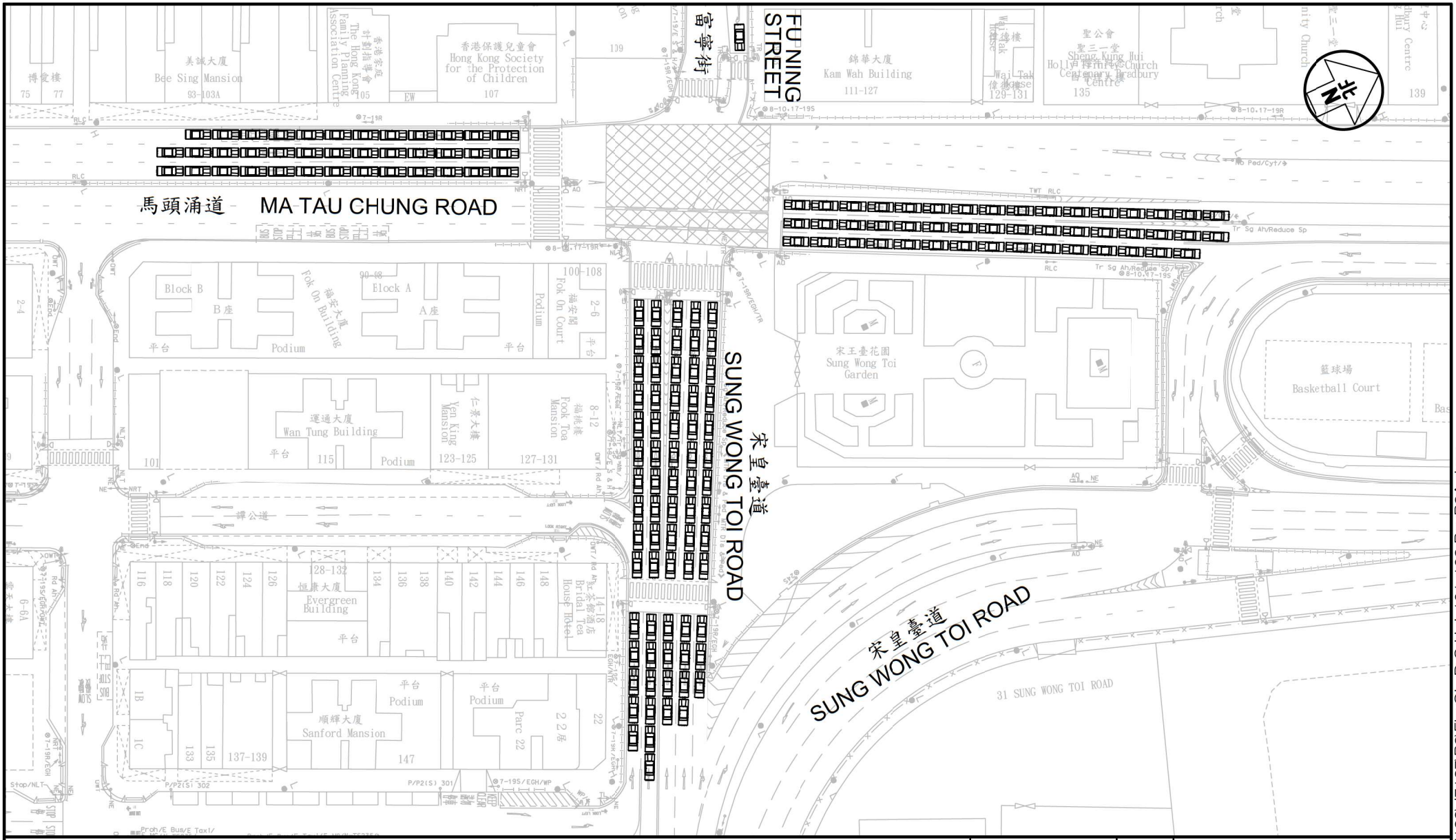


Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	JUNCTION H – QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : AM PEAK)		

Figure No.	QL/H/101	Revision	R2A
Designed by	THC	Drawn by	CCL
Checked by	KC		
Scale in A4	1 : 1,000	Date	21 SEP 2022

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Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	JUNCTION H - QUEUE LENGTH DIAGRAM (2036 TRAFFIC FLOWS WITH KC-018 AND KC-019 : PM PEAK)		

Figure No.	QL/H/102	Revision	R2A
Designed by	THC	Drawn by	CCL
Checked by	KC		
Scale in A4	1 : 1,000	Date	21 SEP 2022

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Average Queue Length for Signal Junction

Junction :	D. To Kwa Wan Road / San Shan Road / San Ma Tau Street	**Job No.:**	J7167
		Date:	21/09/2022
Scenario :	with KC-018 and KC-019	**Design Year:**	2036

R2 / P.4-1

Lane Approach	Stage	Period	Cycle Time (sec)	Direction	Traffic Flow (pcu/hr)	Effective Green (sec)	Queue Length (m/lane)
To Kwa Wan Road NB	1	AM	130	LT+SA	228	30	38
		PM	130		289	35	46
	1	AM	130	SA	258	30	43
		PM	130		321	35	51
	1	AM	130	SA	258	30	43
		PM	130		321	35	51
	1	AM	130	RT+SA	248	30	41
		PM	130		308	35	49
San Shan Road	2	AM	130	LT	281	34	45
		PM	130		233	32	38
	2	AM	130	LT+SA+RT	302	34	48
		PM	130		262	32	43
	2	AM	130	RT	308	34	49
		PM	130		268	32	44
To Kwa Wan Road SB	3	AM	130	LT+SA	359	24	63
		PM	130		315	23	56
	3	AM	130	SA	363	24	64
		PM	130		330	23	59
	3	AM	130	SA	363	24	64
		PM	130		329	23	59
	3	AM	130	RT	345	24	61
		PM	130		254	23	45
San Ma Tau Street	4	AM	130	LT	138	17	26
		PM	130		119	15	23
	4	AM	130	LT+SA	170	17	32
		PM	130		145	15	28
	4	AM	130	RT	190	17	36
		PM	130		180	15	35
	4	AM	130	RT	188	17	35
		PM	130		178	15	34

Note:

1. Queue Length = Average Queue x 6m

Average Queue Length for Signal Junction

Junction :	G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	**Job No.:**	J7167
		Date:	21/09/2022
Scenario :	with KC-018 and KC-019	**Design Year:**	2036

R2 / P.7-1

Lane Approach	Stage	Period	Cycle Time (sec)	Direction	Traffic Flow (pcu/hr)	Effective Green (sec)	Queue Length (m/lane)
To Kwa Wan Road	1	AM	100	LT+SA	515	42	50
		PM	100		584	42	56
	1	AM	100	SA	596	42	58
		PM	100		581	42	56
Sung Wong Toi Road	3	AM	100	LT	247	26	30
		PM	100		284	26	35
	3	AM	100	LT+RT	279	26	34
		PM	100		321	26	40
	3	AM	100	RT	281	26	35
		PM	100		322	26	40
Shing Kai Road	2	AM	100	SA	326	19	44
		PM	100		265	19	36
	2	AM	100	RT+SA	333	19	45
		PM	100		271	19	37
	2	AM	100	RT	333	19	45
		PM	100		270	19	36

Note:

1. Queue Length = Average Queue x 6m

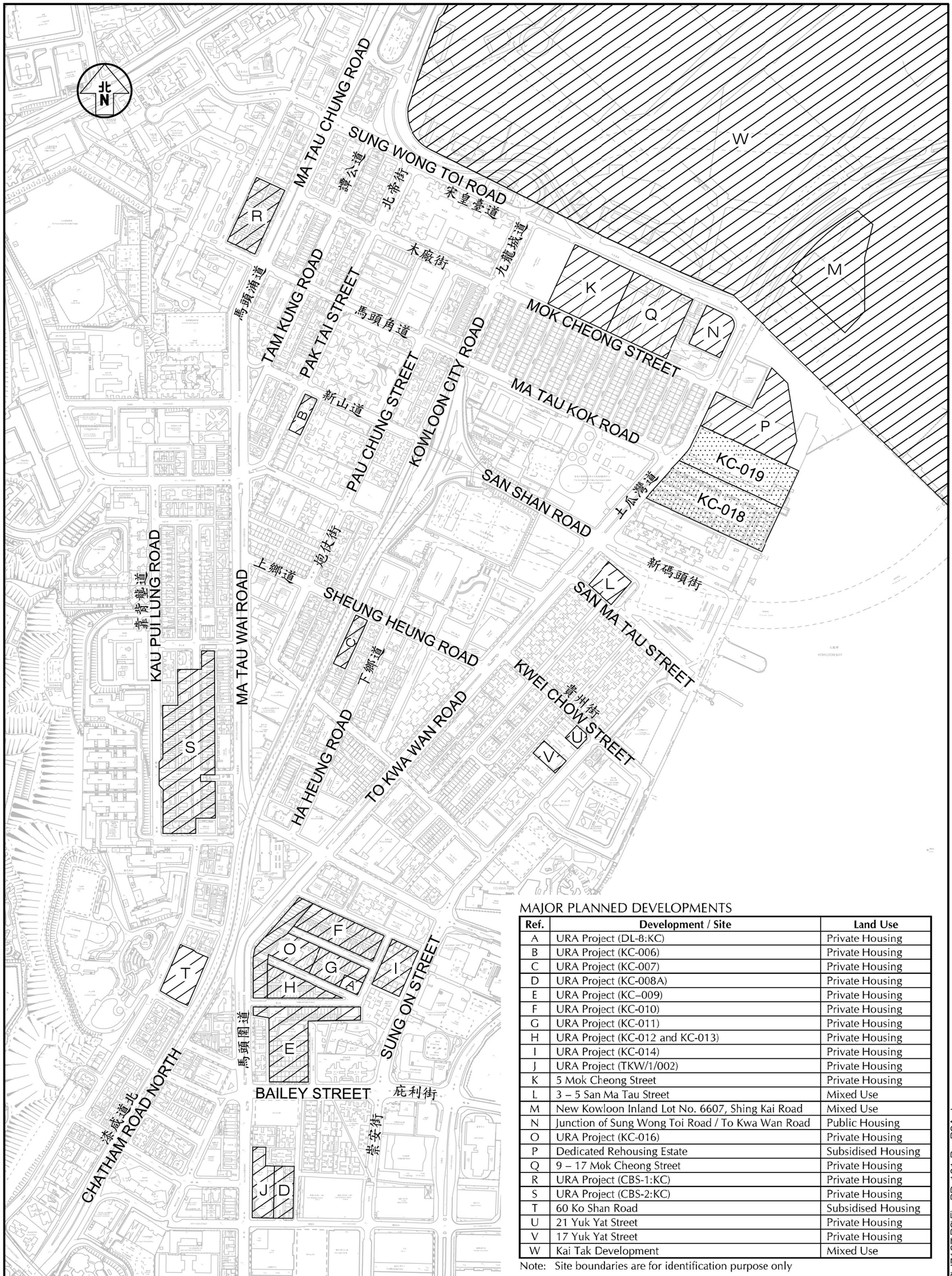
Average Queue Length for Signal Junction

Junction :	H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	**Job No.:**	J7167
		Date:	21/09/2022
Scenario :	with KC-018 and KC-019	**Design Year:**	2036

R2 / P.8-1

Lane Approach	Stage	Period	Cycle Time (sec)	Direction	Traffic Flow (pcu/hr)	Effective Green (sec)	Queue Length (m/lane)
Ma Tau Chung Road NB	1	AM	130	SA + LT	539	55	67
		PM	130		476	50	63
	1	AM	130	SA	595	55	74
		PM	130		534	50	71
	1	AM	130	SA	596	55	75
		PM	130		534	50	71
Fu Ning Street	4	AM	130	RT	18	7	4
		PM	130		18	7	4
Ma Tau Chung Road SB	1	AM	130	SA	645	52	84
		PM	130		589	47	81
	1	AM	130	SA	691	52	90
		PM	130		631	47	87
	1	AM	130	SA	691	52	90
		PM	130		632	47	87
Sung Wong Toi Road	2	AM	130	SA	470	31	78
		PM	130		488	33	79
	2	AM	130	SA	518	31	85
		PM	130		537	33	87
	2,3	AM	130	RT	423	51	56
		PM	130		597	56	74
	2,3	AM	130	RT	431	51	57
		PM	130		607	56	75
	2,3	AM	130	RT	398	51	52
		PM	130		560	56	69

Note:
1. Queue Length = Average Queue x 6m



MAJOR PLANNED DEVELOPMENTS

Ref.	Development / Site	Land Use
A	URA Project (DL-8:KC)	Private Housing
B	URA Project (KC-006)	Private Housing
C	URA Project (KC-007)	Private Housing
D	URA Project (KC-008A)	Private Housing
E	URA Project (KC–009)	Private Housing
F	URA Project (KC-010)	Private Housing
G	URA Project (KC-011)	Private Housing
H	URA Project (KC-012 and KC-013)	Private Housing
I	URA Project (KC-014)	Private Housing
J	URA Project (TKW/1/002)	Private Housing
K	5 Mok Cheong Street	Private Housing
L	3 – 5 San Ma Tau Street	Mixed Use
M	New Kowloon Inland Lot No. 6607, Shing Kai Road	Mixed Use
N	Junction of Sung Wong Toi Road / To Kwa Wan Road	Public Housing
O	URA Project (KC-016)	Private Housing
P	Dedicated Rehousing Estate	Subsidised Housing
Q	9 – 17 Mok Cheong Street	Private Housing
R	URA Project (CBS-1:KC)	Private Housing
S	URA Project (CBS-2:KC)	Private Housing
T	60 Ko Shan Road	Subsidised Housing
U	21 Yuk Yat Street	Private Housing
V	17 Yuk Yat Street	Private Housing
W	Kai Tak Development	Mixed Use

Note: Site boundaries are for identification purpose only

Project Title

URA KC–018 AND KC–019 IN MA TAU KOK

Job No.	Figure No.			Scale in A3
J7167	PD/101			1 : 5,000
Designed by	Drawn by	Checked by	Revision	Date
T H C	C C L	K C	R2A	21 SEP 2022

Figure Title

MAJOR PLANNED DEVELOPMENTS IN THE VICINITY OF KC–018 AND KC–019

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CKM ASIA LIMITED 陳錦敏亞洲有限公司
Traffic and Transportation Planning Consultants 交通及運輸策劃顧問

Our Ref: J7167/2 28 September 2022

Transport Department
Urban Regional Office
Traffic Engineering (Kln) Division
8/F, Mongkok Government Offices
30 Luen Wan Street
Mong Kok, Kowloon

Attn: Ms CHOW Tseung Man, Wendy (Engr / Hung Hom)

(BY POST)

Dear Ms Chow,

URA Sites 5A and 5B in Ma Tau Kok:
Ming Lun Street / Ma Tau Kok Road (KC-018) and
To Kwa Wan Road / Ma Tau Kok Road (KC-019)

Traffic Forecast for Environmental Assessment Study

We refer to our Letter [CKM ref.: J7167/1] dated 3rd August 2022 and your reply of 22nd September 2022 regarding the traffic forecast in support of conducting the Air Quality Impact Assessment ("AQIA") and Traffic Noise Impact Assessment ("TNIA") by the project Environmental Consultant for the captioned project.

Please find below our response to your comments:

(a) Traffic surveys were conducted on Thursday 9th January 2020 and Monday 6th September 2021, which as the Traffic Impact Assessment ("TIA") report. On the survey days, there were **no** public events, and **no** government announced school suspension or work-from-home arrangements.

(b) There is a typo in Paragraph 3(A)(ii). Traffic growth rate shall be based on the latest *"Territorial Population and Employment Data Matrix"* ("TPEDM") published by Planning Department instead of *"Hong Kong Population Projections"*.

The projected population and employment data extracted from the TPEDM is summarised in Table 1.

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TABLE 1 TPEDM DATA FOR KOWLOON CITY AND KWUN TONG

Year	Population	Employment	Total
2019	1,123,200	607,350	**1,730,550**
2026	1,220,500	648,450	**1,868,950**
2031	1,161,350	636,100	**1,797,450**
Annual Growth Rate			**0.32%**

Table 1 shows that the annual growth rate obtained from TPEDM is modest, i.e. 0.32%. To be conservative, traffic growth rate adopted is 0.5% per annum, and is consistent with the traffic growth rate adopted in the TIA report.

(c) According to the *"Agreement No. TD 302/2015 – Base District Traffic Models for the Urban Area – 2016 Update"* (the *"BDTM Study"*) obtained from Transport Department, Kai Tak Development (KTD) has been included in the 2026 BDTM.

With reference to Town Planning Board (TPB) Paper No. 10192: *"Review Study of Kai Tak Development"* published in 2016 and MPC Paper No. 9/21: *"Proposed Amendments to the Approved Kai Tak Outline Zoning Plan No. S/K22/6"* published in 2021, it is noted that the development intensity of each site in KTD has been increased.

The increase of development parameters for each site under the KTD Studies are found in Annex A. To reflect the increase of traffic generation from KTD, the BDTM was updated by applying the corresponding growths.

Apart from the KTD, other major planned developments in the vicinity of KC-018 and KC-019 which are considered are summarised in Table 2.

TABLE 2 DETAILS OF MAJOR PLANNED DEVELOPMENTS

Ref.	Location	Land Use	Development Parameters (Approx.)
A	URA Project at Kai Ming Street (DL-8:KC)	Private Housing	around 72 flats and retail GFA of around 308m^2
B	URA Project at Pak Tai Street / San Shan Road (KC-006)	Private Housing	around 228 flats and retail GFA of around 1,630m^2
C	URA Project at Kowloon City Road / Sheung Heung Road (KC-007)	Private Housing	around 294 flats and retail GFA of around 2,076m^2
D	URA Project at Chun Tin Street / Sung Chi Street (KC-008A)	Private Housing	around 260 flats and retail GFA of around 1,447m^2
E	URA Project at Bailey Street / Wing Kwong Street (KC–009)	Private Housing	around 1,150 flats and retail GFA of around 11,105m^2
F	URA Project at Hung Fook Street / Ngan Hon Street (KC-010)	Private Housing	around 750 flats and retail GFA of around 6,843m^2
G	URA Project at Hung Fook Street / Kai Ming Street (KC-011)	Private Housing	around 400 flats and retail GFA of around 3,660m^2
H	URA Project at Kai Ming Street / Wing Kwong Street (KC-012 and KC-013)	Private Housing	around 414 flats and retail GFA of around 3,721m^2
I	URA Project at Wing Kwong Street / Sung On Street (KC-014)	Private Housing	around 560 flats and retail GFA of around 4,286m^2
J	URA Project at Ma Tau Wai Road / Chun Tin Street (TKW/1/002)	Private Housing	around 493 flats and retail GFA of around 3,114m^2

TABLE 2 DETAILS OF MAJOR PLANNED DEVELOPMENTS (CONT'D)

Ref.	Location	Land Use	Development Parameters (Approx.)
K	5 Mok Cheong Street	Private Housing	around 825 flats and retail GFA of around 9,262m^2
L	3 – 5 San Ma Tau Street	Mixed Use	office GFA of around 18,479m^2 and retail GFA of around 5,979m^2
M	New Kowloon Inland Lot No. 6607, Shing Kai Road	Mixed Use	office GFA of around 14,450m^2, retail GFA of around 1,550m^2 and not more than 440 hotel rooms
N	Junction of Sung Wong Toi Road / To Kwa Wan Road	Public Housing	around 600 flats
O	URA Project at To Kwa Wan Road / Wing Kwong Street (KC-016)	Private Housing	around 900 flats and retail GFA of around 8,322m^2
P	Dedicated Rehousing Estate at Ma Tau Kok (by HK Housing Society)	Subsidised Housing	around 1,100 flats and retail GFA of around 8,500m^2
Q	9 – 17 Mok Cheong Street (A/K10/265)	Private Housing	around 746 flats and retail GFA of around 7,599m^2
R	URA Project at Shing Tak Street / Ma Tau Chung Road (CBS-1:KC)	Private Housing	residential GFA of around 32,243m^2 and retail GFA of around 6,449m^2
S	URA Project at Kau Pui Lung Road / Chi Kiang Street (CBS-2:KC)	Private Housing	residential GFA of around 122,263m^2 and retail GFA of around 12,232m^2
T	60 Ko Shan Road	Subsidised Housing	around 110 flats
U	21 Yuk Yat Street	Private Housing	around 110 flats and retail GFA of around 810m^2
V	17 Yuk Yat Street	Private Housing	around 208 flats and retail GFA of around 700m^2

The major planned developments listed in Table 2 have been included in the traffic forecast.

(d) The traffic forecast for AQIA and TNIA has considered the increase of development intensity by 15% for the redevelopment of 13 Streets Site.

(e) In view of the response to items (a) to (d), the traffic forecast enclosed in our Letter [CKM ref.: J7167/1] dated 3rd August 2022 remains valid.

We believe that we have addressed your comments. It is much appreciated if your department could confirm *"no further comment"* on the traffic forecast enclosed in our Letter [CKM ref.: J7167/1] dated 3rd August 2022 at your earliest convenience.

Should you have any queries, please do not hesitate to contact the undersigned.

Thank you for your attention.

Yours sincerely



p.p.
CHIN Kim Meng
Director

Encl. 7 pages

cc: Urban Renewal Authority

KIM\THC

Letter from Transport Department

KKW5X

By Fax and by Post
2528 6343

運輸署
Transport Department

本署檔案 Our Ref. : (KL8JX) in TD KR146/193/M-4
來函檔號 Your Ref. : J7167/1
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圖文傳真 Fax : 2397 8046
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22 September 2022

CKM Asia Limited
21st Floor, Methodist House
36 Hennessy Road
Wanchai, Hong Kong
(Attn.: Mr. CHIN Kim Meng)

Dear Sir/Madam,

URA Sites 5A and 5B in Ma Tau Kok:
Ming Lun Street/Ma Tau Kok Road (KC-018) and
To Kwa Wan Road/Ma Tau Kok Road (KC-019)

Traffic Forecast for Environmental Assessment Study

I refer to your above-referenced letter dated 4 August 2021 and have the following comments on the captioned:

(a) Paragraph 2 – Please advise the date(s) of conducting the traffic surveys and whether appropriate adjustment factors were applied to the survey data taking into account the effect of COVID-19.

(b) Paragraph 3(A) ii -- Please advise the "traffic growth rates" adopted. The rate shall be consistent with the rate adopted in TIA report.

(c) Paragraph 3(A) iii – Please advise the "planned developments" considered in the traffic forecast.

(d) It has been mentioned in this project's planning report that a sensitivity study for 13-street redevelopment with 15% additional GFA is included in all technical assessments. Please advised if such increase of GFA will affect the traffic forecast.

/...2

26-SEP-2022 11:00 TRANSPORT DEPT-URO(KLN) P.001

(e) Paragraph 4 – Subject to your response to Items (a) and (d) above, please review and update the projection of the 24-hour traffic flows.

Yours faithfully,

(Ms Wendy CHOW)
for Commissioner for Transport

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Urban (Kln.) & NT Regional Office
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Annex A – Development Parameters of KTD (Extract from TPB Paper No. 10192 and MPC Paper No. 9/21)

Appendix I

of TPB Paper No. 10192

Comparisons of Development Parameters for Sites under Review Study

Sites	Zoning		Maximum PR				BHR (mPD)			
	OZP	Proposed	OZP	Approved s.16	Proposed	Change[#]	OZP	Approved s.16	Proposed	Change[#]
2A1	CDA		5	-	6.5	+1.5	80	-	100	+20
2A2	CDA		4.5	-	6.5	+2	70	-	90	+20
2A3	C		4.5	-	6.5	+2	70	-	90	+20
2A4	C		4.5	-	6.5	+2	60	-	80	+20
2A5	C	2A5(A): G/IC	4.5	-	-	-	60	-	45	-15
		2A5(B): C			6.5	+2			80	+20
2A6	C	2A10: C	4.5	-	6.5	+2	60	-	80	+20
2A7	G/IC		-			-	30			+50
2B1	CDA		5	-	6.5 + 0.3*	+1.8	110	-	135	+25
2B2	R		5	-	6.5 + 0.1*	+1.6	100	-	125	+25
2B3	R		5	-	6.5 + 0.1*	+1.6	85	-	115	+30
2B4	R		5	-	6.5 + 0.1*	+1.6	85	-	115	+30
2B5	R		5	-	6.5 + 0.1*	+1.6	85	-	100	+15
2B6	R		5	-	6.5 + 0.1*	+1.6	85	-	100	+15
3A6	G/IC	C	-	-	8	-	45	-	100	+55
3B1			-	-	5.8	-	45	-	80	+35
3B2			-	-	5.8	-	45	-	80	+35
3B3			-	-	5.8	-	45	-	80	+35
3B4			-	-	5.8	-	45	-	80	+35
3E1	C	R	9.5	-	4.5	-5	100	-	100	0
3E2	OU/O		-	-		-	15	-	80	+65
4A1	R		3	3.4	6.5	+3.1	65/80	80	90	+10
4B1	R		3	3.8	6.5	+2.7	55	65	75	+10
4B2	R		3	4.4	6.5	+2.1	55	75	85	+10
4B3	R		3	3.9	6.5	+2.6	65	75	80	+5
4B4	R		3	3.7	6.5	+2.8	55	65	75	+10
4B5	R	C	3	-	6.3	+3.3	45	-	65	+20
4A2	C	R	4	5	6.5 + 0.15*	+1.65	45	55	80	+25
4C1	C	R	4	5	6.5 + 0.15*	+1.65	45	55	75	+20
4C2	C	R	4	5.9	6.5 + 0.15*	+0.75	55	65	75	+10
4E1	O	R	-	-	6.5	-	-	-	80	-
4E2	O	R	-	-	6.5 + 0.15*	-	-	-	80	-

*non-domestic PR for proposed residential sites [#] comparison with OZP or approved s.16 applications

Bundle	Site	Site Area[b]	Current				Proposed				
			Zoning	Max. PR	Max. SC	Max. BH	Zoning	Max. Dom. PR[c]	Max. Non-dom. PR[c]	Max. SC	Max. BH
1	**2A2**	6,270m^2	"CDA(4)" [commercial]	6.6	65%	90mPD	"CDA(4)" [residential]	6.5[d]	1.0[d]	65%	125mPD[e]
	2A3	5,968m^2	"C(3)"	6.5	65%	90mPD	"R(A)6"	6.5	1.0	65%	125mPD
2	**2A4**[a]	6,555m^2	"C(3)"	6.5	65%	80mPD	"R(A)5"	6.5	1.5	65%	125mPD
	2A5(B)[a]	3,374m^2	"C(3)"	6.5	65%	80mPD					115mPD
	2A10[a]	6,100m^2	"C(3)"	6.5	65%	80mPD					100mPD

Notes:

[a] Sites 2A4, 2A5(B) and 2A10 to be under the same "R(A)5" zoning are proposed to be indicated as a linked single site on the OZP for the purpose of determination of the maximum PR. Individual sites should each be subject to the proposed maximum SC of 65%.

[b] Site areas are subject to detailed survey.

[c] Floor spaces for (i) railway facilities in the "R(A)5" zone (which is to cater for the existing railway facilities in Site 2A10); and (ii) government, institutional or community (GIC) facilities in the "CDA(4)", "R(A)5" and "R(A)6" zones, as required by the Government, are proposed to be disregarded from PR calculation.

[d] A maximum PR of 7.5 is proposed to be stipulated in the Notes of the OZP for the "CDA(4)" zone. The recommended maximum domestic PR of 6.5 and maximum non-domestic PR of 1.0 are to be stipulated under planning brief and land sale conditions.

[e] The retail belt area of the "CDA(4)" zone abutting the LTSBPC (**Plan 9a**) is subject to a maximum BH of 2 storeys in accordance with the Notes of the OZP.

4.3 The proposed increase in the maximum BHs for the five individual sites from 80 to 90mPD to 100 to 125mPD is for ensuring that the residential use at the sites, which is subject to a lower permissible SC under the Building (Planning) Regulations than non-domestic use, could achieve the proposed maximum domestic PR of 6.5. Such an increase in BHs is still in keeping with the general stepped BH profile of the locality which is descending progressively from the northeast to the southwest[8] (**Plan 9a**), and is in line with the broad urban design framework of KTD on creating a dynamic skyline.

4.4 To accord with the policy initiative of providing more welfare facilities in private development sites, a certain amount of gross floor area (GFA) (equivalent to not less than 5% of the proposed domestic GFA of the site in general) for provision of government/social welfare facilities mainly based on the wish-list of the Social Welfare Department (SWD) has been incorporated in the notional schemes of the reviewed sites and assumed to be disregarded from PR/GFA calculation for testing in the Review Study, such that the maximum permissible PR for the sites would not be compromised. For the two bundled sites, upon consulting SWD, the following welfare facilities have been reserved at the sites for addressing the needs of the local and the community on the services:

---

8 The highest BH of 135mPD in the locality of Area 2 relates to the proposed public housing development at Site 2B1, with the BHs of the adjacent residential sites descending progressively from the northeast to the southwest to the levels of 125mPD, 115mPD and 100mPD.

"R(B)7" with maximum PRs of 5.5/6.1/7.0, and have all been sold for private residential developments. To the south and further southeast of the three reviewed sites are the existing Kai Tak Cruise Terminal (KTCT) and a site zoned "OU" annotated "Tourism Related Uses to include Commercial, Hotel and Entertainment" ("OU(TRU)") intended for the development of the proposed Tourism Node (TN). While Sites 4B5 and 4C4 are currently vacant, Site 4C5 is occupied as a temporary depot for franchised buses.

Rezoning Proposals

4.8 The Review Study recommended the three reviewed sites to be rezoned from commercial to residential use subject to maximum domestic PRs of 5.7/6.6/7.0 (average domestic PR of 6.5), maximum non-domestic PRs of 0.3/0.5, maximum SC of 40% and maximum BH of 95/108mPD (same as now) for production of about 3,000 private housing units. Similar to the two bundled sites at the former north apron area, GFAs for GIC/social welfare facilities (equivalent to not less than 5% of the proposed domestic GFA of the site in general) have also been reserved at these sites and are proposed to be disregarded from PR calculation. Site 4B5 is proposed to be rezoned from "C(4)" to "R(B)8" (**Item F** on **Plan 6**), Site 4C4 from "C(7)" to "R(B)9" (**Item G** on **Plan 6**) and Site 4C5 from "C(5)" to "R(B)10" (**Item H** on **Plan 6**). The proposed zonings and development restrictions for the sites are summarised as follows:

Site	Site Area[a]	Current				Proposed			
		Zoning	Max. PR	Max. SC	Max. BH	Zoning	Max. PR[b]	Max. SC	Max. BH
4B5	13,953m^2	"C(4)"	6.5	80%	108mPD	"R(B)8"	7.5[c]	40%	108mPD
4C4	10,692m^2	"C(7)"	7.5	80%	95mPD	"R(B)9"	6.9[d]	40%	95mPD
4C5	9,480m^2	"C(5)"	6.0	80%	95mPD	"R(B)10"	5.7[e]	40%	95mPD

Notes:

[a] Site areas are subject to detailed survey.

[b] Floor spaces for GIC facilities in the "R(B)8", "R(B)9" and "R(B)10" zones, as required by the Government, are proposed to be disregarded from PR calculation.

[c] The proposed maximum PR of 7.5 comprises a maximum domestic PR of 7.0 and a maximum non-domestic PR of 0.5 which are to be stipulated under land sale conditions.

[d] The proposed maximum PR of 6.9 comprises a maximum domestic PR of 6.6 and a maximum non-domestic PR of 0.3 which are to be stipulated under land sale conditions.

[e] The proposed maximum PR of 5.7 is for residential use only.

4.9 To maintain the feature of an undulating and varied BH profile in the former runway area, with the tallest band of developments in the middle portion and BHs of the developments stepping down on the two sides towards the Metro Park and the runway tip (**Plan 12d**), the BHs of Sites 4B5, 4C4 and 4C5 are proposed to remain unchanged. In proportion to the BH and in consideration of specific site constraints (including the proximity of Site 4C5 to KTCT), the PRs for the three sites have been carefully designed[10] to achieve an average maximum domestic PR of 6.5.

---

10 Site 4C5 is proposed with a smaller maximum domestic PR of 5.7 as half of its south-western site boundary is abutting the existing structure of KTCT and its site configuration is relatively elongated. Site 4B5, which has a more regular site configuration and is subject to a higher maximum BH among the three reviewed sites, is proposed with a larger maximum domestic PR of 7.0.

TECHNICAL NOTE – SENSITIVITY TESTS WITH REDEVELOPMENT OF 13 STREETS SITE

Background

A.1 According to the Ma Tau Kok Outline Zoning Plan (OZP) No. S/K10/28, another *"Comprehensive Development Area"* (*"CDA"*) site is located in the vicinity of KC-018 and KC-019 which is bounded by To Kwa Wan Road to the east, Ma Tau Kok Road to the south, Kowloon City Road to the west and Mok Cheong Street to the north, and is commonly known as the 13 Streets Site. The location of 13 Streets Site is shown in Figure A.1.

A.2 Taking into consideration the potential redevelopment of the adjoining *"CDA"* Site, two sensitivity tests are conducted by assuming that the 13 Streets Site is redeveloped in residential and retail uses with an increase of development intensity. The indicative development parameters for the 13 Streets Site are presented in Table A.1.

TABLE A.1 DEVELOPMENT PARAMETERS OF 13 STREETS SITE

Use	Sensitivity Test 1 – Increase GFA by 15%	Sensitivity Test 2 – Increase GFA by 15% and Increase Number of Flats by 15%
Residential [(1)]	4,408 flats	5,070 flats
Retail	48,990m² GFA	48,990m² GFA

Note: [(1)] assume average flat size < 60m²

Traffic Generation of 13 Streets Site

A.3 To estimate traffic generation of the 13 Streets Site, trip generation rates for residential and retail found in Volume 1 of the TPDM are adopted. The adopted trip generation rates are presented in Table A.2.

TABLE A.2 TRIP GENERATION RATES

Use	Unit	Trip Generation Rates			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Residential (average flat size = 60m²) [(1)]	pcu/hour/flat	0.0425	0.0718	0.0370	0.0286
Retail [(1)]	pcu/hour/100m²	0.2434	0.2296	0.3563	0.3100

Note: [(1)] extracted from Volume 1 of TPDM

A.4 The trip generation rates presented in Table A.2 are used to calculate the traffic generated associated with the 13 Streets Site, and the calculated traffic generation is presented in Table A.3.

TABLE A.3 DEVELOPMENT PARAMETERS AND TRAFFIC GENERATION OF 13 STREETS SITE

Use	Traffic Generation (pcu/hour)							
	Sensitivity Test 1 – Increase GFA by 15%				Sensitivity Test 2 – Increase GFA by 15% and Increase Number of Flats by 15%			
	AM Peak		PM Peak		AM Peak		PM Peak	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Residential	188	317	164	127	216	365	188	146
Retail	120	113	175	152	120	113	175	152
Total	**308**	**430**	**339**	**279**	**336**	**478**	**363**	**298**

2036 Junction Capacity Analysis for Sensitivity Tests

A.5 The Kai Tak OZP No. S/K22/7 indicates that a strip of area zoned as *"Road"* is provided along the eastern side of To Kwa Wan Road between Sung Wong Toi Road and Ma Tau Kok Road, which is reserved for potential road widening. Extract of the OZP is found in Annex 1.

A.6 Assuming the redevelopment of 13 Streets Site is completed in 2033, the 2036 junction capacity analysis for Sensitivity Tests 1 and 2 are conducted for the following two scenarios:

Scenario A – without potential widening of To Kwa Wan Road
Scenario B – with potential widening of To Kwa Wan Road as shown in Figure A.2

A.7 The 2036 peak hour traffic flows for Sensitivity Tests 1 and 2 under Scenarios A and B are shown in Figures A.3 – A.6 respectively. The 2036 junction capacity analysis for the sensitivity tests are summarised in Table A.4, and detailed calculations are found in Annex 2.

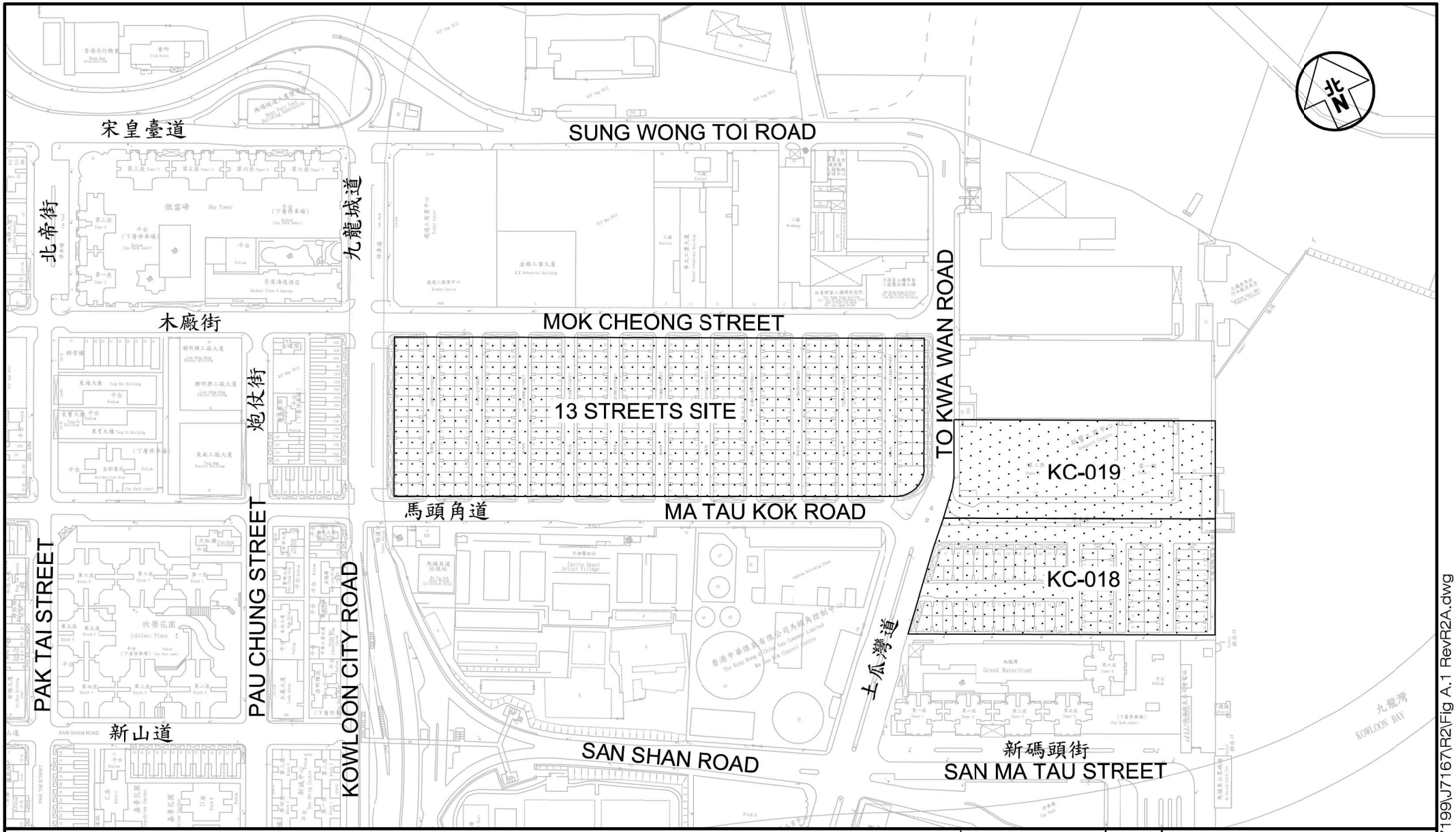
TABLE A.4 2036 JUNCTION OPERATIONAL PERFORMANCE (SENSITIVITY TESTS)

Ref.	Junction [1]	Scenario A – without widening of To Kwa Wan Road		Scenario B – with widening of To Kwa Wan Road	
		AM Peak	PM Peak	AM Peak	PM Peak
Sensitivity Test 1 – Increase GFA by 15%					
A	Kowloon City Road / Sung Wong Toi Road	67%	69%	72%	72%
B	Kowloon City Road / Mok Cheong Street	89%	57%	83%	52%
C	Kowloon City Road / Ma Tau Kok Road	100%	53%	79%	41%
D	To Kwa Wan Road / San Shan Road / San Ma Tau Street [2]	22%	25%	24%	28%
E	To Kwa Wan Road / Ma Tau Kok Road	> 100%	> 100%	90%	> 100%
F	To Kwa Wan Road / Mok Cheong Street	21%	28%	52%	72%
G	To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	2%	8%	48%	50%
H	Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	24%	22%	24%	22%
I	Ma Tau Chung Road / Ma Tau Kok Road	94%	> 100%	94%	> 100%
J	Olympic Garden Roundabout	0.811	0.796	0.811	0.796
Sensitivity Test 2 – Increase GFA by 15% and Increase No. of Flat by 15%					
A	Kowloon City Road / Sung Wong Toi Road	64%	67%	70%	71%
B	Kowloon City Road / Mok Cheong Street	85%	54%	78%	49%
C	Kowloon City Road / Ma Tau Kok Road	98%	51%	76%	39%
D	To Kwa Wan Road / San Shan Road / San Ma Tau Street [2]	21%	25%	23%	27%
E	To Kwa Wan Road / Ma Tau Kok Road	100%	> 100%	89%	> 100%
F	To Kwa Wan Road / Mok Cheong Street	18%	26%	48%	70%
G	To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road	0%	6%	46%	49%
H	Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road	23%	22%	23%	22%
I	Ma Tau Chung Road / Ma Tau Kok Road	94%	> 100%	94%	> 100%
J	Olympic Garden Roundabout	0.815	0.799	0.815	0.799

Note: [1] refer to Table 2.2 of TIA report on the type of junction and performance indicator
[2] with traffic improvement scheme as shown in Figure 4.3 of TIA report

A.8 With completion of the 13 Streets Site without widening of To Kwa Wan Road (i.e. Scenario A), Sensitivity Tests 1 and 2 indicate that the analysed junction G is expected to operate with reserve capacity below 15% during the peak hours in 2036.

A.9 Taking into consideration the potential widening of To Kwa Wan Road (i.e. Scenario B), all analysed junctions in both Sensitivity Tests 1 and 2 are expected to operate with reserve capacity above 15% or Ratio-of-Flow to Capacity below 0.85 during the peak hours in 2036.

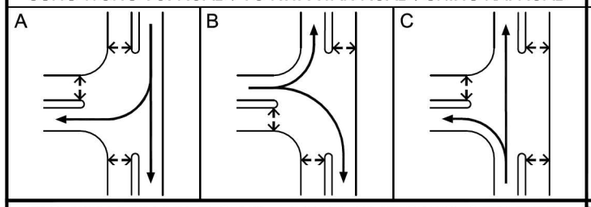


Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No.: A.1	Revision: R2A
Figure Title: LOCATION OF 13 STREETS SITE		Designed by: T H C / Drawn by: C C L / Checked by: K C	
		Scale in A4: 1 : 3,000	Date: 21 SEP 2022

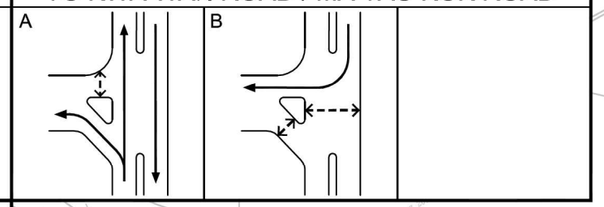
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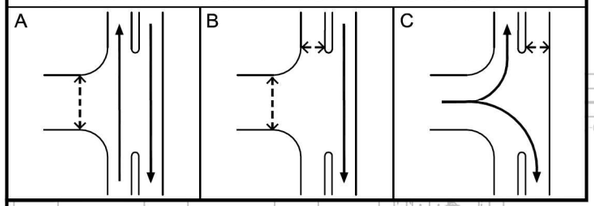
SUNG WONG TOI ROAD / TO KWA WAN ROAD / SHING KAI ROAD



TO KWA WAN ROAD / MA TAU KOK ROAD



TO KWA WAN ROAD / MOK CHEONG STREET



LEGEND :

existing road network

proposed traffic arrangement

NOTE:
The traffic arrangement scheme is conceptual and subject to detailed design and studies.

widen To Kwa Wan Road to dual 3-lane road

LINK SITE (BY HKHS)

13 STREETS SITE

CATTLE DEPOT

KC-019

KC-018

SHING KAI ROAD 承啟道

宋皇臺道

SUNG WONG TOI ROAD

TO KWA WAN ROAD

KOWLOON CITY ROAD 九龍城道

PAU CHUNG STREET

炮仗街

木廠街

MOK CHEONG STREET

馬頭角道

MA TAU KOK ROAD

土瓜灣道

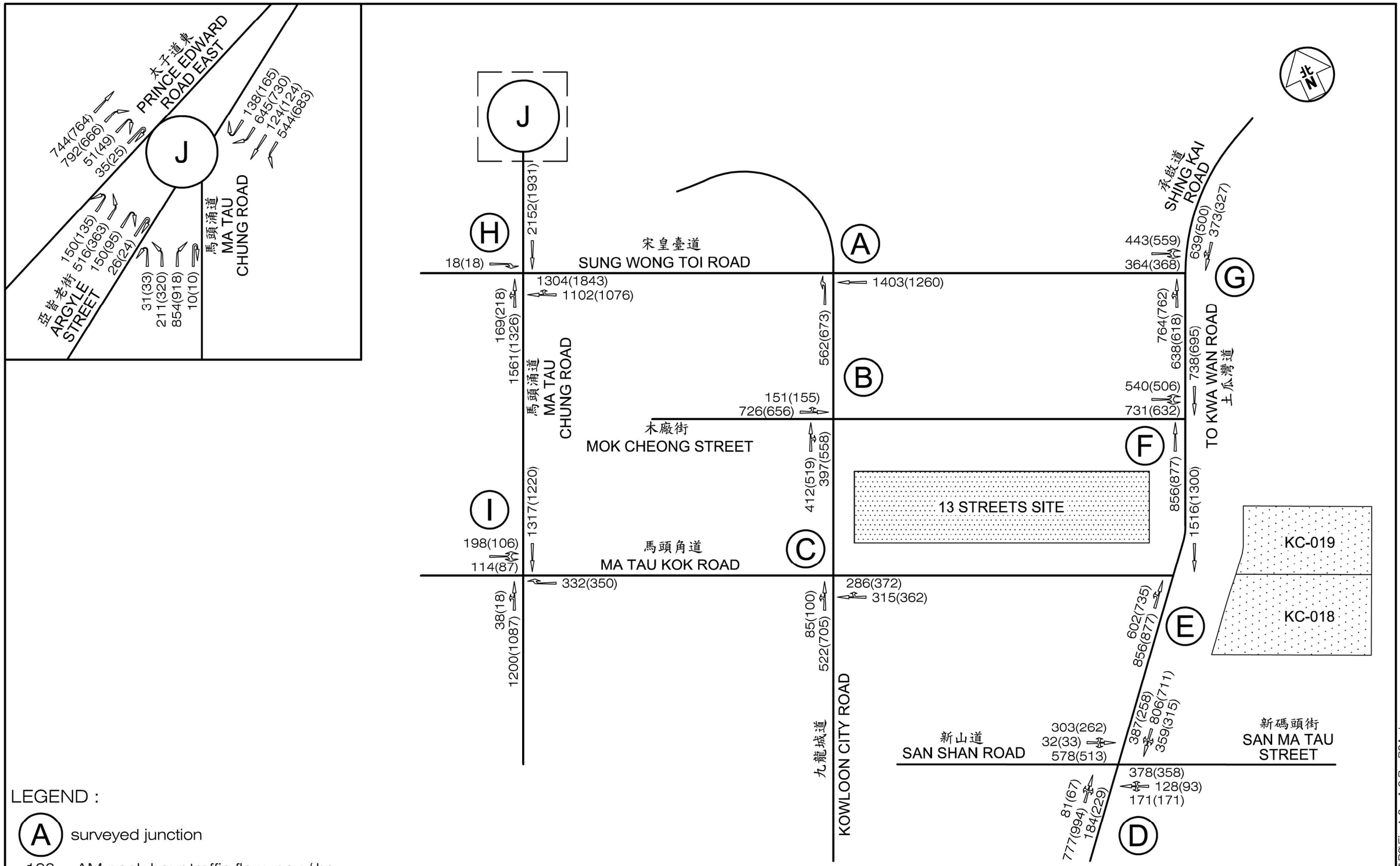
LUNG TO STREET
FUNG YI STREET
LUK MING STREET
LUN CHEUNG STREET
YING YEUNG STREET
PANG CHING STREET
HUNG WAN STREET
SHIU LUEN STREET
YIN CHI STREET

MING LUN STREET

Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	
Figure Title	SCHEMATIC TRAFFIC ARRANGEMENT SCHEME FOR WIDENING OF TO KWA WAN ROAD (EXTRACTED FROM 2019 AREA STUDY REPORT)	Figure No. A.2	Revision R2A
		Designed by THC / Drawn by CCL / Checked by KC	
		Scale in A3 1 : 1,500	Date 21 SEP 2022

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LEGEND :

(A) surveyed junction

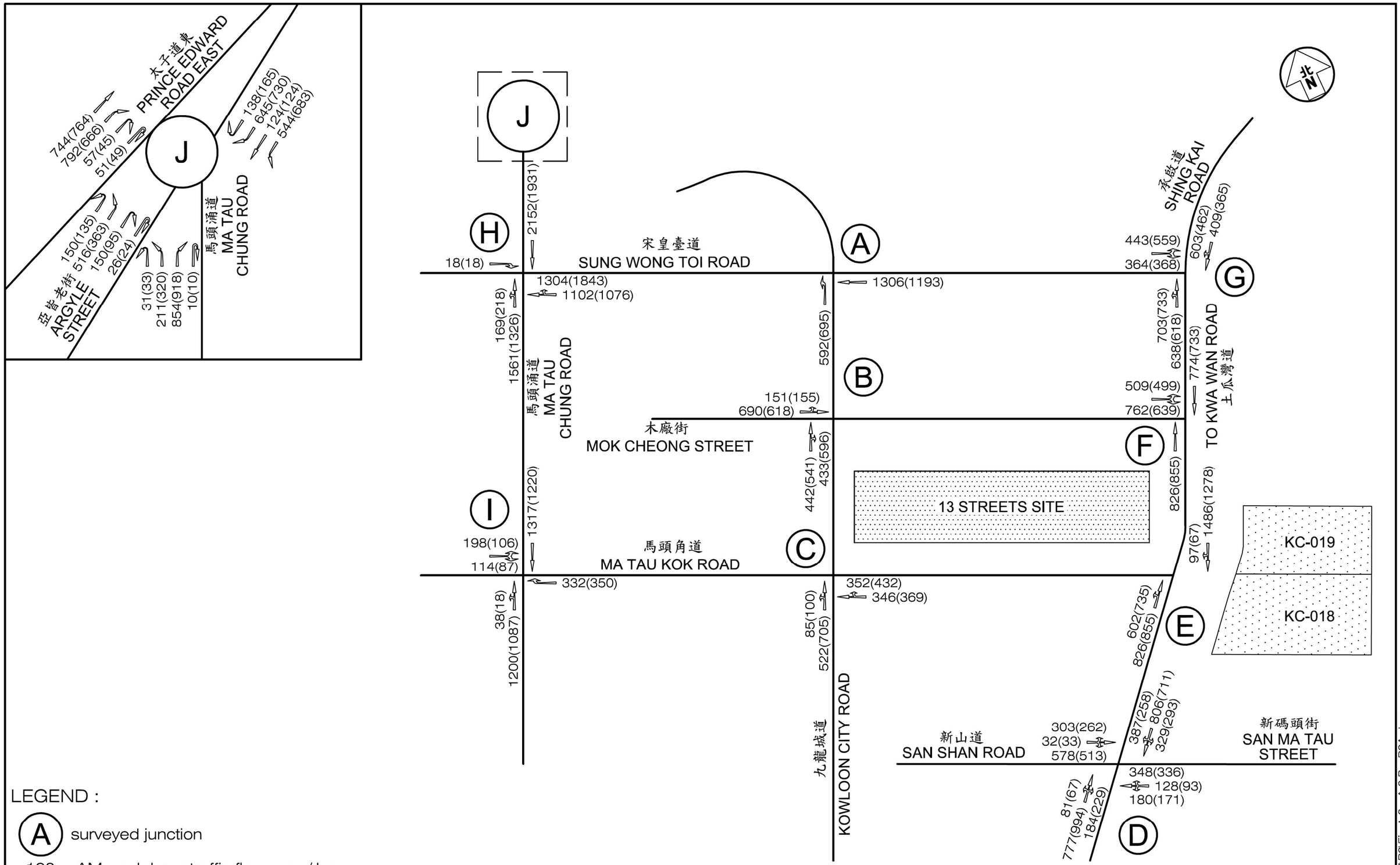
123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK		J7167	Figure No. A.3 / Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITH 13 STREETS SITE (SENSITIVITY TEST 1 : INCREASE GFA BY 15%) [SCENARIO A - WITHOUT POTENTIAL WIDENING OF TO KWA WAN ROAD]	Designed by: T H C / Drawn by: C C L / Checked by: K C	Scale in A3: N.T.S.	Date: 21 SEP 2022

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LEGEND :

A surveyed junction

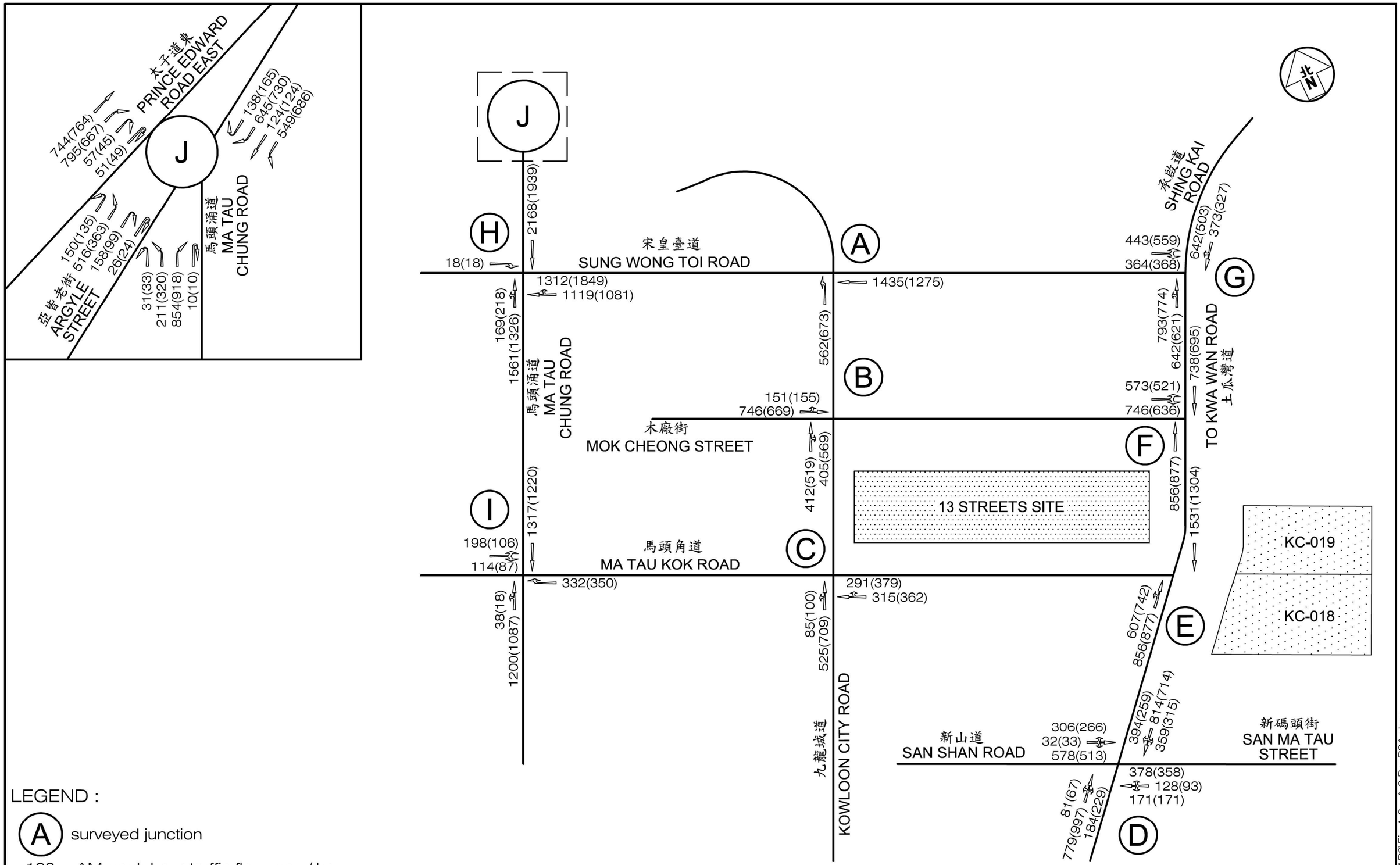
123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. A.4	Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITH 13 STREETS SITE (SENSITIVITY TEST 1 : INCREASE GFA BY 15%) [SCENARIO B – WITH POTENTIAL WIDENING OF TO KWA WAN ROAD]		Designed by T H C / Drawn by C C L / Checked by K C	Scale in A3 N.T.S. / Date 21 SEP 2022

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LEGEND :

A surveyed junction

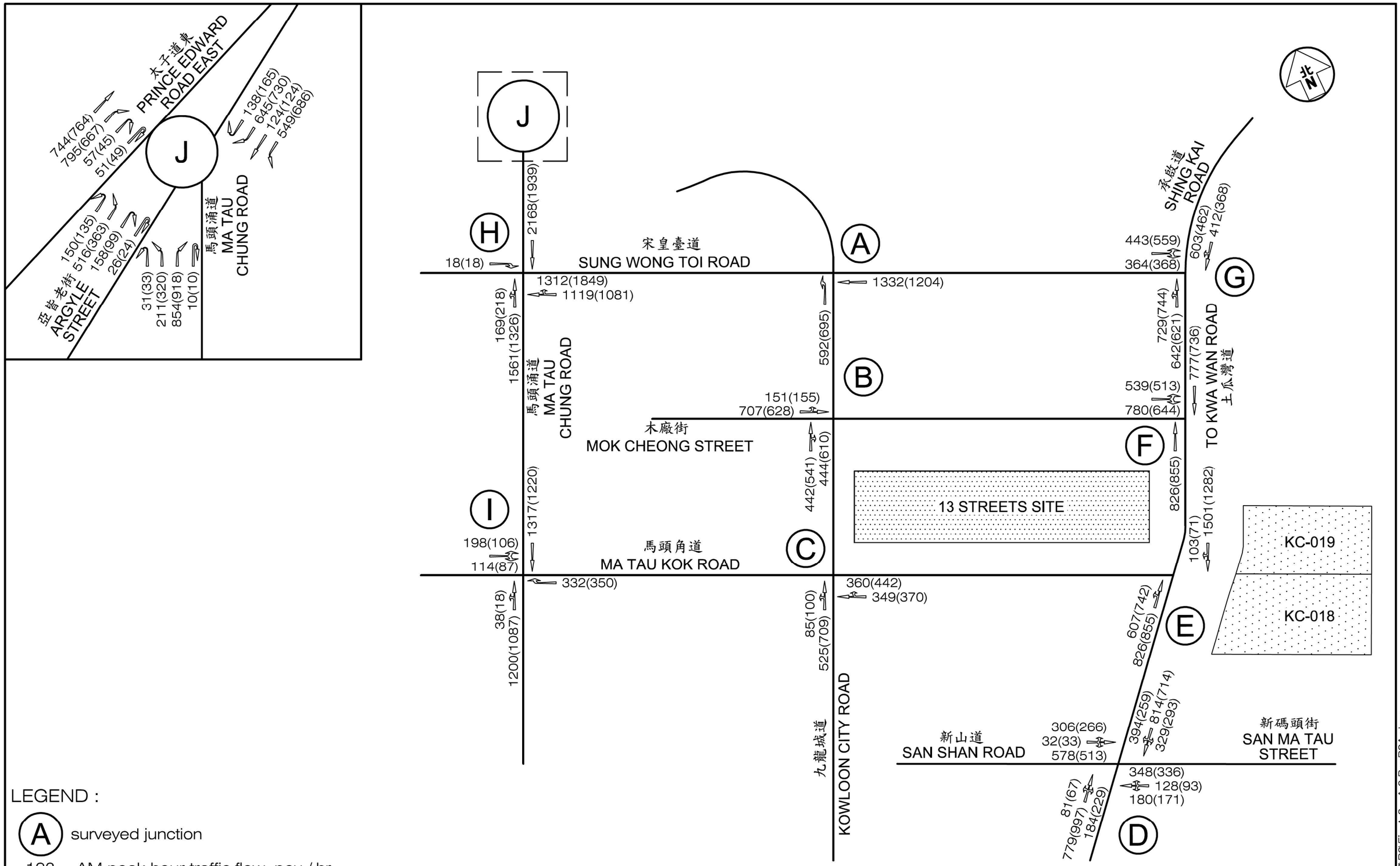
123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. A.5	Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITH 13 STREETS SITE (SENSITIVITY TEST 2 : INCREASE GFA BY 15% AND INCREASE NUMBER OF FLATS BY 15%) [SCENARIO A – WITHOUT POTENTIAL WIDENING OF TO KWA WAN ROAD]		Designed by: T H C / Drawn by: C C L / Checked by: K C; Scale in A3: N.T.S.; Date: 21 SEP 2022	

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LEGEND :

(A) surveyed junction

123 - AM peak hour traffic flow, pcu / hr

(456) - PM peak hour traffic flow, pcu / hr

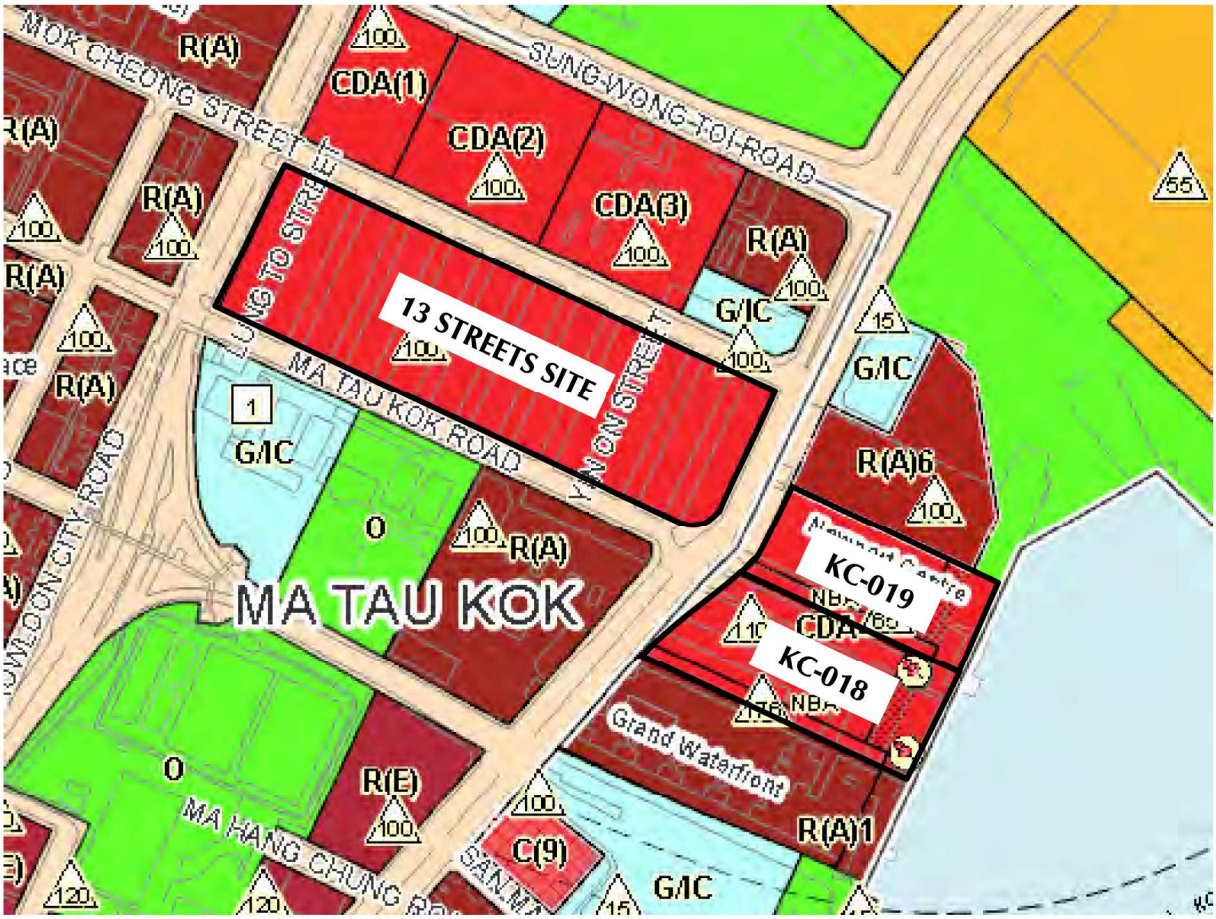
Project Title: URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. A.6	Revision R2A
Figure Title: 2036 PEAK HOUR TRAFFIC FLOWS WITH 13 STREETS SITE (SENSITIVITY TEST 2 : INCREASE GFA BY 15% AND INCREASE NUMBER OF FLATS BY 15%) [SCENARIO B – WITH POTENTIAL WIDENING OF TO KWA WAN ROAD]		Designed by: T H C / Drawn by: C C L / Checked by: K C	Scale in A3: N.T.S. / Date: 21 SEP 2022

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Annex 1 – Extract from Ma Tau Kok OZP No. S/K10/28

MA TAU KOK OUTLINE ZONING PLAN



Annex 2 – Junction Capacity Analysis

Signal Junction Analysis

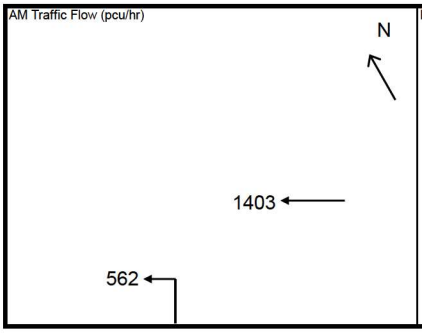
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A1-1

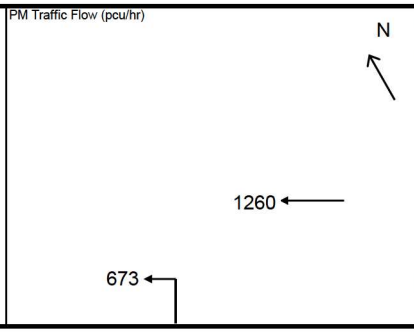
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	275	0.153	0.153	100	1796	329	0.183	
	LT	A2	1	4.50	15.0		100	1877	287	0.153		100	1877	344	0.183	0.183
Sung Wong Toi Road	SA	B1	2	3.50				2105	726	0.345	0.345		2105	652	0.310	0.310
	SA	B2	2	3.50				1965	677	0.345			1965	608	0.309	
pedestrian phase		P1	2		min crossing time =		10	sec GM +		11	sec FGM =		21	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.498		0.493	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	67%		69%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

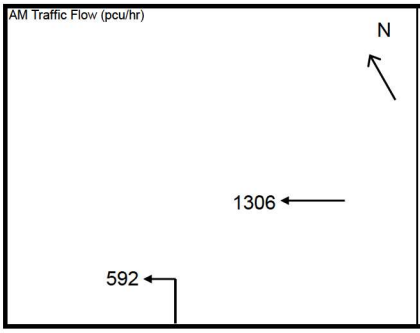
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A1-2

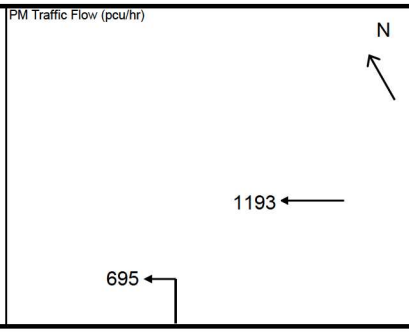
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	290	0.162	0.162	100	1796	340	0.189	
	LT	A2	1	4.50	15.0		100	1877	302	0.161		100	1877	355	0.189	0.189
Sung Wong Toi Road	SA	B1	2	3.50				2105	675	0.321			2105	617	0.293	
	SA	B2	2	3.50				1965	631	0.321	0.321		1965	576	0.293	0.293
pedestrian phase		P1	2		min crossing time =		10	sec GM +		11		sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.483		0.482	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	72%		72%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

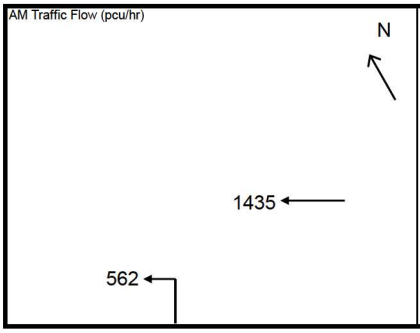
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A1-3

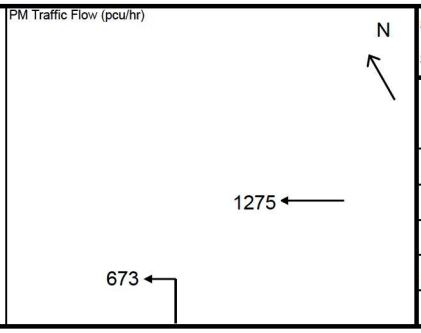
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	275	0.153	0.153	100	1796	329	0.183	
	LT	A2	1	4.50	15.0		100	1877	287	0.153		100	1877	344	0.183	0.183
Sung Wong Toi Road	SA	B1	2	3.50				2105	742	0.352			2105	659	0.313	
	SA	B2	2	3.50				1965	693	0.353	0.353		1965	616	0.313	0.313
pedestrian phase		P1	2		min crossing time =		10	sec GM +			11	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.506		0.497	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	64%		67%	

Note:



AM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	

Signal Junction Analysis

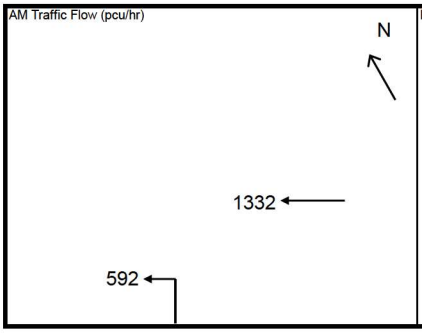
Junction: A. Sung Wong Toi Road / Kowloon City Road — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A1-4

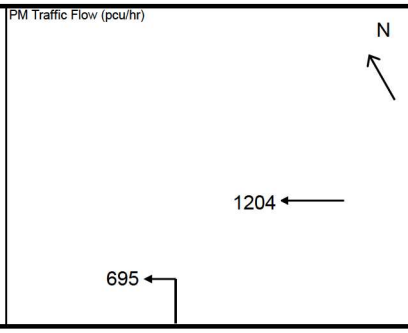
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT	A1	1	4.50	10.0		100	1796	290	0.162	0.162	100	1796	340	0.189	
	LT	A2	1	4.50	15.0		100	1877	302	0.161		100	1877	355	0.189	0.189
Sung Wong Toi Road	SA	B1	2	3.50				2105	689	0.327	0.327		2105	623	0.296	0.296
	SA	B2	2	3.50				1965	643	0.327			1965	581	0.296	
pedestrian phase		P1	2		min crossing time =		10	sec GM +		11	sec FGM =		21	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.489		0.485	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	70%		71%	

Note:

1	2	3	4	5
A1 ← A2	B1 ← B2 ← P1 ←·-·→			
AM G = I/G = 6	G = I/G = 6	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =
PM G = I/G = 6	G = I/G = 6	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =

Signal Junction Analysis

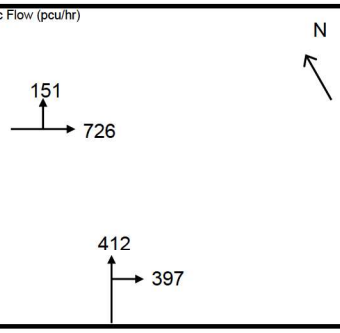
Junction: B. Kowloon City Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A2-1

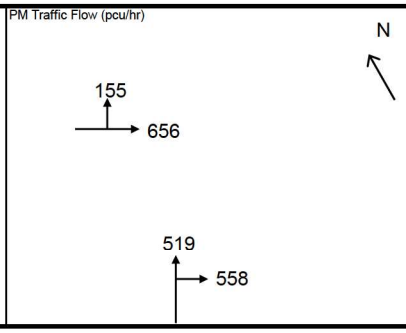
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	199	0.102			1945	250	0.129	
	SA	A2	1	3.30				2085	213	0.102			2085	269	0.129	
	RT	A3	1	3.30	5.0		100	1496	397	0.265	0.265	100	1496	558	0.373	0.373
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	375	0.173			2165	339	0.157	0.157
	SA	B3	2	4.10				2025	351	0.173	0.173		2025	317	0.157	
pedestrian phase		P3	2		min crossing time =		5	sec GM +		14		sec FGM =		19	sec	
		P4	1		min crossing time =		7	sec GM +		14		sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

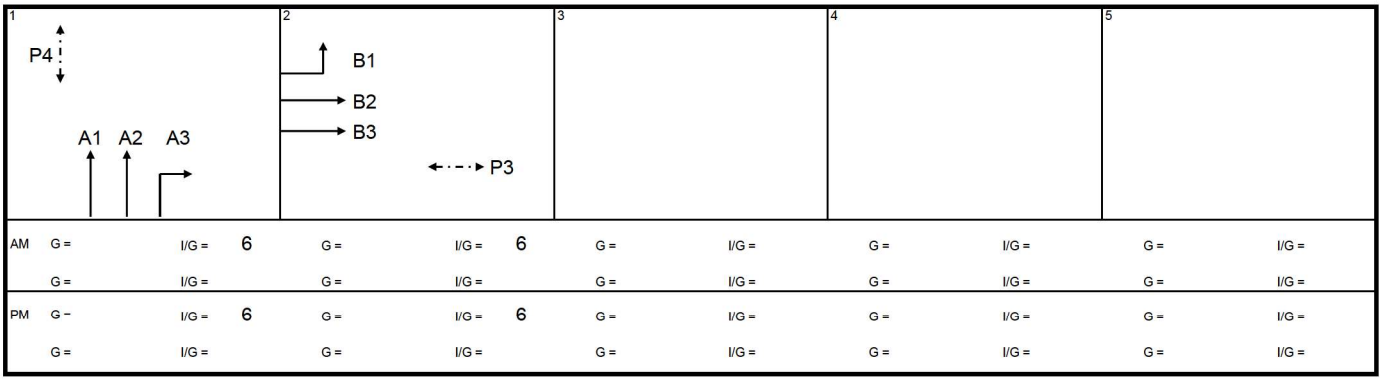


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.439		0.530	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	89%		57%	



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

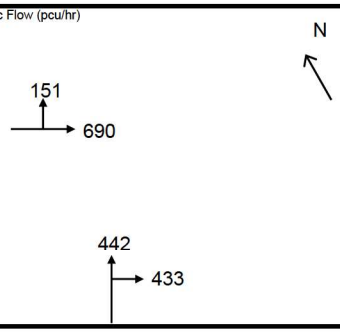
Junction: B. Kowloon City Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A2-2

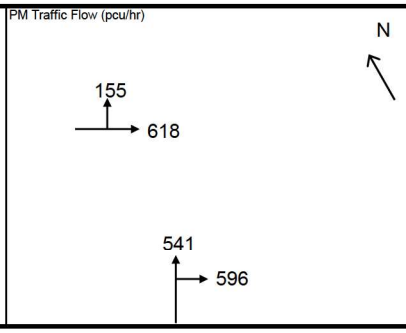
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	213	0.110			1945	261	0.134	
	SA	A2	1	3.30				2085	229	0.110			2085	280	0.134	
	RT	A3	1	3.30	5.0		100	1496	433	0.290	0.290	100	1496	596	0.398	0.398
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	357	0.165	0.165		2165	319	0.147	
	SA	B3	2	4.10				2025	333	0.165			2025	299	0.148	0.148
pedestrian phase		P3	2		min crossing time =			5	sec GM +		14	sec FGM =		19	sec	
		P4	1		min crossing time =			7	sec GM +		14	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

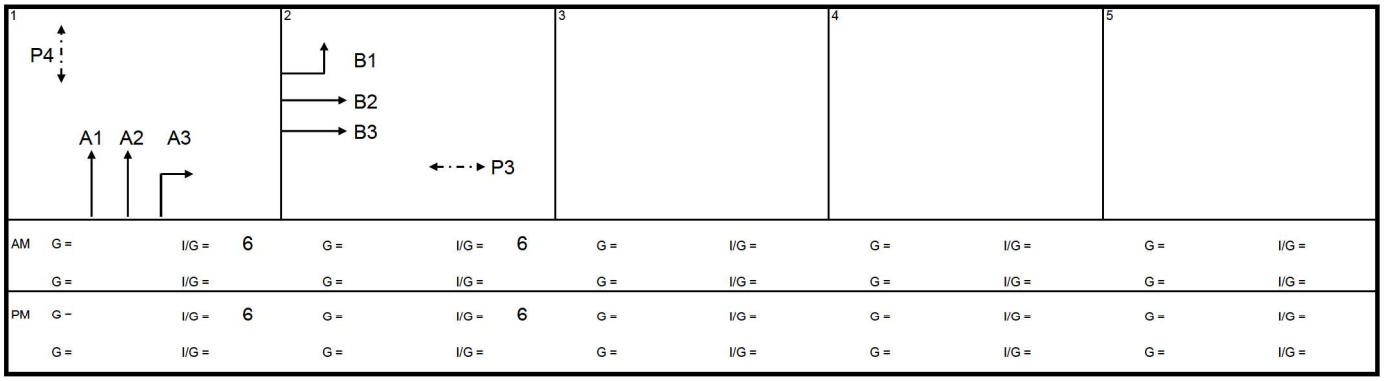


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.454		0.546	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	83%		52%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =		

Signal Junction Analysis

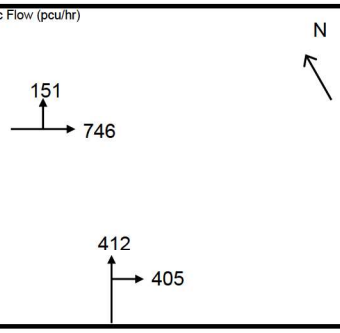
Junction: B. Kowloon City Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A2-3

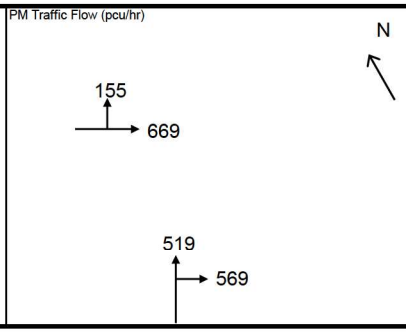
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	199	0.102			1945	250	0.129	
	SA	A2	1	3.30				2085	213	0.102			2085	269	0.129	
	RT	A3	1	3.30	5.0		100	1496	405	0.271	0.271	100	1496	569	0.380	0.380
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	385	0.178			2165	346	0.160	0.160
	SA	B3	2	4.10				2025	361	0.178	0.178		2025	323	0.160	
pedestrian phase		P3	2		min crossing time =		5	sec GM +			14	sec FGM =		19	sec	
		P4	1		min crossing time =		7	sec GM +			14	sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

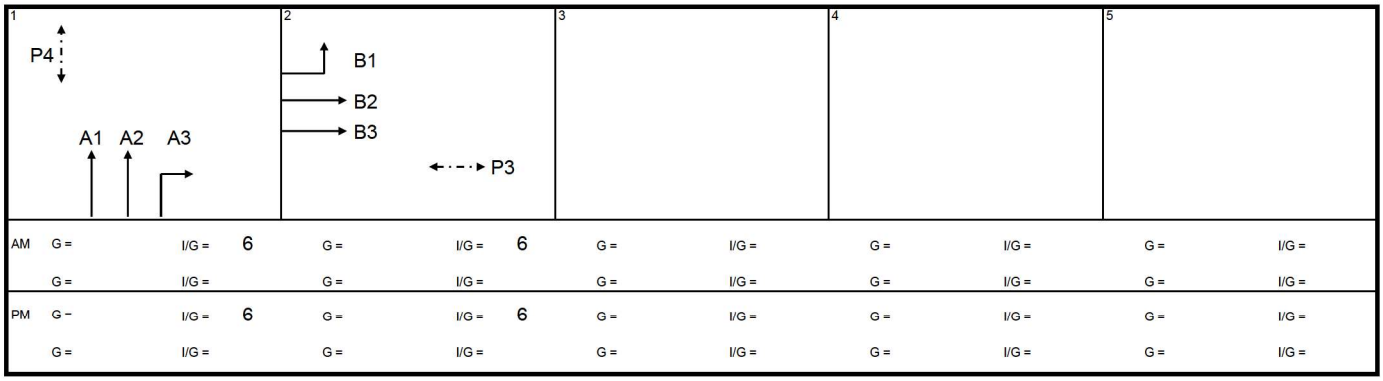


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.449		0.540	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	85%		54%	

Note:



AM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	
PM	G =	I/G = 6	G =	I/G = 6	G =	I/G =	G =	I/G =	G =	I/G =	
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	

Signal Junction Analysis

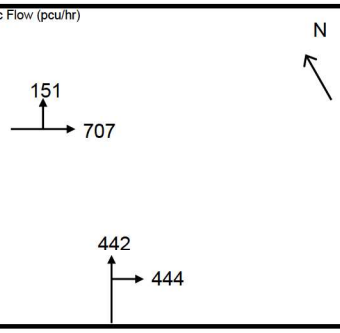
Junction: B. Kowloon City Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A2-4

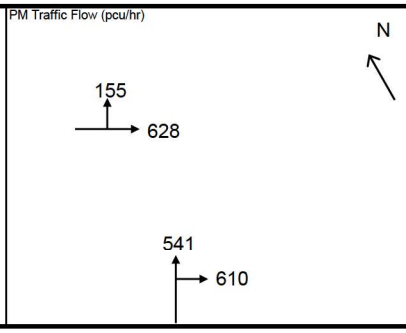
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kownloon City Road	SA	A1	1	3.30				1945	213	0.110			1945	261	0.134	
	SA	A2	1	3.30				2085	229	0.110			2085	280	0.134	
	RT	A3	1	3.30	5.0		100	1496	444	0.297	0.297	100	1496	610	0.408	0.408
Mok Cheong Street	LT	B1	2	4.10	10.0		100	1761	151	0.086		100	1761	155	0.088	
	SA	B2	2	4.10				2165	366	0.169	0.169		2165	325	0.150	0.150
	SA	B3	2	4.10				2025	341	0.169			2025	303	0.150	
pedestrian phase		P3	2		min crossing time =		5	sec GM +		14		sec FGM =		19	sec	
		P4	1		min crossing time =		7	sec GM +		14		sec FGM =		21	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.466		0.558	
L (s)	10		10	
C (s)	130		130	
practical y	0.831		0.831	
R.C. (%)	78%		49%	



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =		G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

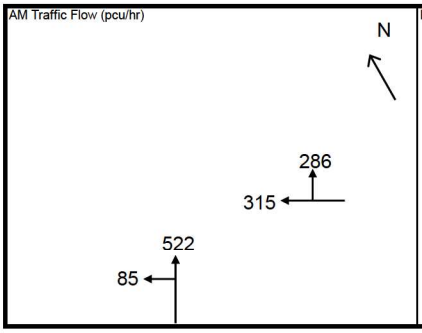
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A3-1

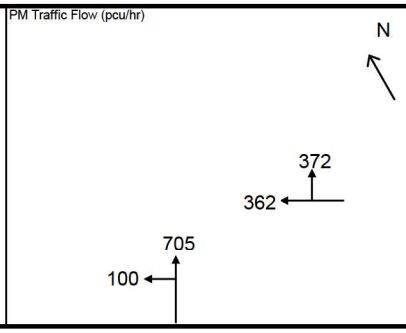
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		29	1785	291	0.163	0.163	26	1800	387	0.215	
	SA	A2	1	3.25				1940	316	0.163			1940	418	0.215	0.215
Ma Tau Kok Road	SA	B1	2	3.50				1965	152	0.077			1965	175	0.089	
	SA	B2	2	3.50				2105	163	0.077			2105	187	0.089	
	RT	B3	2	3.70	10.0		100	1726	286	0.166	0.166	100	1726	372	0.216	0.216
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

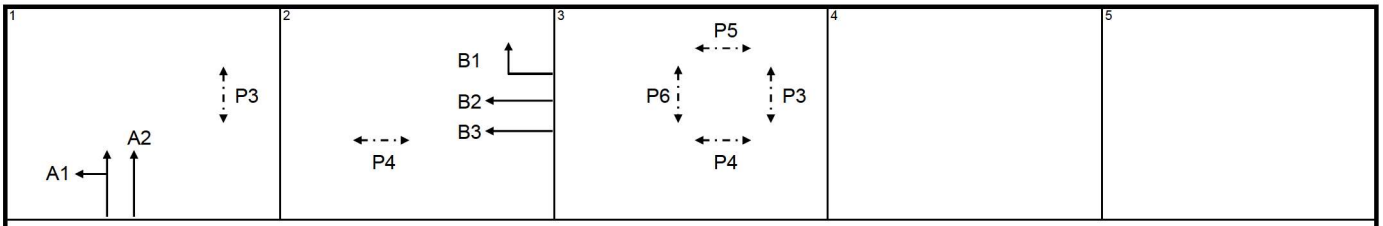


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.329		0.431	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	100%		53%	

Note:



AM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

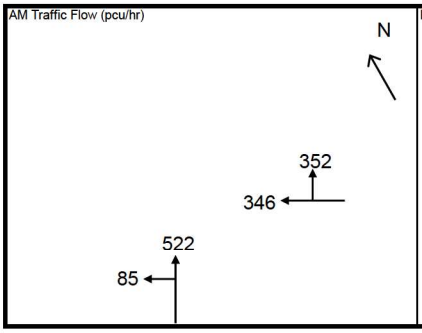
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A3-2

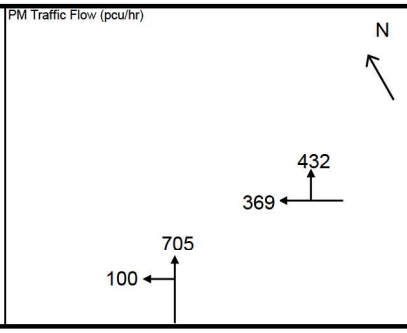
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		29	1785	291	0.163		26	1800	387	0.215	
	SA	A2	1	3.25				1940	317	0.163	0.163		1940	418	0.215	0.215
Ma Tau Kok Road	SA	B1	2	3.50				1965	167	0.085			1965	178	0.091	
	SA	B2	2	3.50				2105	179	0.085			2105	191	0.091	
	RT	B3	2	3.70	10.0		100	1726	352	0.204	0.204	100	1726	432	0.250	0.250
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

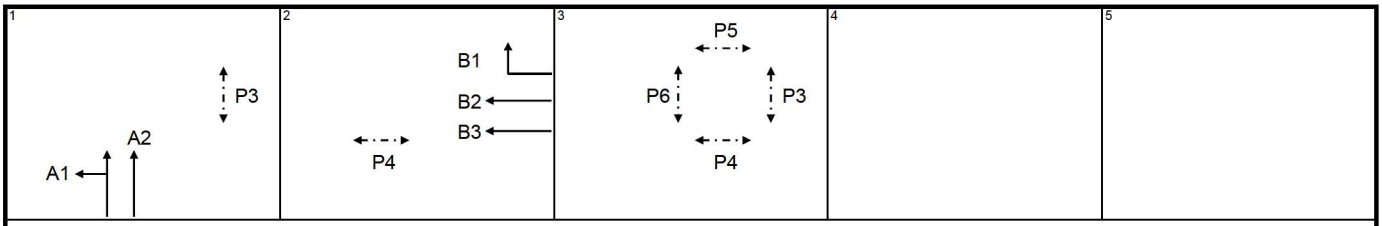


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.367		0.466	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	79%		41%	

Note:



AM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

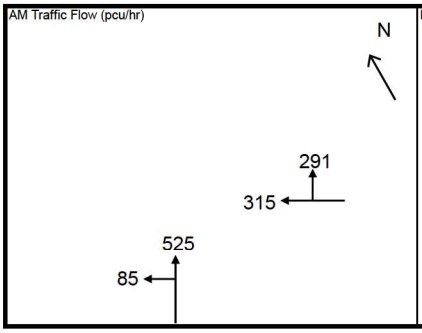
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A3-3

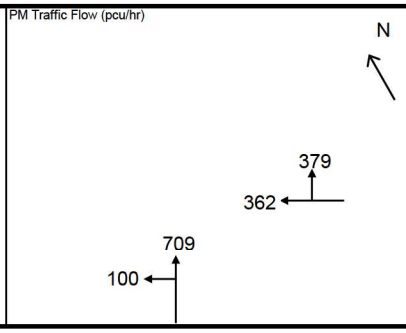
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		29	1785	292	0.164		26	1800	389	0.216	
	SA	A2	1	3.25				1940	318	0.164	0.164		1940	420	0.216	0.216
Ma Tau Kok Road	SA	B1	2	3.50				1965	152	0.077			1965	175	0.089	
	SA	B2	2	3.50				2105	163	0.077			2105	187	0.089	
	RT	B3	2	3.70	10.0		100	1726	291	0.169	0.169	100	1726	379	0.220	0.220
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

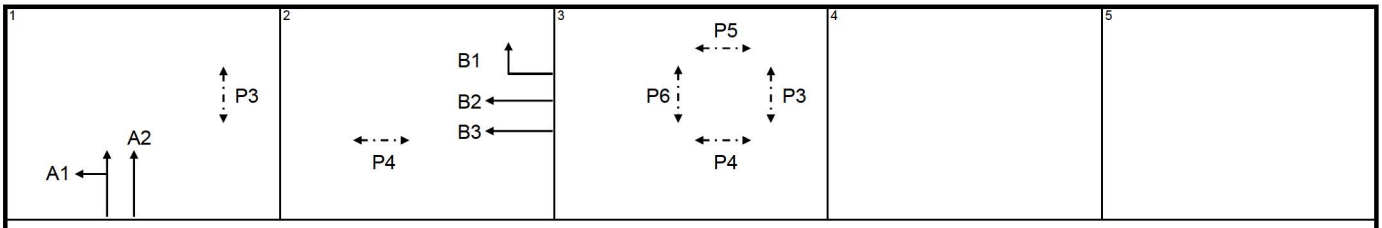


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.333		0.436	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	98%		51%	



AM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/G =	8	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

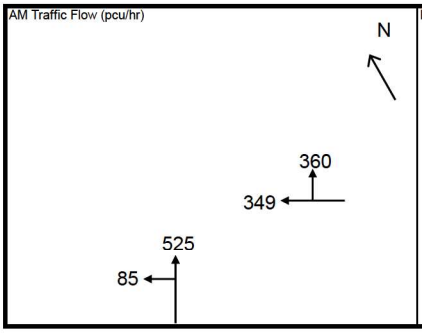
Junction: C. Kowloon City Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A3-4

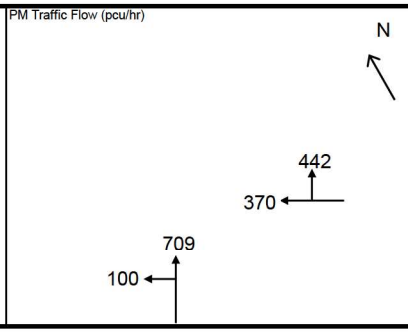
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Kowloon City Road	LT+SA	A1	1	3.25	5.0		29	1785	293	0.164	0.164	26	1800	389	0.216	
	SA	A2	1	3.25				1940	318	0.164			1940	420	0.216	0.216
Ma Tau Kok Road	SA	B1	2	3.50				1965	168	0.085			1965	179	0.091	
	SA	B2	2	3.50				2105	181	0.086			2105	191	0.091	
	RT	B3	2	3.70	10.0		100	1726	360	0.209	0.209	100	1726	442	0.256	0.256
pedestrian phase		P3	1,3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P4	2,3		min crossing time =		6	sec GM +		7	sec FGM =		13	sec		
		P5	3		min crossing time =		8	sec GM +		10	sec FGM =		18	sec		
		P6	3		min crossing time =		8	sec GM +		9	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

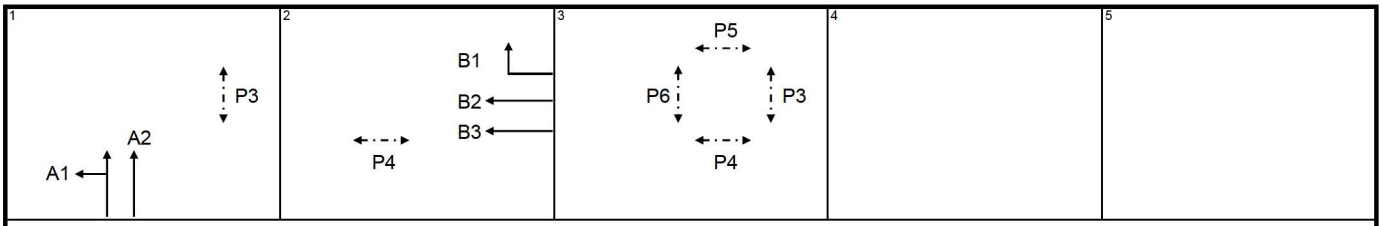


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.373		0.473	
L (s)	35		35	
C (s)	130		130	
practical y	0.658		0.658	
R.C. (%)	76%		39%	

Note:



		1		2		3		4		5	
AM	G =		I/G = 8	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =		I/G = 8	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =
	G =		I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

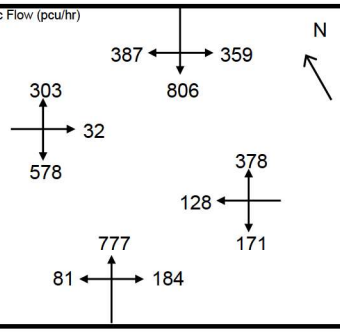
Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A4-1

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

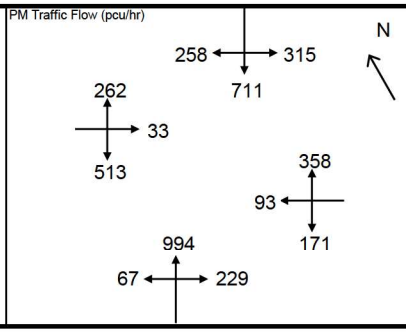
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		34	1822	240	0.132		22	1854	301	0.162	
	SA	A2	1	3.00				2055	271	0.132			2055	334	0.163	
	SA	A3	1	3.00				2055	271	0.132			2055	334	0.163	
	RT+SA	A4	1	3.00	25.0		71	1971	260	0.132	0.132	71	1971	321	0.163	0.163
San Shan Road	LT	B1	2	3.00	10.0		100	1665	277	0.166	0.166	100	1665	245	0.147	0.147
	LT+SA+RT	B2	2	3.00	16.0		90	1895	315	0.166		88	1898	279	0.147	
	RT	B3	2	3.00	24.0		100	1934	321	0.166		100	1934	284	0.147	
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		108	1648	333	0.202		107	1650	294	0.178	0.178
	SA	C2	3	3.00				2055	416	0.202	0.202		2055	366	0.178	
	SA	C3	3	3.00				2055	416	0.202			2055	366	0.178	
	RT	C4	3	3.00	30.0		100	1957	387	0.198		100	1957	258	0.132	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	134	0.080		100	1665	119	0.071	
	LT+SA	D2	4	3.40	16.0		22	2053	165	0.080		36	2027	145	0.072	
	RT	D3	4	3.40	24.0		100	1972	190	0.096		100	1972	180	0.091	0.091
	RT	D4	4	3.40	20.0		100	1949	188	0.096	0.096	100	1949	178	0.091	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



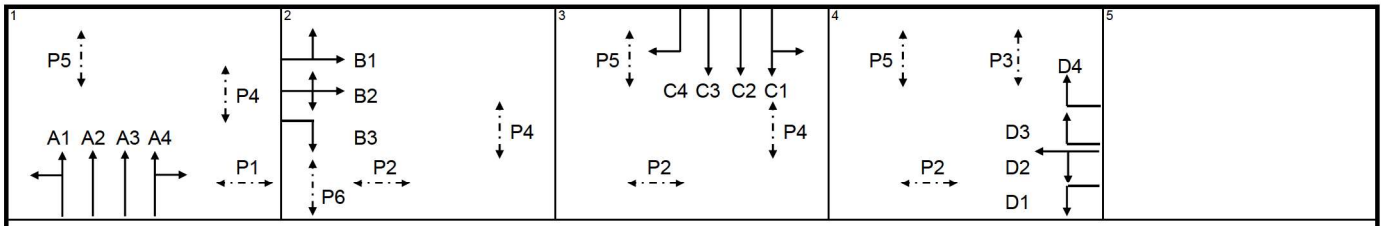
$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.597	0.501	0.579	0.488
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	22%	27%	25%	30%

Note:

with possible improvement scheme for San Ma Tau Street and San Shan Road



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

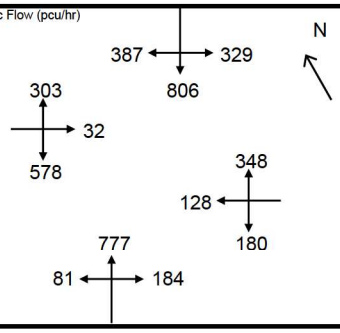
Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A4-2

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

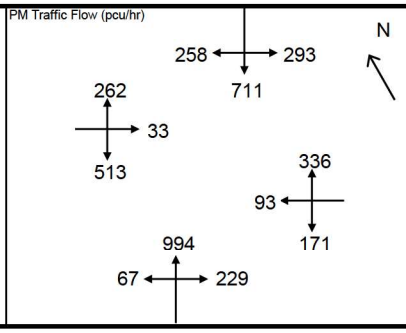
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		34	1822	240	0.132		22	1854	301	0.162	
	SA	A2	1	3.00				2055	271	0.132	0.132		2055	334	0.163	
	SA	A3	1	3.00				2055	271	0.132			2055	334	0.163	
	RT+SA	A4	1	3.00	25.0		71	1971	260	0.132		71	1971	321	0.163	0.163
San Shan Road	LT	B1	2	3.00	10.0		100	1665	277	0.166	0.166	100	1665	245	0.147	0.147
	LT+SA+RT	B2	2	3.00	16.0		90	1895	315	0.166		88	1898	279	0.147	
	RT	B3	2	3.00	24.0		100	1934	321	0.166		100	1934	284	0.147	
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		101	1663	327	0.197		101	1663	289	0.174	
	SA	C2	3	3.00				2055	404	0.197			2055	358	0.174	0.174
	SA	C3	3	3.00				2055	404	0.196			2055	357	0.174	
	RT	C4	3	3.00	30.0		100	1957	387	0.198	0.198	100	1957	258	0.132	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	138	0.083		100	1665	119	0.071	
	LT+SA	D2	4	3.40	16.0		25	2047	170	0.083		36	2027	145	0.072	
	RT	D3	4	3.40	24.0		100	1972	175	0.089		100	1972	169	0.086	0.086
	RT	D4	4	3.40	20.0		100	1949	173	0.089	0.089	100	1949	167	0.085	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



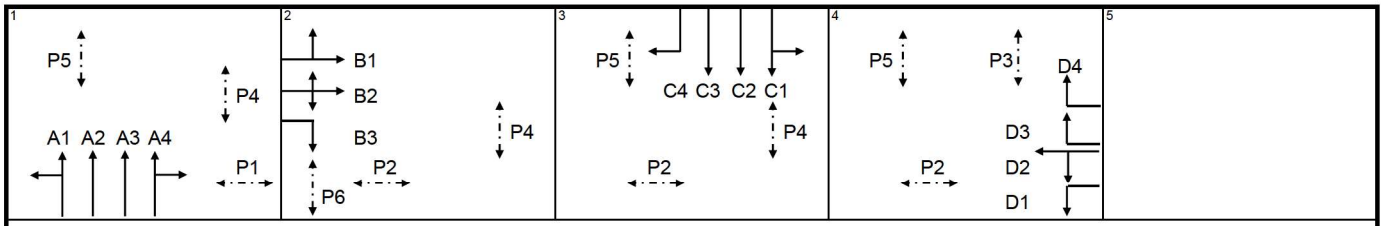
$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.585	0.496	0.570	0.484
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	24%	28%	28%	32%

Note:

with possible improvement scheme for San Ma Tau Street and San Shan Road



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street — Job Number: J7167

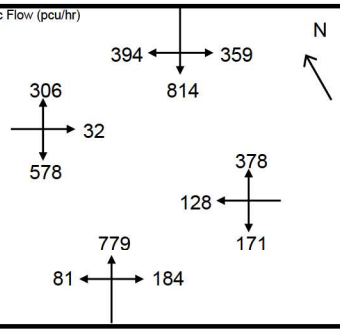
Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A4-3

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

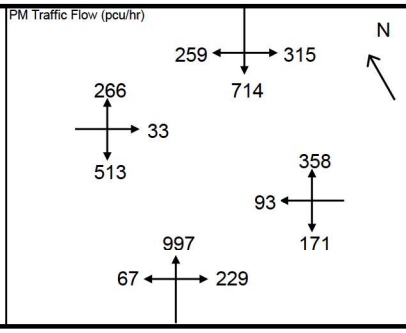
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		34	1822	241	0.132		22	1854	302	0.163	
	SA	A2	1	3.00				2055	271	0.132			2055	335	0.163	0.163
	SA	A3	1	3.00				2055	271	0.132			2055	335	0.163	
	RT+SA	A4	1	3.00	25.0		70	1972	261	0.132	0.132	71	1971	321	0.163	
San Shan Road	LT	B1	2	3.00	10.0		100	1665	278	0.167	0.167	100	1665	246	0.148	
	LT+SA+RT	B2	2	3.00	16.0		90	1895	316	0.167		88	1898	280	0.147	
	RT	B3	2	3.00	24.0		100	1934	322	0.166		100	1934	286	0.148	0.148
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		107	1650	336	0.204		107	1650	295	0.179	0.179
	SA	C2	3	3.00				2055	418	0.203			2055	367	0.179	
	SA	C3	3	3.00				2055	419	0.204	0.204		2055	367	0.179	
	RT	C4	3	3.00	30.0		100	1957	394	0.201		100	1957	259	0.132	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	134	0.080		100	1665	119	0.071	
	LT+SA	D2	4	3.40	16.0		22	2053	165	0.080		36	2027	145	0.072	
	RT	D3	4	3.40	24.0		100	1972	190	0.096		100	1972	180	0.091	0.091
	RT	D4	4	3.40	20.0		100	1949	188	0.096	0.096	100	1949	178	0.091	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



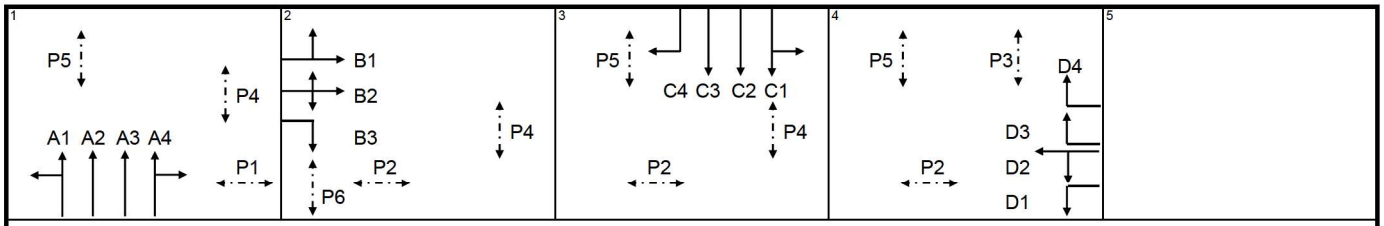
$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.600	0.503	0.581	0.490
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	21%	27%	25%	30%

Note:

with possible improvement scheme for San Ma Tau Street and San Shan Road



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

Junction: D. To Kwa Wan Road / San Shan Road / San Ma Tau Street Job Number: J7167

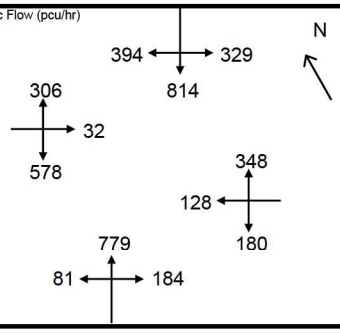
Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) R2 / P.A4-4

Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

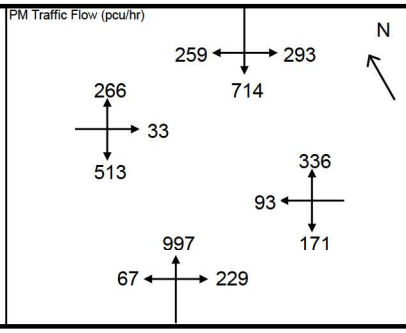
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT+SA	A1	1	3.00	10.0		34	1822	241	0.132	0.132	22	1854	302	0.163	
	SA	A2	1	3.00				2055	271	0.132			2055	335	0.163	0.163
	SA	A3	1	3.00				2055	271	0.132			2055	335	0.163	
	RT+SA	A4	1	3.00	25.0		71	1971	261	0.132		71	1971	321	0.163	
San Shan Road	LT	B1	2	3.00	10.0		100	1665	278	0.167	0.167	100	1665	246	0.148	0.148
	LT+SA+RT	B2	2	3.00	16.0		90	1895	316	0.167		88	1898	280	0.147	
	RT	B3	2	3.00	24.0		100	1934	322	0.167		100	1934	286	0.148	
To Kwa Wan Road SB	LT+SA	C1	3	3.00	10.0		100	1665	329	0.198		101	1663	290	0.174	
	SA	C2	3	3.00				2055	407	0.198			2055	359	0.175	0.175
	SA	C3	3	3.00				2055	407	0.198			2055	358	0.174	
	RT	C4	3	3.00	30.0		100	1957	394	0.201	0.201	100	1957	259	0.132	
San Ma Tau Street	LT	D1	4	3.00	10.0		100	1665	138	0.083		100	1665	119	0.071	
	LT+SA	D2	4	3.40	16.0		25	2047	170	0.083		36	2027	145	0.072	
	RT	D3	4	3.40	24.0		100	1972	175	0.089		100	1972	169	0.086	0.086
	RT	D4	4	3.40	20.0		100	1949	173	0.089	0.089	100	1949	167	0.085	

pedestrian phase	P1	1		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P2	2, 3, 4		min crossing time =	8	sec GM +	15	sec FGM =	23	sec
	P3	4		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P4	1, 2, 3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P5	1, 3, 4		min crossing time =	5	sec GM +	9	sec FGM =	14	sec
	P6	2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



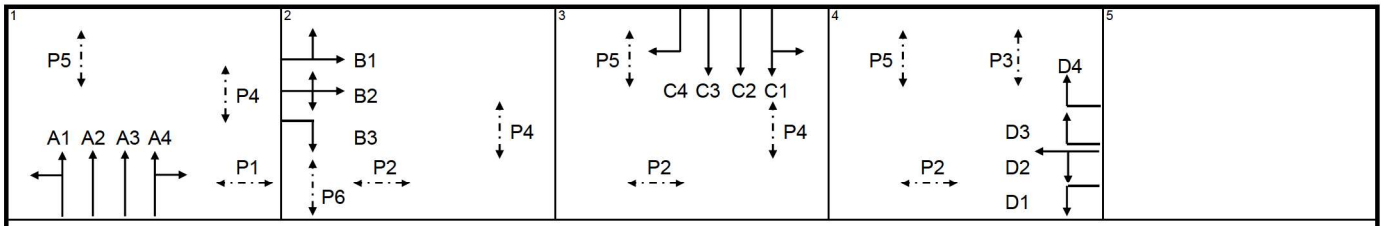
S=1940+100(W–3.25) S=2080+100(W–3.25)

S_M=S÷(1+1.5f/r) S_M=(S–230)÷(1+1.5f/r)

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.589	0.500	0.571	0.485
L (s)	25	38	25	38
C (s)	130	130	130	130
practical y	0.727	0.637	0.727	0.637
R.C. (%)	23%	27%	27%	31%

Note:

with possible improvement scheme for San Ma Tau Street and San Shan Road



AM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	
PM	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	I/G =	8	G =	I/G =		
	G =	I/G =	6	G =	I/G =	9	G =	I/G =	6	G =	12	I/G =	8	G =	I/G =	

Signal Junction Analysis

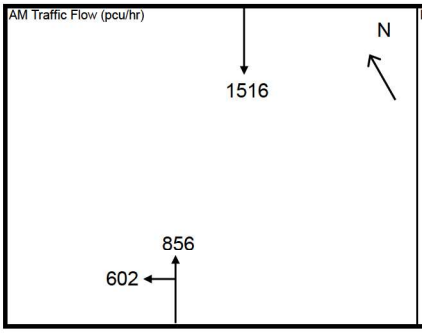
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A5-1

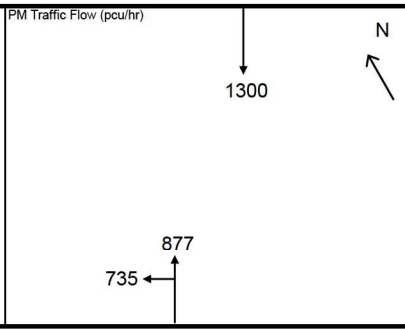
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT	C1	1	3.80	13.0		100	1789	437	0.244		100	1789	486	0.272	
	LT+SA	C2	1	3.65	15.0		33	2052	502	0.245		45	2029	551	0.272	
	SA	C3	1	3.65				2120	519	0.245			2120	575	0.271	
To Kwa Wan Road SB	SA	D1	1	3.80				1995	732	0.367			1996	628	0.315	0.315
	SA	D2	1	3.80				2135	784	0.367	0.367		2136	672	0.315	
pedestrian phase		P6	2		min crossing time =		5	sec GM +		8		sec FGM =	13	sec		
		P7	2		min crossing time =		8	sec GM +		8		sec FGM =	16	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

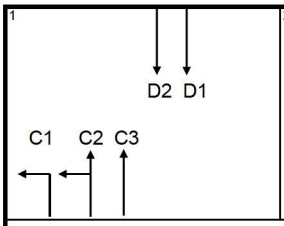
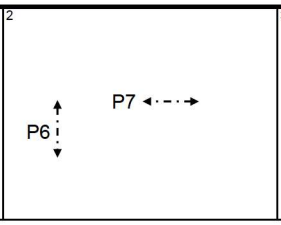


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.367		0.315	
L (s)	23		23	
C (s)	130		130	
practical y	0.741		0.741	
R.C. (%)	102%		135%	

Note:

1	2	3	4	5
				
AM G = I/G = 5	G = 16 I/G = 3	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =
AM G = I/G = 5	G = 16 I/G = 3	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =

Signal Junction Analysis

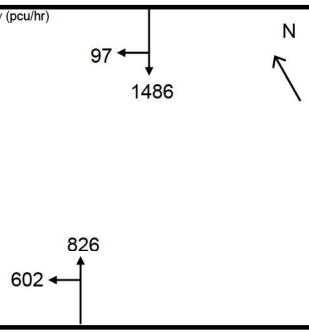
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A5-2

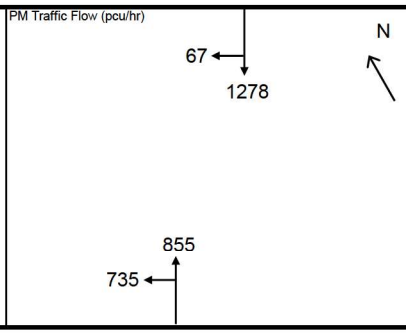
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT	C1	1	3.80	13.0		100	1789	429	0.240		100	1789	479	0.268	
	LT+SA	C2	1	3.65	15.0		35	2048	491	0.240		47	2025	543	0.268	
	SA	C3	1	3.65				2120	508	0.240			2120	568	0.268	
To Kwa Wan Road SB	SA	D1	1	3.80				1995	718	0.360	0.360		1996	617	0.309	
	SA	D2	1	3.80				2135	768	0.359			2136	661	0.309	0.309
	RT	E1	2	3.80	15.0		100	1941	97	0.050	0.050	100	1941	67	0.035	0.035
pedestrian phase		P5	1		min crossing time =		5	sec GM +	5	sec FGM =		10	sec			
		P6	2		min crossing time =		5	sec GM +	10	sec FGM =		15	sec			
		P7	2		min crossing time =		12	sec GM +	10	sec FGM =		22	sec			

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

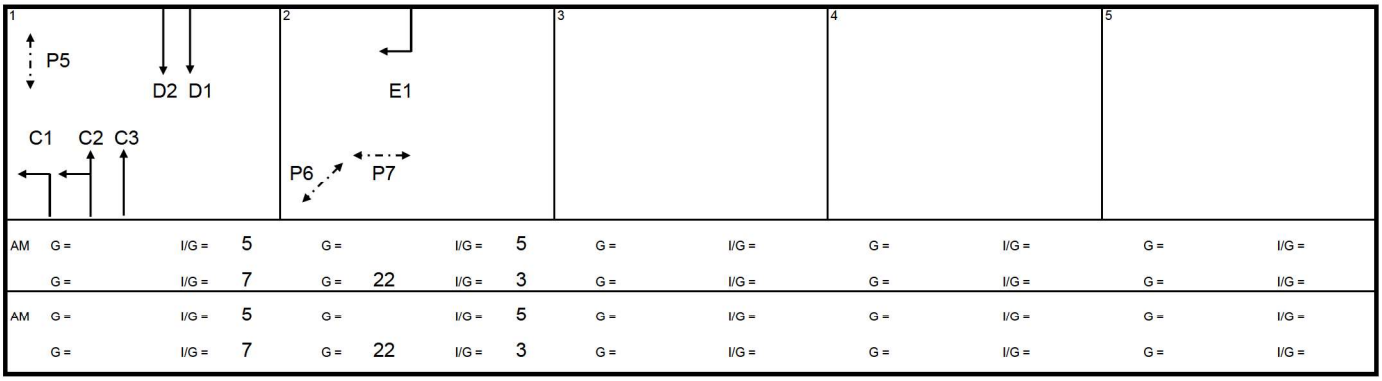


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.410	0.360	0.344	0.309
L (s)	8	31	8	31
C (s)	130	130	130	130
practical y	0.845	0.685	0.845	0.685
R.C. (%)	106%	90%	146%	122%



AM	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =	7	G =	22	I/G =	3	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
AM	G =	I/G =	5	G =		I/G =	5	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =	7	G =	22	I/G =	3	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

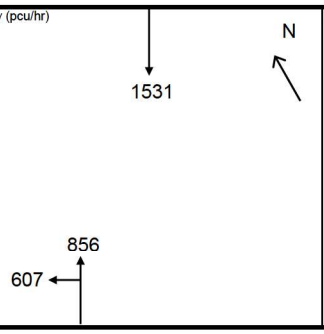
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A5-3

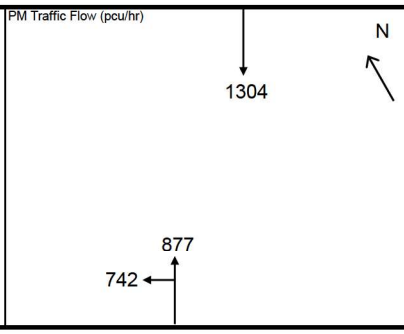
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT	C1	1	3.80	13.0		100	1789	439	0.245		100	1789	488	0.273	
	LT+SA	C2	1	3.65	15.0		33	2052	504	0.246		46	2027	553	0.273	
	SA	C3	1	3.65				2120	520	0.245			2120	578	0.273	
To Kwa Wan Road SB	SA	D1	1	3.80				1995	740	0.371	0.371		1996	630	0.316	0.316
	SA	D2	1	3.80				2135	791	0.370			2136	674	0.316	
pedestrian phase		P6	2		min crossing time =		5	sec GM +		8	sec FGM =		13	sec		
		P7	2		min crossing time =		8	sec GM +		8	sec FGM =		16	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

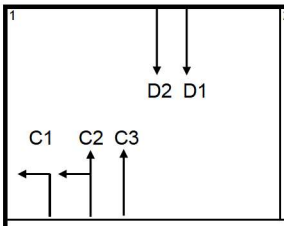
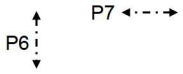


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.371		0.316	
L (s)	23		23	
C (s)	130		130	
practical y	0.741		0.741	
R.C. (%)	100%		135%	

Note:

1	2	3	4	5
				
AM G = I/G = 5	G = 16 I/G = 3	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =
AM G = I/G = 5	G = 16 I/G = 3	G = I/G =	G = I/G =	G = I/G =
G = I/G =	G = I/G =	G = I/G =	G = I/G =	G = I/G =

Signal Junction Analysis

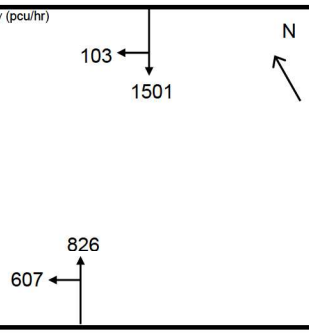
Junction: E. To Kwa Wan Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A5-4

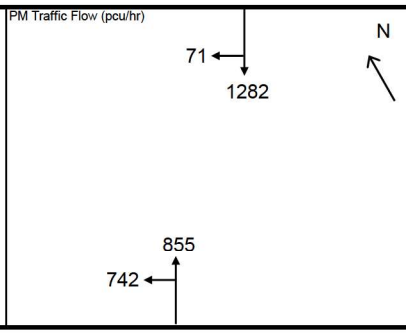
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	LT	C1	1	3.80	13.0		100	1789	430	0.240		100	1789	482	0.269	
	LT+SA	C2	1	3.65	15.0		36	2046	492	0.240		48	2023	545	0.269	
	SA	C3	1	3.65				2120	511	0.241			2120	570	0.269	
To Kwa Wan Road SB	SA	D1	1	3.80				1995	725	0.363	0.363		1996	619	0.310	
	SA	D2	1	3.80				2135	776	0.363			2136	663	0.310	0.310
	RT	E1	2	3.80	15.0		100	1941	103	0.053	0.053	100	1941	71	0.037	0.037
pedestrian phase		P5	1		min crossing time =		5	sec GM +	5	sec FGM =		10	sec			
		P6	2		min crossing time =		5	sec GM +	10	sec FGM =		15	sec			
		P7	2		min crossing time =		12	sec GM +	10	sec FGM =		22	sec			

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)



$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.416	0.363	0.347	0.310
L (s)	8	31	8	31
C (s)	130	130	130	130
practical y	0.845	0.685	0.845	0.685
R.C. (%)	103%	89%	144%	121%



AM	G =		I/G =	5	G =		I/G =	5	G =		I/G =	G =		I/G =	G =		I/G =
	G =		I/G =	7	G =	22	I/G =	3	G =		I/G =	G =		I/G =	G =		I/G =
AM	G =		I/G =	5	G =		I/G =	5	G =		I/G =	G =		I/G =	G =		I/G =
	G =		I/G =	7	G =	22	I/G =	3	G =		I/G =	G =		I/G =	G =		I/G =

Signal Junction Analysis

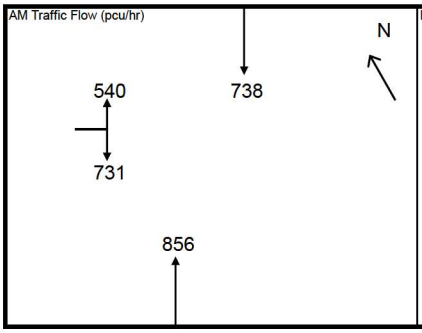
Junction: F. To Kwa Wan Road / Mok Cheong Street Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) R2 / P.A6-1

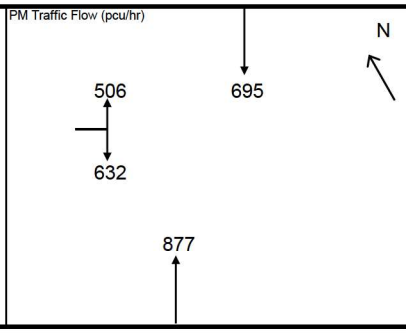
Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
							Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
To Kwa Wan Road NB	SA	A1	1	2.75				1890	413	0.219	0.219		1890	423	0.224	0.224
	SA	A2	1	2.75				2030	443	0.218			2030	454	0.224	
Mok Cheong Street	LT+RT	B1	2	5.50	15.0		100	1968	654	0.332	0.332	100	1968	585	0.297	
	RT	B2	2	4.30	15.0		100	1859	617	0.332		100	1859	553	0.297	0.297
To Kwa Wan Road SB	SA	A3	1	3.50				1965	361	0.184			1965	340	0.173	
	SA	A4	1	3.00				2055	377	0.183			2055	355	0.173	
pedestrian phase		P3	3		min crossing time =		6	sec GM +		12	sec FGM =		18	sec		
		P4	1,3		min crossing time =		7	sec GM +		12	sec FGM =		19	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

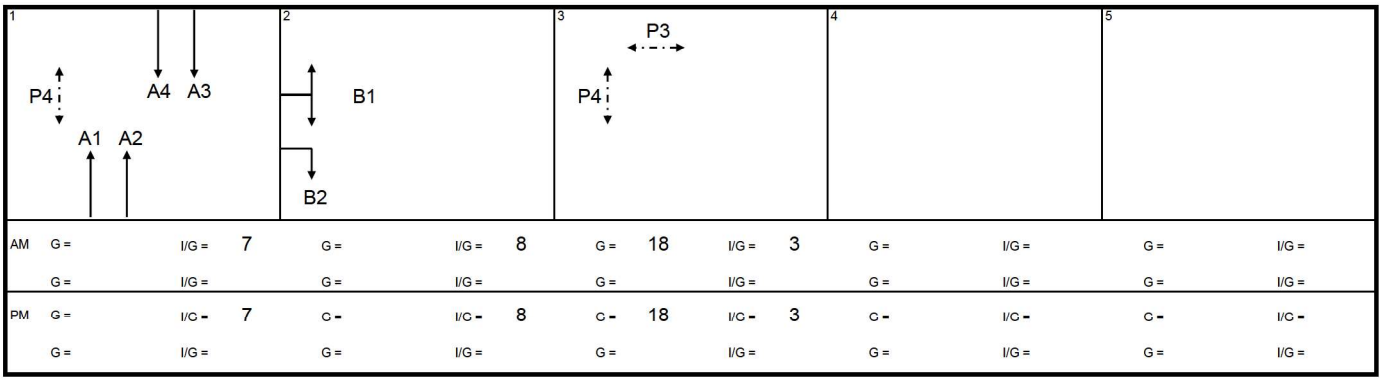


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.551		0.521	
L (s)	34		34	
C (s)	130		130	
practical y	0.665		0.665	
R.C. (%)	21%		28%	

Note:



AM	G =	I/G =	7	G =	I/G =	8	G =	18	I/G =	3	G =	I/G =		G =	I/G =	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	
PM	G =	I/C -	7	C -	I/C -	8	C -	18	I/C -	3	C -	I/C -		C -	I/C -	
	G =	I/G =		G =	I/G =		G =		I/G =		G =	I/G =		G =	I/G =	

Signal Junction Analysis

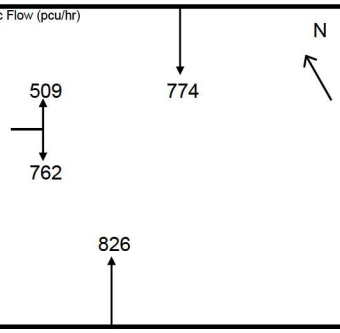
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A6-2

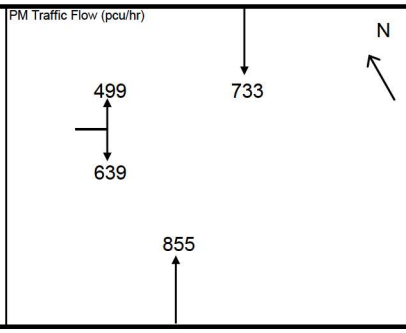
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	SA	A1	1	3.70				1985	263	0.132			1985	272	0.137	
	SA	A2	1	3.70				2125	282	0.133	0.133		2125	292	0.137	0.137
	SA	A3	1	3.70				2125	281	0.132			2125	291	0.137	
Mok Cheong Street EB	LT+RT	B1	3	5.50	15.0		100	1968	625	0.318	0.318		2165	566	0.261	
	RT	B2	3	4.30	20.0		100	2033	645	0.317			2185	572	0.262	0.262
Mok Cheong Street SB	SA	C1	1, 2	3.70				1985	246	0.124			1985	233	0.117	
	SA	C2	1, 2	3.70				2125	264	0.124			2125	250	0.118	
	SA	C3	1, 2	3.70				2125	264	0.124			2125	250	0.118	
pedestrian phase		P3	1, 2		min crossing time =		7	sec GM +		12	sec FGM =		19	sec		
		P4	2		min crossing time =		5	sec GM +		12	sec FGM =		17	sec		
		P5	3		min crossing time =		5	sec GM +		10	sec FGM =		15	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

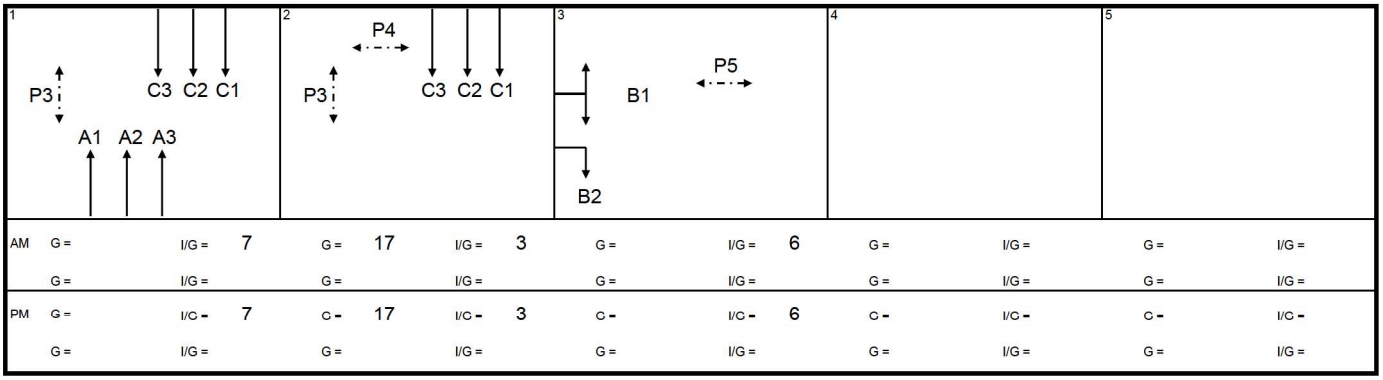


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.450		0.399	
L (s)	31		31	
C (s)	130		130	
practical y	0.685		0.685	
R.C. (%)	52%		72%	

Note:



		1	2	3	4	5
AM	G =		17			
	I/G =	7	3	6		
	G =					
	I/G =					
PM	G =		17			
	I/G =	7	3	6		
	G =					
	I/G =					

Signal Junction Analysis

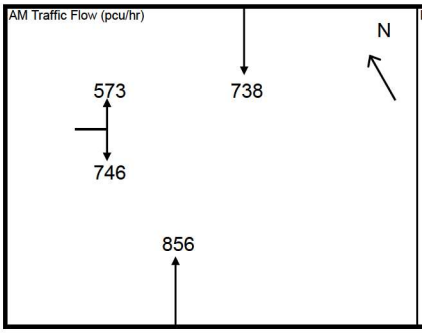
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A6-3

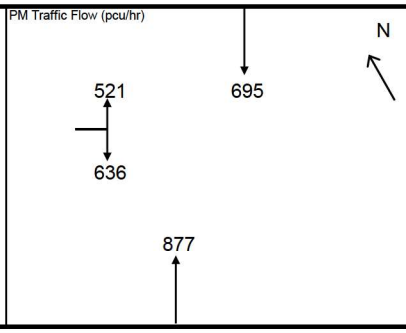
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
							Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
To Kwa Wan Road NB	SA	A1	1	2.75				1890	413	0.219	0.219		1890	423	0.224	0.224
	SA	A2	1	2.75				2030	443	0.218			2030	454	0.224	
Mok Cheong Street	LT+RT	B1	2	5.50	15.0		100	1968	678	0.344		100	1968	595	0.302	0.302
	RT	B2	2	4.30	15.0		100	1859	641	0.345	0.345	100	1859	562	0.302	
To Kwa Wan Road SB	SA	A3	1	3.50				1965	361	0.184			1965	340	0.173	
	SA	A4	1	3.00				2055	377	0.183			2055	355	0.173	
pedestrian phase		P3	3		min crossing time =		6	sec GM +		12	sec FGM =		18	sec		
		P4	1,3		min crossing time =		7	sec GM +		12	sec FGM =		19	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

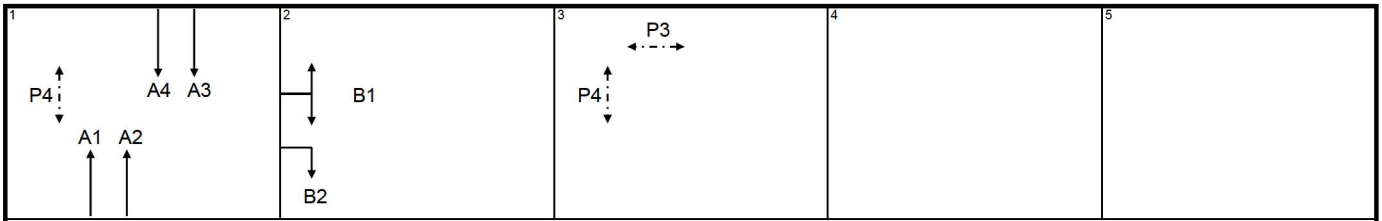


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.563		0.526	
L (s)	34		34	
C (s)	130		130	
practical y	0.665		0.665	
R.C. (%)	18%		26%	

Note:



AM	G =	I/G = 7	G =	I/G = 8	G = 18	I/G = 3	G =	I/G =	G =	I/G =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						
PM	G =	I/C = 7	C =	I/C = 8	C = 18	I/C = 3	C =	I/C =	C =	I/C =						
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =						

Signal Junction Analysis

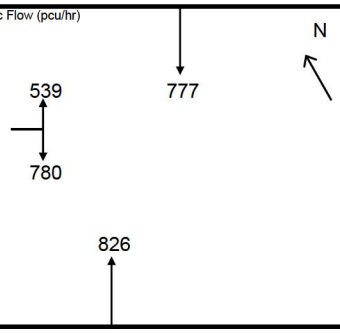
Junction: F. To Kwa Wan Road / Mok Cheong Street — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A6-4

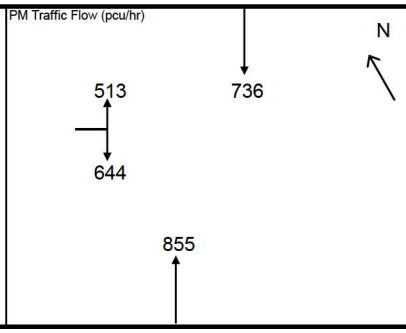
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road NB	SA	A1	1	3.70				1985	263	0.132			1985	272	0.137	
	SA	A2	1	3.70				2125	282	0.133	0.133		2125	292	0.137	0.137
	SA	A3	1	3.70				2125	281	0.132			2125	291	0.137	
Mok Cheong Street EB	LT+RT	B1	3	5.50	15.0		100	1968	649	0.330	0.330		2165	576	0.266	0.266
	RT	B2	3	4.30	20.0		100	2033	669	0.329			2185	581	0.266	
Mok Cheong Street SB	SA	C1	1, 2	3.70				1985	247	0.124			1985	234	0.118	
	SA	C2	1, 2	3.70				2125	265	0.125			2125	251	0.118	
	SA	C3	1, 2	3.70				2125	265	0.125			2125	251	0.118	
pedestrian phase		P3	1, 2		min crossing time =		7	sec GM +		12	sec FGM =		19	sec		
		P4	2		min crossing time =		5	sec GM +		12	sec FGM =		17	sec		
		P5	3		min crossing time =		5	sec GM +		10	sec FGM =		15	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

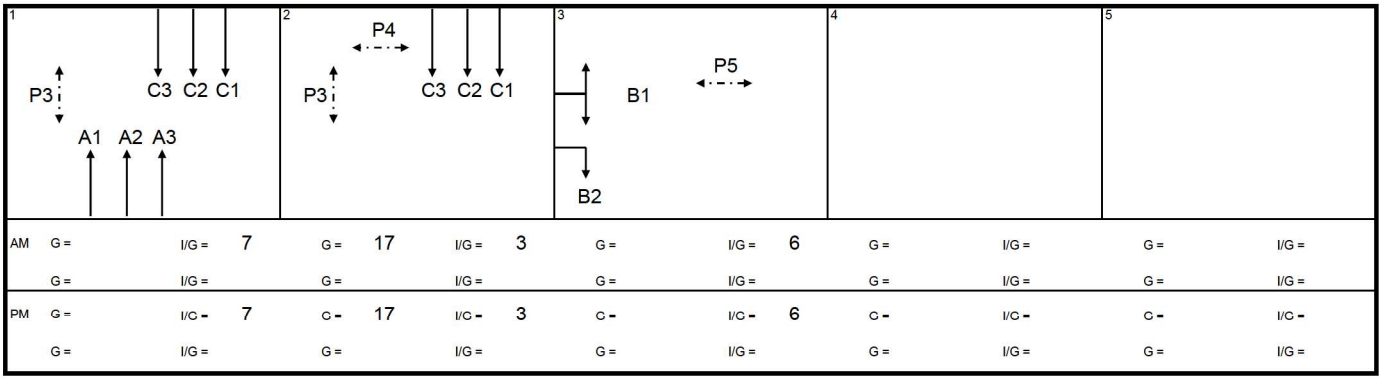


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.462		0.403	
L (s)	31		31	
C (s)	130		130	
practical y	0.685		0.685	
R.C. (%)	48%		70%	

Note:



		1	2	3	4	5
AM	G =		17			
	I/G =	7	3	6		
	G =					
	I/G =					
PM	G =		17			
	I/G =	7	3	6		
	G =					
	I/G =					

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road Job Number: J7167

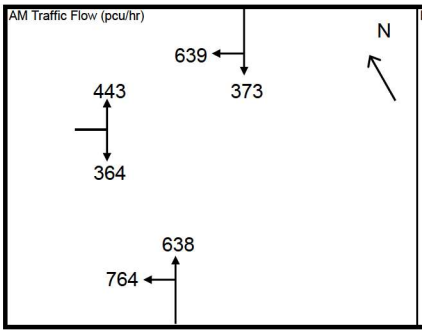
Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) R2 / P.A7-1

Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

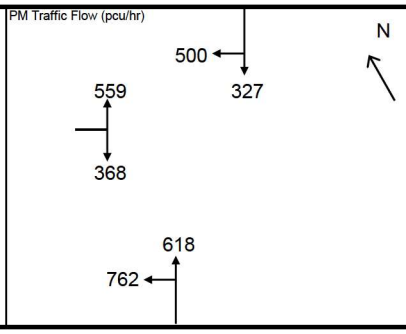
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT+SA	A1	3	4.00	18.0		100	1860	764	0.411	0.411	100	1860	762	0.410	0.410
	SA	A2	3	4.00				2155	638	0.296			2155	618	0.287	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	247	0.139		100	1781	284	0.159	0.159
	LT+RT	B2	2	3.80	25.0		100	2014	279	0.139		100	2014	321	0.159	
	RT	B3	2	3.80	28.0		100	2026	281	0.139	0.139	100	2026	322	0.159	
Shing Kai Road	SA	C1	1	3.50				1965	333	0.169			1965	272	0.138	0.138
	RT+SA	C2	1	3.50	25.0		88	1999	339	0.170		80	2009	278	0.138	
	RT	C3	1	3.50	30.0		100	2005	340	0.170	0.170	100	2005	277	0.138	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec	
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec	
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec	
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

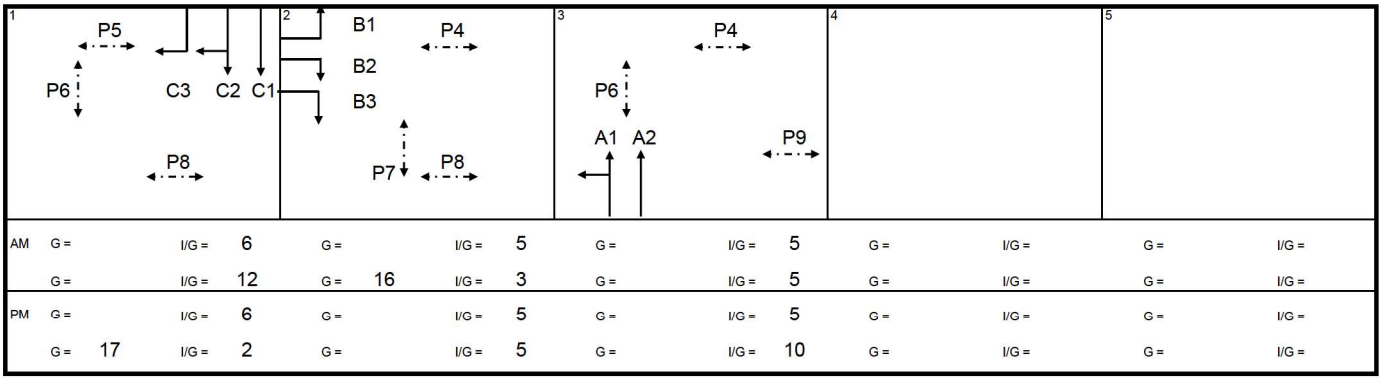


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.719	0.580	0.708	0.569
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	9%	2%	11%	8%



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =		G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =		G =		I/G =	

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road — Job Number: J7167

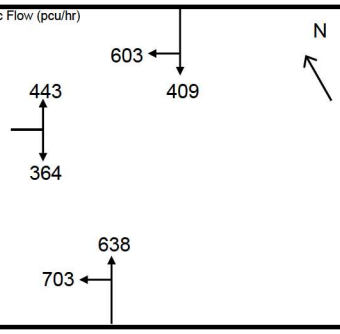
Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A7-2

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

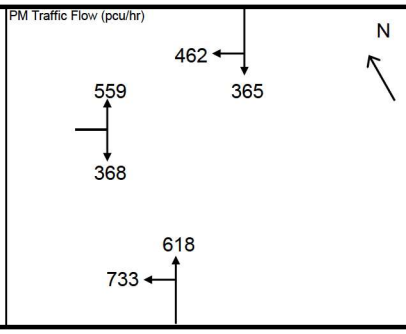
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT	A1	3	3.70	15.0		100	1805	406	0.225	0.225	100	1805	409	0.227	
	LT+SA	A2	3	3.80	18.0		65	2025	455	0.225		71	2016	457	0.227	
	SA	A3	3	3.80				2135	480	0.225			2135	484	0.227	0.227
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	249	0.140	0.140	100	1781	286	0.161	0.161
	LT+RT	B2	2	3.80	25.0		100	2014	281	0.140		100	2014	323	0.160	
	RT	B3	2	3.80	20.0		100	1986	277	0.140		100	1986	319	0.160	
Shing Kai Road	SA	C1	1	4.30				2045	339	0.166			2045	276	0.135	
	RT+SA	C2	1	3.80	25.0		79	2038	338	0.166	0.166	68	2051	277	0.135	0.135
	RT	C3	1	3.80	30.0		100	2033	336	0.165		100	2033	273	0.134	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec	
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec	
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec	
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

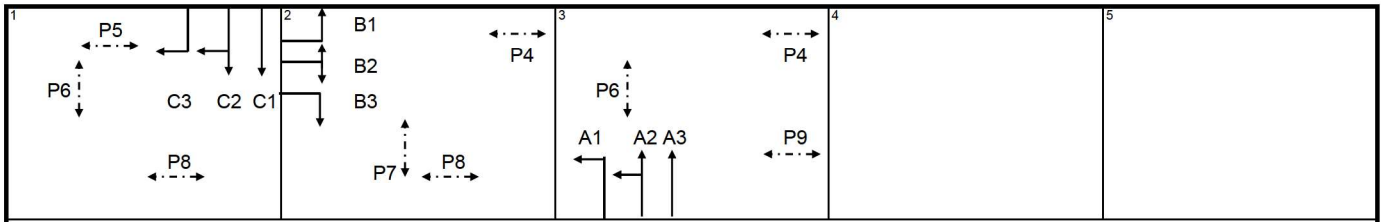


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.531	0.391	0.522	0.387
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	48%	52%	50%	58%

Note:



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =	

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road — Job Number: J7167

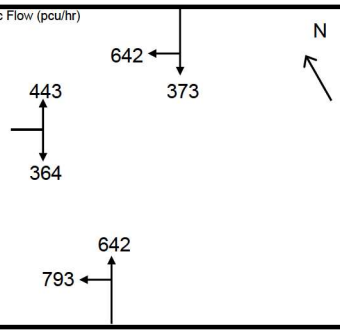
Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A7-3

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

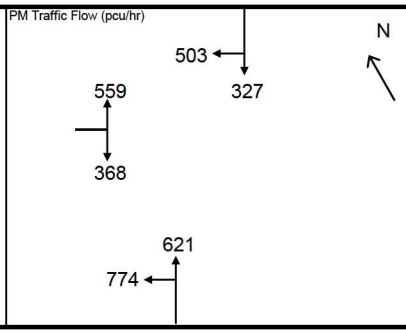
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT+SA	A1	3	4.00	18.0		100	1860	793	0.426	0.426	100	1860	774	0.416	0.416
	SA	A2	3	4.00				2155	642	0.298			2155	621	0.288	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	247	0.139		100	1781	284	0.159	0.159
	LT+RT	B2	2	3.80	25.0		100	2014	279	0.139		100	2014	321	0.159	
	RT	B3	2	3.80	28.0		100	2026	281	0.139	0.139	100	2026	322	0.159	
Shing Kai Road	SA	C1	1	3.50				1965	334	0.170			1965	273	0.139	
	RT+SA	C2	1	3.50	25.0		89	1998	340	0.170	0.170	81	2007	279	0.139	0.139
	RT	C3	1	3.50	30.0		100	2005	341	0.170		100	2005	278	0.139	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec	
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec	
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec	
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec	
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

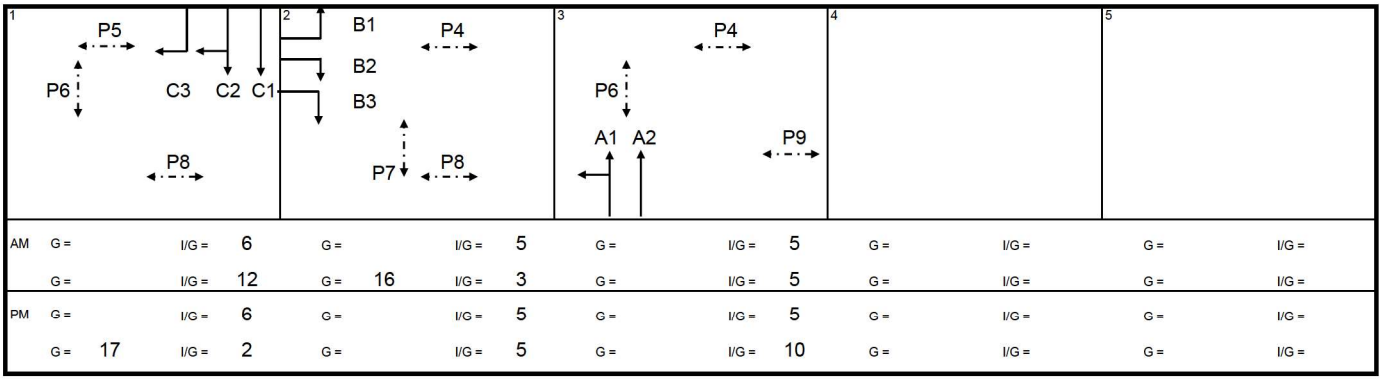


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.735	0.596	0.715	0.576
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	7%	0%	10%	6%

Note:



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =	

Signal Junction Analysis

Junction: G. To Kwa Wan Road / Shing Kai Road / Sung Wong Toi Road — Job Number: J7167

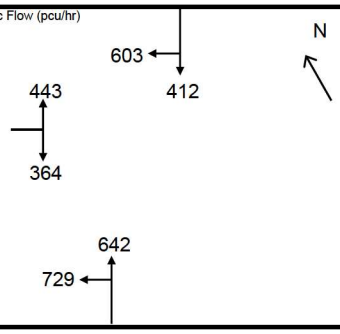
Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A7-4

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

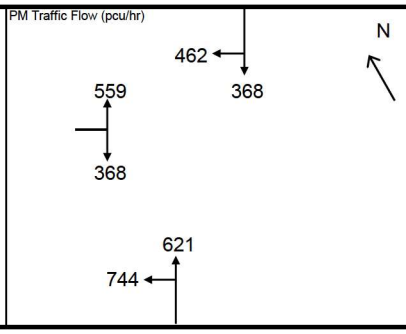
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
To Kwa Wan Road	LT	A1	3	3.70	15.0		100	1805	415	0.230		100	1805	413	0.229	
	LT+SA	A2	3	3.80	18.0		68	2021	465	0.230	0.230	72	2014	462	0.229	0.229
	SA	A3	3	3.80				2135	491	0.230			2135	489	0.229	
Sung Wong Toi Road	LT	B1	2	3.00	20.0		100	1781	249	0.140	0.140	100	1781	286	0.161	0.161
	LT+RT	B2	2	3.80	25.0		100	2014	281	0.140		100	2014	323	0.160	
	RT	B3	2	3.80	20.0		100	1986	277	0.140		100	1986	319	0.160	
Shing Kai Road	SA	C1	1	4.30				2045	340	0.166			2045	277	0.135	0.135
	RT+SA	C2	1	3.80	25.0		79	2038	339	0.166	0.166	67	2052	278	0.135	
	RT	C3	1	3.80	30.0		100	2033	337	0.166		100	2033	274	0.135	

pedestrian phase	P4	2,3		min crossing time =	5	sec GM +	10	sec FGM =	15	sec
	P5	1		min crossing time =	5	sec GM +	12	sec FGM =	17	sec
	P6	1,3		min crossing time =	5	sec GM +	11	sec FGM =	16	sec
	P7	2		min crossing time =	5	sec GM +	7	sec FGM =	12	sec
	P8	1,2		min crossing time =	5	sec GM +	6	sec FGM =	11	sec
	P9	3		min crossing time =	5	sec GM +	7	sec FGM =	12	sec

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

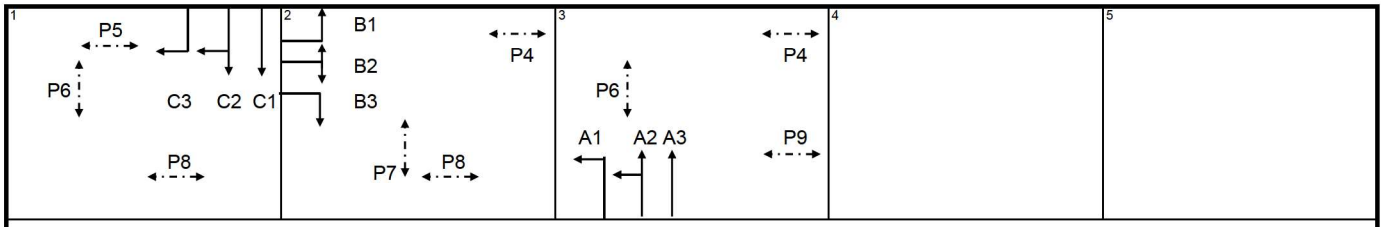


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.536	0.396	0.525	0.390
L (s)	13	34	13	32
C (s)	100	100	100	100
practical y	0.783	0.594	0.783	0.612
R.C. (%)	46%	50%	49%	57%



AM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =		I/G =	12	G =	16	I/G =	3	G =		I/G =	5	G =		I/G =		G =		I/G =	
PM	G =		I/G =	6	G =		I/G =	5	G =		I/G =	5	G =		I/G =		G =		I/G =	
	G =	17	I/G =	2	G =		I/G =	5	G =		I/G =	10	G =		I/G =		G =		I/G =	

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road — Job Number: J7167

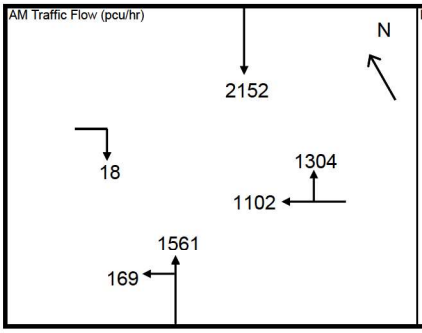
Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A8-1

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

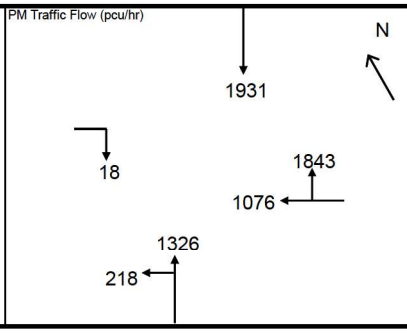
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
							Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	539	0.283		46	1879	476	0.253	
	SA	A2	1	3.50				2105	595	0.283			2105	534	0.254	
	SA	A3	1	3.50				2105	596	0.283			2105	534	0.254	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.010	0.010	100	1854	18	0.010	0.010
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	685	0.349			1965	614	0.312	
	SA	C2	1	3.50				2105	734	0.349			2105	658	0.313	0.313
	SA	C3	1	3.50				2105	733	0.348	0.348		2105	659	0.313	
Sung Wong Toi Road	SA	D1	2	3.20				1935	525	0.271			1935	512	0.265	
	SA	D2	2	3.75				2130	577	0.271	0.271		2130	564	0.265	
	RT	D3	2, 3	3.00	30.0		100	1957	441	0.225		100	1957	623	0.318	
	RT	D4	2, 3	3.50	26.0		100	1990	448	0.225		100	1990	634	0.319	0.319
	RT	D5	2, 3	3.50	22.0		100	1840	415	0.226		100	1840	586	0.319	

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

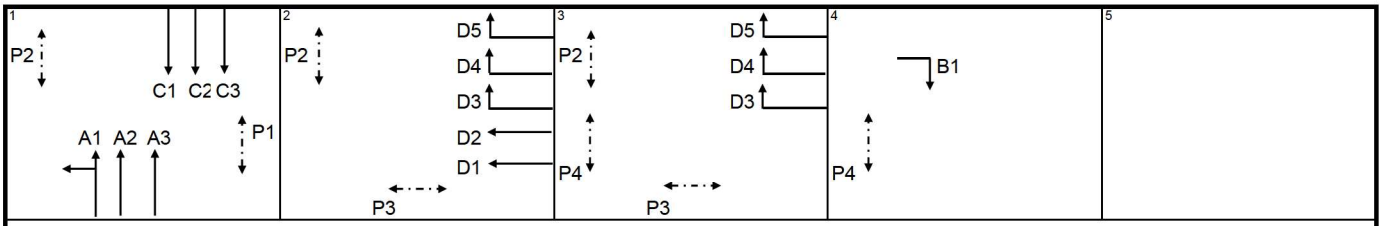


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.629		0.641	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	24%		22%	

Note:



AM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			
PM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road — Job Number: J7167

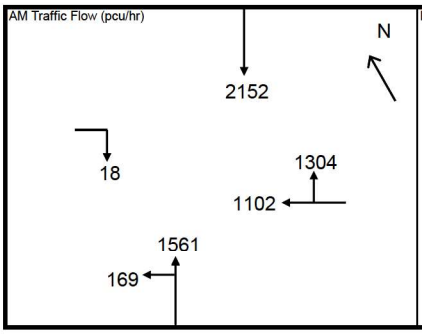
Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A8-2

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

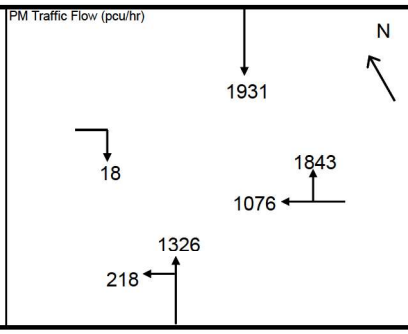
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	539	0.283		46	1879	476	0.253	
	SA	A2	1	3.50				2105	596	0.283			2105	534	0.254	
	SA	A3	1	3.50				2105	595	0.283			2105	534	0.253	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.009	0.009	100	1854	18	0.009	0.009
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	685	0.349			1965	614	0.312	
	SA	C2	1	3.50				2105	733	0.348			2105	658	0.313	0.313
	SA	C3	1	3.50				2105	734	0.348	0.348		2105	659	0.313	
Sung Wong Toi Road	SA	D1	2	3.20				1935	525	0.271			1935	512	0.265	
	SA	D2	2	3.75				2130	577	0.271	0.271		2130	564	0.265	
	RT	D3	2, 3	3.00	30.0		100	1957	441	0.225		100	1957	623	0.318	
	RT	D4	2, 3	3.50	26.0		100	1990	449	0.226		100	1990	634	0.319	
	RT	D5	2, 3	3.50	22.0		100	1840	414	0.225		100	1840	586	0.319	0.319

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

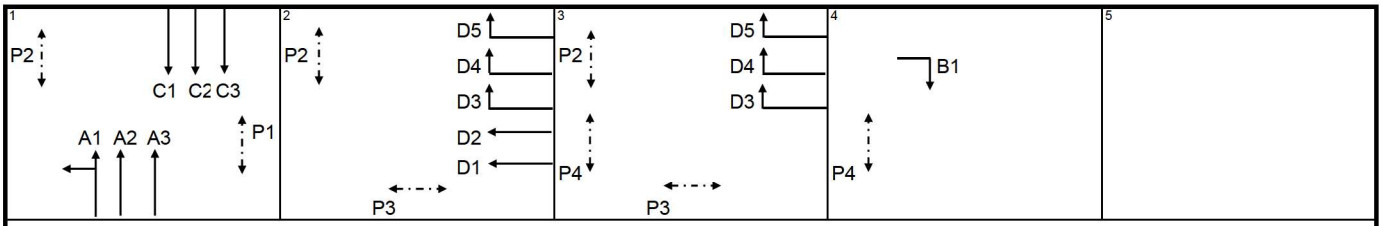


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.629		0.641	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	24%		22%	

Note:



AM	G =		I/G =	7	G =		I/G =		G =		I/G =	7	G =		I/G =	6	G =		I/G =	
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =	
PM	G =		I/G =	7	G =		I/G =		G =		I/G =	7	G =		I/G =	6	G =		I/G =	
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =	

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road — Job Number: J7167

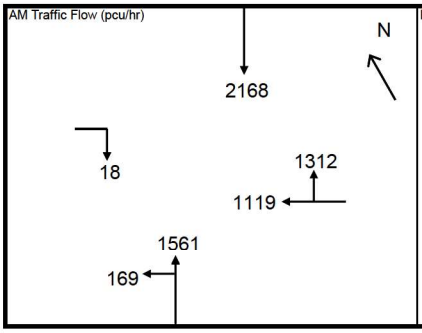
Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A8-3

Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

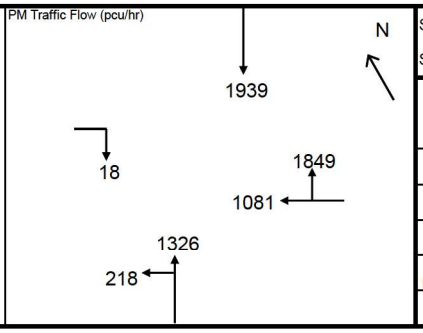
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	539	0.283		46	1879	476	0.253	
	SA	A2	1	3.50				2105	595	0.283			2105	534	0.254	
	SA	A3	1	3.50				2105	596	0.283			2105	534	0.254	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.010	0.010	100	1854	18	0.010	0.010
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	690	0.351			1965	617	0.314	
	SA	C2	1	3.50				2105	739	0.351			2105	661	0.314	0.314
	SA	C3	1	3.50				2105	739	0.351	0.351		2105	661	0.314	
Sung Wong Toi Road	SA	D1	2	3.20				1935	533	0.275			1935	515	0.266	
	SA	D2	2	3.75				2130	586	0.275	0.275		2130	566	0.266	
	RT	D3	2, 3	3.00	30.0		100	1957	444	0.227		100	1957	625	0.319	
	RT	D4	2, 3	3.50	26.0		100	1990	451	0.227		100	1990	636	0.320	
	RT	D5	2, 3	3.50	22.0		100	1840	417	0.227		100	1840	588	0.320	0.320

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

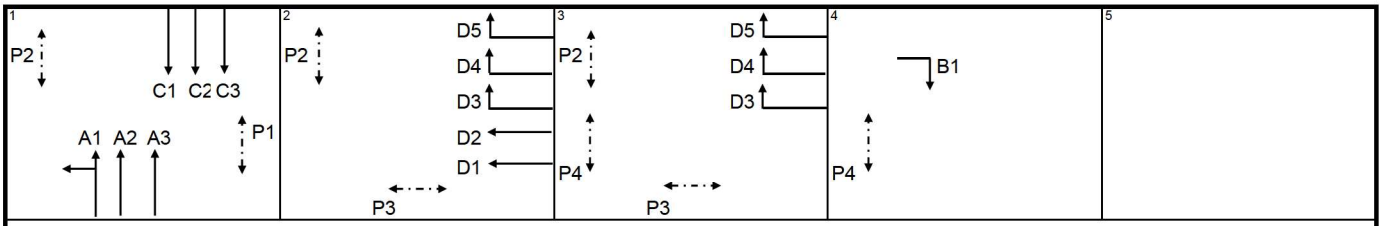


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.636		0.643	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	23%		22%	

Note:



AM	G =		I/G =	7	G =		I/G =		G =		I/G =	7	G =		I/G =	6	G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		
PM	G =		I/G =	7	G =		I/G =		G =		I/G =	7	G =		I/G =	6	G =		I/G =		
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		

Signal Junction Analysis

Junction: H. Ma Tau Chung Road / Fu Ning Street / Sung Wong Toi Road Job Number: J7167

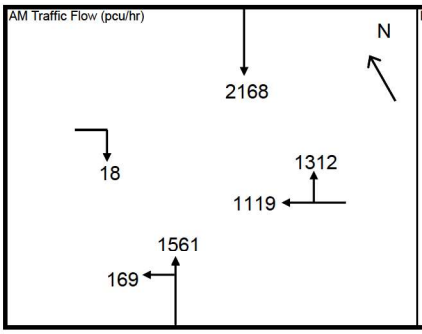
Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) R2 / P.A8-4

Design Year: 2036 Designed By: Checked By: Date: 19 September 2022

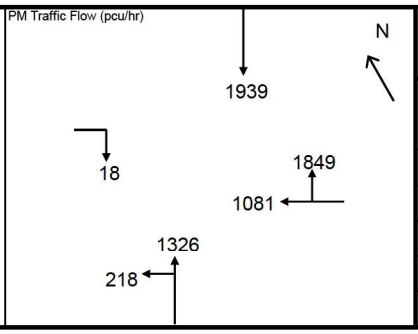
Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	15.0		31	1906	539	0.283		46	1879	476	0.253	
	SA	A2	1	3.50				2105	596	0.283			2105	534	0.254	
	SA	A3	1	3.50				2105	595	0.283			2105	534	0.253	
Fu Ning Street	RT	B1	4	3.50	25.0		100	1854	18	0.009	0.009	100	1854	18	0.009	0.009
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	690	0.351			1965	617	0.314	
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	RT	D5	2, 3	3.50	22.0		100	1840	417	0.227		100	1840	588	0.320	0.320

pedestrian phase	P1	1		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P2	1, 2, 3		min crossing time =	5	sec GM +	5	sec FGM =	10	sec	
	P3	2, 3		min crossing time =	10	sec GM +	9	sec FGM =	19	sec	
	P4	3, 4		min crossing time =	7	sec GM +	8	sec FGM =	15	sec	

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

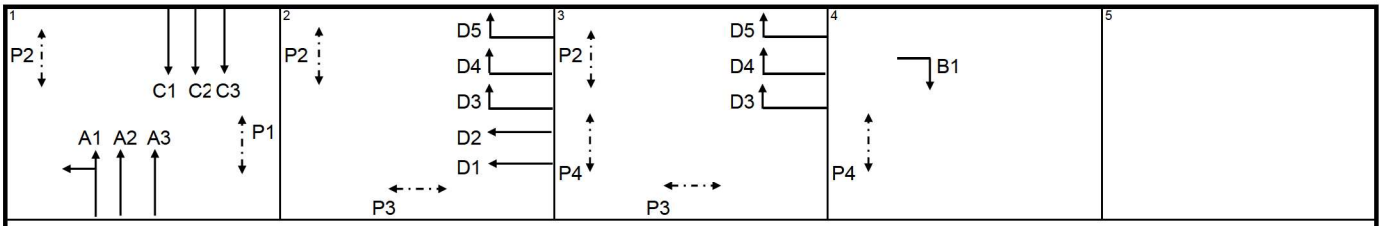


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.636		0.643	
L (s)	17		17	
C (s)	130		130	
practical y	0.782		0.782	
R.C. (%)	23%		22%	

Note:



AM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
	G =	I/G =		G =	I/G =	G =	I/G =		G =	I/G =		G =	I/G =			
PM	G =	I/G =	7	G =	I/G =	G =	I/G =	7	G =	I/G =	6	G =	I/G =			
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Signal Junction Analysis

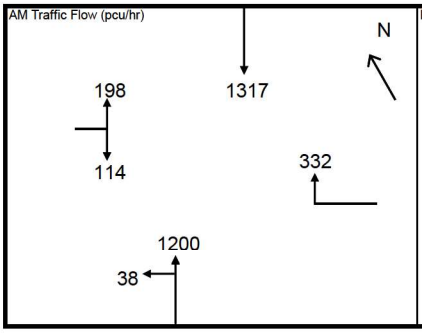
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road) — R2 / P.A9-1

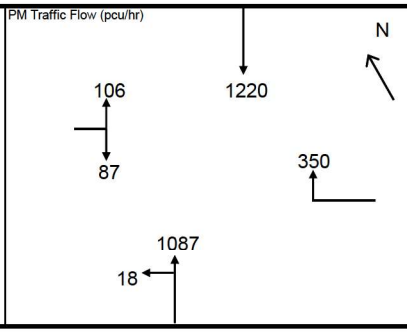
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
	SA	A2	1	3.50				2105	424	0.201			2105	377	0.179	
	SA	A3	1	3.50				2105	423	0.201			2105	378	0.180	
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	161	0.085		100	1898	170	0.090	
	RT	B2	2	4.50	15.0		100	2005	171	0.085	0.085	100	2005	180	0.090	0.090
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213			1965	388	0.197	
	SA	C2	1	3.50				2105	449	0.213	0.213		2105	416	0.198	
	SA	C3	1	3.50				2105	449	0.213			2105	416	0.198	0.198
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	198	0.112	0.112	100	1768	106	0.060	0.060
	RT	D2	3	3.30	15.0		100	1895	114	0.060		100	1895	87	0.046	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		9	sec FGM =		21	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

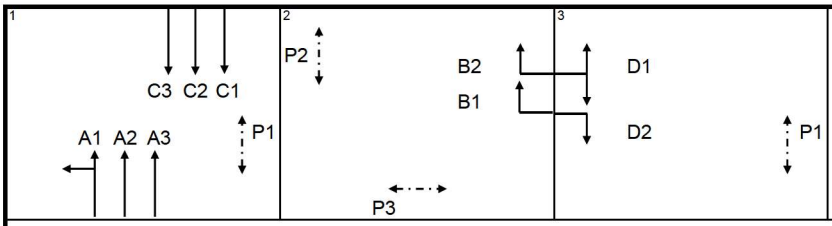


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.411		0.347	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	94%		129%	

Note:



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =

Signal Junction Analysis

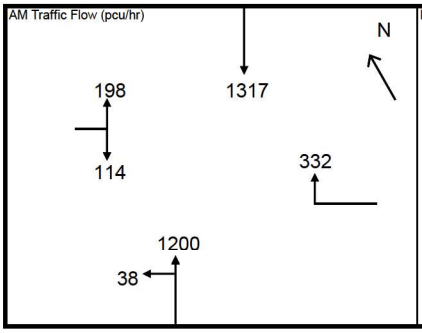
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road) — R2 / P.A9-2

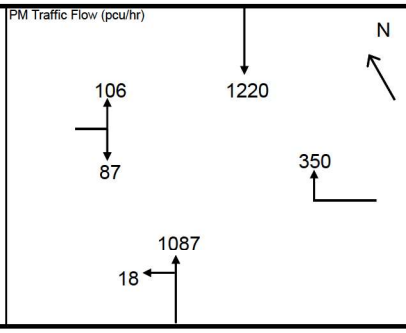
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
	SA	A2	1	3.50				2105	424	0.201			2105	377	0.179	
	SA	A3	1	3.50				2105	423	0.201			2105	378	0.179	
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	161	0.085		100	1898	170	0.090	
	RT	B2	2	4.50	15.0		100	2005	171	0.085	0.085	100	2005	180	0.090	0.090
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213			1965	388	0.197	
	SA	C2	1	3.50				2105	449	0.213	0.213		2105	416	0.198	
	SA	C3	1	3.50				2105	449	0.213			2105	416	0.198	0.198
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	198	0.112	0.112	100	1768	106	0.060	0.060
	RT	D2	3	3.30	15.0		100	1895	114	0.060		100	1895	87	0.046	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		9	sec FGM =		21	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

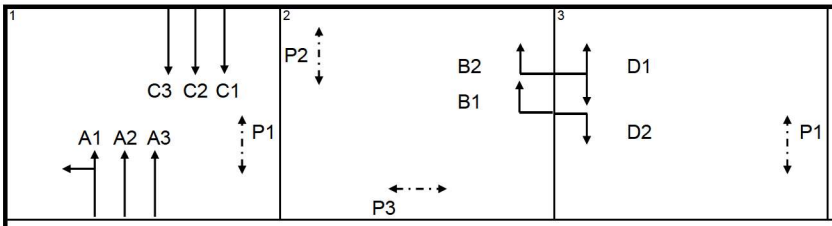


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

Note:

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.411		0.348	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	94%		129%	



AM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =
PM	G =		I/G =	6	G =		I/G =	6	G =		I/G =	6	G =		I/G =		G =		I/G =
	G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =		G =		I/G =

Signal Junction Analysis

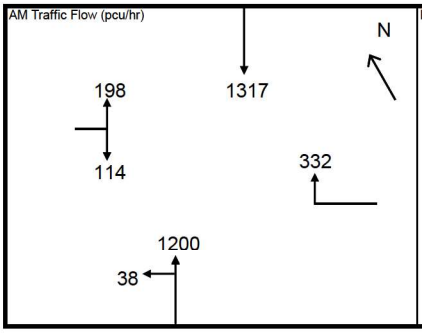
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road) — R2 / P.A9-3

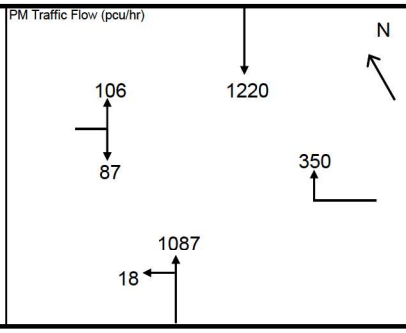
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
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Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	161	0.085		100	1898	170	0.090	
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Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213			1965	388	0.197	
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		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

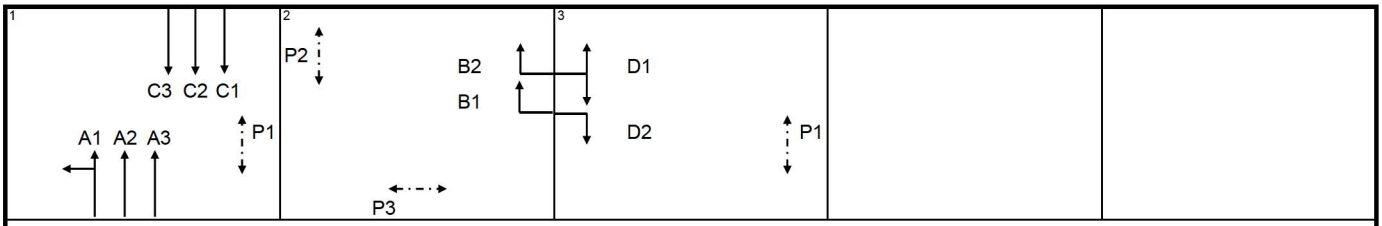


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Note:

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Sum y	0.411		0.347	
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C (s)	130		130	
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R.C. (%)	94%		129%	



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	6	G =	I/G =		G =	I/G =		G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	6	G =	I/G =		G =	I/G =		G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		

Signal Junction Analysis

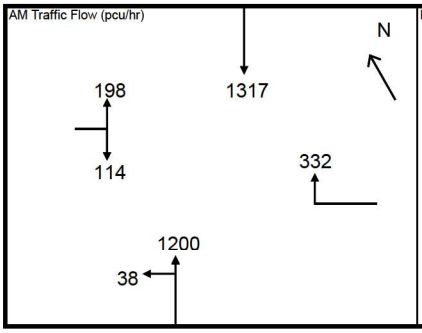
Junction: I. Ma Tau Chung Road / Ma Tau Kok Road — Job Number: J7167

Scenario: Sensitivity Test 2 (with widening of To Kwa Wan Road) — R2 / P.A9-4

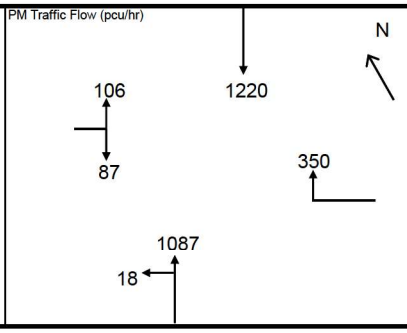
Design Year: 2036 — Designed By: — Checked By: — Date: 19 September 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak Turning %	AM Peak Sat. Flow (pcu/hr)	AM Peak Flow (pcu/hr)	AM Peak y value	AM Peak Critical y	PM Peak Turning %	PM Peak Sat. Flow (pcu/hr)	PM Peak Flow (pcu/hr)	PM Peak y value	PM Peak Critical y
Ma Tau Chung Road NB	SA+LT	A1	1	3.50	12.0		10	1941	391	0.201		5	1953	350	0.179	
	SA	A2	1	3.50				2105	424	0.201			2105	377	0.179	
	SA	A3	1	3.50				2105	423	0.201			2105	378	0.179	
Ma Tau Kok Road WB	RT	B1	2	4.50	17.0		100	1898	161	0.085		100	1898	170	0.090	
	RT	B2	2	4.50	15.0		100	2005	171	0.085	0.085	100	2005	180	0.090	0.090
Ma Tau Chung Road SB	SA	C1	1	3.50				1965	419	0.213			1965	388	0.197	
	SA	C2	1	3.50				2105	449	0.213	0.213		2105	416	0.198	
	SA	C3	1	3.50				2105	449	0.213			2105	416	0.198	0.198
Ma Tau Kok Road EB	LT+RT	D1	3	3.30	15.0		100	1768	198	0.112	0.112	100	1768	106	0.060	0.060
	RT	D2	3	3.30	15.0		100	1895	114	0.060		100	1895	87	0.046	
pedestrian phase		P1	1, 3		min crossing time =		5	sec GM +		9	sec FGM =		14	sec		
		P2	2		min crossing time =		12	sec GM +		9	sec FGM =		21	sec		
		P3	2		min crossing time =		6	sec GM +		11	sec FGM =		17	sec		

AM Traffic Flow (pcu/hr)



PM Traffic Flow (pcu/hr)

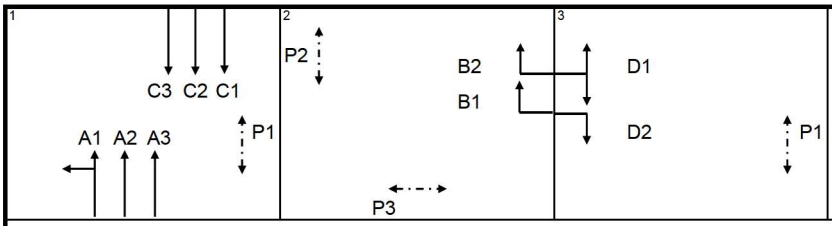


$S=1940+100(W-3.25)$ $S=2080+100(W-3.25)$

$S_M=S\div(1+1.5f/r)$ $S_M=(S-230)\div(1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.411		0.348	
L (s)	15		15	
C (s)	130		130	
practical y	0.796		0.796	
R.C. (%)	94%		129%	

Note:



AM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	6	G =	I/G =		G =	I/G =		G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		
PM	G =	I/G =	6	G =	I/G =	6	G =	I/G =	6	G =	I/G =		G =	I/G =		G =	I/G =		
	G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		G =	I/G =		

Roundabout Analysis

Location: J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street — R2 / P.A10-1

Scenario: Sensitivity Test 1 (without widening of To Kwa Wan Road)

Design Year: 2036 | Job Number: J7167 | Date: 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	150	26	150	516					842	1909
From C	792	57	51	491					1391	1694
From D	544	124	645	138					1451	1086
From E										
From F										
From G										
From H										
Total	1496	238	1057	1999					4790	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	95	24	135	363					617	2192
From C	666	45	49	504					1264	1575
From D	683	124	730	165					1702	889
From E										
From F										
From G										
From H										
Total	1454	226	1234	1950					4864	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	842	617	0.774	0.654
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1715	1787	1391	1264	0.811	0.707
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2026	2138	1451	1702	0.716	0.796
From E												
From F												
From G												
From H												

Roundabout Analysis

Location: J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street — R2 / P.A10-2

Scenario: Sensitivity Test 1 (with widening of To Kwa Wan Road)

Design Year: 2036 | Job Number: J7167 | Date: 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	150	26	150	516					842	1909
From C	792	57	51	491					1391	1694
From D	544	124	645	138					1451	1086
From E										
From F										
From G										
From H										
Total	1496	238	1057	1999					4790	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	95	24	135	363					617	2192
From C	666	45	49	504					1264	1575
From D	683	124	730	165					1702	889
From E										
From F										
From G										
From H										
Total	1454	226	1234	1950					4864	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	$= 1-0.00347(\varnothing-30)-0.978[(1/r)-0.05]$
F	$= 303x_2$
f_c	$= 0.210t_D(1+0.2x_2)$
t_D	$= 1+0.5/(1+M)$
M	$= \exp[(D-60)/10]$
x_2	$= v+(e-v)/(1+2S)$
S	$= 1.6(e-v)/L$

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	842	617	0.774	0.654
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1715	1787	1391	1264	0.811	0.707
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2026	2138	1451	1702	0.716	0.796
From E												
From F												
From G												
From H												

Roundabout Analysis

Location: J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street — R2 / P.A10-3

Scenario: Sensitivity Test 2 (without widening of To Kwa Wan Road)

Design Year: 2036 | Job Number: J7167 | Date: 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	158	26	150	516					850	1909
From C	795	57	51	491					1394	1702
From D	549	124	645	138					1456	1097
From E										
From F										
From G										
From H										
Total	1512	238	1057	1999					4806	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	99	24	135	363					621	2192
From C	667	45	49	504					1265	1579
From D	686	124	730	165					1705	894
From E										
From F										
From G										
From H										
Total	1462	226	1234	1950					4872	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	= 1-0.00347(∅-30)-0.978[(1/r)-0.05]
F	= $303x_2$
f_c	= $0.210t_D(1+0.2x_2)$
t_D	= 1+0.5/(1+M)
M	= exp[(D-60)/10]
x_2	= v+(e-v)/(1+2S)
S	= 1.6(e-v)/L

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	850	621	0.782	0.658
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1710	1784	1394	1265	0.815	0.709
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2020	2135	1456	1705	0.721	0.799
From E												
From F												
From G												
From H												

Roundabout Analysis

Location J. Ma Tau Chung Road / Prince Edward Road East / Prince Edward Road West / Argyle Street R2 / P.A10-4

Scenario Sensitivity Test 2 (with widening of To Kwa Wan Road)

Design Year 2036 Job Number J7167 Date 19 September 2022

AM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	31	211	854					1106	1041
From B	158	26	150	516					850	1909
From C	795	57	51	491					1394	1702
From D	549	124	645	138					1456	1097
From E										
From F										
From G										
From H										
Total	1512	238	1057	1999					4806	

PM Peak

Arm	To A	To B	To C	To D	To E	To F	To G	To H	Total	q_c
From A	10	33	320	918					1281	1137
From B	99	24	135	363					621	2192
From C	667	45	49	504					1265	1579
From D	686	124	730	165					1705	894
From E										
From F										
From G										
From H										
Total	1462	226	1234	1950					4872	

Legend

Arm	Road (in clockwise order)
A	Ma Tau Chung Road
B	Argyle Street
C	Prince Edward Road West
D	Prince Edward Road East
E	
F	
G	
H	

Geometric Parameters

Arm	e (m)	v (m)	r (m)	L (m)	D (m)	∅ (°)	S
From A	10.2	7.3	30.0	13.2	100.0	40.0	0.4
From B	7.8	5.4	25.0	6.6	100.0	20.0	0.6
From C	9.6	7.2	100.0	12.6	100.0	30.0	0.3
From D	9.6	7.2	100.0	60.0	100.0	60.0	0.1
From E							
From F							
From G							
From H							

Predictive Equation $Q_E = K(F - f_c q_c)$

Q_E	Entry Capacity
q_c	Circulating Flow across the Entry
K	$= 1-0.00347(\varnothing-30)-0.978[(1/r)-0.05]$
F	$= 303x_2$
f_c	$= 0.210t_D(1+0.2x_2)$
t_D	$= 1+0.5/(1+M)$
M	$= \exp[(D-60)/10]$
x_2	$= v+(e-v)/(1+2S)$
S	$= 1.6(e-v)/L$

Limitation

e	Entry Width	4.0 - 15.0 m
v	Approach Half Width	2.0 - 7.3 m
r	Entry Radius	6.0 - 100.0 m
L	Effective Length of Flare	1.0 - 100.0 m
D	Inscribed Circle Diameter	15 - 100 m
∅	Entry Angle	10° - 60°
S	Sharpness of Flare	0.0 - 3.0

Ratio-of-Flow to Capacity (RFC)

							Q_E		Entry Flow		RFC	
Arm	x_2	M	t_D	K	F	f_c	AM	PM	AM	PM	AM	PM
From A	9.003	54.598	1.009	0.982	2727.863	0.593	2071	2015	1106	1281	0.534	0.636
From B	6.509	54.598	1.009	1.044	1972.301	0.488	1088	943	850	621	0.782	0.658
From C	8.691	54.598	1.009	1.039	2633.411	0.580	1710	1784	1394	1265	0.815	0.709
From D	9.328	54.598	1.009	0.935	2826.281	0.607	2020	2135	1456	1705	0.721	0.799
From E												
From F												
From G												
From H												

Appendix 5

Environmental Assessment

(EA) Report

Prepared for

Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

ENVIRONMENTAL ASSESSMENT

Date	**5 October 2022**
Prepared by	**Miko Wan** **Assistant Environmental Consultant**
Signed	
Approved by	**Calvin Chiu** **Senior Manager**
Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8597_V1.2**

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1. INTRODUCTION

1.1 Background

1.1.1 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.1.2 This Environmental Assessment is prepared to support the two draft Development Scheme Plans (DSPs) submission to Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance. This Report covers and supports both Schemes as one comprehensive redevelopment.

1.1.3 Ramboll Hong Kong Limited is commissioned by the Applicant to prepare an Environmental Assessment (EA) report to support the DSP submission for KC-018 and KC-019 sites. Architectural drawings and technical information are provided by the Applicant.

1.1.4 This EA would address major issues including potential environmental noise, air quality impact during operation of the proposed development, and a review of potential land contamination issue.

1.2 The Schemes and its Environs

1.2.1 The Schemes have a total site area of 20,189m^2 (11,430m^2 for KC-018 site and 8,759m^2 for KC-019 site). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1.1** shows the location of the Schemes.

1.2.2 Existing roads including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road fall within the Schemes. In addition, the Schemes is occupied by ageing residential buildings (not less than 60 years) of 7 to 8 storeys with street shops and Newport Centre (industrial building). The street shops include restaurants, retail shop, garage, shops for auto parts, auto cleaning service, hardware store, etc. Newport Centre (Phase 1 & 2) is currently occupied for offices, storage, workshops, showrooms and retail services use.

1.2.3 "13-Street" to the northwest is currently occupied by ageing residential buildings (about 60 years) of 6 to 7 storeys with street shops. The "13-Street" area falls within a "*Proposed Redevelopment Priority Area*" under DURF. The site is currently zoned as "CDA" under the approved Ma Tau Kok OZP No. S/K10/28 gazetted on 25 March 2022. According to the OZP, the planning intention of this "CDA" zone is for comprehensive re-/development of the area for residential and/or commercial uses with the provision of open space and other supporting facilities.

1.2.4 Grand Waterfront with 5 residential towers erected on top of a retail podium building is situated to the immediate south. Ma Tau Kok Gas Work North Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artist Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building, New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.3 Proposed Redevelopment

1.3.1 The Proposed Redevelopment at the Schemes consists of 4 residential towers with 3 lowest floors for retail/GIC/clubhouse purpose and 31 domestic storeys above. Carparking facilities will be provided in 3 basement floors. There is a maximum BH (measured at the main roof of the tower) of 120mPD. There will be a total of 2,226 flat units provided after development

1.3.2 The tentative completion dates of the proposed redevelopments at KC-018 Site and KC-019 Site are both 2033. In view of KC-018 and KC-019 redevelopment, proposed development at DRE site by HKHS, and planning applications in nearby CDA zones, may trigger redevelopment of other CDA sites, for instance, CDA ("13-Street") in the vicinity. In order to account the possible scenarios where the surrounding site would undergo similar redevelopment in future, it is assumed that the redevelopment and completion year of nearby CDA ("13-street") may take place a few years after KC-018 and KC-019 for the purpose of technical assessments.

1.3.3 The Master Layout Plan (MLP), typical floor plan and section of the Proposed Development are shown in **Appendix 1.1.**

1.4 Environmental Appraisal of the Proposed Development

Noise

1.4.1 Based on the existing conditions of the environs, the noise environment is mainly dominated by road traffic generated from To Kwa Wan Road, Ma Tau Kok Road, San Shan Road, etc. Road traffic noise impact assessment is therefore prepared (detailed in **Section 2**) to address the potential noise impact that would be generated from the traffic.

1.4.2 Regarding the concern of potential fixed noise impact, desktop survey (review of published report) as well as site surveys for both daytime & evening time and night-time periods have been carried out in 2017, May/July 2020, Jan 2021, May 2022 to identify potential fixed noise sources that could have adverse impact on the Proposed Redevelopment or update the condition.

1.4.3 As observed, there are potential fixed noise sources such as AC equipment (e.g. chiller, cooling tower at Ma Tau Kok Gas Work North Plant and other buildings further apart, as well as garages, car repairing workshop, etc in the vicinity, which has been illustrated in **Figure 3.2.** Fixed noise impact assessment is prepared (detailed in **Section 3**) to address the potential noise impact that would be generated from the fixed noise sources.

1.4.4 There is no exposed railway noise source identified in the vicinity (i.e. 300m) of the Schemes and thus, no adverse railway noise impact is anticipated on the Proposed Redevelopment.

Air Quality

1.4.5 With respect to the potential vehicular emission impact, as mentioned above, the Schemes is affected by nearby carriageways such as To Kwa Wan Road, Ma Tau Kok Road, San Shan Road, etc.

1.4.6 With regard to the potential chimney impact, site survey has been conducted in May 2020 to identify if there are active chimneys located in the proximity of the Schemes. According to onsite survey, there are presence of chimneys in the vicinity of the Schemes within 200m such as chimney stack at Ma Tau Kok Gas Work North Plant.

1.4.7 A quantitative air quality impact assessment is prepared (detailed in **Section 4**) to address the potential air quality impact that would be generated from the chimney emissions.

Land Contamination

1.4.8 The historical landuse and existing condition have been studied for the purpose to identify if there is/was any potentially land contaminating activity held onsite, and recommend actions to be taken afterwards. A land contamination appraisal is included in **Section 5**.

2. ROAD TRAFFIC NOISE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The section of this study is to review the potential road noise impacts (i.e. road traffic noise impact) on the noise sensitive uses of the Proposed Redevelopment, and to recommend mitigation measures where are practicable to attenuate the impact. Among the Proposed Redevelopment, only the residential dwelling will rely on opened window for ventilation purpose and will be regarded as noise sensitive receivers for this study. Other uses in podium (retail/GIC/clubhouse) will be provided with central air conditioning system and would not rely on openable window for ventilation purpose.

2.1.2 As mentioned in paragraph 1.3.2, it is estimated that the redevelopment of "13-street" site will be completed few years after KC-018 and KC-019 redevelopment.

2.2 Assessment Criteria

2.2.1 Noise standards are recommended in Chapter 9, "Environment", of the Hong Kong Planning Standards and Guidelines (HKPSG) for planning against possible noise impact from road traffic, railway and aircrafts. According to the guidelines, the maximum road traffic noise level, measured in terms of L_{10}(1-hr), at façades of residential development like the proposed redevelopment is 70 dB(A).

2.3 Assessment Methodology

2.3.1 The assessment concerns the prediction of the maximum hourly L_{10} traffic noise level at noise sensitive receivers (NSRs) of the proposed redevelopment due to the projected traffic flow on the adjacent major road networks within 15 years from the operation year of the proposed development. The traffic data provided by the project traffic consultant – CKM for year 2048 (which is considered as the worst case scenario within 15 years upon completion of the proposed redevelopment). Traffic forecast of year 2048 is attached in **Appendix 2.1**. Traffic data generated from potential development at nearby CDA sites (e.g. 13-Street) have been accounted in the traffic forecast as a conservative approach in technical assessments.

2.3.2 The U.K. Department of Transport's procedure "Calculation of Road Traffic Noise" has been applied to predict the hourly L_{10} noise level generated from road traffic at selected representative noise sensitive receivers (NSRs) of the Proposed Development. The predicted noise levels were then compared with the HKPSG noise criterion for assessing the impact.

2.4 Noise Sensitive Receivers

2.4.1 Noise Sensitive Receivers (NSRs) representing opening of habitable room of dwelling likely to be subject to adverse traffic noise impact have been identified in this assessment. The locations of the NSRs are shown in **Figure 2.1**. The assessment points were taken at 1.2 m above the floors of the selected storeys and 1m away from the façades of openable windows/doors.

2.5 Base Case Scenario and Assessment Result

KC-018

2.5.1 10m Non-Building Areas (NBAs) need to be provided along southern side of the KC-018 site and KC-019 site. Moreover, 20m waterfront promenade along seashore must be provided for promenade on east side, the buildable area is reduced. It is also subject to building height restriction of 120mPD.

2.5.2 Nonetheless, the development is designed with due consideration of potential road traffic noise impact and site constraints as well.

2.5.3 Given the need to provide adequate unobstructed space to meet prescribed window requirement, the development needs to make use of the frontage as much as possible. Further building setback from To Kwa Wan Road (major road traffic noise source) is limited. Instead of relying on building setback, the residential towers are designed with the noise sensitive façade of the nearest tower not facing To Kwa Wan Road to the west. In particular, there is one wing on southern side of KC-018 site nearest to To Kwa Wan Road designed to provide extra shielding effect for units to the east of the wing.

2.5.4 Apart from disposition and orientation, podium is another self-protective building design adopted to attenuate adverse road traffic noise impact on the Proposed Redevelopment. Podium can serve to increase absolute distance between noise source and NSR built on top of it, and may provide shielding for dwellings at lower floors if the podium coverage is more extensive. In the Proposed Redevelopment, 3-storey podium building is designed and with the extent near To Kwa Wan Road enlarged to provide some shielding for NSRs at lower floors.

2.5.5 The base case is defined as the scheme to reflect the design but without further direct noise mitigation measures. According to the predicted noise level for the base case, road traffic noise exceedance is found at various locations at the tower near to To Kwa Wan Road in both KC-018 Site and KC-019 Site. Among the assessment result, it is suggested that AM peak traffic forecast represents a worst representative scenario with more noise exceedance.

2.5.6 There is 78 out of 1,276 flat units with noise exceedance at KC-018 Site, and 111 out of 950 flat units with noise exceedance at KC-019 Site. Altogether, there are 189 out of 2,226 flat units with exceedance, equivalent to road traffic noise compliance level of 91.5%. The maximum predicted road traffic noise level is L_{10}(1-hr) 78 dB(A) at a window location facing To Kwa Wan Road at KC-019 Site. Detailed result is presented in **Appendix 2.2**.

2.5.7 While the tentative completion year of development at KC-018 and KC-019 sites are the same, there is a possibility that the implementation of KC-019 will be delayed. As a conservative assessment approach, an additional scenario which KC-019 Site is vacant (i.e. existing building demolished but new building of proposed development not yet in place) would be represented for a worst-case scenario. Detailed result based on AM peak traffic forecast (worst representative scenario) is presented in **Appendix 2.4** and **Figure 2.3**. According to the assessment result, the noise exceedance at KC-018 Site with and without proposed development at KC-019 Site is of same number of exceedance and maximum predicted noise level. In other words, the possibly delay of KC-019 Site does not significantly affect the road traffic noise performance of proposed development at KC-018 Site.

2.6 Proposed Traffic Noise Mitigation Measures

2.6.1 In order to minimise the potential traffic noise impact, mitigation measures have been incorporated or considered when formulating the building layout. **Figure 2.2** show the location of the mitigation measures proposed for mitigating the potential adverse traffic noise impact.

2.6.2 Mitigation measures proposed in the current scheme include:

a. Fixed Glazing (with or without Maintenance Window; not for ventilation purpose) (FG)

As discussed, the tower nearest to To Kwa Wan Road is designed to avoid any opening window facing road directly. Subject to detailed design of the project, the fixed glazing (at NSRs C01-1, CH01-1) may be provided without or with a maintenance window (e.g. for cleaning) as there is already a door opening for prescribed ventilation purpose which is away from To Kwa Wan Road. Similarly, for other habitable rooms, the window location not necessary to serve for natural ventilation and would be subject to adverse road traffic noise impact would be designated as fixed glazing as well.

It is confirmed that the maintenance window, if any, of the fixed glazing is not for prescribed ventilation purpose and such information will be clearly indicated in future general building plan submission, sales brochure, DMC, etc. so that it cannot be altered and future buyer can be well informed.

b. Utility Platform with Self-Closing Door (SD)

Similarly, some bedrooms are provided with utility platform (UP) and with access door, and the door opening is solely for access purpose and not accounted for prescribed ventilation purpose. Auto-close system will be provided so that the door will remain closed except during access (i.e. self-closing door; not for ventilation purpose). Such information will be clearly indicated in future general building plan submission, sales brochure, DMC, etc. so that it cannot be altered and future buyer can be well informed.

c. Acoustic Window/Door (Baffle Type)

The Acoustic Window/Door (Baffle Type) refers to the type of window/door that has an inner sliding glass panel behind an outer window/door, both readily openable, for creating an air gap for the supply of fresh air with noise mitigation effect. It comprises two glazing:-

(i) The outer window/door system; and

(ii) The inner sliding panel.

The "designed setting" to reduce noise entry into indoor area is that the inner sliding panel is moved to the side behind the openable window/door so that noise from outside cannot pass through the opening and enter indoor area directly. Instead, noise needs to pass through the gap between the inner sliding panel and outer façade aside the openable window/door in order to enter indoor area. The design can enable natural ventilation through the gap between the outer façade and inner sliding panel on one hand (although extent of natural ventilation may be inferior to the case without the inner sliding panel behind) and prevent most noise from entering indoor environment on the other hand. According to the latest PNAP APP-130 "Lighting and Ventilation Requirements – Performance-based Approach", the proposed Acoustic Window/Door (Baffle Type) is considered complying with prescribed ventilation requirement if the net opening when the inner sliding panel is moved to another side with least obstruction to the openable window at the outer façade. The design of the proposed baffle type acoustic window/door in its "designed setting" is confirmed by the project architect to meet the relevant natural ventilation requirement under the Building (Planning) Regulations (B(P)R).

In an approved planning application (No. A/K20/128) for another residential development project in Cheung Sha Wan, sliding panel behind window and

balcony door openings is proposed. The case with sliding panel behind balcony door opening (applied to living room) is analogous to baffle type acoustic window. The sliding panel behind window opening(s) of bedroom is equipped with micro-perforated absorber (MPA) panel (1mm) which is sound absorptive. Therefore, sound propagating to indoor area will be mostly absorbed and the sound attenuation performance can be improved. According to the insitu test result, a road traffic noise sound attenuation of 6.9 dB(A) can be achieved for bedroom with baffle type acoustic window with 1 window opening. Sound attenuation of 8.8 dB(A) can be achieved for living room with baffle type acoustic door. Indicative design of baffle type acoustic window and acoustic door is shown in **Figure 2.4** and **Figure 2.5**.

The configuration of baffle type acoustic window/door for the proposed development will make reference to those in the reference project mentioned above so that the noise reduction performance will be comparable. However, the sound attenuation of such innovative noise mitigation measure does refer to the additional noise reduction indoor when compared to a corresponding case with conventional window opening (those opening size should be proportional to the room area as well). In theory, the smaller the room size designed, the less will be the sound attenuation after adjustment. The sound attenuation for individual habitable room type has been adjusted based on comparison of room size of the case in this proposed development (the minimum size among same room type adopted) and the reference case. Detailed calculation is shown in **Appendix 2.5**. For assessment purpose, it is assumed that the noise reduction at individual NSRs would be the corrected sound attenuation or the predicted residual exceedance under base case whichever is lower.

2.7 Assessment Results for Mitigated Scenario

2.7.1 The predicted road traffic noise impact on the selected representative NSRs based on the noise mitigation measures discussed above were assessed.

2.7.2 With practical noise mitigation measures considered and incorporated for implementation as described in **Figure 2.2**, all dwellings would have the predicted noise level complying with relevant standard. (i.e. L_{10}(1-hr) 70 dB(A)).

2.7.3 **Appendix 2.3** shows the assessment result table under mitigated scenario. **Appendix 2.4** show assessment result table under mitigated scenario for reference which represents scenario if KC-019 Site is vacant.

2.7.4 **Appendix 2.6** shows the schedule of noise mitigation measures.

2.8 Conclusions

2.8.1 A road traffic noise impact assessment has been carried out to evaluate the potential traffic noise impact to the Proposed Redevelopment.

2.8.2 The package of direct noise mitigation measures including fixed glazing (with or without maintenance window), utility platform with self-closing door (not for ventilation), acoustic window/door (baffle type) are recommended to address the adverse traffic noise impact upon the Proposed Redevelopment.

2.8.3 With practical noise mitigation measures considered and incorporated for implementation where appropriate, full compliance with the traffic noise standard is predicted. No adverse traffic noise impact to the future resident is anticipated.

2.8.4 In order to account the possible scenarios where the surrounding site ("13-street") may undergo similar redevelopment in future, a possible increase of about 15% in development intensity has been taken into account as a conservative approach in

technical assessments. Yet, the proposed total number of flat units should make reference to the population assumptions adopted in the endorsed the Quantitative Risk Assessments (QRA) report by the CCPHI in 2021.
The QRA report had assessed the risk levels associated with the Ma Tau Kok Gas Works (MTKGW) arising from potential residential development (including development in DRE site of HKHS, "5-Street" and "13-Street" area) within the Consultation Zone of the PHI of the MTKGW. Hence, it is anticipated that the increase in development intensity of "13-street" area will lead to an increase of average flat size instead of total number of flat units, and the traffic forecast would not be affected as advised by project traffic consultant. Therefore, it is confirmed that the increase in development intensity would not result in worsened road traffic noise impact on the proposed development.

2.8.5 It is noted that the scheme adopted for assessment purpose is notional and subject to detailed design. The scheme design will be revised taking into account factors such as marketability, constructability, cost-effectiveness, etc. Practical and effective noise mitigation measures will be devised in future to minimise potential road traffic noise impact.

2.8.6 For future NIA submission, any possible delay of implementation of KC-019 Site will be revisited. Where necessary, additional scenario to cater for uncertainty will be included in the future NIA.

3. FIXED NOISE IMPACT ASSESSMENT

3.1 Scope of Work

3.1.1 The aim of this study is to review potential noise impacts arising from the nearby fixed noise sources, including industrial buildings and activities, within 300m of the Proposed Redevelopment. Practicable noise mitigation measures would be recommended, where necessary.

3.2 Assessment Criteria

3.2.1 The Schemes is located in urban area in Kowloon City. In accordance with the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* (herein referred as TM), the type of the area where the Schemes located is considered to be "Type (iii) Urban Area".

3.2.2 An urban trunk road, East Kowloon Corridor, which exceeds 30,000 traffic flows per day (regarded as Influencing Factor (IF)), is aligned around 300m to the west.

3.2.3 In this study, Area Sensitivity Rating "B" is adopted (i.e. urban area not affected by IF) as a conservative approach.

3.2.4 **Table 3.1** below shows the details of the fixed noise impact assessment criteria for this study.

Table 3.1 Fixed Noise Impact Assessment Criteria

Standard	ASRs[1]	Criteria	Acceptable Noise Level (ANL) [2]	Noise Criteria in Current Assessment Leq (30mins), dB(A)
NCO	B	Leq (30 mins) (07:00 – 23:00)	65 dB(A)	65 dB(A)
		Leq (30 mins) (23:00 – 07:00)	55 dB(A)	55 dB(A)

Notes:
[1] Acceptable Noise Level for Area Sensitivity Ratings "B" stipulated in the Technical Memorandum for the Assessment from Places other than Domestic Premises, Public Places or Construction Sites for "Urban Area" type of the area containing NSR and an ASR of "B" assigned to the NSR "Not Affected" by IF

[2] The assigned ASRs are for assessment purpose only and not to affect the Authority's discretion on the enforcement based on the temporary conditions.

3.3 Fixed Noise Sources

3.3.1 Site visits were conducted in various dates in 2017, May/July 2020, Jan 2021, May 2022 to identify the fixed noise sources or update the condition within 300m from the Schemes. It is noted that based on the verification survey in May 2022, the previously identified condition including the identified noise sources, activities held, etc. are still valid.

3.3.2 The noise environment of the Schemes is observed to be dominated by road traffic noise and no noticeable noise from fixed plant or industrial operation can be observed.

3.3.3 In a recent study for dedicated rehousing estate at LS (to the north of the Schemes, separated by KC-019 Site) and contained in the environmental assessment report titled Dedicated Rehousing Estate at Ma Tau Kok - Environmental Assessment, potential fixed noise sources were identified including the ventilation exhaust of To Kwa Wan Road Sewage Pumping Station (SPS) recently constructed, To Kwa Wan North

(Electricity) Sub-Station (ESS), ACs at Ma Tau Kok Gas Production Plant, as well as chillers and cooling towers on commercial and industrial buildings, garages and workshop for car repair and motor services among buildings bounded by Mok Cheong Street, To Kwa Wan Road and Sung Wong Toi Road to the north of 13-Street Site. In addition, ACs is found at existing Newport Centre at KC-019 Site; there are several garages in 13-Street Site and the KC-018 Site.

3.3.4 The dedicated rehousing estate has been planned to meet the rehousing demands arising from government developments and/or urban renewal projects, and will tentatively complete in 2027. On the other hand, as mentioned in para 1.3.2, it is estimated that the 13-Street Site development would be completed few years after KC-018 and KC-019 redevelopment so that all existing building in 13-Street Site will be demolished by the time when the proposed development is completed tentatively. Therefore, upon operation of the proposed development at the Schemes, the dedicated rehousing estate at LS must be in place. It will completely shield the SPS and ESS so that noise contribution, if any, from the same to the proposed development will be negligible. In fact, as observed before there is no noticeable noise from ESS. The louver of the ESS is facing To Kwa Wan Road directly and will not have any direct line of sight with the habitable room of the proposed development. Besides, noise sources identified before at 13-Street Site would no longer exist at that time.

3.3.5 It is likely that there is an interim period when the proposed development is in operation. As a conservative approach adopted in technical assessments, it is estimated that the existing buildings of 13-Street Site will be demolished so that there is no shielding against noise from buildings behind and on northern side of 13-Street Site.

3.3.6 As such, major noise sources that would affect the proposed development during its operation would include those at Ma Tau Kok Gas Production Plant and at buildings bounded by Mok Cheong Street, To Kwa Wan Road and Sung Wong Toi Road to the north of 13-Street Site. Location of identified fixed noise sources (Location ID: G1 to G4, C1 to C16) are indicated in **Figure 3.1** while the site photos and satellite images are shown in **Appendix 3.1.**

3.3.7 For the potential fixed noise impact arising from the garages and the workshops for car repair, motor services (e.g. car washing and car painting) (G1 to G4), no night-time (23:00 – 07:00) operation were observed during the site visits. It was confirmed with the workers of the garages and workshops that there is no night-time operation.

3.3.8 For chillers and cooling towers on the rooftops of the industrial and commercial buildings, night-time operation is assumed as a conservative approach.

3.3.9 While it was attempted to conduct on-site noise measurement during the site visit, not all activities were captured. Sound power levels from the previous approved planning application (MPC Paper No. A/K10/256), Noise Impact Assessment Report for "CDA(2)" at KIL 10578, 7628 and 7626 in Ma Tau Kok (hereinafter referred to as "NIA-MTK Report"), have been adopted to predict the potential fixed noise level in some garages. The source of sound power levels for each noise source is listed in **Appendix 3.3**.

3.3.10 According to the NIA-MTK Report as shown in **Appendix 3.2**, the relevant SWL of similar motor service workshop calculated based on the on-site noise measurement is 91.7 dB(A) which had already captured all of the operation activities such as Hand-held Pneumatic Tools, Vehicle lifting machine, hammering, grinding, etc. In addition, according to the site survey conducted within the existing buildings of the project site, there was no audible noise heard from the identified fixed noise sources.

3.3.11 Comparing to motor service workshops in NIA-MTK Report, motor service workshops in the vicinity of Subject Site are relatively smaller in size. According to site survey,

the major activities include car washing and car repairing. Since the identified workshops are with similar size and have similar activities of that identified in the NIA-MTK Report; therefore, it is considered that the adoption of the sound power level for larger garages involving noisier activities from NIA-MTK Report is a conservative approach.

Fixed/Industrial Noise Source within Site and Possible Interfacing Problem

3.3.12 Regarding KC-018 Site, there are several car repairing workshops, hardware stores, and small retail stores at G/F and domestic dwellings at upper floors. The car repairing workshops, by its nature, would generate noise during its operation especially when mechanical equipment is used. Regarding KC-019 Site, it is now occupied by Newport Centre Phases I and II of 4 storeys high including G/F. The buildings do not employ central air conditioning system. Split type and window type air conditioners, as well as VRVs can be observed at the façade and rooftop. Based on onsite survey, there is no breakthrough noise observed from Newport Centre Phases I and II.

3.3.13 It is planned that KC-018 site and KC-019 site will be developed and occupied at the same time. However, there is a chance that the scheme of KC-019 site will be delayed.

3.3.14 In any case there is delay of development at KC-019 site, it can be conservatively assumed that KC-018 site will be occupied while the existing Newport Centre Phases I and II is still in operation. Nevertheless, as there is no major noise source observed at Newport Centre Phases I and II (only AC system ordinary of domestic premises can be found and no break through noise or any other noisy operation/facility can be identified), interfacing problem and fixed/industrial noise impact arising from Newport Centre Phase I on future development at KC-018 Site is not considered a major issue.

3.3.15 In all circumstances, if any delay of operation of KC-019 site is determined in later stage, the potential fixed/industrial noise impact on KC-018 site will be reviewed to ensure that there is no insurmountable fixed/industrial noise impact.

3.4 Noise Sensitive Receivers

3.4.1 To summarise, identified fixed noise sources are concentrated on the western side of the Schemes. Therefore, 4 representative Noise Sensitive Receivers (NSRs) (A22-2A, A01-1, C16-2A & C01-1) nearest to the identified noise sources on southwest/ northwest sides of towers of the proposed development have been selected for the assessment. **Figure 3.2** shows the location of the representative NSRs.

3.5 Assessment Methodology

3.5.1 Standard acoustic principles were adopted for prediction of cumulative industrial noise impact. Horizontal distance separation instead of absolute distance is adopted for simplicity and conservatism. A façade correction of + 3dB was assumed.

3.5.2 As mentioned, there is no night-time operation from the garages and car repairing workshops. No tonality, impulsiveness and intermittency characteristics were identified during the on-site surveys. In addition, according to the NIA-MTK Report. No tonal, impulsiveness/ intermittency were observed. Therefore, no correction of tonality, impulsiveness and intermittency were applied in the calculations.

3.5.3 Tonal effect was observed in the cooling tower based on the on-site measurement data. Correction of tonality was applied for cooling towers.

3.6 Assessment Result

3.6.1 A summary of predicted fixed noise levels during day & evening time and night-time periods at representative NSRs is tabulated as below in **Table 3.2.** Detailed calculations are shown in **Appendix 3.4**.

Table 3.2 Predicted Fixed Noise Level

Representative NSRs	Predicted Noise Level Leq (30min) (0700-2300), dB(A)	Predicted Noise Level Leq (30min) (2300-0700), dB(A)
A22-2A	55	54
A01-1	55	54
C16-2A	54	52
C01-1	53	51
Standard	***65 dB(A)***	***55 dB(A)***

3.6.2 The assessment results indicated that the predicted noise level of the representative NSRs comply with the relevant standards.

3.7 Conclusion

3.7.1 The potential noise impact from fixed noise sources has been assessed based on the Proposed Development scheme. According to the assessment results based on a rather conservative assumption with the identified noise sources along Mok Cheong Street not shielded by adjacent buildings, the predicted noise levels of the representative NSRs would still comply with the NCO criteria.

3.7.2 The Proposed Development will inevitably contain noisy facilities such as ventilation system for podium building. The requirement under HKPSG is fully observed (i.e. ANL – 5dB(A)). In future detailed design of the project, same requirement will be imposed so that the relevant noise standard will be met by various means such as selection of quiet equipment, use of shielding device, acoustic louvers, silencers, semi/full-enclosure. With abundance of direct noise mitigation measures to control and suppressed the generated noise level, no unacceptable noise impact due to operation of potentially noisy facilities of the Proposed Development is anticipated.

4. AIR QUALITY IMPACT ASSESSMENT

4.1.1 This assessment predicts air quality pollutant concentration at the Proposed Development, informing the provision of air quality mitigation measures to ensure future residents are not exposed to unacceptable levels of poor air. The assessment considers surrounding emissions from nearby i) chimneys, ii) marine emissions due to ferry services at Kowloon City Ferry Pier and Ma Tau Kok Public Pier, iii) portal emission and iv) the traffic emissions from road networks within 500m of the site boundary. To Kwa Wan Typhoon Shelter (TKWTS) and the portal and ventilation building of Central Kowloon Route (CKR) are identified outside the 500m study area. Hence, the air quality impact generated by the emissions from them on the Proposed Development would be insignificant and would not be included in the computer model. The air pollutants assessed are Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Respirable Suspended Particulate (RSP) and Fine Suspended Particulate (FSP). Concentrations of these pollutants are predicted at air sensitive receivers (ASRs) within the Proposed Development through the use of quantitative computer modelling, and are compared with the relevant Air Quality Objectives (AQOs).

4.1.2 The study also considers nearby odour sources within 500m of the Schemes and identified three potential odour sources, i.e. Ma Tau Kok Gas Production Plant and To Kwa Wan Road Sewage Pumping Station. Several site surveys were conducted to assess the odour impacts at sources. Odour units are converted to value at averaging period of 5 seconds in order to compare to criteria stated in the Technical Memorandum of Environmental Impact Assessment Ordinance (EIAO-TM).

4.1.3 The assessment area of 500m from the Schemes is shown in **Appendix 4.1**.

4.1.4 Appropriate mitigation measures will be recommended if exceedances of AQOs and/or odour units are identified.

4.2 Assessment Criteria

4.2.1 The Hong Kong AQOs enacted on 1/1/2022 are listed in **Table 4.1** below.

Table 4.1 Hong Kong Air Quality Objectives

Pollutants	Average Time	Standard [i] (µg/m³)	No. of exceedances allowed
SO_2	10-min	500	3
	24-Hour	50	3
RSP (PM_{10}) [ii]	24-Hour	100	9
	Annual	50	NA
FSP ($PM_{2.5}$) [iii]	24-Hour	50	35
	Annual	25	NA
NO_2	1-Hour	200	18
	Annual	40	NA
Ozone (O_3)	8-Hour	160	9
Carbon Monoxide (CO)	1-Hour	30,000	0
	8-Hour	10,000	0
Lead (Pb)	Annual	0.5	NA

Notes:

[i] All measurements of the concentration of gaseous air pollutants, i.e. sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.

[ii] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.

[iii] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

4.2.2 Annex 4 of EIAO-TM stipulates that the odour level at air sensitive receiver should meet 5 odour units based on an averaging time of 5 seconds for odour prediction assessment.

4.3 Existing Air Quality in To Kwa Wan District

4.3.1 The tentative year of completion of the Proposed Development is 2033. Therefore, the latest year of 2025 hourly background concentrations of NO_2, SO_2, RSP and FSP has been adopted for the purpose of this assessment. The data for Year 2025 was extracted from the latest version of the PATH provided by EPD (Grid 42, 33).

4.3.2 Based on the information provided by EPD, the below adjustment of RSP levels and FSP levels should be applied in order to compare with AQOs.

- 10th highest daily RSP concentration: add 11.0 $\mu g/m^3$
- Annual RSP concentration: add 10.3 $\mu g/m^3$
- Annual FSP concentration: add 3.5 $\mu g/m^3$

4.3.3 The five most recent years of air quality monitoring data, 2017 to 2021, from the Sham Shui Po general Air Quality Monitoring Station (AQMS) are summarized in **Table 4.2** below.

Table 4.2 EPD Air Quality Monitoring Data in Sham Shui Po AQMS and Latest Version of PATH (Grid 42, 33)

Statistics of Past Ambient Air Quality

Pollutants / Averagin Periods / Statistics	% of valid data	Concentration (µg/m3) [1] Averaging Periods																		
		10 min [2][3]				1 Hour				Daily 8 Hour moving average				24 Hour					1 Year	
		AQO	4th	Max	No. of Ex	AQO	19th	Max	No. of Ex	AQO	10th	Max [4]	No. of Ex	AQO	4th	10th	Max	No. of Ex	AQO	Mean [5]
Sulphur Dioxide, SO_2																				
2017	99%	**500**	76	85	0									**125**	25		32	0		8
2018	99%		98	102	0										21		26	0		6
2019	98%	Not to be exceeded more than 3 times per year	41	44	0									Not to be exceeded more than 3 times per year	14		16	0		6
2020	97%		40	48	0	n.a.				n.a.					12	n.a.	16	0	n.a.	6
2021	96%		38	40	0										12		13	0		6
5-year average =	-		59	64	-										17		21	-		6
PATH in Year 2025 (42 33)	100%		47	47	0										10		16	0		3
Respirable Suspended Particulates, RSP																				
2017	95%													**100**	-	72	85	0	**50**	33
2018	95%														-	59	99	0		33
2019	96%													Not to be exceeded more than 9 times per year	-	65	120	1		33
2020	98%	n.a.				n.a.				n.a.					-	59	73	0		28
2021	98%														-	65	106	2		28
5-year average =	-														-	64	97	-		31
PATH in Year 2025 (42 33)	100%															62	88	0		27
Fine Suspended Particulates, FSP																				
2017	95%													**75**	-	46	54	0	**35**	21
2018	95%														-	41	70	0		21
2019	95%													Not to be exceeded more than 9 times per year	-	36	80	2		18
2020	98%	n.a.				n.a.				n.a.					-	30	43	0		14
2021	98%														-	32	49	0		14
5-year average =	-														-	37	59	-		18
PATH in Year 2025 (42 33)	100%														-	45	72	0		14
Nitrogen Dioxide, NO_2																				
2017	99%					**200**	194	267	15										**40**	54
2018	98%						152	210	1											49
2019	98%					Not to be exceeded more than 18 times per year	176	227	6											48
2020	96%	n.a.					151	310	5	n.a.				n.a.						45
2021	96%						171	259	3											47
5-year average =	-						169	255	-											49
PATH in Year 2025 (42 33)	100%						119	195	0											21
Ozone, O_3																				
2017	98%									**160**	130	256	3							39
2018	98%										147	219	5							44
2019	97%									Not to be exceeded more than 9 times per year	164	279	11							51
2020	96%	n.a.				n.a.					134	227	3	n.a.					n.a.	47
2021	96%										137	199	4							50
5-year average =	-										142	236	-							46
PATH in Year 2025 (42 33)	100%										187	260	37							85

Notes:

(1) Measured at 293 K and 101.325 kPa (one atmosphere)

(2) 10-min average SO2 levels were calculated based on stability classes in the corresponding PATH grid(s)

(3) " - " denotes no data available

(4) Max. daily 8h moving average for O_3

(5) Arithmetic mean

4.4 Operational Phase

Representative Air Sensitive Receivers

4.4.1 Representative ASRs within the Proposed Development as shown in **Figure 4.2** are selected to assess the air quality at the Proposed Development and determine the appropriate fresh air intake locations for the podium of the Proposed Development.

4.4.2 Details of these assessment points are shown in **Table 4.3** below.

Table 4.3 Details of Assessment Points for Air Quality Assessment

Label for Assessment Points	Local Ground mPD	Flagpole Height, mAG	Assessment Height, mPD
KC-018			
A1 to A11	3.6	1.5 – 116.4	3.6 – 120.0
KC-019			
A8 to A17	3.6	1.5 – 116.4	3.6 – 120.0

4.5 Air Quality Impact Assessment Methodology

Latest Version of PATH

4.5.1 Hourly meteorology data for a full year is extracted from the latest version of the PATH provided by EPD (meteorological data year 2015, Grid 42, 33). Hourly mixing heights lower than 131m or higher 1941m are corrected to 131m or 1941m respectively to align with the real meteorological data recorded by the Hong Kong Observatory (HKO) in 2015. Hourly wind speeds lower than 1 m/s (i.e. calm wind condition) are corrected to 1m/s.

4.5.2 The hourly background concentrations of NO_2, SO_2, RSP and FSP in Year 2025 are extracted from the latest version of the PATH provided by EPD (Grid 42, 33) to predict the total air quality concentrations at ASRs and adjusted appropriately as discussed in **Section 4.3.2**.

4.5.3 Within the 4km radius area of the Schemes, two major point sources, i.e. the Kai Tak Cruise Terminal with marine vessels emission and the Diamond Hill Crematorium with chimney emissions have been identified and would be included for the air modelling regarded as background emissions.

Computer Modelling for Industrial Air Quality

4.5.4 The dispersion of NO_2, SO_2, RSP and FSP were modelled using AERMOD software released by Lakes Environmental Software. The model is based on the principle of Gaussian dispersion and is widely accepted by EPD and is used in this assessment to predict both concentration and deposition of pollutants from point and area sources.

4.5.5 Landuse types surrounding the Schemes have to be identified to determine albedo, bowen ratio and surface roughness for AERMET setup. According to "AERMOD Implementation Guide" (revised in August 2015) released by USEPA, albedo and Bowen ratio is determined with the use of 10km by 10km region while surface roughness is determined by a circle in 1km radius. The circle is further divided by 12 sectors. The centroid of the region and circle are located at the Schemes and details of determination of albedo, Bowen ratio and surface roughness are shown in **Appendix 4.1.** These data together with the meteorological data (discussed in **Section 4.5.1**) were processed using Lakes Environmental' s AERMET to generate the Surface File and Profile File for use in AERMOD.

Source Description and Emission Inventory

4.5.6 As discussed in **Section 4.1.1**, emissions from chimneys, marine emissions, portal emission and open roads have been assessed. **Table 4.4** shows a summary of the sources and the associated air pollutants of concern.

Table 4.4 Summary of Emission Sources

Sources		SO_2	NO_x	RSP	FSP
(i)	Chimney	✓	✓	✓	✓
(ii)	Marine Vessels	✓	✓	✓	✓
(iii)	Portal	X	✓	✓	✓
(iv)	Open Roads	X	✓	✓	✓

4.5.7 A summary of model input in AERMOD for sources (i) is given in **Appendix 4.2**.

(i) Chimney Emissions

4.5.8 With reference to the information available in the SP License (No. L-8-004(6)) and several site survey was conducted in May 2020 to update the chimney information, there were 5 active chimneys identified and they are included in this assessment. Site records are shown in **Appendix 4.3** and the locations of five active chimneys are shown in **Figure 4.3**.

4.5.9 NO_2, SO_2, RSP and FSP from chimney emissions are assessed by AERMOD. Emission parameters such as exit temperature, exit velocity, internal diameter and emission rates are referenced to the above-mentioned SP License. Detailed derivation of emission rates of active chimneys is shown in **Appendix 4.4**.

4.5.10 For the NO_2 assessment, initial NO_2 to NO_x ratio for chimneys is 10% which is referenced from the percentage of industrial coal in table 4.5 of the Heathrow Airport EIA report.

4.5.11 The details of model inputs for chimney emissions are given in **Appendix 4.2**.

(ii) Marine Vessels Emissions

4.5.12 A desktop review with reference to the Air Quality Impact Assessment Report under the approved planning application (Application No.: A/K10/259). The identified sources are as follows:

- Ferry service between North Point and Kowloon City provided by New World First Ferry Services Limited; and
- Harbour Tour Service (round trip to and from the Ma Tau Kok Public Pier.

4.5.13 With reference to "*Study on Marine Vessels Emission Inventory – Final Report*" by HKUST in February 2012, the total emissions from vessels can be calculated using the following equations:

$$\text{Total Emission}_{(\text{pollutant})} = \Sigma\ \text{Emission}_{(\text{pollutant, activity mode, equipment})}$$

$$\text{Emission}_{(\text{pollutant, activity mode, equipment})} = P \times FL \times T \times EF$$

where P is the installed power of equipment;

FL is fractional load of equipment in a specific mode;

T is operation time-in-mode; and

EF is fractional load emission factor of equipment.

4.5.14 Emissions from ferries during sailing have been modelled as evenly distributed point sources representing the segment they travel to and from the berths within the 500m assessment area. The individual routes are shown in **Figure 4.4**. All point sources were modelled as slow cruising mode except the one nearest to the berth was modelled as maneuvering mode for the route travelling to the berth.

4.5.15 Emissions during staying at the berths are modelled as single point source using hoteling mode.

Ferry services between Kowloon City and North Point provided by New World First Ferry Services Limited and Harbour Tour service for tourists (Round trip to and from Ma Tau Kok Public Pier)

4.5.16 No information on the engine powers, engine load factors and time-in-modes are provided by the operators, therefore, the references were made to "Study on Marine Vessels Emission Inventory – Final Report" and "Port of Hong Kong Statistical Tables (2015)" issued by Marine Department, HKSAR. Details of the derivation of emission rates are presented in **Appendix 4.5**.

4.5.17 According to the current schedule of ferry services between Kowloon City and North Point on the operator's website, the visiting frequencies of different modes at each hour are studied and presented in **Appendix 4.6**. Based on the site survey findings, the daily operation hours of harbour tour would be from 5pm to 9pm and the ferry frequency of the ferry service can be up to maximum 5 trips per hour.

Kai Tak Cruise Terminal

4.5.18 As mentioned in **Section 4.5.3**, the marine vessels emission of Kai Tak Cruise would be regarded as a background emission as it is identified as a major point source. The air quality impact assessment in the Approved Environmental Impact Assessment Report for Kai Tak Development was conducted over 10 years ago. Therefore, the latest information (such as types and schedule of the cruises which will visit Kai Tak Cruise Terminal) available from the website of Kai Tak Cruise Terminal has been reviewed. According to the schedule for the Ship Calls in Year 2021, the cruise which will visit Kai Tak Cruise Terminal the most frequent will be World Dream and the cruise with largest gross tonnage will be Spectrum of the Seas. Therefore, as a worst-case scenario, it is assumed that World Dream and Spectrum of the Seas will be hotelling at Kai Tak Cruise Terminal at the same time for every hour of a day. The details of model inputs and the detailed information of the emission rates of cruise vessels are shown in **Appendix 4.7**.

(iii)Portal Emissions

4.5.19 Based on a desktop study, all portals within the study area have been identified. These include Kai Tak Tunnel West portals and other portal emission such as Road D2 landscape deck, CKR eastern tunnel portal, CKR landscape deck portals. Locations of all portals are shown in **Figure 4.5**.

4.5.20 According to the Permanent International Association of Road Congress Report (PIARC, 1991), the pollutants were assumed to eject from the portal as a portal jet such that 2/3 of the total emissions was dispersed within the first 50m of the portal and the other 1/3 of the total emission within the second 50m.

4.5.21 With reference to the approved Kai Tak Multi-purpose Sports Complex EIA, 50% of pollutant inside Kai Tak Tunnel was assumed to be emitted through the ventilation building and the remaining pollutant was assumed to be ejected through the tunnel portal.

4.5.22 The 24-hour emission factor for each tunnel in 2042 has been adopted in compiling the emission inventory of portals. The calculation of emission factors for portals and 24-hour emission factors for every quarter of different tunnel sections are given in **Appendix 4.8**.

(iv) Open Roads Emissions

4.5.23 Air pollutant concentration at the Schemes due to the emission from the nearby road networks (vehicular tailpipe emissions) was assessed. The emission rate of each road within 500m from the Schemes is calculated from with latest EMFAC-HK issued by EPD. Based on the emission rate of each road, the air pollutant concentration at the Schemes was modelled with CALINE4.

EMFAC-HK Model

4.5.24 The latest available EMFAC-HK Model version 4.3 dated 13 January 2021 (the EMFAC-HK Model) has been adopted.

Guideline and Document

4.5.25 Several guidelines and documents published by the EPD, which are available from the following EPD EMFAC-HK website (the EPD website), are referred for EMFAC-HK Model input:

- http://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/emfac-hk.html (the EPD website)
- Guideline on Modelling Vehicle Emissions (Released in January 2021) (the EPD Guideline)
- 2018 Licensed Vehicle by Age and Technology Group Fractions (the EPD Document)

Traffic Data

4.5.26 Three sets traffic data predicted by the project traffic consultant, AECOM Asia Company Limited, includes hourly traffic flows with a composition of 18 vehicle classes according to "Guideline on Modelling Vehicle Emissions" as shown in **Table 4.5**. Traffic forecast of Year 2033, 2040 and 2048, based on the traffic count are included in **Appendix 4.9**, which shows the hourly Vehicle Kilometre Travelled (VKT), the number of trips travelled, and the hourly average speed (kph) of road carriageways respectively.

Table 4.5 EMFAC-HK Vehicle Classes

Vehicle Class Description	Fuel Type	Gross Vehicle Weight (tonnes)	Symbol 1 (in csv output file)	Symbol 2 (in bcd output file & traffic data)
Private Cars (PC)	ALL	ALL	PC	PC
Taxi	ALL	ALL	Taxi	Taxi
Light Goods Vehicles (<=2.5t)	ALL	<=2.5t	LGV<=2.5t	LGV3
Light Goods Vehicles (2.5-3.5t)	ALL	>2.5-3.5t	LGV2.5-3.5t	LGV4
Light Goods Vehicles (3.5-5.5t)	ALL	>3.5-5.5t	LGV>3.5t	LGV6
Medium & Heavy Goods Vehicles (5.5-15t)	ALL	>5.5-15t	HGV<=15t	HGV7

Vehicle Class Description	Fuel Type	Gross Vehicle Weight (tonnes)	Symbol 1 (in csv output file)	Symbol 2 (in bcd output file & traffic data)
Medium & Heavy Goods Vehicles (15-24t)	ALL	>15-24t	HGV15-24t	HGV8
Public Light Buses	ALL	ALL	PLB	PLB
Private Light Buses (<=3.5t)	ALL	<=3.5t	PrLB<=3.5t	PV4
Private Light Buses (>3.5t)	ALL	>3.5t	PrLB>3.5t	PV5
Non-franchised Buses (<6.4t)	ALL	<=6.36t	NFB<=6.4t	NFB6
Non-franchised Buses (6.4-15t)	ALL	>6.36-15t	NFB6.4-15t	NFB7
Non-franchised Buses (15-24t)	ALL	>15-24t	NFB15-24t	NFB8
Single Deck Franchised Buses	ALL	ALL	FBSD	FBSD
Double Deck Franchised Buses	ALL	ALL	FBDD	FBDD
Motor Cycles	ALL	ALL	MC	MC
Heavy Goods Vehicles (>24t)	ALL	>24t	HGV>24t	HGV9
Non-franchised Buses (>24t)	ALL	>24t	NFB>24t	NFB9

4.5.27 The estimated 18-class distribution as defined in EMFAC-HK was derived by sectoring the relevant classes in the Transport Department's Annual Traffic Census record or vehicle distribution obtained from manual traffic count surveys, in proportion to the recorded distribution in EPD document: "2018 Vehicle Licensed Number by Age and Technology Group Fractions".

4.5.28 All concerned roadways shall be characterized with speed limits. Average speeds of 24 hours were prepared for each road.

4.5.29 The roadway network within the 500m study area consists of 91 distinct roadway links. In this study, all concerned roads are characterized into four road groups for EMFAC modelling, i.e. Local Distributor (LD), District Distributor (DD) and Urban Trunk Road (UT).

4.5.30 The established road traffic data for 2033, including traffic flow, 24-hour vehicle mix and 24-hour average speed is provided by the Project Traffic Consultant. Confirmation from the Transport Department (TD) is being sought and the reply from TD will be provided in **Appendix 4.9**. In addition, the confirmation of the Traffic Consultant that the traffic forecast for the assessment has been produced strictly in accordance to the methodology of the traffic forecast is also provided in **Appendix 4.9**.

EMFAC-HK Input

Geographical Area

4.5.31 "Hong Kong" is selected as the Geographical Area.

Calendar Year

4.5.32 In order to determine the highest emission scenario and the worst assessment year, EMFAC-HK model runs have been carried out with emission factors and the predicted traffic forecast for Years 2033 (i.e. commissioning), 2040 (i.e. eight year after commissioning), 2048 (i.e. fifteen year after commissioning).

Season or Month

4.5.33 Per the EPD Guideline, "Annual" is selected in this study to evaluate the highest vehicle emission within the Model Year.

Mode and Output

4.5.34 EMFAC-HK Model is run in Emfac mode for calculating area fleet average emissions.

Temperature and Humidity

4.5.35 The information of King's Park Automatic Weather Station from the Hong Kong Observatory was used in this assessment. The hourly values over the entire year (i.e. Year 2021) were selected.

4.5.36 In accordance with a *Guideline of Use of Temperature and Relative Humidity Data for Vehicular Emission Factor* Prediction published by EPD in March 2021, the minimum quarterly temperature and quarterly relative humidity (RH) were applied for bother short-term (i.e. hourly or daily average) and long-term (i.e. annual average) air quality impact.

4.5.37 Referring to the said information, the minimum quarterly temperatures for every quarter of a year are ranging from 7°C – 24°C; and minimum quarterly RH for every quarter of a year are ranging from 13% – 53% (see **Table 1** of **Appendix 4.10**).

Speeds

4.5.38 The average speed data provided by the project traffic consultant for every hour of each road was used for the subsequent calculation. As mentioned in **Section 4.5.30**, the relevant correspondence of the endorsement by the TD will be provided in **Appendix 4.9**.

Exhaust / Evaporation Technology Fractions

4.5.39 Vehicle classes are grouped with different exhaust and evaporation technology group indexes and technology fractions. Each technology group represents a distinct emission control technologies. Default exhaust and evaporation technology fractions are adopted in this assessment.

Vehicle Kilometre Travelled (VKT)

4.5.40 VKT is the product of the number of vehicles and the road length travelled in the assessment area. The peak flows and the diurnal variations were predicted by the Project Traffic Consultant for each assessment year for the 18 vehicle classes defined in EPD's "*Guideline on Modelling Vehicle Emissions*" for road carriageways within the 500m assessment area.

Population and Accrual Rate

4.5.41 Default vehicle populations forecast and accrual rate in EMFAC-HK Model is adopted.

Trips and VKT

4.5.42 Default trips and VKT for HK total is adopted. Detailed impact rates were generated with respect to the combination of temperature, RH and speed for running exhaust emission, and combination of temperature and duration for cold start emission.

Calculation of Emission Factors by EMFAC-HK Model Output

Running Exhaust Emission Factor

4.5.43 Running exhaust fleet average emission factor (g/km) arising from all combinations of temperature and RH (see **Section 4.5.37**) with respect to each combination of speed and vehicle class have been adopted.

4.5.44 For each road, hourly composite running exhaust emission factor (NO_x/RSP/FSP) is determined by:

Hourly composite running exhaust emission factor (NO_x/RSP/FSP) (g/veh-km)

$= \sum$ [hourly running exhaust fleet average emission factor for each vehicle class (determined for the corresponding road group) x % composition of corresponding vehicle class]

Starting Emission Factor

4.5.45 Start emission is applicable to non-trunk road only, primary and district distributor roads. As the information of the durations is not available, the maximum starting emission (g/trip) among different durations (from 5min to 720min) is adopted, which is considered as a more conservative approach. Starting emissions of all 18 vehicle classes are included in the calculation.

4.5.46 The trip in EMFAC-HK Model is referred to the cold start trip. The number of trip is dependent on vehicle population. The default value of trip in the EMFAC-HK Model is the number of trips within HK given a defined vehicle population. Since there is no project-specific vehicle population data, it is proposed to estimate the number of trips within the study area with respect to the project-specific Vehicle Miles Travelled (VMT) given the assumption that the VMT is related to vehicle population.

4.5.47 It is assumed that there is no cold start on urban trunk road (UT) except Road IDs L013, L082, L083, L085, L125, L126, L158 and L159, and hence the number of trips of these roads is zero for all vehicle classes for all hour of the day. For the local and rural roads within the study area, the number of trips are estimated by scaling the number of trip for vehicle class within the entire HK using the ratio of VMT for local and rural roads within the study area to VKT for local and rural roads within the entire HK.

$$Trip\ for\ local\ and\ rural\ roads\ within\ the\ study\ area = Trip\ for\ local\ and\ rural\ roads\ within\ HKSAR * \frac{VMT\ for\ local\ and\ rural\ roads\ within\ the\ study\ area}{VMT\ for\ local\ and\ rural\ roads\ within\ HKSAR}$$

Note: For particular vehicle class and particular hour

4.5.48 The same method was also adopted in the approved Liantang EIA. The estimation of % VMT for local and rural roads within HK is shown in **Appendix 4.10**.

4.5.49 In this assessment, the estimated VMT/ VKT for local and rural roads with possible cold start emission amounts to ~12.86% of total VMT/ VKT. Trip per VKT for local and rural road for each class is determined by:

Trip/VKT (1/veh-km) for each vehicle class

= HK total number of trips for each vehicle class ÷ (HK total VKT travelled for each vehicle class x % of daily vehicle-km for local and rural roads in Hong Kong).

4.5.50 Based on the hourly VKT travelled data from the project traffic consultant, the hourly total cold start emission (gram) for each vehicle class along each road is determined by:

Hourly total cold start emission (g) for each vehicle class = starting emission rate for each vehicle class x Trip/VKT for each vehicle class x VKT travelled for each vehicle class along each road

4.5.51 The hourly total cold start emission rate for each road is the sum of hourly total cold start emission (gram) for each vehicle class along the same road. The hourly composite cold start emission factor is calculated by dividing the value using the hourly traffic flow:

Hourly total cold start emission (g) = Σ [hourly total cold start emission for each vehicle class]

Hourly composite cold start emission factor (g/veh-km) = hourly total cold start emission ÷ hourly total VKT travelled

4.5.52 In addition, cold start emissions are mainly occurred at the bus terminus and the car parking area. While the nearest bus terminus at San Ma Tau Street is about 200m away from the Schemes and there is car parking area nearby, cold start emissions from the bus terminus and the car parking area have been assumed emitting along the open roads, including the roads connected to the bus terminus and the developments with the car parking area, within the assessment area. It is considered the current assessment approach would give conservative estimate of the air quality impact of these start emissions at the Schemes.

Assessment Year

4.5.53 The air quality impact of the vehicular emissions are typically calculated based on the highest emission strength from the traffic forecast data within the first 15 years after the completion of the Proposed Development (i.e. between 2033 and 2048). The assessment year is selected to represent the highest emission scenario given the combination of vehicular emission factors and traffic flow for the same year. The worst assessment year has been determined based on the highest NO_x, RSP and FSP emission scenario using the EMFAC-HK model. Sensitivity tests have been conducted to determine the worst-case scenario given the combination of vehicular emission factors and the projected traffic flow for the following selected years within 15 years after the completion of the Proposed Development. The representative years are 2033 (completion year), 2040 and 2048 (15 years after completion year). Details of sensitivity analysis of the emission inventories of the vehicular emission from open roads is shown in **Appendix 4.18**. Bases on the results, the greatest total emission for NO_x and RSP is in Year 2033, therefore, Year 2033 has been selected as the worst-case model year for the air quality.

Surface Roughness Height

4.5.54 This parameter is closely related to the land use characteristics of a study area and associated with the roughness element height. As a first approximation, the surface

roughness can be estimated as 3 to 10 percent of the average height of physical structures. Typical values used for urban and new development areas are 370cm and 100cm, respectively. The surface roughness adopted for CALINE4 is shown in **Appendix 4.16**.

NO_x to NO_2 Conversion

4.5.55 The conversion of NO_x to NO_2 is a result of a series of complex photochemical reactions and determines the prediction of near field impact of NO_x emissions. To determine vehicular emission impacts, the emission factors of NO_2 are extracted from the results of the EMFAC-HK Model version 4.3 and the emission factors of NO are calculated from the emission factors of NO_x and NO_2 for all motor vehicle types. For the industrial emissions, initial NO_2 to NO_x ratio for chimneys is 10% which is referenced from the percentage of industrial coal in table 4.5 of the Heathrow Airport EIA report.

(v) Vehicular Emissions of Bus Terminus

4.5.56 A bus terminus is located at the south of Grand Waterfront, which may have potential air quality impact on the Schemes due to the vehicular emissions of the franchised buses within the bus terminus. However, as the Schemes would be located about 200m away from this bus terminus, it is anticipated that the air quality impact generated by this bus terminus on the Schemes would be insignificant. Moreover, the Motor Vehicle Idling (Fixed Penalty) Ordinance has been effective on 15 December 2011 in order to reduce the air pollution on the environment by prohibiting the driver of a motor vehicle from causing or permitting any internal combustion engine of a motor vehicle to operate for more than three minutes in aggregate within any continuous sixty-minute period while the vehicle is stationary ("idling prohibition"), unless an exemption applies (i.e. Franchised buses that are ready for boarding by passengers are exempted from the idling prohibition). Therefore, it is anticipated that the air quality impact generated by this bus terminus on the Schemes would be further reduced. Therefore, it is considered that it is unnecessary to include the vehicular emissions generated by this bus terminus in the air quality models.

4.6 Odour Impact Assessment Methodology

4.6.1 According to the Air Quality Impact Assessment Report under the approved planning application (Application No.: A/K10/259) and the site surveys conducted in May 2020 and July 2020, two odour sources have been identified (i.e. To Kwa Wan Road Sewage Pumping Station and Ma Tau Kok Gas Production Plant).

To Kwa Wan Road Sewage Pumping Station

4.6.2 To Kwa Wan Road Sewage Pumping Station would be located close to the Schemes at the north direction.

4.6.3 According to the Environmental Permit No.EP-344/2009 and Kai Tak Development EIA, the following mitigation measures shall be implemented to minimize the possibility of odour impact to sensitive receiver(s) during operation period:

- All odour sources of each of the sewage pumping stations (including wet wells and distribution chambers) shall be located within enclosed building structures.
- Ventilation system(s) shall be provided to divert all odourous emissions to deodorizer(s) for treatment before discharge to the environment.

4.6.4 According to the recent update from DSD, activated carbon is being used for the removal of odour. However, the odour removal efficiency is not available. Besides, site surveys have been conducted in May 2020 and July 2020 around the building of To Kwa Wan Road Sewage Pumping Station and along the site boundary near To Kwa Wan Road Sewage Pumping Station, no odour was observed during the site surveys.

Therefore, it is considered that the odour impact from To Kwa Wan Road Sewage Pumping Station is not anticipated.

Ma Tau Kok Gas Production Plant

4.6.5 Ma Tau Kok Gas Production Plant is located at the junction of To Kwa Wan Road and San Shan Road and is at about 100m to the Proposed Development at the southwest direction. Its odour impact on the proposed development has been modelled by AERMOD in this assessment. The emission rate of the odour have been made reference to the latest Specified Process License (SPL). **Figure 4.6** indicates the assigned odour sources within Gas Production Plant. Detailed derivation of emission rate and the model input of odour source is given in **Appendix 4.11**.

4.6.6 With the reference to EIAO-TM, the criteria is 5OUs on an averaging time of 5 seconds. Therefore, the modelling result of 1 hour average is converted to 5 seconds average using the below **Table 4.6** in accordance with the EPD's Guidelines on Choice of Models and Model Parameters:

Table 4.6 Conversion Factor from 1 Hour to 5 Seconds

Stability Category	1-hour to 5-sec Conversion Factor
A & B	45
C	27
D	9
E & F	8

4.7 Assessment Results

4.7.1 The predicted air quality concentrations from the surrounding vehicular and industrial emissions have been quantitatively assessed separately for SO_2, NO_2, RSP, FSP and Odour.

4.7.2 The predicted results of NO_2, RSP, FSP and SO_2 at all predetermined ASRs are summarized in **Appendix 4.12**. Contour plots at corresponding levels with the highest air quality impact (assessment height: 1.5m above ground) for NO_2, RSP, FSP and SO_2 are shown in **Appendix 4.13**.

4.7.3 The predicted results of odour at all predetermined ASRs are summarized in **Appendix 4.14** and, the contour plots at the highest odour impact (assessment height: 10.0m above ground) are shown in **Appendix 4.15**.

NO_2

4.7.4 The predicted results of the 19th highest 1-hour average and annual average NO_2 concentration at all selected ASR levels are summarized in **Appendix 4.12**. The results indicate that NO_2 concentrations at all locations of the Schemes comply with the relevant AQOs except the 1-hour average NO_2 concentration and the annual average NO_2 concentration at A6, A7 and A8 (i.e. A6 and A7 are within KC-018 and A8 is at the interception point of KC-018 and KC-019) at 1.5m above ground and the annual average NO_2 concentration at A6 at 5m above ground would exceed the criteria of

AQO. Therefore, no fresh air intake for the podium would be located within the area with exceedance.

RSP

4.7.5 The predicted results of the 10th highest 24-hour and annual average RSP concentrations at ASR levels are summarized in **Appendix 4.12**. The results indicate that RSP concentrations at the Schemes comply with the relevant AQOs.

FSP

4.7.6 The predicted results of the 36th highest 24-hour and annual average FSP concentrations at ASR levels are summarized in **Appendix 4.12**. The results indicate that FSP concentrations at the Schemes comply with the relevant AQOs.

SO_2

4.7.7 The predicted results of the 4th highest 10-minute average and 4th highest 24-hour average SO_2 concentration at ASR levels are summarized in **Appendix 4.12**. The results indicate that SO_2 concentrations at the Schemes comply with the relevant AQOs.

Odour

4.7.8 The predicted results of odour impact for all selected ASRs at all levels are summarized in **Appendix 4.14**. It reveals that odour at all locations of the Schemes comply with the criterion.

4.8 Construction Phase Impact and Mitigation

Fugitive Dust Emission and Exhaust Emission

4.8.1 The major air quality impact of concern during the construction phase will be the potential fugitive dust emission and exhaust emission. The major dust emission sources during the construction phase of the Proposed Scheme are expected to arise from construction activities during site formation stage such as:

- Demolition of existing buildings;
- Site formation resulting in exposed ground vulnerable to air erosion;
- Earth moving, loading and unloading of excavated material;
- Wind effect on material stockpiling; and
- Vehicle movements over the construction site.

4.8.2 There will be potential impacts from the criteria pollutants (e.g. nitrogen oxides (NOx), sulphur dioxide (SO_2), and carbon monoxide (CO)) from exhaust emission. Emission from diesel trucks for the haulage of materials and construction plants will contain high percentage of smoke particulate and unburned hydrocarbons in comparison with petrol driven vehicles. Ultra-low sulphur diesel (ULSD) with sulphur content not exceeding 0.005% by weight will be used as fuel to minimize SO_2 emission. Impact on the existing air quality is considered limited. In all circumstances, the contractor will be required to observe all relevant regulations and maintain all equipment in good condition to avoid any excessive emission. Under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, only approved or exempted non-road mobile machineries (including mobile generator, air compressor, excavator, crawler crane, bulldozer and etc.) with a proper label are allowed to be used in the construction site.

4.8.3 The Schemes is located at To Kwa Wan Road with east side close to seashore, where is the existing location of Newport Centre. The nearest residential developments (i.e. 112-138 To Kwa Wan Road) is to the west on the opposite side of To Kwa Wan Road

about 31m apart from the nearest site boundary. There is other residential development to the further south at about 72m apart when measured from nearest site boundary. They are considered as Air Sensitive Receivers (ASRs).

Table 4.7 Separation Distance between the Schemes and Nearby Air/Noise Sensitive Receivers

Identified ASR/NSR	Separation Distance
112-138 To Kwa Wan Road	~35m
Grand Waterfront	~72m

Mitigation Measures for Fugitive Dust Emission

4.8.4 Fugitive dust emission arising from construction activities can be effectively suppressed by incorporating proper mitigation measures into work procedures through contractual clauses, good site management, and close monitoring by the resident engineers. The contractor shall be required to follow the requirements of the Air Pollution Control (Construction Dust) Regulations. With the adoption of good practices, it is expected that emission of construction dust can be kept at an acceptable level. The recommended dust mitigation measures are described below. In addition, EPD's recommended pollution control clause for construction contracts will be incorporated and required in future tender document to ensure that all relevant environmental protection and pollution control ordinances are observed and complied with.

General Site Management

4.8.5 Appropriate working methods should be devised and arranged to minimise dust emissions and to ensure any installed control system and/or measures are operated and/or implemented in accordance with their design merits. No free falling of construction debris should be allowed, which should be let down by hoist or enclosed tunnel to the ground.

4.8.6 Frequent mist/ water spraying should be applied on dusty areas. The frequency of spraying will depend upon local conditions such as rainfall, temperature, wind speed and humidity. The amount of water spraying should be just enough to dampen the material without over-watering which could result in surface water runoff.

4.8.7 Hoarding of not less than 2.4m high from ground level along site boundary, which is next to a road or other public area should be provided.

Vehicles and Unpaved Site Roads

4.8.8 Dust emission from unpaved roads comes predominantly from travelling of vehicles. Areas within the site where there are regular vehicle movements should have an approved hard surface. Speed controls at an upper limit of 10km/hr should be imposed and their movements should be confined to designed roadways within the site. All dusty vehicle loads should have side and tail boards covered by tarpaulin extending at least 300mm over the edges of the side and tail boards. Wheel-wash troughs and hoses should be provided at exit points of the site.

Material Stockpiling and Handling

4.8.9 The amount of stockpiling should be minimised where possible. Construction material or debris should be covered and stored inside enclosed areas. Other control measures such as enclosed or semi-enclosed windboard should be used, where applicable, to

minimise dust emission. Regular watering is needed at areas such as storage piles, where there could be potential dust emission. Placing dusty material storage piles near ASRs should be prevented.

4.8.10 Moreover, as the Schemes is close to the nearby ASR, i.e. Newport Centre. The following control measures are suggested to minimise the potential construction impact to the nearby ASRs:

- Plan site layout so that machineries, dust causing activities and stockpilings are away from receptors as far as possible.
- Site hoarding higher than 2.4m should be implemented where there are receptors at close proximity to the construction site and dusty activities.
- Haul road shall be away from the project boundary as much as possible.

4.9 Conclusion

4.9.1 The predicted concentrations of assessment parameters (NO_2, RSP and FSP and SO_2) at all ASRs of the Schemes would comply with the relevant AQOs except the 1-hour average NO_2 concentration and the annual average NO_2 concentration at A6, A7 and A8 (i.e. A6 and A7 are within KC-018 and A8 is at the interception point of KC-018 and KC-019) at 1.5m above ground and the annual average NO_2 concentration at A6 at 5m above ground would exceed the criteria of AQO. Therefore, no fresh air intake for the podium would be located within the area with exceedance. Therefore, it is anticipated that the air sensitive receivers of the proposed development will not be subject to adverse air quality impact.

4.9.2 The predicted concentration of odour for all ASRs are expected to be within the odour criterion, therefore, the occupant at these uses will not be subject to adverse odour impact.

4.9.3 Proper construction phase mitigation measures will be incorporated into work procedures through contractual clauses, good site management, and close monitoring by the resident engineers. The contractor shall be required to follow the requirements of the Air Pollution Control (Construction Dust) Regulations, Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation and other relevant ordinance/regulatory requirements. With the adoption of good practices, it is expected that emission of construction dust and emission can be kept at an acceptable level. In addition, EPD's recommended pollution control clause for construction contracts will be incorporated and required in future tender document to ensure that all relevant environmental protection and pollution control ordinances are observed and complied with. No significant construction phase environmental air quality impact is therefore anticipated.

5. WASTE MANAGEMENT AND LAND CONTAMINATION REVIEW

5.1 Introduction

5.1.1 During the construction phase of the proposed development, there would be waste generation. Practicable environmental mitigation measures are recommenced to reduce the impact to acceptable ranges. Potential land contamination impacts at the Schemes due to previous land uses and/or the existing operations are also being assessed.

5.2 Construction Waste Disposal

Legislation and Construction Waste Impact

5.2.1 The principal legislation controlling waste materials in Hong Kong is the Waste Disposal Ordinance (WDO) (Cap. 354) and its subsidiary regulations.

5.2.2 Construction activities for the Proposed Development will generate waste materials requiring appropriate management and disposal. Likely range of waste types includes:

- Excavated C&D materials and site clearance waste;
- Wood from formwork as non-inert C&D materials;
- General refuse generated by the workforce;
- Chemical and oily wastes due to maintenance of equipment; and

5.2.3 The general waste management strategy is to avoid waste generation in the first place. If that is unavoidable, source reduction and segregation should be exercised as far as practicable and at the same time, recycling and reuse should be adopted to salvage as much as possible all the recyclable and reusable materials.

Construction Waste Disposal Measures

5.2.4 Contractor will be required to develop and implement a proper waste management plan (WMP) according to the PNAP ADV-19 to devise proper procedures to segregate, store and delivery/disposal or recyclable/non-recyclable materials.

5.2.5 Onsite sorting of construction wastes will be recommended. Onsite sorting can be achieved by avoiding the generation of "mixed waste" through good site control.

5.2.6 Waste generated by construction activities should be sorted into inert C&D materials and non-inert C&D materials. The inert C&D materials which comprise soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works. The non-inert C&D materials which comprises metal, timber, paper, glass, junk and general garbage shall be reused or recycled and, as the last resort, disposal of at landfills.

5.2.7 It is estimated that about 185,000m^3 of inert C&D material and 15,700m^3 of non-inert material will be generated during the course of construction. Adequate areas for sorting and storage of segregated materials should be provided onsite. Construction wastes shall be sorted, with the inert C&D material broken up into small pieces for disposal at public fill reception facility, and the non-inert C&D material should be disposed of at landfill.

5.2.8 To estimate the general refuse generated during construction phase, an assumption of 100 workers per day with 0.65 kg per worker per day has been made. **Table 5.1** presents the estimation of waste generated during construction phase.

Table 5.1 Summary Table of Estimated Waste during Construction Phase

Waste Material	Total Quantity Generated	Handling	Disposed offsite/reused and quantity
Inert C&D Material	~185,000m^3	Sorted into inert C&D material and delivered to public fill reception facilities	~185,000m^3 to be delivered to public fill reception facility (minimal for reuse onsite)
Non-Inert C&D Material	~15,700m^3	Collected and segregated where practicable, and collected by/delivered to recycler	~800 m^3 to be collected by/delivered to recycler ~14,900 m^3 to be disposed of at designated landfill site
General Refuse	~65kg per day	Collected using adequate containers/bins and provide onsite collection point for collection	Collected by refuse collection vehicle and disposed of at designated landfill site
Chemical Waste	Anticipated to be limited (around some hundred litres at most)	Collected by licensed collectors	Chemical Waste Treatment Centre or equivalent

Note: The above estimated quantities are subject to detailed design stage.

5.2.9 Construction wastes shall be sorted, with the inert C&D materials broken up into small pieces for disposal at public fill reception facility, and the non-inert C&D materials should be disposed of at landfill.

5.2.10 Chemical and oily wastes generated from the construction activities, vehicle and plant maintenance and oil interceptors should be disposed of as chemical waste in strict compliance with the Waste Disposal (Chemical Waste) (General) Regulations.

5.2.11 Waste disposal from construction site is subject to control under the Waste Disposal Ordinance.

5.3 Assessment Criteria for Land Contamination Review

5.3.1 The following guidelines published by EPD have been followed:

- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (RBRGs), dated December 2007;
- Guidance Note for Contaminated Land Assessment and Remediation, dated 15 August 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land (EPD's Practice Guide), dated August 2011.

5.3.2 As the RBRGs and the Practice Guide are the latest guidelines promulgated for use in August 2007 and August 2011 respectively, the RBRGs criteria and the requirements stated in the Practice Guide will be adopted in this Land Contamination Review.

5.4 Review of Historical and Current Available Information

5.4.1 The Schemes (i.e. KC-018 and KC-019) are currently zoned as "Comprehensive Development Area (CDA)" and shown as 'Road' under the Kai Tak OZP (Plan No. S/K22/7).

5.4.2 The existing KC-018 Site comprises ageing residential blocks. They are of 8 storeys high. The existing KC-019 Site comprises Newport Centre Phase 1 and 2 (industrial buildings) of 4 storeys high. Part of Ma Tau Kok Road is within the schemes. The historic and current land uses are discussed below.

Historic and Current Land Uses

5.4.3 Historic aerial photos taken in year 1945, 1963, 1976, 1980, 1985, 2017 and 2021 are shown in **Appendix 5.1**. KC-018 generally consisted of compacted residentials. Gas Work was established to its immediate south and west in year 1945 and 1963 respectively. The south portion of Gas Work was demolished in year 1993 and redeveloped into a high-rise residential development (i.e. Grand Waterfront) since year 2007. The compacted residentials remain the same till now.

5.4.4 KC-019 was under reclamation in year 1945 and became an industrial area from 1963 to 1976 with shore. KC-019 was then demolished and redeveloped into the current Newport Centre by phase. Phase 1 (i.e. east portion) of Newport Centre was erected in year 1980, followed by Phase 2 (i.e. west portion) in year 1981. There is no change of landuse at KC-019 since then.

Table 5.2 Landuse Summary

Period / Year	Landuse / Description	Owner or occupier	Source(s) of Information	Off-site Property Affected?
1945	A few building structures were erected at KC-018 Site. A Gas Work was established to its immediate south. The area at KC-019 Site is under reclamation.	No information available	Aerial Photograph from Lands Department	No Based on the earliest available topographic map (i.e. year 1960), it is observed that several facilities were erected within the Gas Work (i.e. water tank, gas storage tank, brick store and vertical retort plant). The Gas Work was abandoned and demolished in year 1993. The site has been developed into residential use since 2007 (i.e. Grand Waterfront). No land contamination issue is considered for the **operation involved in the mentioned** facilities within the Gas Work.
1963	Residential buildings were erected at KC-018 Site. The buildings were constructed in a compact way. New portion of Gas Work was established to its immediate west. KC-019 Site is occupied by low-rise building. The shore area is used for loading and unloading goods from/to vessels	No information available	Aerial Photograph from Lands Department	
1976	There is no change of landuse comparing to year 1963.	No information available	Aerial Photograph from Lands Department	
1980	There is no change of landuse at KC-018 Site comparing to year 1976. KC-019 Site started to redevelop as Newport Centre with low0rise building demolished. In 1980, Newport Centre Phase 1 (i.e. east portion) was erected. Phase 2 (i.e. west portion) was under construction. Demolition of previous building was completed.	No information available	Aerial Photograph from Lands Department	
1985	There is no change of landuse at KC-018 Site comparing to year 1980. For KC-019 Site, construction of Newport Centre (both phase 1 and 2) was completed. EMSD workshop with rooftop carpark was erected to the immediate north of KC-019. Part of the workshop was within KC-019.	No information available	Aerial Photograph from Lands Department	
2017	A residential development (i.e. Grand Waterfront) was erected since 2007 to KC-018's immediate south. There is no change of landuse at KC-019 Site comparing to year 1985.	No information available	Aerial Photograph from Lands Department	
2020	There is no change of landuse at KC-018 Site comparing to year 2017. EMSD workshop has been demolished and the northwestern corner of KC-019 Site is therefore vacant.	No information available	Aerial Photograph from Lands Department	No

Site Inspection and Observation

5.4.5 Site inspection to the Schemes was conducted on 29 September 2017, 23 June 2020 and 24 April 2022. Photo records are provided in **Appendix 5.4**.

5.4.6 Based on the observation from the site inspection, the ground floor of KC-018 Site generally consists of car repairing workshops, hardware stores, and small retail stores, etc. There were no aboveground / underground oil storage tanks, chemicals and dangerous goods observed to be stored on site during the site visit.

5.4.7 *T*he basement and ground floor of KC-019 Site consists mainly of workshops, storage, retail shops, store and office. There were no aboveground / underground oil storage tanks, chemicals and dangerous goods observed to be stored on site during the site visit.

Information from Government Departments

5.4.8 Apart from the historic aerial photos, the following Hong Kong Special Administration Region (HKSAR) Government Departments have been enquired on the latest update on the availability of land use status and records of land contamination and/or spillage of the Application Site. The summary of correspondence is tabulated in **Table 5.3** below. Copy of letters which the Consultant sent to various Government Departments and relevant replies are shown in **Appendix 5.2** for reference.

5.4.9 Building Records Access and Viewing On-line (BRAVO) of Building Departments (BD) was visited to obtain records for completed private buildings. It is observed from the building plans in year 1951 that part of the KC-018 Site at No. 93-113 Ma Tau Kok Road was designated as manufacturing industries (packaging, weaving). KC-019 Site is currently occupied by industrial building so that industrial process is deemed allowed. Building plans for other parts of the Schemes were not available. The captured screen of BRAVO is provided in **Appendix 5.3**.

5.4.10 As advised by Planning Department (PlanD), the Schemes fall within an area zoned "Comprehensive Development Area" ("CDA") and shown as "Road" on the prevailing approved Kai Tak Outline Zoning Plan (OZP) No. S/K22/6. The Consultant visited the Town Planning Board Statutory Planning Portal 2 to obtain latest records for land zoning. The website as of 05 September 2022 has confirmed the zoning remains valid under the Kai Tak Outline Zoning Plan (OZP) No. S/K22/7.

5.4.11 As advised by Fire Service Department (FSD), no Dangerous Goods Licence is issued regarding the Schemes. 3 incidents were reported regarding leakage of flammable liquid/gas and there was a No. 1 alarm fire happened at Ming Lun Street (varies from 1/F to 6/F).

5.4.12 As advised by Hong Kong Police Force (HKPF), there was no explosive incident in their database at the Schemes.

5.4.13 As advised by Environmental Protection Department (EPD), the Consultant visited the territory-wide register of chemical waste producers (CWPs) maintained at EPD's Territory Control Office. The register record as of 04 November 2021 has recorded 80 chemical waste producers near/at both KC-018 and KC-019 sites.

Table 5.3 Enquiries and Responses on Land Contamination Related Records for the Schemes

Consultant's Letter Ref.	Department	Response Letter Ref.	Date	Summary
URAKCAA2EI00_0_0007L.20	Environmental Protection Department	( ) in EP650/G1/4	17 June 2020	There is no record of chemical spillage accident and submission relating to land contamination assessment at the Schemes in the past 3 years. A visit to the Territorial Control Office for chemical waste producer registry inspection was performed. According to the register record as of 04/11/2021, 80 CWPs are found near/at KC-018 and KC-019.
URAKCAA2EI00_0_0008L.20	Fire Service Department	(148) in FSD GR 6-5/4 R Pt.27	06 July 2020	There is no Dangerous Goods Licence issued at the Schemes. There were total of 3 incidents record regarding leakage of flammable liquid/gas and 1 incident of No. 1 alarm fire at Ming Lun Street (varies from 1/F to 6/F).
URAKCAA2EI00_0_0009L.20	Hong Kong Police Force	(37) in CP OPS EOD 6-20/1 Pt. 4	10 June 2020	There was no explosive incident in EOD's database at KC-018 and KC-019.
URAKCAA2EI00_0_00010L.20	Planning Department	( ) K-22/23	23 June 2020	The Schemes fall within an area zoned "Comprehensive Development Area" ("CDA") and shown as "Road" on the prevailing approved Kai Tak Outline Zoning Plan (OZP) No. S/K22/6, which is intended for a comprehensive development/ redevelopment of the area for residential and/ or commercial uses with the provision of waterfront promenade, open space and other supporting facilities. The current "CDA" zoning for the site was first designated on the draft Kai Tak OZP No. S/K22/1 exhibited in November 2006 and has remained unchanged since then. Before that, the site had been subject to various land use zonings/ designation on statutory town plan, including: • "Residential or Light Industrial or a Mixture of Both" and 'Road' on the draft Ma Tau Kok Outline

				Development Plan No. LK/10/18/4 exhibited in April 1957; • "Industrial" and 'Road' on the draft Ma Tau Kok OZP No. LK/10/28 exhibited in November 1967; • "Residential (Group A)" and 'Road' on the draft Kai Tak (South) OZP No. S/k21/1 exhibited in September 1998; and • "CDA(1)", "Open Space" and 'Road' on the draft Kai Tak (South) OZP No. S/K21/2 exhibited in August 2001. The existing tenement buildings in the five street blocks of KC-018 site were issued with Occupation Permits by the Building Authority by phases in July 1959 to December 1960.
URAKCAA2EI00_0_00011L.20	Lands Department	(2) in DLO KW 309/KPT/KW	16 Jun 2020	DLO is not in position to advise the information on spillage accidents, illegal/ contaminating land uses or uncontrolled dumping uses and historical use information for the Schemes. Topographic Map available from Lands Department was reviewed. Topographic Map records generally tally with observations in aerial photos.

5.5 Discussions

KC-018

5.5.1 Based on the above, the desktop review of historic information indicated that the KC-018 Scheme was occupied by low-rise buildings that might have been used as manufacturing industries in year 1945. Since year 1963, the KC-018 was then developed into an urban area and the current buildings have remained since its erection from year 1963. 2 phases of Gas work were erected in year 1945 (i.e. immediate south) and year 1963 (i.e. immediate west). The south portion was demolished in year 1993 and redeveloped into a high-rise residential since year 2007. The west portion of Gas Work remains.

5.5.2 According to the site visit conducted in Apr 2022, the ground floor of the KC-018 Site is currently comprised of several car repairing workshops, hardware stores, and small retail stores, while the upper floors are of residential use. Since car repairing workshops may release oils and fuels and lubricant from vehicles during vehicle and equipment maintenance and refueling, potential land contamination issues are present at the KC-018 Site.

KC-019

5.5.3 It is observed that reclamation work was undergoing at the KC-019 Site in year 1945. Based on the topographic map and aerial photos from year 1959 to 1976, the KC-019

Site was used as foundry / factory. The KC-019 Site was then developed into industrial buildings (i.e. Newport Centre). Phase 1 (i.e. east portion) of Newport Centre was under construction since year 1978 and completed in year 1979. Phase 2 (i.e. west portion) was then followed by 1981 and remain unchanged up to present. EMSD workshop was expanded to the immediate north of KC-019 in year 1985. The extension involved a rooftop carpark. Part of the new workshop extension was within KC-019 site. The whole EMSD workshop has been demolished in year 2017. The northwest corner of KC-019 site is now vacant.

5.5.4 According to the site visit conducted in Apr 2022, the basement/ground floor of the KC-019 Site is currently comprised of workshop, storage, retail, store and office uses. Due to the nature of the buildings (i.e. Newport Centre and EMSD workshop), potential land contamination issues need to be ascertained in later stage.

5.6 Recommendations

5.6.1 Further site appraisal and soil sampling may be required to determine whether the site is contaminated, and if so, the extent of the potential contamination. Nevertheless, the consequent Contamination Assessment Plan (CAP) will be prepared to cover the Schemes (both KC-018 and KC-019 sites) to be developed. A Contamination Assessment Plan (CAP) and subsequently, Contamination Assessment Report (CAR), and Remediation Action Plan (RAP) will be prepared in later stages to identify the potential land contamination issues in the Schemes.

5.6.2 Further land contamination assessment and/or remediation works will be completed before commencement of any construction works for the development, in accordance with relevant guidelines issued by government departments.

6. OVERALL CONCLUSION

6.1 Conclusion

6.1.1 The Schemes is proposed to be redeveloped into a residential development comprising 4 towers with 2,226 flat units erected on top of a podium building with retail/GIC/clubhouse uses. The potential noise impact, air quality impact, and land contamination issues have been quantitatively addressed.

6.1.2 Road traffic noise level is found to exceed relevant criteria under base case scenario based on the notional layout plan. With the recommended noise mitigation measures in place, no exceedance is anticipated. As the scheme is subject to detailed design, the scheme design will be revised taking into account factors such as marketability, constructability, cost-effectiveness, etc. Practical and effective noise mitigation measures will be devised in future to minimise potential road traffic noise impact.

6.1.3 Fixed noise impact on the proposed development has been quantitatively assessed and no exceedance is anticipated under unmitigated scenario.

6.1.4 Cumulative air quality impact has been assessed. Based on the proposed development disposition and building height, no exceedance of relevant assessment criteria is found for residential portions while the future fresh air intake for the podium portion is recommended to be located to area further apart from To Kwa Wan Road where the impact is found to be acceptable.

6.1.5 Based on land contamination appraisal, potential risk of land contamination is present at the Schemes due to car repair workshop and potential manufacturing operations. A Contamination Assessment Plan (CAP) and subsequently, Contamination Assessment Report (CAR), and Remediation Action Plan (RAP) will be prepared in later stages to identify the potential land contamination issues in the Schemes. Further land contamination assessment and/or remediation works will be completed before commencement of any construction works for the development, in accordance with relevant guidelines issued by government departments.

6.1.6 Based on the environmental assessment results, it is concluded that the Proposed Redevelopment is environmentally acceptable with the recommended measures in place and remediation work (if required) implemented.

Figures

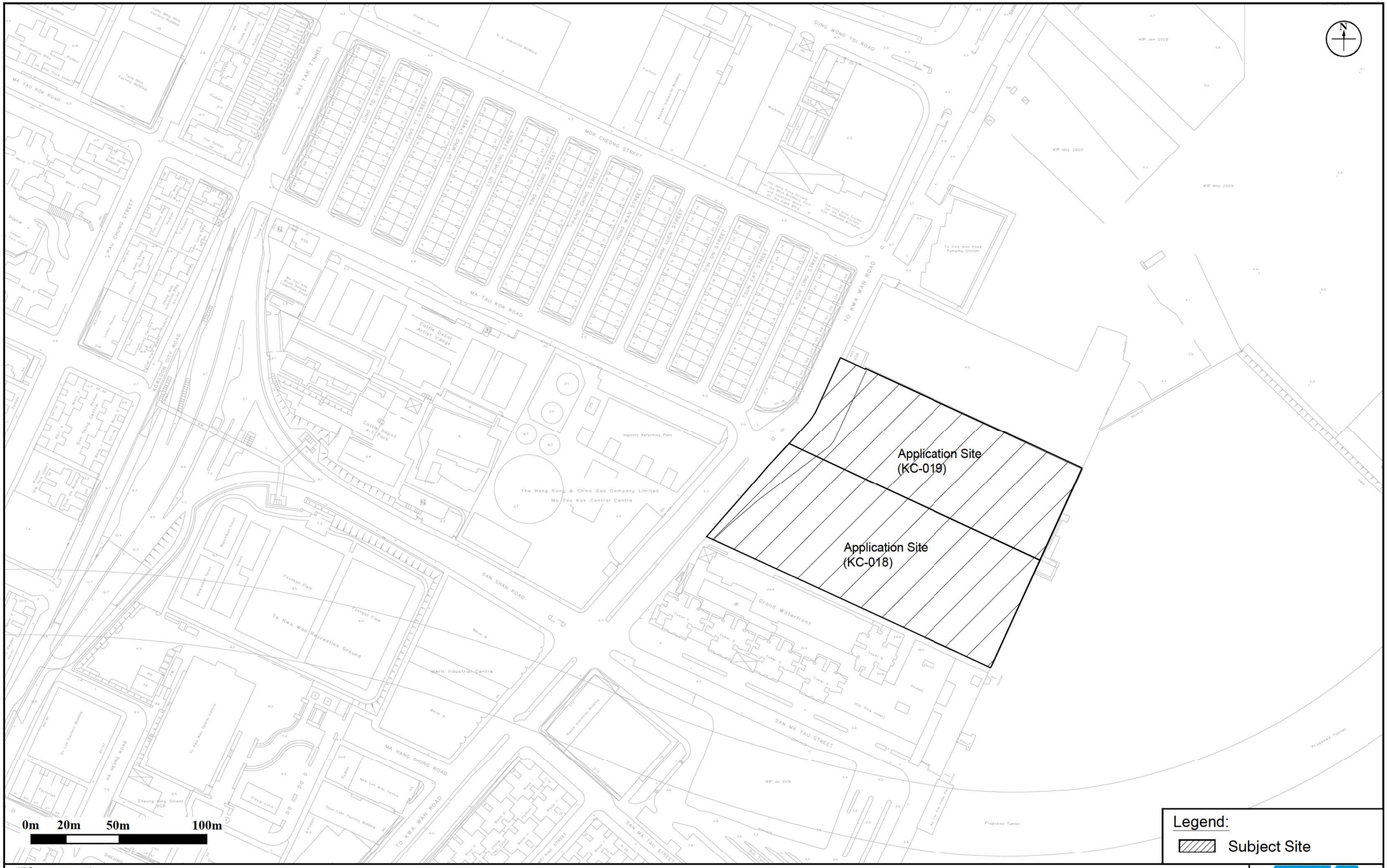


Figure: 1

Title: Location of Subject Site and Its Environs

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

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Date:	Jul 2022

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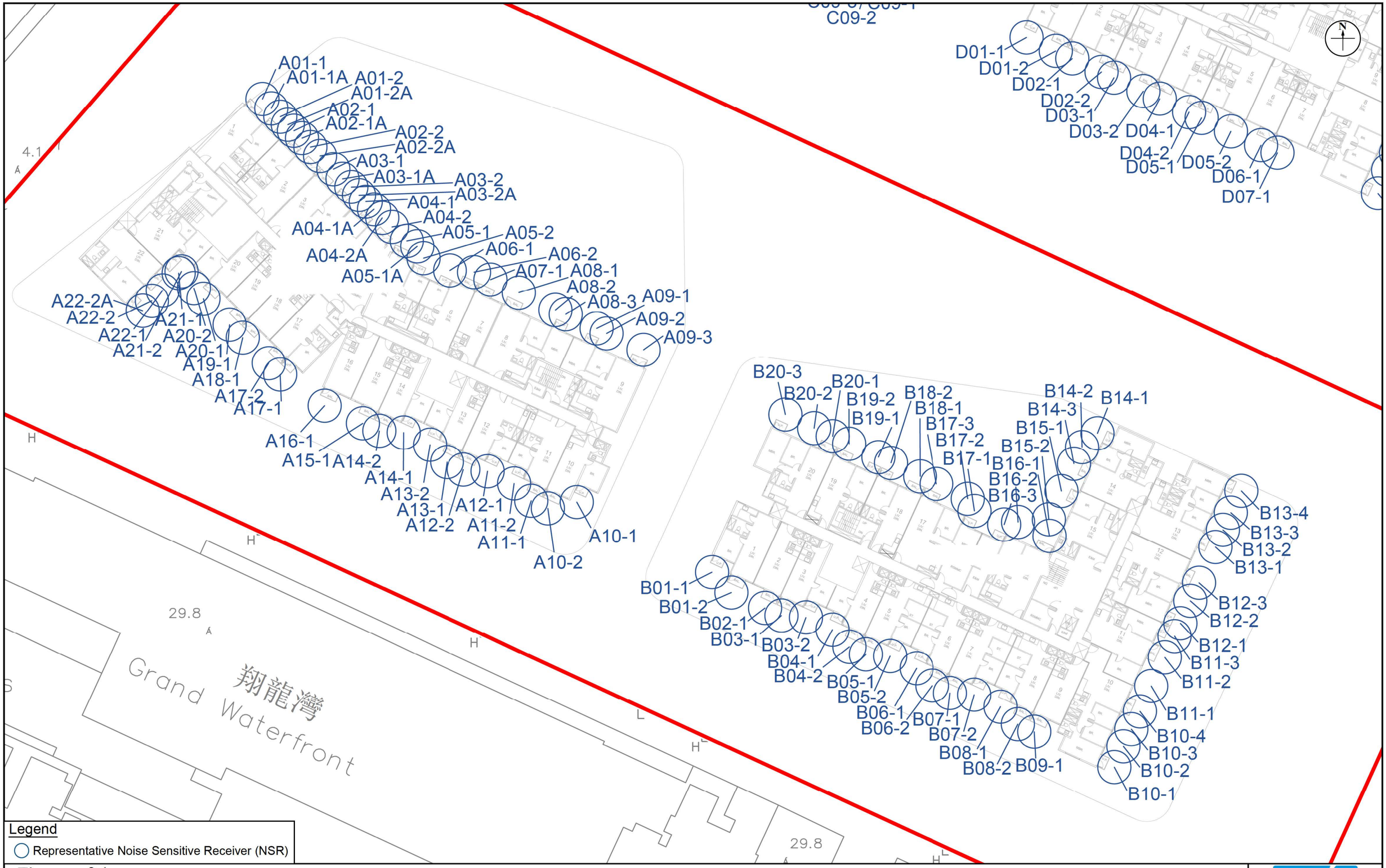


Figure: 2.1a

Title: Location of Representative Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (KC-018) - Low Zone (3/F-7/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

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Date:	July 2022

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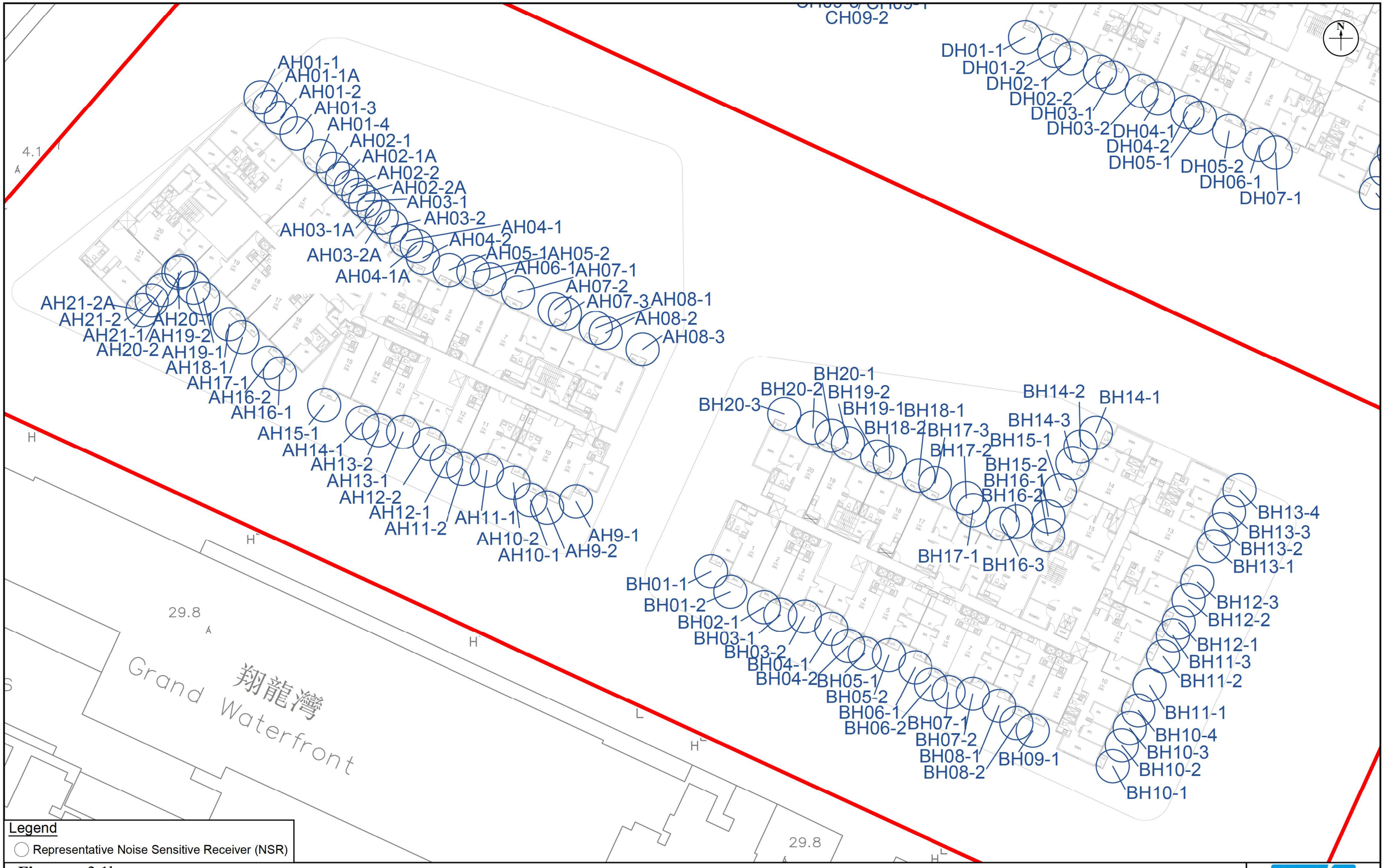


Figure: 2.1b

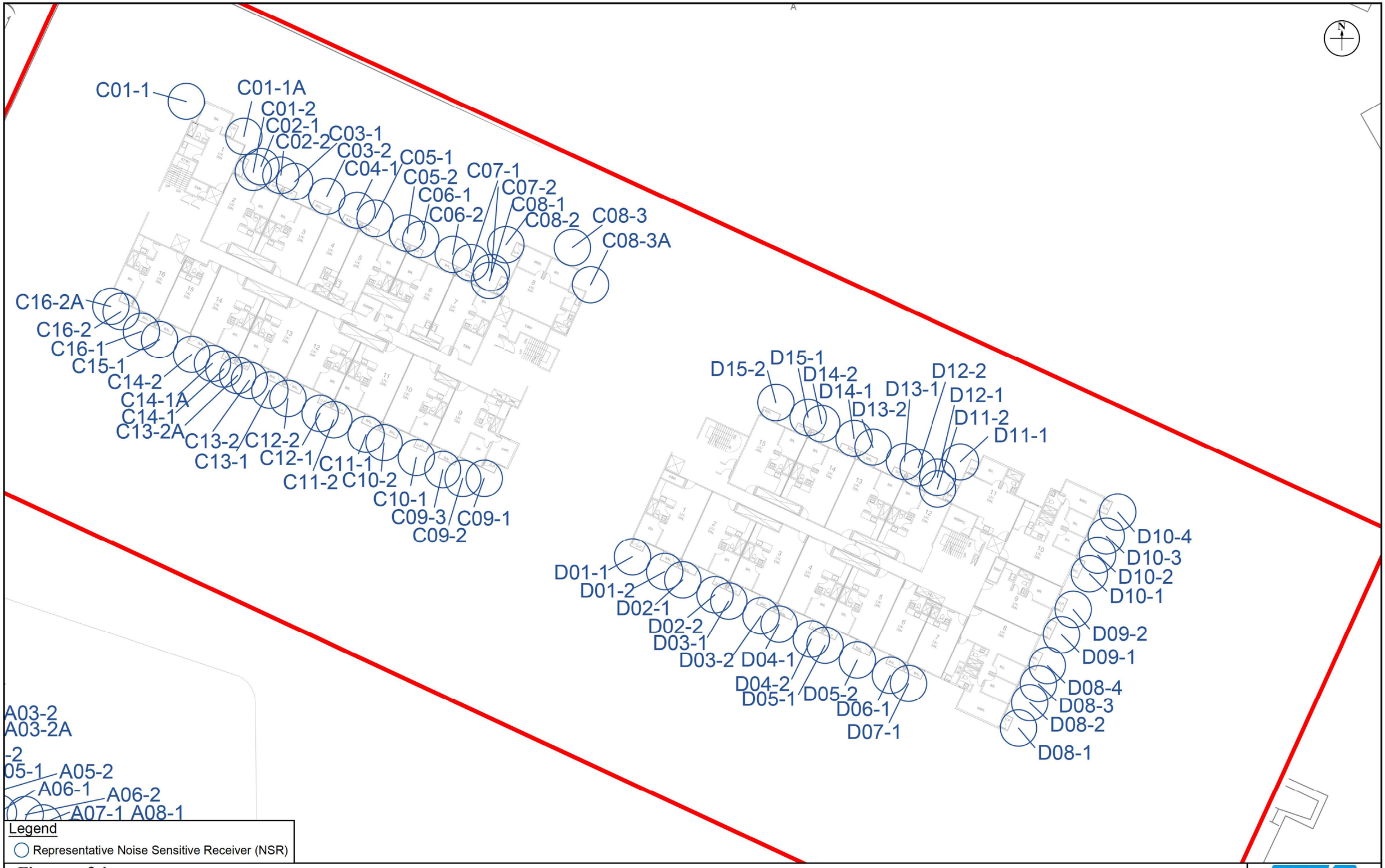
Title: Location of Representative Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (KC-018) - High Zone (8/F-33/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.1
Date:	July 2022

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Legend

◯ Representative Noise Sensitive Receiver (NSR)

Figure: 2.1c

Title: Location of Representative Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (KC-019) - Low Zone (3/F-22/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.1
Date:	July 2022

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Legend

◯ Representative Noise Sensitive Receiver (NSR)

Figure: 2.1d

Title: Location of Representative Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (KC-019) - High Zone (23/F-33/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.1
Date:	July 2022

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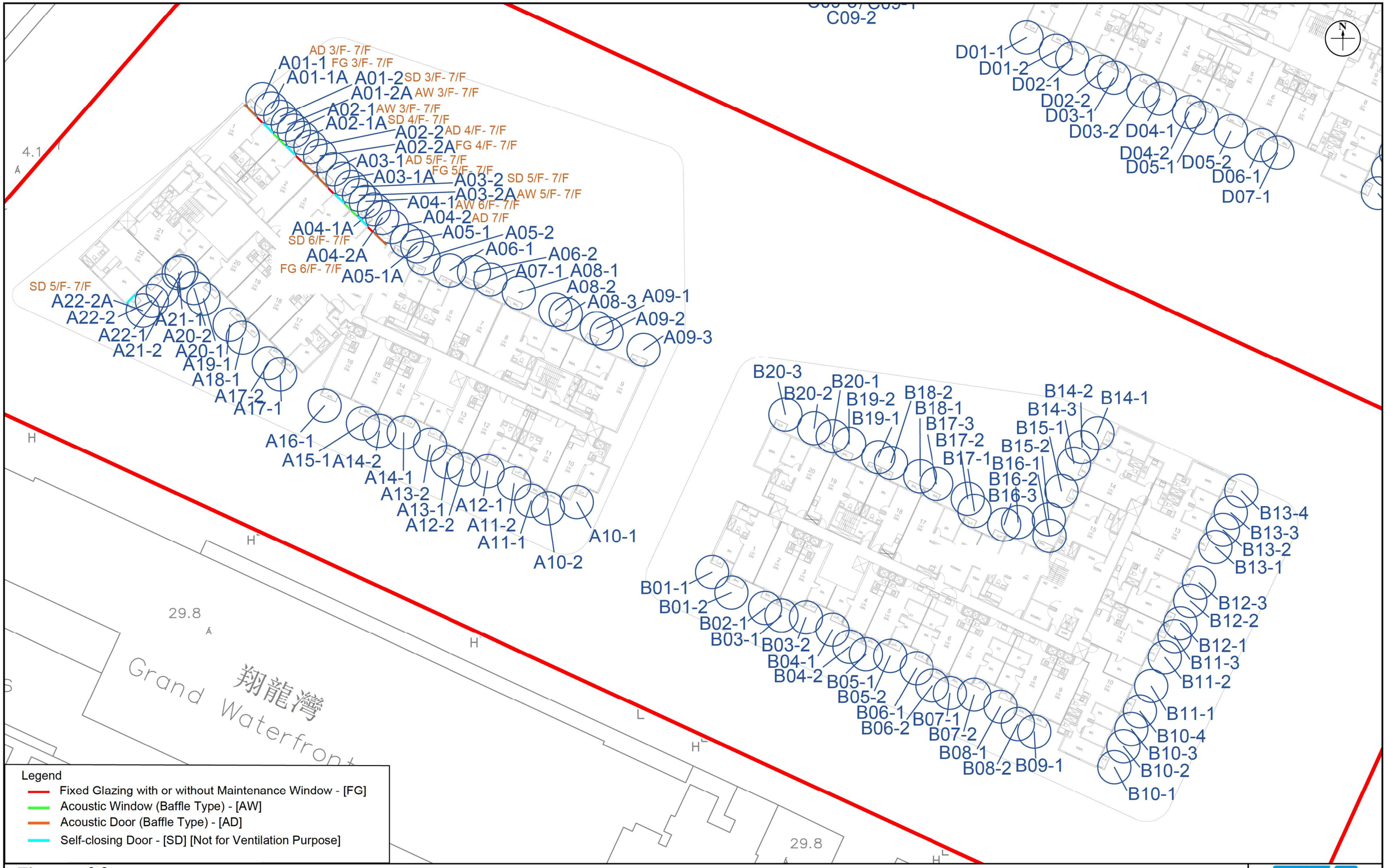


Figure: 2.2a

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-018) - Low Zone (3/F-7/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

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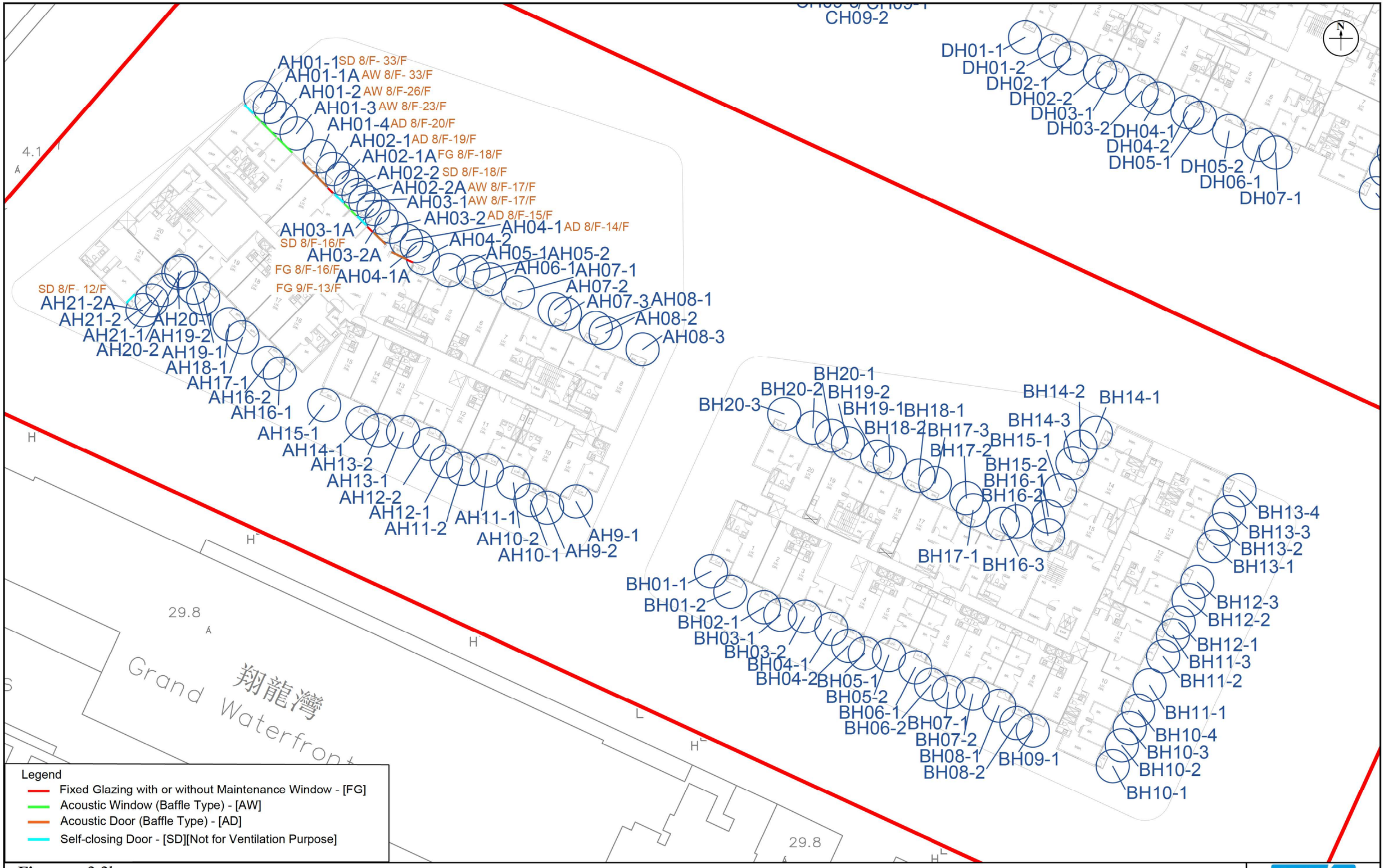


Figure: 2.2b

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-018) - High Zone (8/F-33/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

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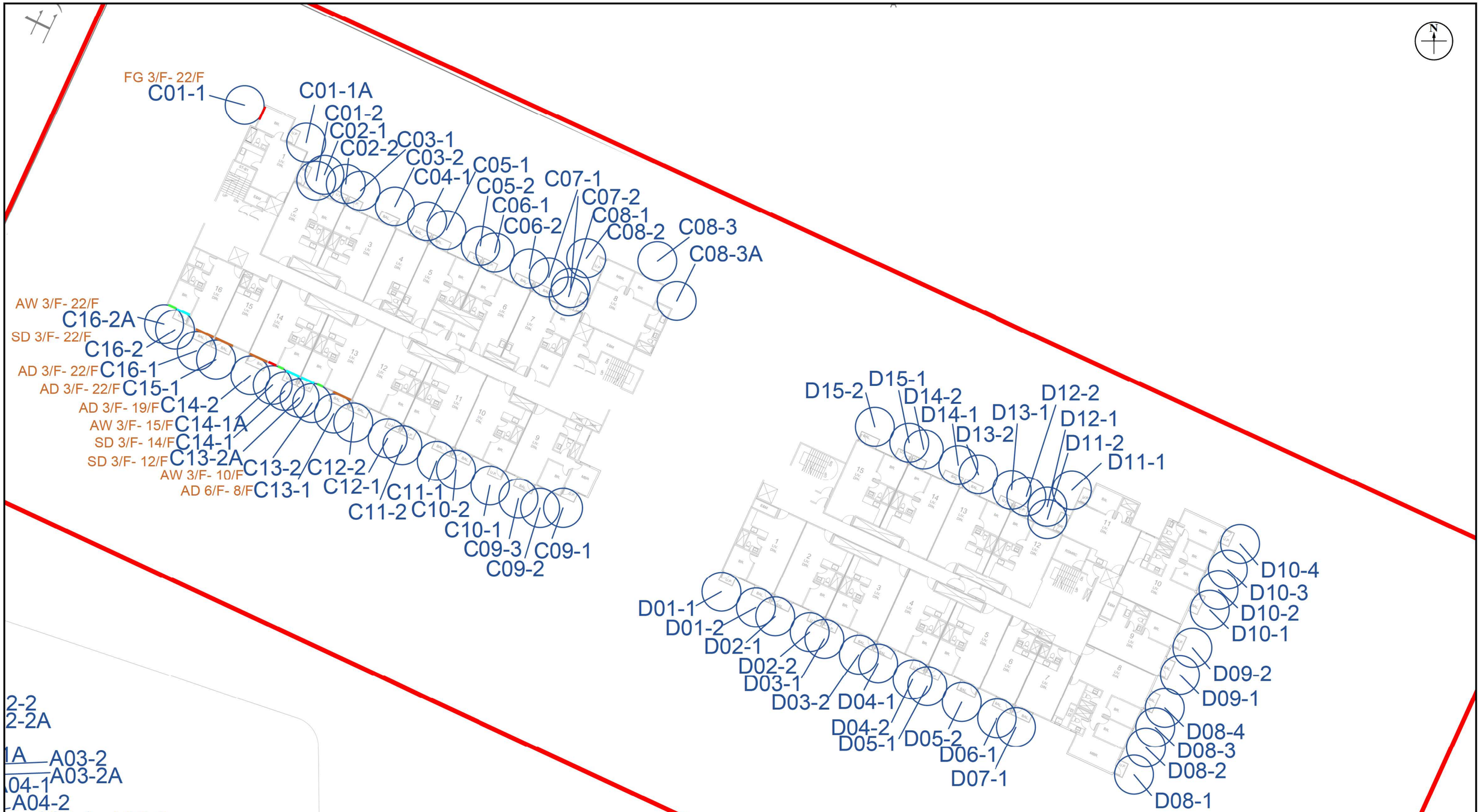


Figure: 2.2c

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-019) - Low Zone (3/F-22/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by: MW

Checked by: CC

Rev.: 1.2

Date: Sep 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\02 Noise\02 Traffic\220829\cad\MLP_20220829.dwg



Figure: 2.2d

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-019) - High Zone (23/F-33/F)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

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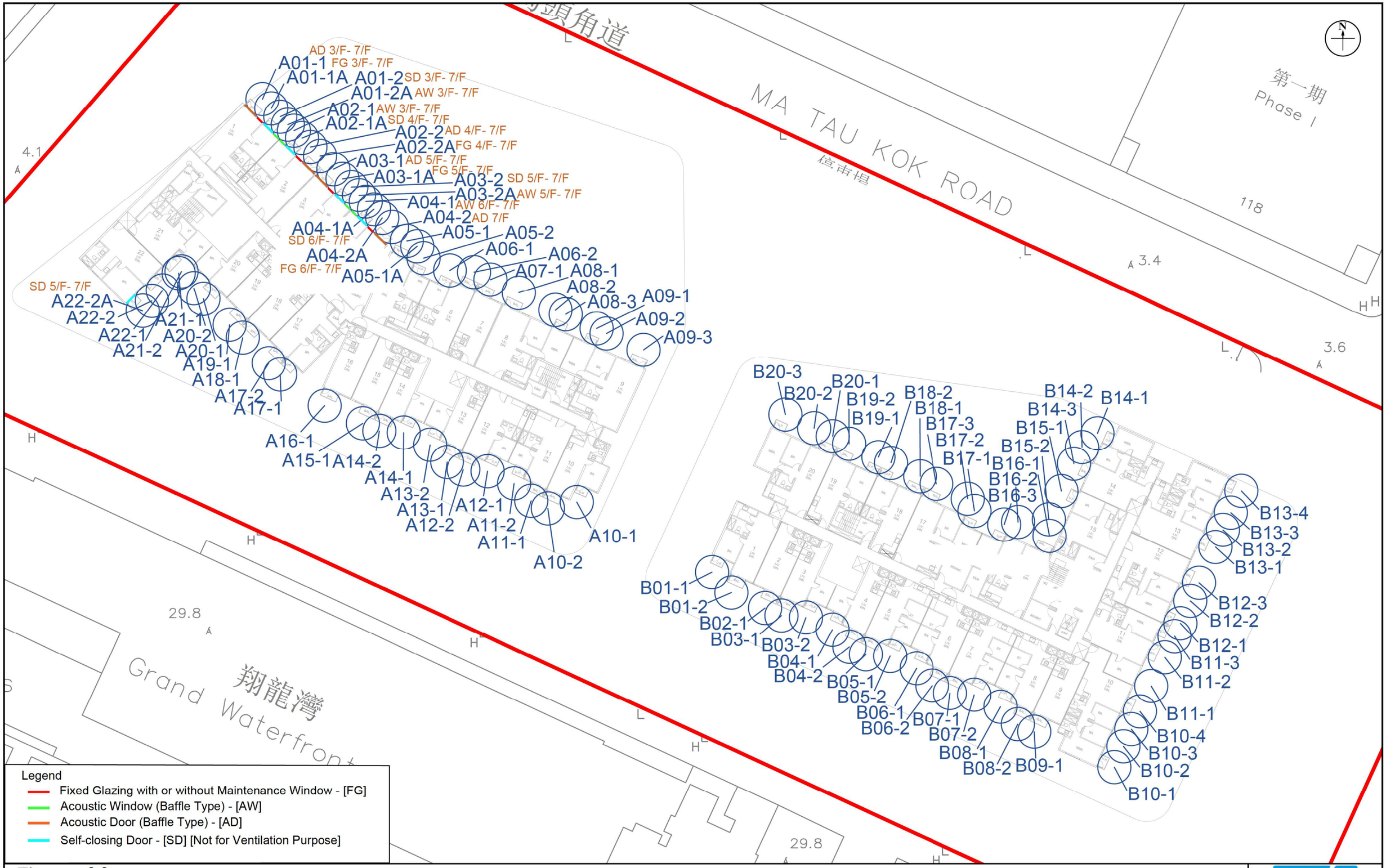


Figure: 2.3a

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-018) - Low Zone (3/F-7/F) (Worst Case Scenario)

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

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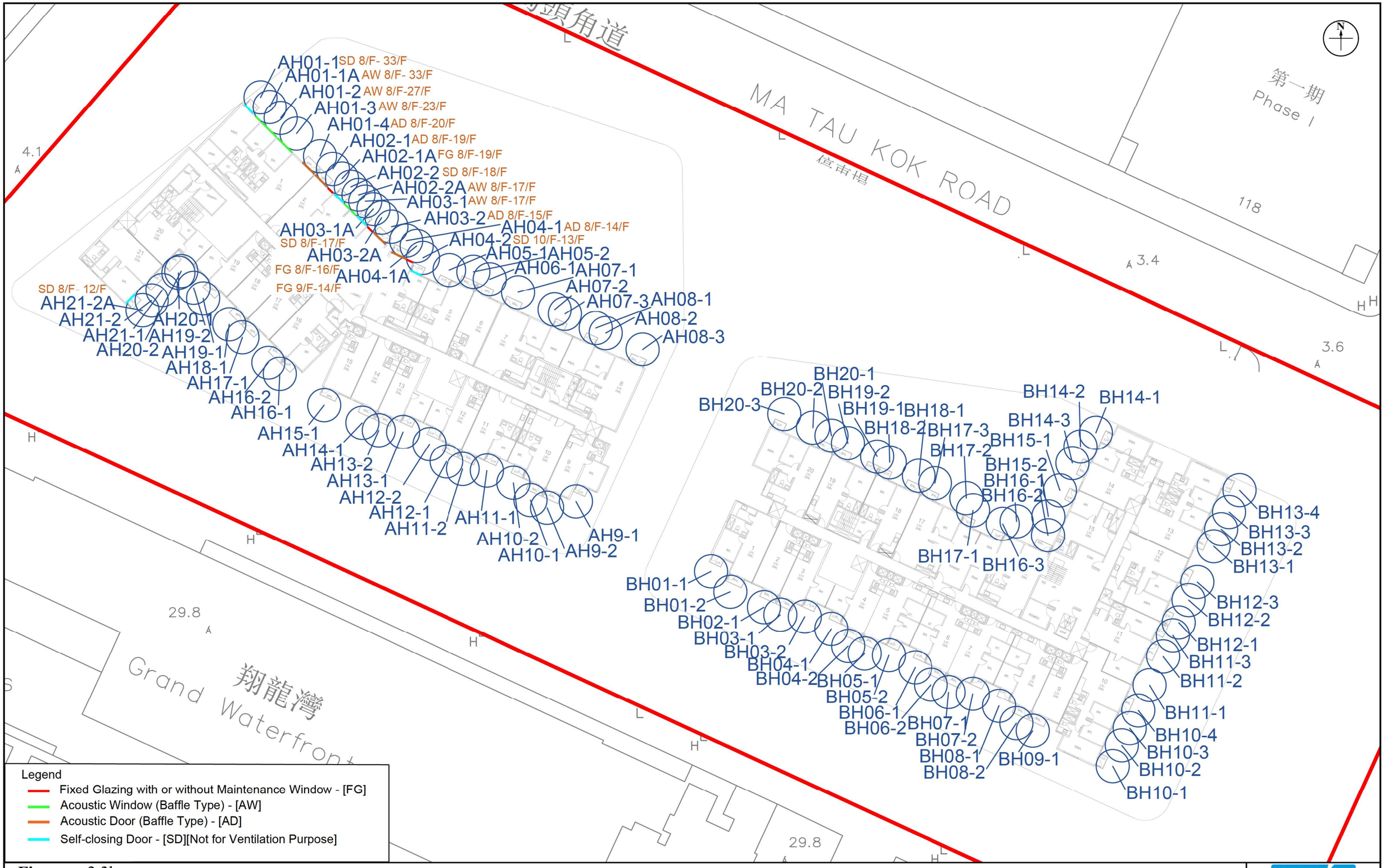


Figure: 2.3b

Title: Location of Recommended Road Traffic Noise Mitigation Measures (KC-018) - High Zone (8/F-33/F) (Worst Case Scenario)

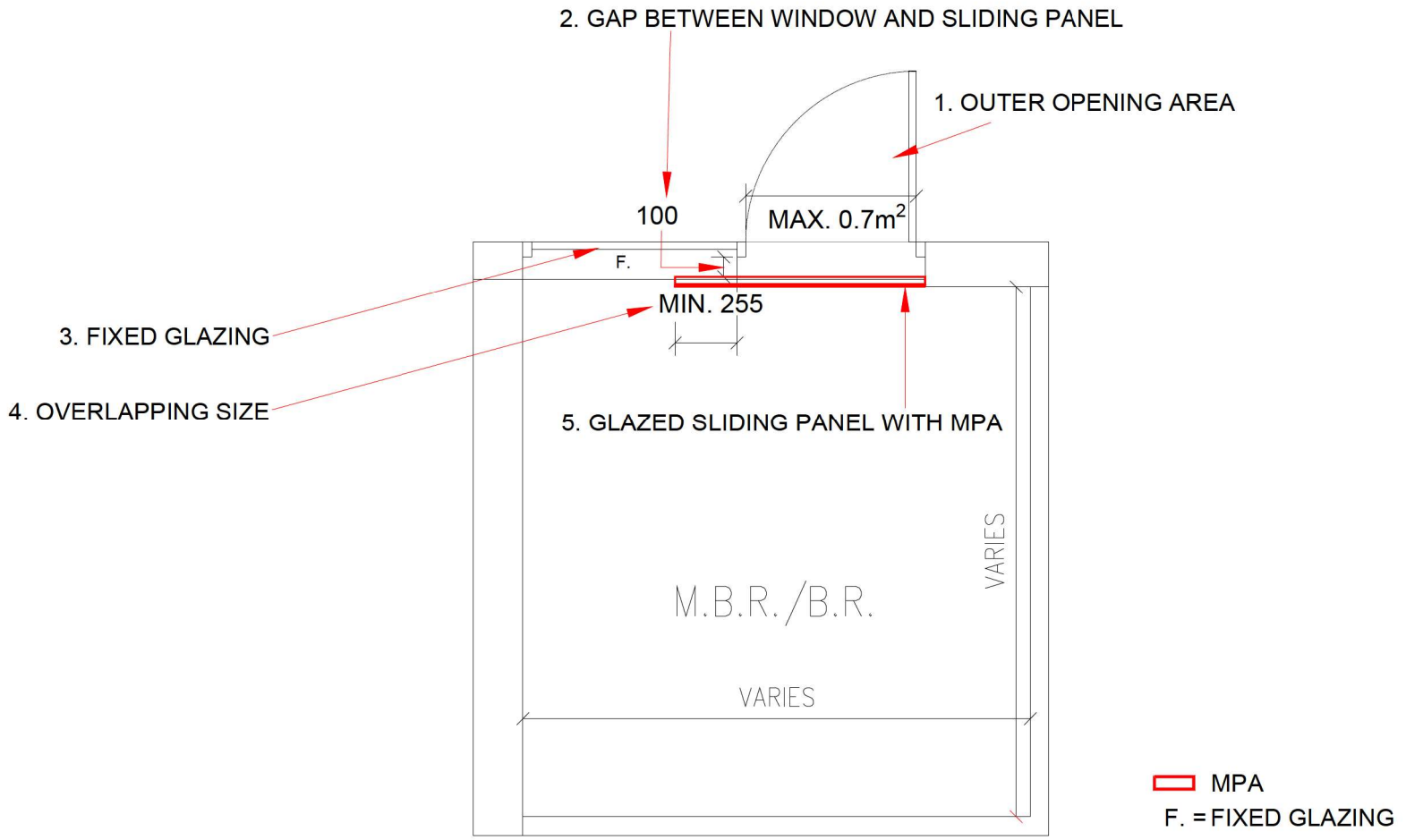
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\02 Noise\02 Traffic\220829\cad\MLP_20220829_sc1.dwg

INDICATIVE DESIGN OF ACOUSTIC WINDOW (BAFFLE TYPE) FOR BEDROOM (REFERENCED FROM EX-NORTH POINT ESTATE REDEVELOPMENT)



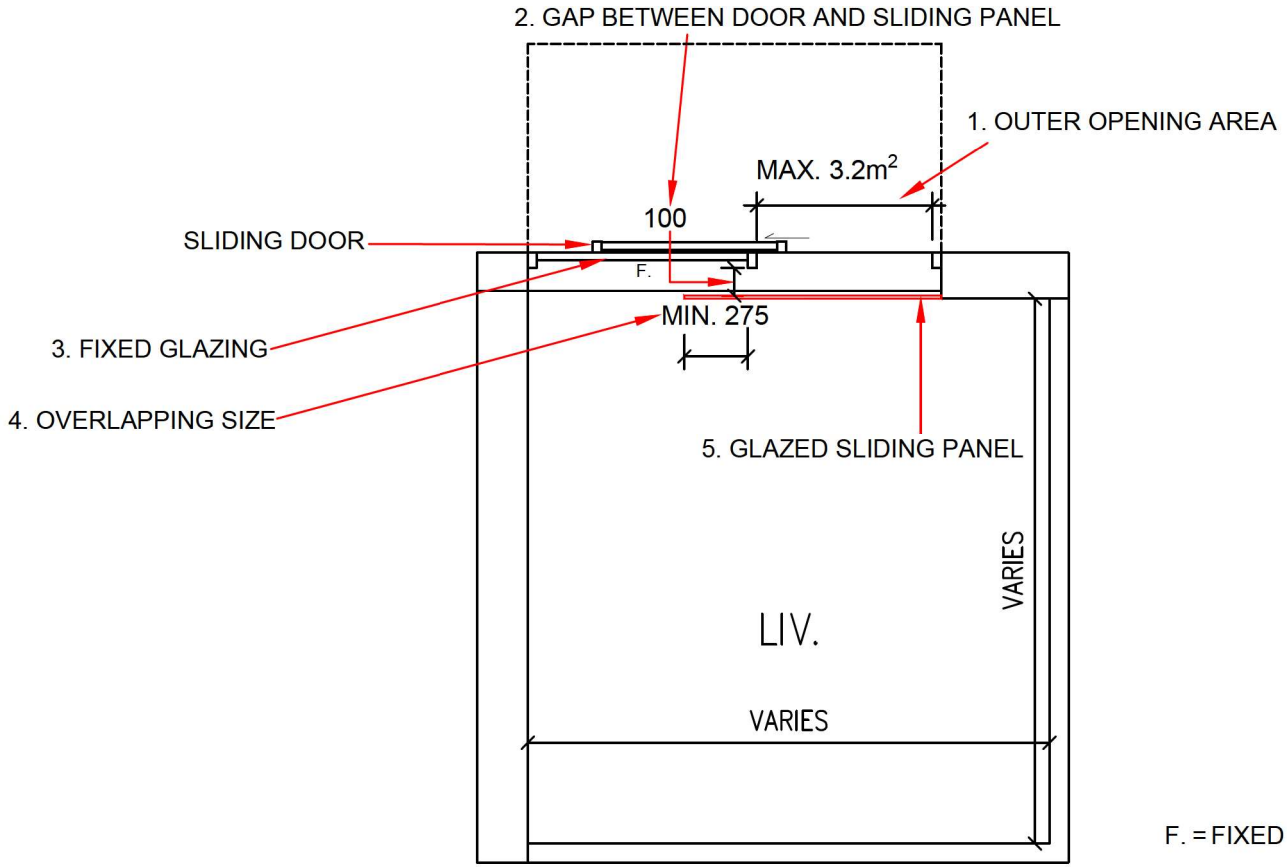
TYPICAL PLAN

Note:
The design is made reference to the reference case, it will be subject to further refinement at the detailed design stage.

Figure: 2.4	RAMBOLL
Title: Indicative Design of Acoustic Window (Baffle Type)	Drawn by: MW Checked by: CC
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.1 Date: July 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\02 Noise\02 Traffic\220829\cad\Baffle Window & Door.dwg

INDICATIVE DESIGN OF ACOUSTIC DOOR (BAFFLE TYPE) FOR LIVING/DINING ROOM (REFERENCED FROM EX-NORTH POINT ESTATE REDEVELOPMENT)



F. = FIXED GLAZING

TYPICAL PLAN

Note:
The design is made reference to the reference case, it will be subject to further refinement at the detailed design stage.

Figure: 2.5	RAMBOLL
Title: Indicative Design of Acoustic Door (Baffle Type)	Drawn by: MW Checked by: CC
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.1 Date: July 2022

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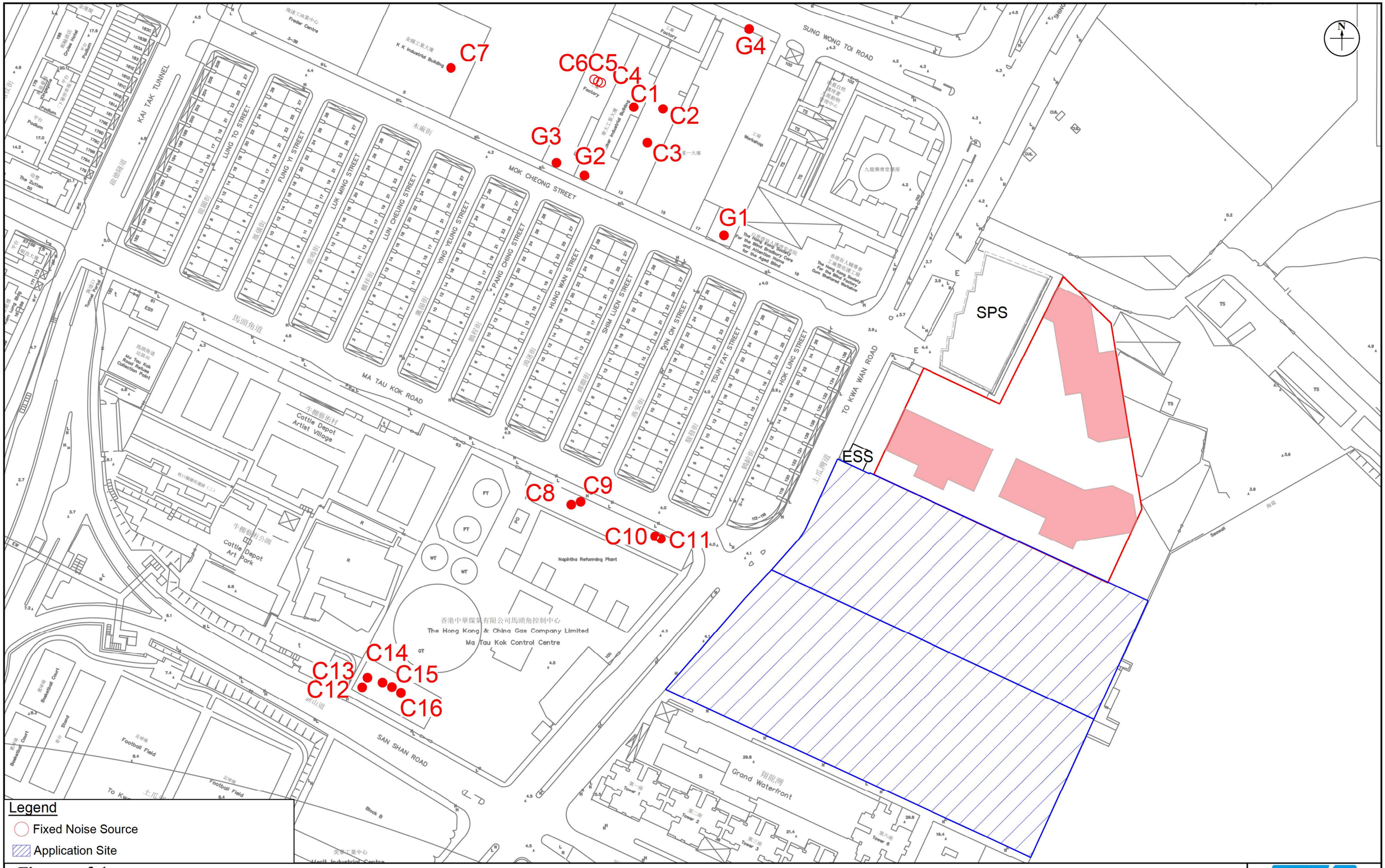


Figure: 3.1

Title: Location of Fixed Noise Source Identified in the Surrounding of the Application Site

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.1
Date:	July 2022

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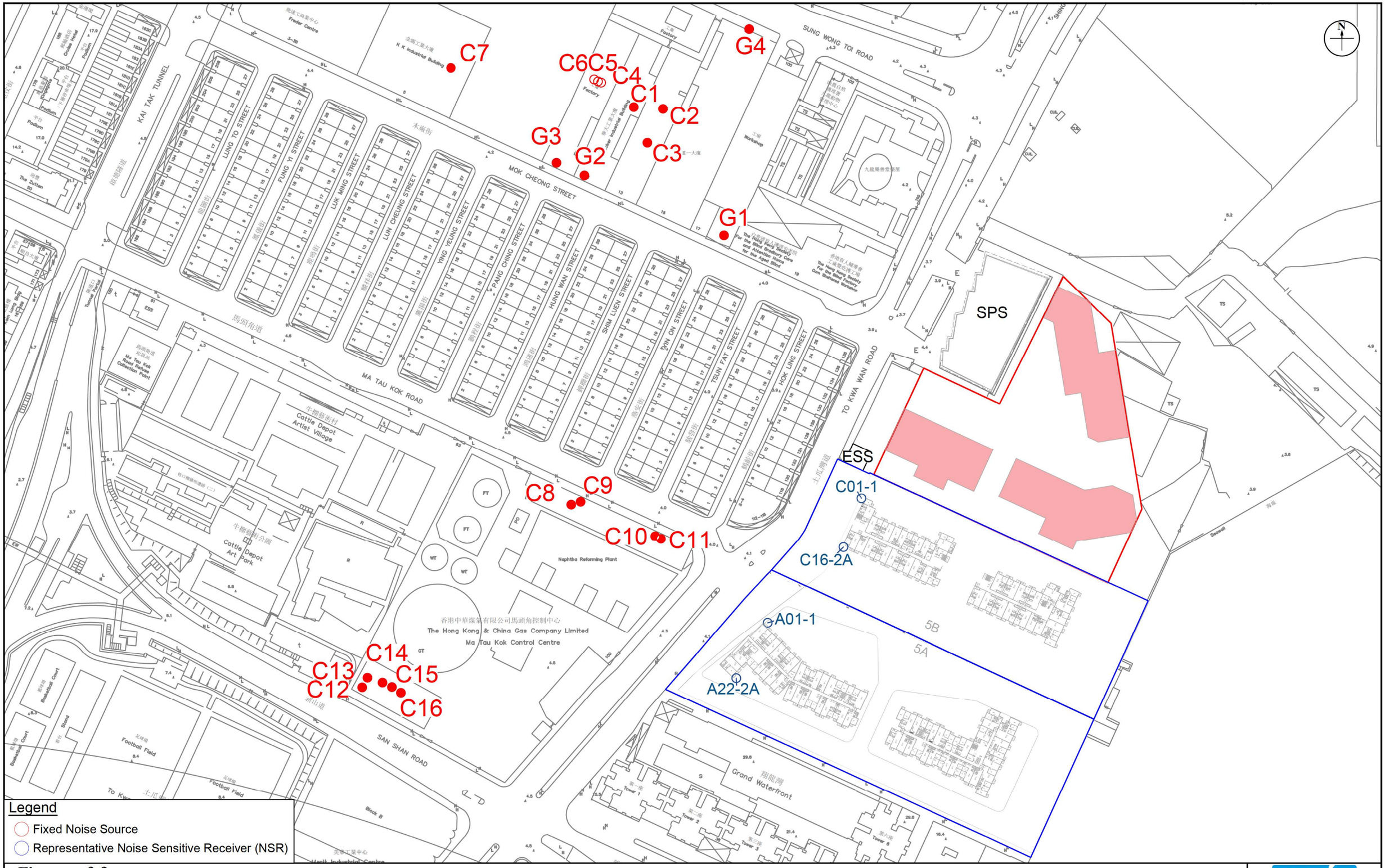


Figure: 3.2

Title: Location of Representative Noise Sensitive Receivers for Fixed Noise Impact Assessment

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	MW
Checked by:	CC
Rev.:	1.1
Date:	July 2022

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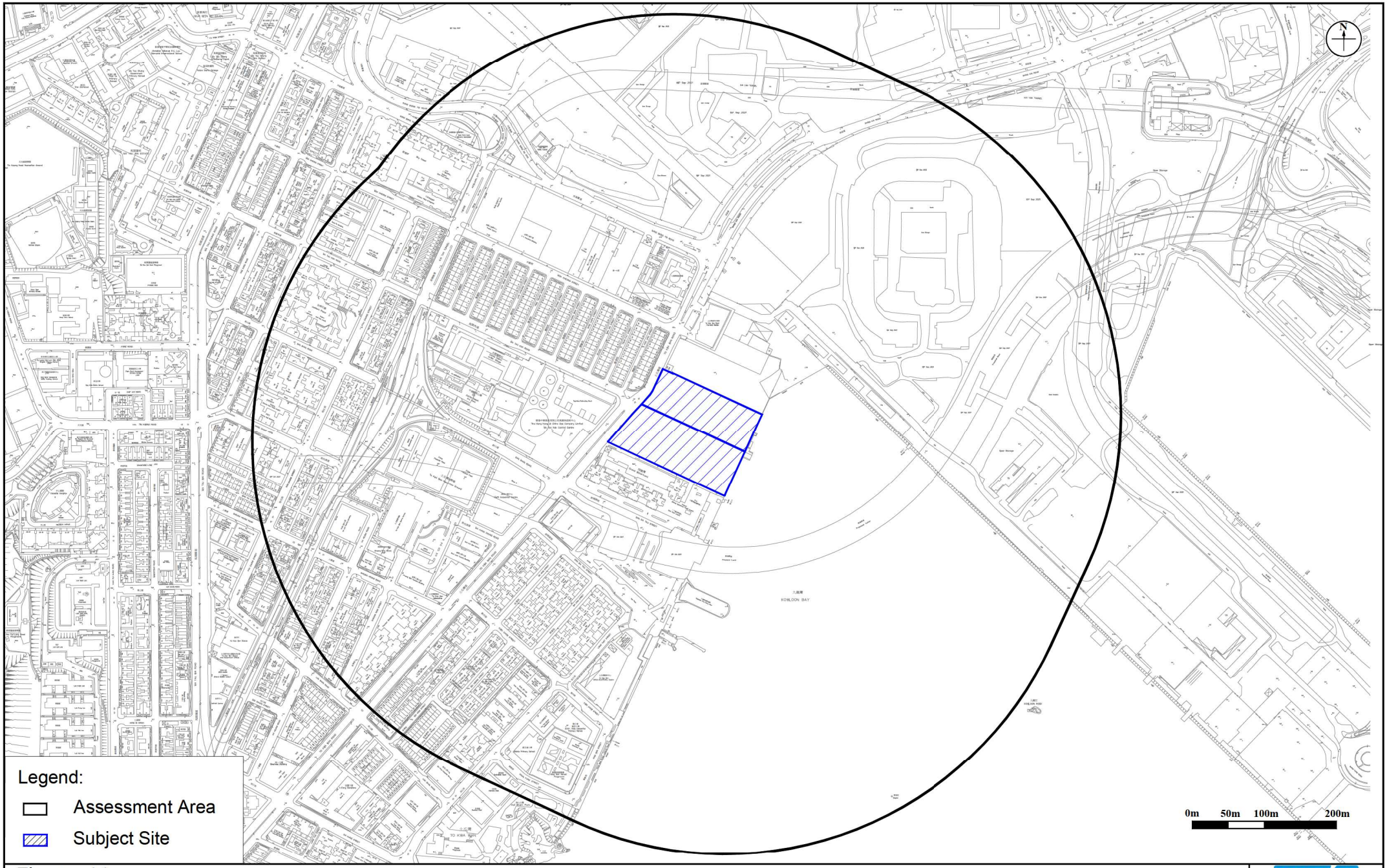


Figure: 4.1

Title: Assessment Area of 500m from the Application Site

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	LT
Checked by:	BF
Rev.:	1.0
Date:	May 2022

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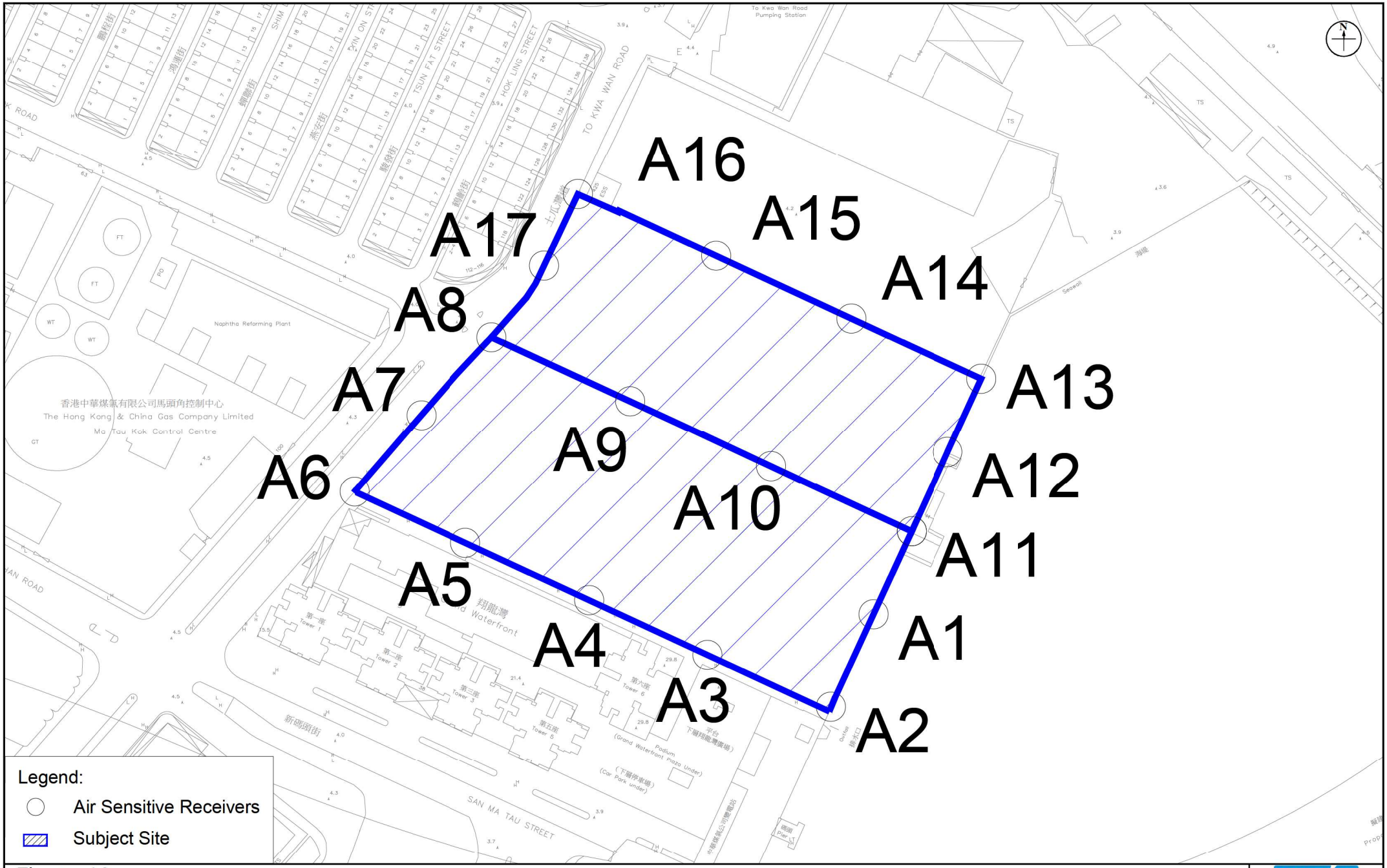


Figure: 4.2

Title: Location of Representative Air Sensitive Receivers for Operation Phase

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	LT
Checked by:	BF
Rev.:	1.0
Date:	Sep 2022

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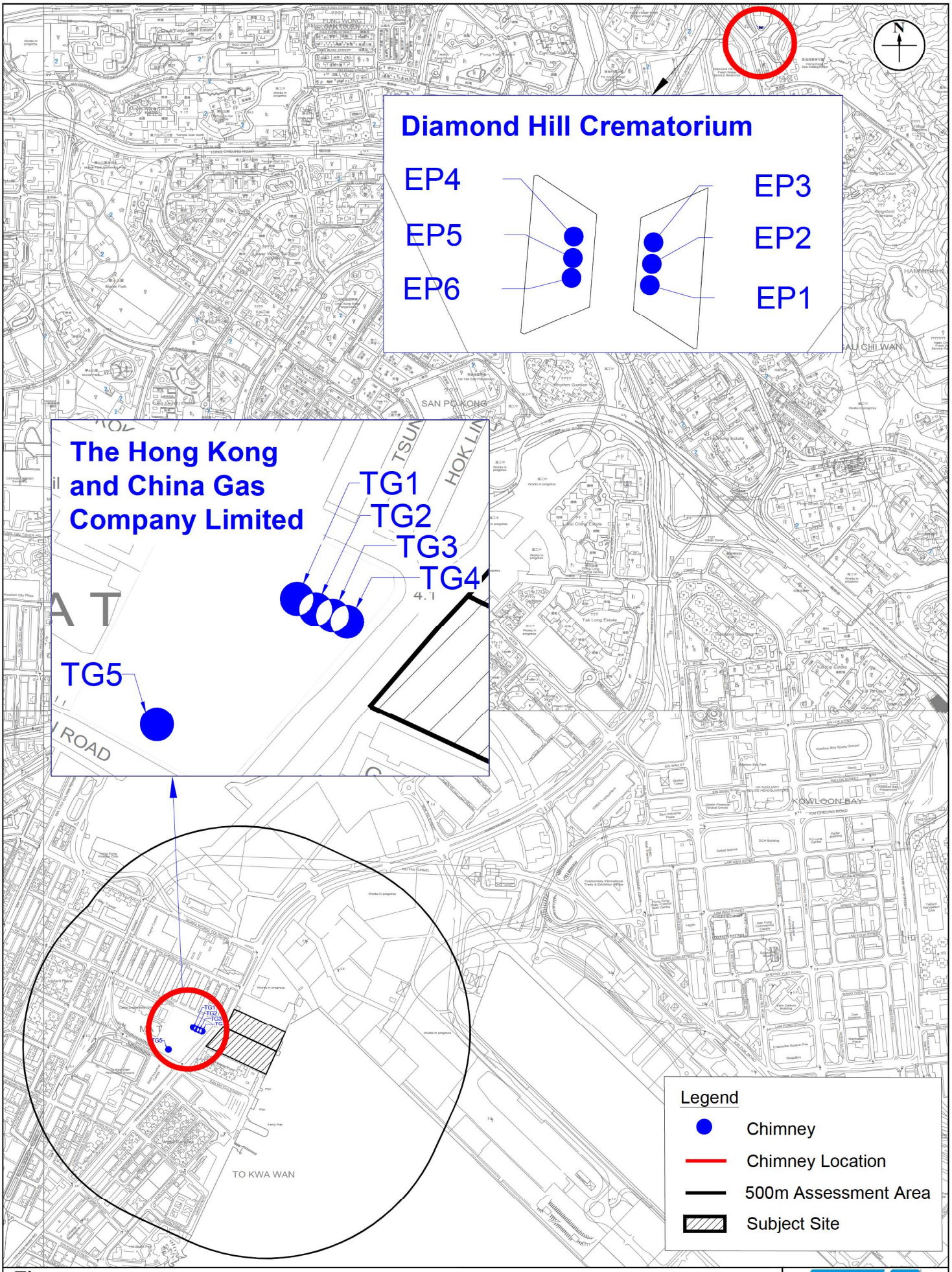


Figure:	4.3	RAMBOLL	
Title:	Location of Emissions from Active Chimneys	Drawn by:	LT
		Checked by:	BF
Project:	Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.:	1.0
		Date:	May 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\01 Air\01 Stack\v1.1_2\Fig4.3.dwg

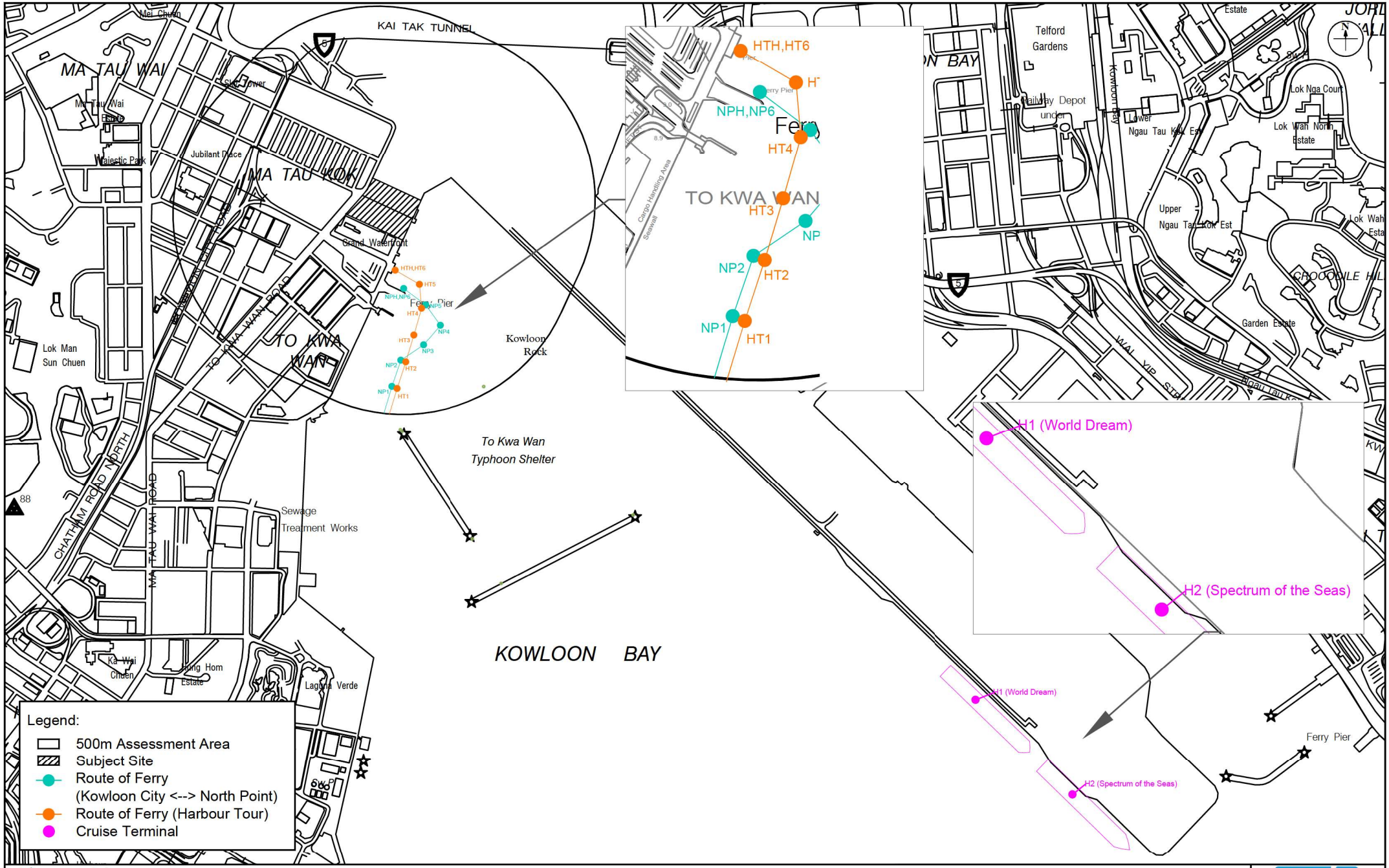


Figure: 4.4

Title: Location of Emissions from Marine Vessel

Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	LT
Checked by:	BF
Rev.:	1.1
Date:	May 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\01 Air\01 Stack\v1.1_2\Fig4.4-4.7.dwg

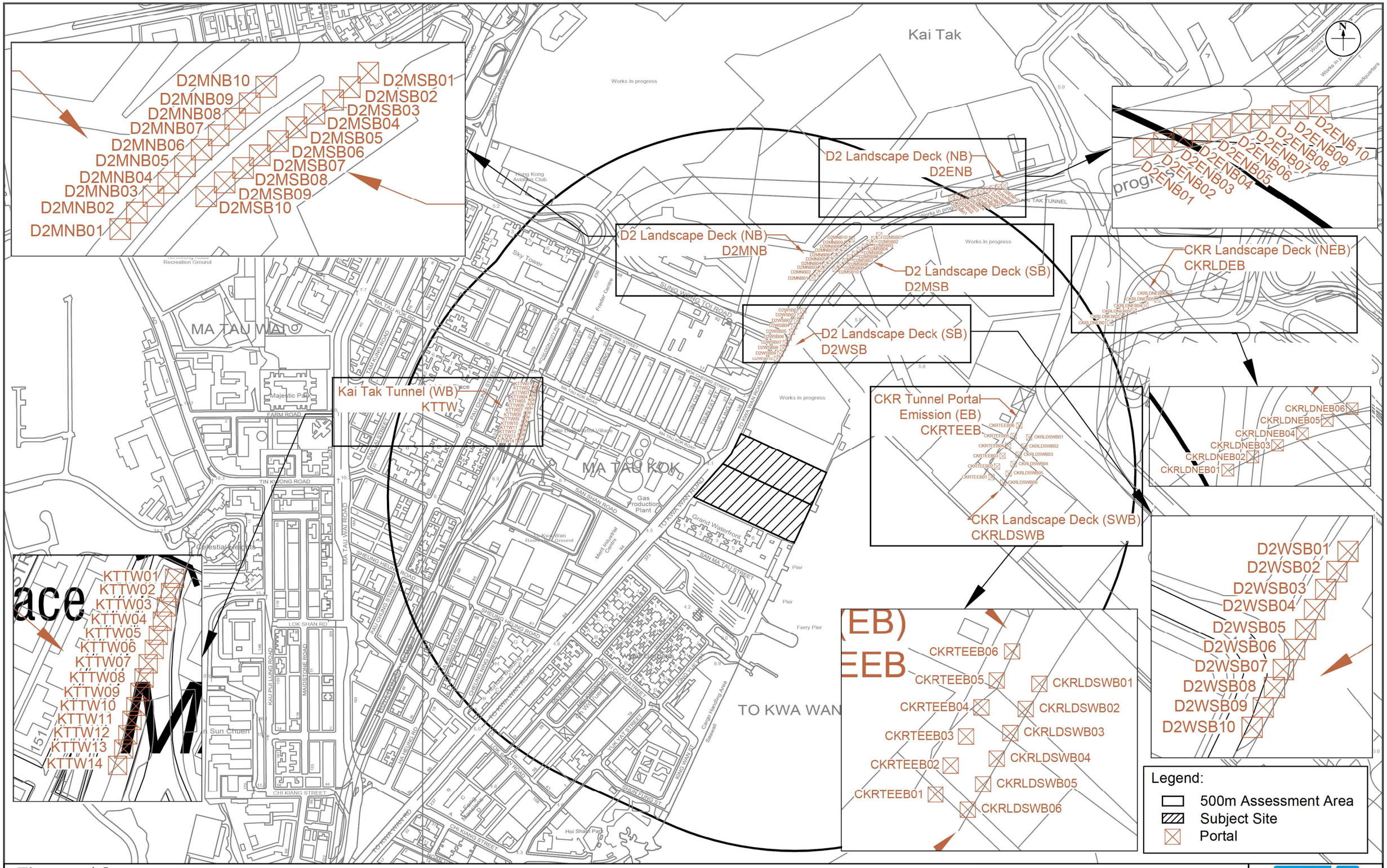


Figure: 4.5	RAMBOLL
Title: Location of Emissions from Portal	Drawn by: LT
	Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.1
	Date: May 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\01 Air\01 Stack\v1.1_2\Fig4.4-4.7.dwg

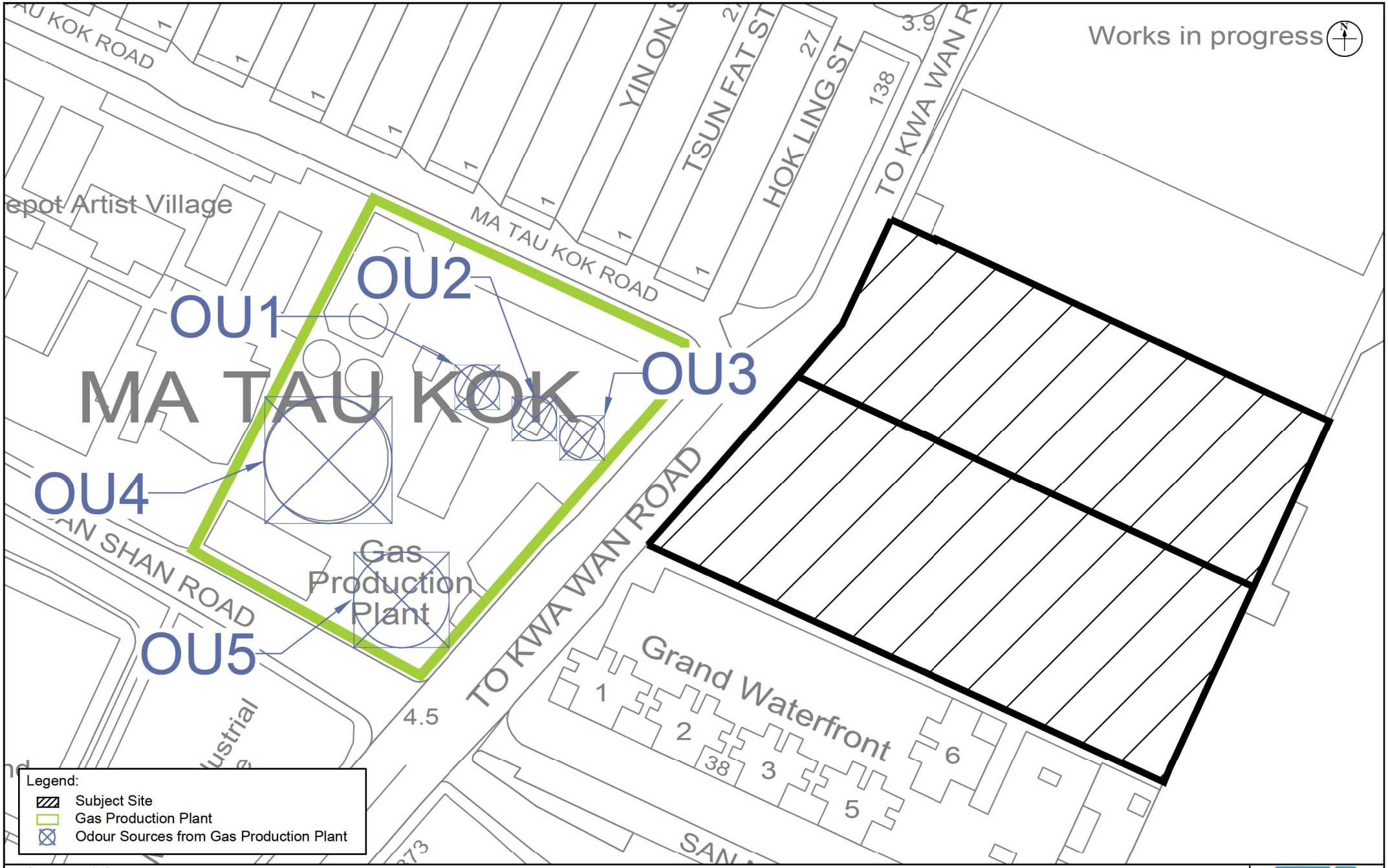


Figure: 4.6

Title: Location of Odour Sources within the Ma Tau Kok Gas Production Plant

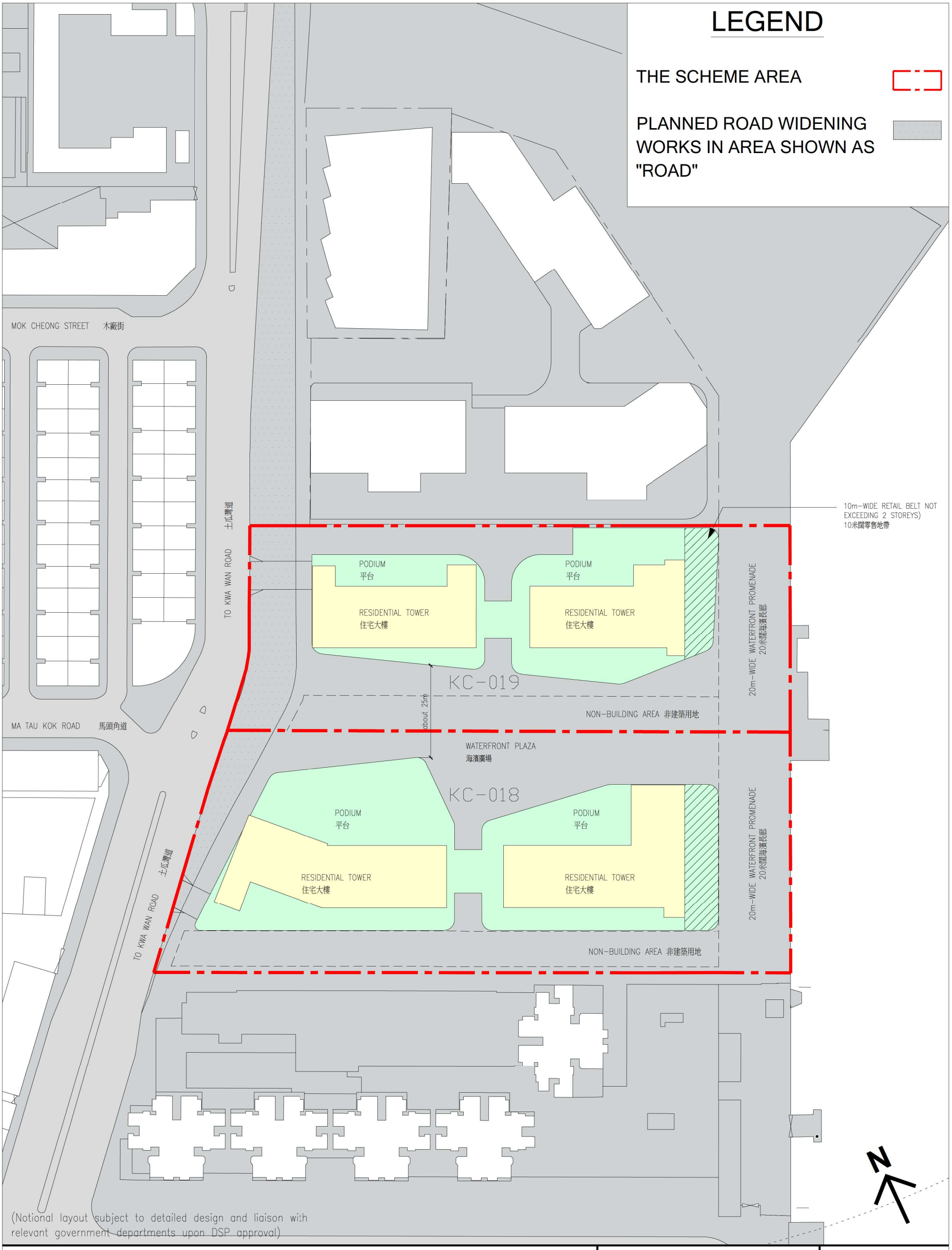
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

RAMBOLL

Drawn by:	LT
Checked by:	BF
Rev.:	1.0
Date:	May 2022

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Appendix 1.1 Master Layout Plan of the Proposed Development

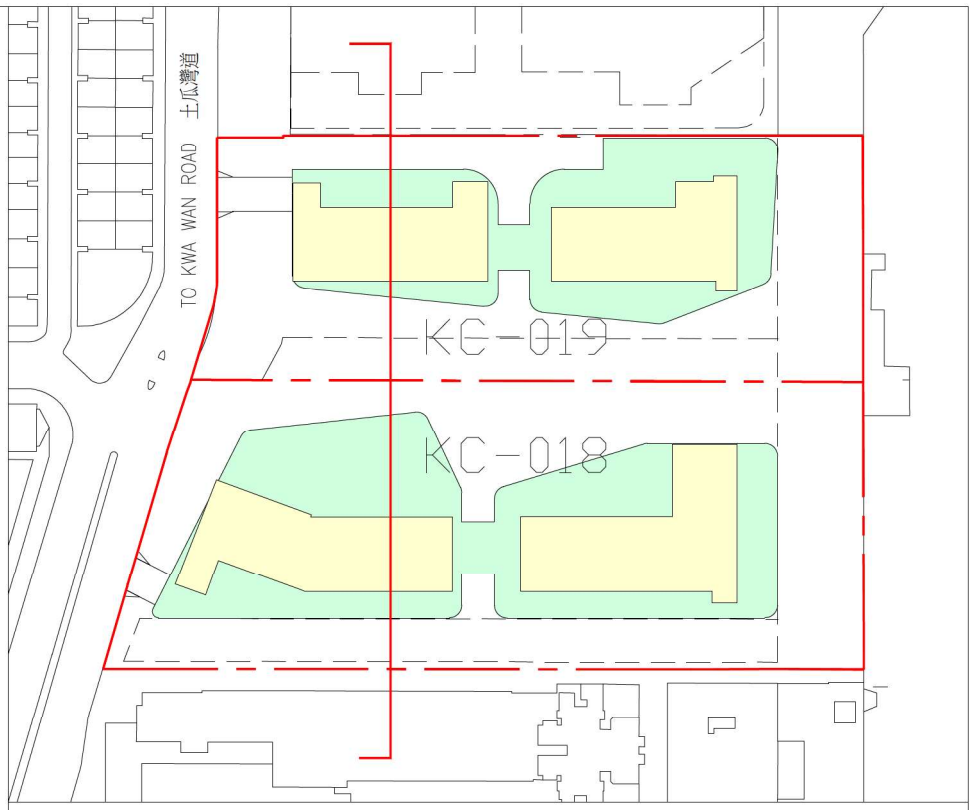


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

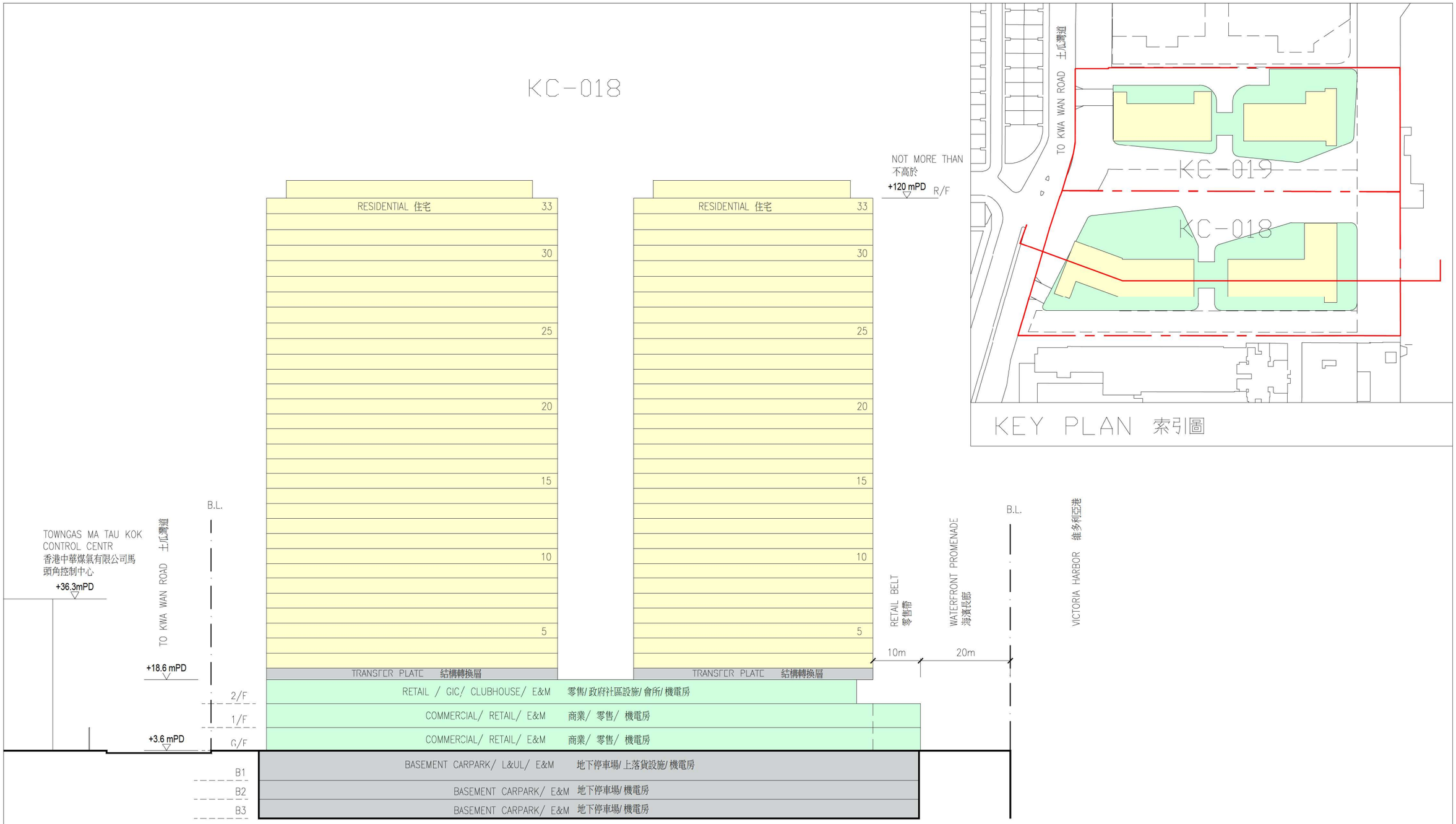
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

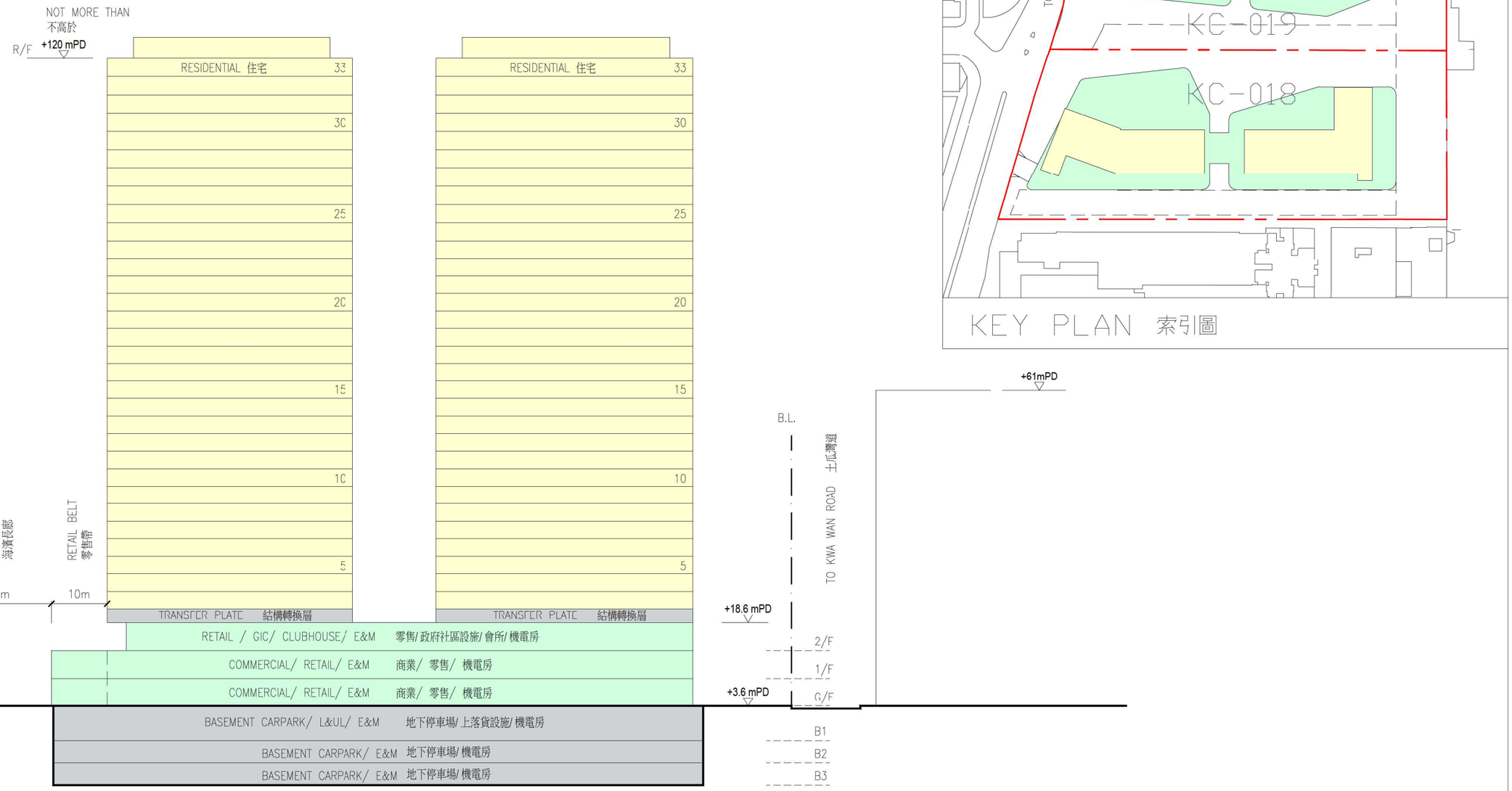
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

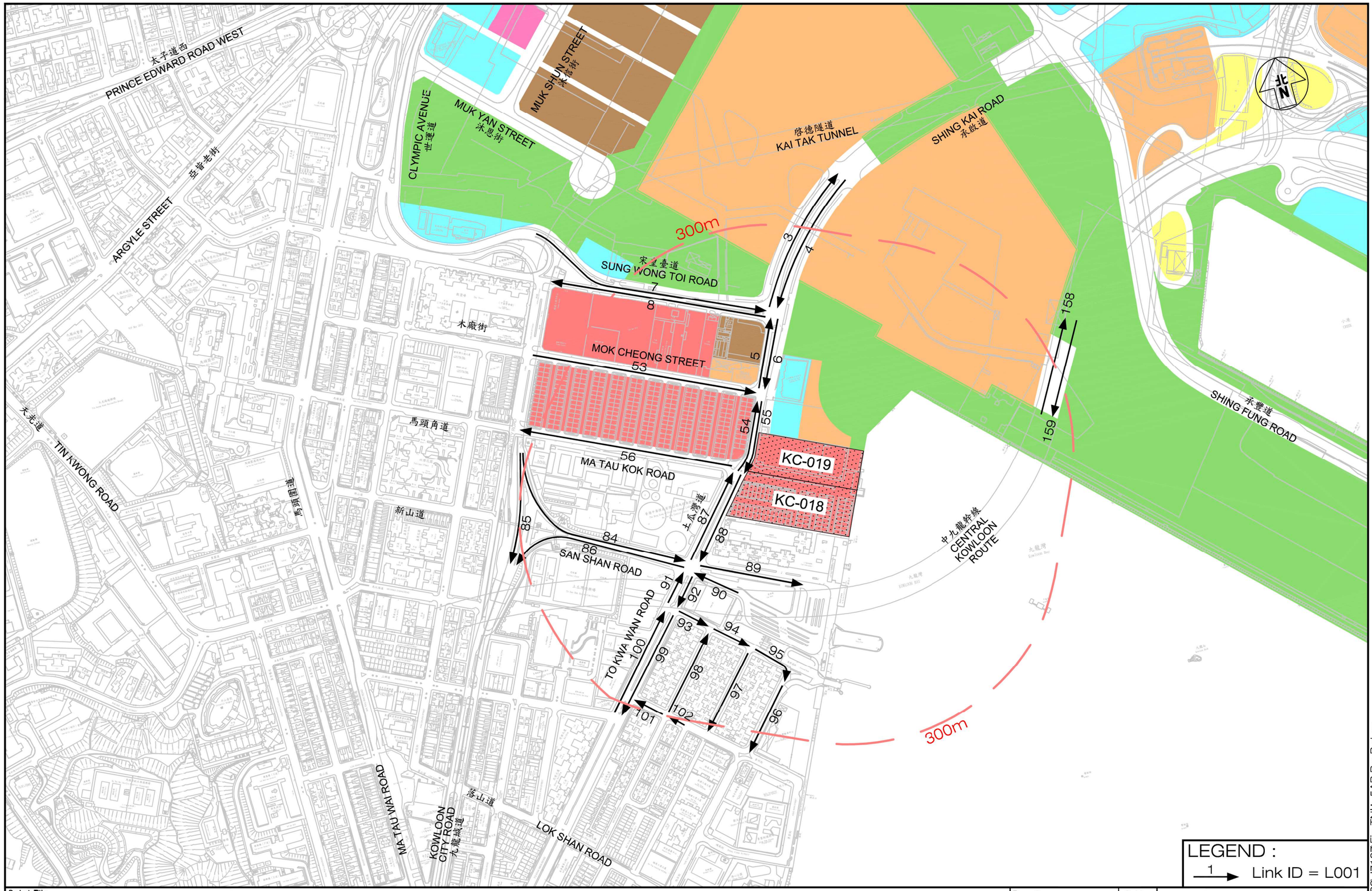
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE

Appendix 2.1 Traffic Forecast for Year 2048



Project Title	URA KC-018 AND KC-019 IN MA TAU KOK	J7167	Figure No. TNIA/5AB; Revision B
Figure Title	LOCATION OF TRAFFIC DATA FOR TRAFFIC NOISE IMPACT ASSESSMENT		Designed by THC; Drawn by CCL; Checked by KC; Scale in A3 N.T.S.; Date 21 SEP 2022

CKM Asia Limited
Traffic and Transportation Planning Consultants
21st Floor, Methodist House, 36 Hennessy Road
Wan Chai, Hong Kong
Tel : (852) 2520 5990 Fax : (852) 2528 6343
Email : mail@ckmasia.com.hk

T:\JOB\J7150-J7199\J7167\Fig TNIA_5AB RevB.dwg

TABLE E – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2048 TRAFFIC FORECAST

Date: 12 April 2022 Job No.: J7167

Link ID	Road Section	From Road	To Road	AM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L003	Shing Kai Road (NB)	Sung Wong Toi Road	Unnamed Road	900	77.7%	22.3%
L004	Shing Kai Road (SB)	Unnamed Road	Sung Wong Toi Road	850	76.8%	23.2%
L005	To Kwa Wan Road (NB)	Mok Cheung Street	Sung Wong Toi Road	1,150	71.4%	28.6%
L006	To Kwa Wan Road (SB)	Sung Wong Toi Road	Mok Cheong Street	650	73.2%	26.8%
L007	Sung Wong Toi Road (EB)	Kowloon City Road	Shing Kai Road	700	72.6%	27.4%
L008	Sung Wong Toi Road (WB)	To Kwa Wan Road	Kowloon City Road	1,050	69.7%	30.3%
L053	Mok Cheong Street (EB)	Kowloon City Road	To Kwa Wan Road	1,000	67.9%	32.1%
L054	To Kwa Wan Road (NB)	Ma Tau Chung Road	Mok Cheong Street	650	66.5%	33.5%
L055	To Kwa Wan Road (SB)	Mok Cheong Street	Ma Tau Chung Road	1,250	67.6%	32.4%
L056	Ma Tau Kok Road (WB)	To Kwa Wan Road	Kowloon City Road	500	61.8%	38.2%
L084	San Shan Road (EB)	Kai Tak Tunnel	To Kwa Wan Road	800	75.5%	24.5%
L085	East Kowloon Corridor (SB)	Kai Tak Tunnel	San Shan Road	1,350	67.8%	32.2%
L086	San Shan Road (WB)	To Kwa Wan Road	East Kowloon Corridor	500	61.9%	38.1%
L087	To Kwa Wan Road (NB)	San Shan Road	Ma Tau Kok Road	1,100	64.1%	35.9%
L088	To Kwa Wan Road (SB)	Ma Tau Kok Road	San Ma Tau Street	1,200	66.1%	33.9%
L089	San Ma Tau Street (EB)	To Kwa Wan Road	End of section	450	63.7%	36.3%
L090	San Ma Tau Street (WB)	End of section	To Kwa Wan Road	450	46.3%	53.7%
L091	To Kwa Wan Road (NB)	San Ma Tau Street	San Shan Road	750	58.9%	41.1%
L092	To Kwa Wan Road (SB)	San Ma Tau Street	San Ma Tau Street	1,200	65.4%	34.6%
L093	San Ma Tau Street (EB)	To Kwa Wan Road	Mei King Street	450	66.8%	33.2%
L094	San Ma Tau Street (EB)	Mei King Street	Wai King Street	500	66.2%	33.8%
L095	San Ma Tau Street (EB)	Wai King Street	Long Yuet Street	300	66.1%	33.9%
L096	Long Yuet Street (SB)	San Ma Tau Street	Shun Fung Street	300	63.1%	36.9%
L097	Wai King Street (SB)	San Ma Tau Street	Kwei Chow Street	250	65.7%	34.3%
L098	Mei King Street (NB)	Kwei Chow Street	San Ma Tau Street	100	46.1%	53.9%
L099	To Kwa Wan Road (SB)	San Ma Tau Street	Kwei Chow Street	1,000	64.2%	35.8%
L100	To Kwa Wan Road (NB)	Kwei Chow Street	San Ma Tau Street	950	59.7%	40.3%
L101	Kwei Chow Street (WB)	Mei King Street	To Kwa Wan Road	350	58.2%	41.8%
L102	Kwei Chow Street (WB)	Mei King Street	Mei Kwong Street	550	56.4%	43.6%
L158	Central Kowloon Route (EB)	Central Kowloon Route	Central Kowloon Route	2,950	68.7%	31.3%
L159	Central Kowloon Route (WB)	Central Kowloon Route	Central Kowloon Route	4,750	61.6%	38.4%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

TABLE E – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2048 TRAFFIC FORECAST

Date: 12 April 2022 Job No.: J7167

Link ID	Road Section	From Road	To Road	PM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L003	Shing Kai Road (NB)	Sung Wong Toi Road	Unnamed Road	1,050	75.2%	24.8%
L004	Shing Kai Road (SB)	Unnamed Road	Sung Wong Toi Road	700	74.1%	25.9%
L005	To Kwa Wan Road (NB)	Mok Cheung Street	Sung Wong Toi Road	1,200	74.1%	25.9%
L006	To Kwa Wan Road (SB)	Sung Wong Toi Road	Mok Cheong Street	650	73.8%	26.2%
L007	Sung Wong Toi Road (EB)	Kowloon City Road	Shing Kai Road	800	76.7%	23.3%
L008	Sung Wong Toi Road (WB)	To Kwa Wan Road	Kowloon City Road	1,050	72.4%	27.6%
L053	Mok Cheong Street (EB)	Kowloon City Road	To Kwa Wan Road	900	68.9%	31.1%
L054	To Kwa Wan Road (NB)	Ma Tau Chung Road	Mok Cheong Street	750	73.0%	27.0%
L055	To Kwa Wan Road (SB)	Mok Cheong Street	Ma Tau Chung Road	1,050	68.3%	31.7%
L056	Ma Tau Kok Road (WB)	To Kwa Wan Road	Kowloon City Road	600	62.7%	37.3%
L084	San Shan Road (EB)	Kai Tak Tunnel	To Kwa Wan Road	700	75.4%	24.6%
L085	East Kowloon Corridor (SB)	Kai Tak Tunnel	San Shan Road	1,500	82.7%	17.3%
L086	San Shan Road (WB)	To Kwa Wan Road	East Kowloon Corridor	400	73.3%	26.7%
L087	To Kwa Wan Road (NB)	San Shan Road	Ma Tau Kok Road	1,300	69.9%	30.1%
L088	To Kwa Wan Road (SB)	Ma Tau Kok Road	San Ma Tau Street	1,000	66.6%	33.4%
L089	San Ma Tau Street (EB)	To Kwa Wan Road	End of section	400	55.2%	44.8%
L090	San Ma Tau Street (WB)	End of section	To Kwa Wan Road	450	64.1%	35.9%
L091	To Kwa Wan Road (NB)	San Ma Tau Street	San Shan Road	1,000	63.9%	36.1%
L092	To Kwa Wan Road (SB)	San Ma Tau Street	San Ma Tau Street	1,100	66.6%	33.4%
L093	San Ma Tau Street (EB)	To Kwa Wan Road	Mei King Street	400	66.8%	33.2%
L094	San Ma Tau Street (EB)	Mei King Street	Wai King Street	500	68.7%	31.3%
L095	San Ma Tau Street (EB)	Wai King Street	Long Yuet Street	250	64.2%	35.8%
L096	Long Yuet Street (SB)	San Ma Tau Street	Shun Fung Street	250	65.0%	35.0%
L097	Wai King Street (SB)	San Ma Tau Street	Kwei Chow Street	300	72.6%	27.4%
L098	Mei King Street (NB)	Kwei Chow Street	San Ma Tau Street	100	79.7%	20.3%
L099	To Kwa Wan Road (SB)	San Ma Tau Street	Kwei Chow Street	850	65.2%	34.8%
L100	To Kwa Wan Road (NB)	Kwei Chow Street	San Ma Tau Street	1,200	63.1%	36.9%
L101	Kwei Chow Street (WB)	Mei King Street	To Kwa Wan Road	400	73.8%	26.2%
L102	Kwei Chow Street (WB)	Mei King Street	Mei Kwong Street	650	71.8%	28.2%
L158	Central Kowloon Route (EB)	Central Kowloon Route	Central Kowloon Route	3,400	62.9%	37.1%
L159	Central Kowloon Route (WB)	Central Kowloon Route	Central Kowloon Route	4,300	62.4%	37.6%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

Appendix 2.2 Predicted Road Traffic Noise [$L10_{(1hr)}$ dB(A)] at Selected Receivers under Base Case Scenario

Result Summary (Detail)(Site 5A)(KC-018)- Base Case (AM)

| | | LZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | 5A-A | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | Z | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

Result Summary (Detail)(Site 5A)(KC-018)- Base Case (PM)

| | | LZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

| | | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

| | | 5A-A | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

| | | HZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

Result Summary (Detail)(Site 5B)(KC-019)- Base Case (AM)

		LZ																																					
		5B-A																																						
		1			2		3		4	5		6		7		8					9				10	11		12		13			14			15	16			
GBP Floor	mPD,m	C01-1	C01-1A	C01-2	C02-1	C02-2	C03-1	C03-2	C04-1	C05-1	C05-2	C06-1	C06-2	C07-1	C07-2	C08-1	C08-2	C08-3	C08-3A	C09-1	C09-2	C09-3	C10-1	C10-2	C11-1	C11-2	C12-1	C12-2	C13-1	C13-2	C13-2A	C14-1	C14-1A	C14-2	C15-1	C16-1	C16-2	C16-2A
3F	22.3	78	70	67	68	68	68	67	66	65	64	64	63	63	62	62	65	66	56	65	66	66	67	67	68	69	69	70	70	71	71	71	71	72	73	75	76	77
4F	25.4	77	70	68	70	70	70	69	68	68	67	67	66	66	65	65	67	66	57	66	67	67	68	68	69	69	69	70	70	71	71	71	72	72	74	75	76	77
5F	28.6	77	70	68	70	70	70	70	69	69	68	68	67	67	66	66	67	66	57	67	67	68	68	68	69	69	69	70	70	71	71	72	72	73	74	74	75	76
6F	31.8	77	70	68	70	70	70	70	69	69	68	68	67	67	67	66	67	66	57	67	67	68	68	68	69	69	69	70	71	71	71	72	72	72	74	74	75	76
7F	34.9	77	70	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	71	71	71	72	72	72	73	74	75	76
8F	38	76	70	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	71	71	71	71	72	72	73	74	75	76
9F	41.2	76	69	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72	73	74	74	76
10F	44.4	76	69	67	69	70	70	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	71	71	71	71	72	73	73	74	75
11F	47.5	76	69	67	69	70	70	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	71	71	71	72	73	73	74	75
12F	50.6	75	69	67	69	69	69	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	71	71	71	71	72	73	74	75
13F	53.8	75	69	67	69	69	69	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	70	71	71	71	72	73	74	75
14F	57	75	69	67	68	69	69	69	69	68	68	68	67	67	67	67	67	66	57	67	67	68	68	68	68	69	69	70	70	70	70	71	71	71	72	73	74	75
15F	60.1	75	68	67	68	69	69	69	69	68	68	68	67	67	67	66	67	66	57	67	67	68	68	68	68	69	69	69	70	70	70	70	71	71	72	72	73	74
16F	63.2	75	68	67	68	69	69	69	68	68	68	68	67	67	67	66	67	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	71	72	72	73	74
17F	66.4	75	68	66	68	69	69	69	68	68	68	68	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	71	72	72	73	74
18F	69.6	74	68	66	68	69	69	69	68	68	67	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	69	69	70	70	70	70	71	71	72	73	74
19F	72.7	74	68	66	68	68	69	68	68	68	67	67	67	67	66	66	67	66	57	67	67	67	68	68	68	68	69	69	69	70	70	70	70	71	71	72	73	74
20F	75.8	74	68	66	68	68	68	68	68	68	67	67	67	66	66	66	67	66	57	67	67	67	67	68	68	68	69	69	69	69	70	70	70	70	71	72	73	74
21F	79	74	68	66	67	68	68	68	68	68	67	67	67	66	66	66	66	66	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	71	72	72	73
22F	82.2	74	67	66	67	68	68	68	68	68	67	67	66	66	66	66	66	66	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	71	71	72	73
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		**78**	**70**	**68**	**70**	**70**	**70**	**70**	**69**	**69**	**68**	**68**	**67**	**67**	**67**	**67**	**67**	**66**	**57**	**67**	**67**	**68**	**68**	**68**	**69**	**69**	**70**	**70**	**71**	**71**	**71**	**72**	**72**	**73**	**74**	**75**	**76**	**77**
No. of Exceedance Per NSR		**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**8**	**10**	**12**	**13**	**17**	**20**	**20**	**20**	**20**

Legend	
Exceeded Hong Kong Planning Standard Guidelines' Standard of 70 dB(A)	

/ Non-residential unit

*** The assessment point is located at 1m in front of the most exposed part of an openable window for ventilation at a habitable room (NSRs) and 1.2m above the floor level of individual floors of the residential towers of the proposed development.**

No. of Exceedance	
Total no. of units	950
Total no. of units with exceedance	111
	78
Max SPL	#
Compliance %	88%

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	D01-1	D01-2	D02-1	D02-2	D03-1	D03-2	D04-1	D04-2	D05-1	D05-2	D06-1	D07-1	D08-1	D08-2	D08-3	D08-4	D09-1	D09-2	D10-1	D10-2	D10-3	D10-4	D11-1	D11-2	D12-1	D12-2	D13-1	D13-2	D14-1	D14-2	D15-1	D15-2
3F	22.3	63	63	63	62	62	61	61	61	60	60	60	59	58	60	57	49	50	51	55	55	56	56	58	57	58	57	58	58	59	58	59	62
4F	25.4	64	64	64	63	63	63	63	62	62	62	61	61	58	60	57	50	50	51	55	55	56	57	61	60	60	61	61	62	62	60	60	63
5F	28.6	65	64	64	64	64	63	63	63	63	62	62	62	58	60	57	50	50	51	55	56	57	57	62	62	62	62	62	63	63	61	61	64
6F	31.8	65	65	65	64	64	63	63	63	63	63	62	62	58	60	57	50	50	51	55	56	57	58	62	62	62	63	63	63	63	61	61	64
7F	34.9	65	65	65	64	64	64	64	63	63	63	63	62	59	60	58	51	51	52	55	56	58	58	63	62	62	63	63	63	63	61	62	64
8F	38	65	65	65	65	64	64	64	64	63	63	63	63	59	60	58	51	51	52	55	56	58	58	63	62	62	63	63	64	64	62	62	64
9F	41.2	66	65	65	65	65	64	64	64	64	63	63	63	60	60	58	51	51	52	55	57	58	58	63	62	63	63	63	64	64	62	62	64
10F	44.4	66	66	65	65	65	64	64	64	64	64	63	63	60	60	58	51	52	53	55	57	58	58	63	62	63	63	63	64	64	62	62	64
11F	47.5	66	66	66	65	65	64	64	64	64	64	64	63	61	61	58	52	52	53	55	57	58	58	63	63	63	63	63	64	64	62	62	64
12F	50.6	66	66	66	65	65	64	64	64	64	64	64	64	61	61	58	52	52	53	55	57	58	58	63	63	63	63	63	64	64	62	62	64
13F	53.8	66	66	66	65	65	65	64	64	64	64	64	64	60	60	58	52	53	53	56	57	58	58	63	63	63	63	63	64	65	62	62	64
14F	57	66	66	66	65	65	65	65	64	64	64	64	64	61	61	59	53	53	54	56	57	58	58	63	63	63	63	63	64	65	62	62	64
15F	60.1	66	66	66	65	65	65	65	64	64	64	64	64	61	61	59	53	53	54	56	57	58	59	63	63	63	63	64	65	65	62	62	64
16F	63.2	66	66	66	66	65	65	65	64	64	64	64	64	61	61	59	54	54	55	56	58	58	59	63	63	63	63	64	65	65	62	62	64
17F	66.4	66	66	66	66	65	65	65	65	64	64	64	64	61	61	59	54	54	55	57	58	58	59	63	63	63	63	64	65	65	62	62	64
18F	69.6	66	66	66	66	65	65	65	65	65	64	65	64	62	61	59	54	55	56	57	58	58	59	63	63	63	63	64	65	65	62	62	64
19F	72.7	66	66	66	66	65	65	65	65	65	64	65	64	62	62	60	55	55	56	57	58	59	59	63	63	63	63	64	65	65	62	62	64
20F	75.8	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	55	56	57	57	58	59	59	63	63	63	63	64	65	65	62	62	64
21F	79	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	56	56	57	58	59	59	59	63	63	63	63	64	65	65	62	62	64
22F	82.2	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	56	57	57	58	59	59	60	63	63	63	63	64	65	65	62	62	64
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		**66**	**66**	**66**	**66**	**65**	**65**	**65**	**65**	**65**	**64**	**65**	**65**	**62**	**62**	**60**	**56**	**57**	**57**	**58**	**59**	**59**	**60**	**63**	**63**	**63**	**63**	**64**	**65**	**65**	**62**	**62**	**64**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

		HZ																																				
		5B-A																																				
		1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16			
GBP Floor	mPD,m	CH01-1	CH01-1A	CH01-2	CH02-1	CH02-2	CH03-1	CH03-2	CH04-1	CH05-1	CH05-2	CH06-1	CH06-2	CH07-1	CH07-2	CH08-1	CH08-2	CH08-3	CH08-3A	CH09-1	CH09-2	CH09-3	CH10-1	CH10-2	CH11-1	CH11-2	CH12-1	CH12-2	CH13-1	CH13-2	CH13-2A	CH14-1	CH14-1A	CH14-2	CH15-1	CH16-1	CH16-2	CH16-2A
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	74	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	66	57	67	67	67	67	67	68	68	68	69	69	69	69	69	70	70	71	71	72	73
24F	88.4	74	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	71	71	72	73
25F	91.6	73	67	65	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	66	67	67	67	67	67	68	68	68	69	69	69	69	69	70	70	71	72	73
26F	94.8	73	67	65	67	68	68	68	67	67	67	67	66	66	66	66	66	65	57	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	71	72	73
27F	97.9	73	67	65	67	68	68	68	67	67	67	66	66	66	66	66	66	65	58	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	71	72	73
28F	101	73	67	65	67	67	68	67	67	67	67	66	66	66	66	65	66	65	58	66	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	71	72	73
29F	104.2	73	67	65	67	67	67	67	67	67	66	66	66	66	65	65	66	65	58	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	71	71	73
30F	107.4	73	67	65	66	67	67	67	67	67	66	66	66	66	65	65	66	65	58	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	71	71	72
31F	110.7	73	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	58	66	66	66	67	67	67	67	67	68	68	68	68	69	69	69	70	70	71	72
32F	114.2	73	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	59	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	71	72
33F	117.7	73	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	60	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	71	72
Max Noise Level, dB(A)		**74**	**67**	**66**	**67**	**68**	**68**	**68**	**68**	**67**	**67**	**67**	**66**	**66**	**66**	**66**	**66**	**66**	**60**	**67**	**67**	**67**	**67**	**67**	**68**	**68**	**68**	**69**	**69**	**69**	**69**	**69**	**70**	**70**	**71**	**71**	**72**	**73**
No. of Exceedance Per NSR		**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**8**	**11**	**11**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	DH01-1	DH01-2	DH02-1	DH02-2	DH03-1	DH03-2	DH04-1	DH04-2	DH05-1	DH05-2	DH06-1	DH07-1	DH08-1	DH08-2	DH08-3	DH08-4	DH09-1	DH09-2	DH10-1	DH10-2	DH10-3	DH10-4	DH11-1	DH11-2	DH12-1	DH12-2	DH13-1	DH13-2	DH14-1	DH14-2	DH15-1	DH15-2
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	66	66	66	66	65	65	65	65	65	64	65	65	62	63	60	57	57	58	58	59	59	60	63	63	63	63	64	65	65	62	62	64
24F	88.4	66	66	66	66	65	65	65	65	65	64	65	65	62	63	61	57	58	58	59	60	60	60	63	63	63	63	64	65	65	62	62	64
25F	91.6	66	66	66	66	65	65	65	65	65	64	65	65	63	63	61	58	58	59	59	60	60	60	63	63	63	63	64	65	65	62	63	64
26F	94.8	66	66	66	66	65	65	65	65	65	64	65	65	63	63	61	59	59	60	60	60	61	61	63	63	63	63	64	65	65	62	63	64
27F	97.9	66	66	66	66	65	65	65	65	65	64	65	65	63	63	62	59	60	60	60	61	61	61	63	63	63	63	64	65	65	62	63	64
28F	101	66	66	66	66	65	65	65	65	65	64	65	65	63	64	62	60	60	60	60	61	61	61	63	63	63	63	64	65	65	63	63	64
29F	104.2	66	66	66	66	65	65	65	65	65	64	65	65	64	64	62	60	60	61	61	61	61	62	63	63	63	63	64	65	65	63	63	65
30F	107.4	66	66	66	66	65	65	65	65	65	64	65	65	64	64	63	61	61	61	61	62	62	62	63	63	63	63	64	65	65	63	63	65
31F	110.7	66	66	66	66	65	65	65	65	65	64	65	65	64	64	63	62	62	62	62	62	63	63	63	63	63	63	64	65	66	63	63	65
32F	114.2	66	66	66	66	65	65	65	65	65	64	65	65	64	65	63	62	62	63	63	63	63	63	63	63	63	63	64	65	66	63	63	65
33F	117.7	66	66	66	66	65	65	65	65	65	65	65	65	65	65	64	62	63	63	63	63	63	64	63	63	63	63	64	65	66	63	64	65
Max Noise Level, dB(A)		**66**	**66**	**66**	**66**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**64**	**62**	**63**	**63**	**63**	**63**	**63**	**64**	**63**	**63**	**63**	**63**	**64**	**65**	**66**	**63**	**64**	**65**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Result Summary (Detail)(Site 5B)(KC-019)- Base Case (PM)

		LZ																																				
		5B-A																																				
		1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16		
GBP Floor	mPD,m	C01-1	C01-1A	C01-2	C02-1	C02-2	C03-1	C03-2	C04-1	C05-1	C05-2	C06-1	C06-2	C07-1	C07-2	C08-1	C08-2	C08-3	C08-3A	C09-1	C09-2	C09-3	C10-1	C10-2	C11-1	C11-2	C12-1	C12-2	C13-1	C13-2	C13-2A	C14-1	C14-1A	C14-2	C15-1	C16-1	C16-2	C16-2A
3F	22.3	77	69	66	68	68	67	66	65	65	64	63	63	62	62	61	65	66	56	65	66	66	67	67	68	68	69	69	70	70	71	71	71	72	73	74	75	76
4F	25.4	77	70	68	69	69	69	68	68	67	67	66	65	65	65	64	66	66	56	66	66	67	67	68	68	69	69	70	70	71	71	71	71	72	73	74	75	76
5F	28.6	77	69	68	69	70	70	69	69	68	67	67	66	66	66	65	66	66	56	66	67	67	68	68	68	69	69	70	70	71	71	71	72	72	73	74	75	76
6F	31.8	76	69	67	69	70	70	69	69	68	68	67	67	66	66	66	66	66	56	67	67	67	68	68	68	69	69	70	70	71	71	71	72	72	73	74	75	76
7F	34.9	76	69	67	69	69	70	69	69	68	68	67	67	66	66	66	66	66	56	67	67	67	68	68	68	69	69	70	70	71	71	71	71	72	73	74	75	76
8F	38	76	69	67	69	69	69	69	69	68	68	67	67	66	66	66	66	66	57	67	67	67	68	68	68	69	69	70	70	71	71	71	71	72	73	73	74	75
9F	41.2	76	69	67	69	69	69	69	69	68	68	67	67	67	66	66	67	66	57	67	67	67	68	68	69	69	69	70	70	70	71	71	71	72	73	73	74	75
10F	44.4	75	69	67	69	69	69	69	69	68	68	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72	73	74	75
11F	47.5	75	69	67	68	69	69	69	68	68	68	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	70	70	70	70	71	71	71	72	73	74	75
12F	50.6	75	68	67	68	69	69	69	68	68	68	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	71	71	72	73	73	75
13F	53.8	75	68	66	68	69	69	69	68	68	67	67	67	66	66	66	66	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	71	72	72	73	74
14F	57	75	68	66	68	69	69	68	68	68	67	67	67	66	66	66	66	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	71	72	72	73	74
15F	60.1	74	68	66	68	68	68	68	68	68	67	67	67	66	66	66	66	66	57	67	67	67	68	68	68	69	69	69	69	70	70	70	70	71	72	72	73	74
16F	63.2	74	68	66	68	68	68	68	68	68	67	67	66	66	66	66	66	66	57	67	67	67	67	68	68	68	69	69	69	70	70	70	70	71	71	72	73	74
17F	66.4	74	68	66	67	68	68	68	68	68	67	67	66	66	66	66	66	65	57	67	67	67	67	68	68	68	69	69	69	69	70	70	70	70	71	72	73	74
18F	69.6	74	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	71	72	72	73
19F	72.7	74	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	71	71	72	73
20F	75.8	74	67	66	67	68	68	68	67	67	67	67	66	66	66	66	66	65	57	66	67	67	67	67	68	68	68	69	69	69	69	69	70	70	71	71	72	73
21F	79	74	67	65	67	68	68	68	67	67	67	66	66	66	66	65	66	65	57	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	71	71	72	73
22F	82.2	73	67	65	67	68	68	68	67	67	67	66	66	66	65	65	66	65	57	66	66	67	67	67	67	68	68	68	69	69	69	69	69	70	70	71	72	73
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		**77**	**70**	**68**	**69**	**70**	**70**	**69**	**69**	**68**	**68**	**67**	**67**	**67**	**66**	**66**	**67**	**66**	**57**	**67**	**67**	**67**	**68**	**68**	**69**	**69**	**69**	**70**	**70**	**71**	**71**	**71**	**72**	**72**	**73**	**74**	**75**	**76**
No. of Exceedance Per NSR		**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**8**	**9**	**10**	**14**	**19**	**20**	**20**	**20**

Legend	
Exceeded Hong Kong Planning Standard Guidelines' Standard of 70 dB(A)	

/ Non-residential unit

*** The assessment point is located at 1m in front of the most exposed part of an openable window for ventilation at a habitable room (NSRs) and 1.2m above the floor level of individual floors of the residential towers of the proposed development.**

No. of Exceedance	
Total no. of units	950
Total no. of units with exceedance	103
Max SPL	77
Compliance %	89%

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	D01-1	D01-2	D02-1	D02-2	D03-1	D03-2	D04-1	D04-2	D05-1	D05-2	D06-1	D07-1	D08-1	D08-2	D08-3	D08-4	D09-1	D09-2	D10-1	D10-2	D10-3	D10-4	D11-1	D11-2	D12-1	D12-2	D13-1	D13-2	D14-1	D14-2	D15-1	D15-2
3F	22.3	63	63	62	62	62	61	61	61	60	60	59	59	57	59	56	49	49	51	54	55	56	56	58	56	57	57	57	58	58	58	58	62
4F	25.4	64	64	64	63	63	63	63	62	62	62	61	61	57	59	57	49	49	51	54	55	56	56	60	59	60	60	61	61	62	60	60	63
5F	28.6	65	64	64	64	63	63	63	63	63	62	62	62	58	59	57	50	50	51	54	55	57	57	62	61	61	62	62	62	63	60	60	63
6F	31.8	65	65	64	64	64	63	63	63	63	63	62	62	58	59	57	50	50	51	55	56	57	57	62	62	62	62	62	63	63	60	61	64
7F	34.9	65	65	65	64	64	64	63	63	63	63	62	62	58	59	57	50	50	51	54	56	57	58	62	62	62	62	62	63	63	61	61	64
8F	38	65	65	65	64	64	64	64	63	63	63	63	63	59	59	57	50	50	52	55	56	57	58	62	62	62	62	62	63	63	61	61	64
9F	41.2	65	65	65	65	64	64	64	64	63	63	63	63	59	60	57	51	51	52	55	56	57	58	62	62	62	62	63	63	64	61	61	64
10F	44.4	65	65	65	65	65	64	64	64	64	63	63	63	60	60	58	51	51	52	55	56	57	58	62	62	62	62	63	63	64	61	61	64
11F	47.5	65	66	65	65	65	64	64	64	64	63	63	63	60	60	58	51	51	52	55	56	57	58	62	62	62	63	63	64	64	61	61	64
12F	50.6	65	66	65	65	65	64	64	64	64	64	64	63	60	60	57	52	52	53	55	57	57	58	62	62	62	63	63	64	64	61	61	64
13F	53.8	66	66	66	65	65	64	64	64	64	64	64	64	60	60	58	52	52	53	55	57	57	58	63	62	62	63	63	64	64	61	61	64
14F	57	66	66	66	65	65	64	64	64	64	64	64	64	60	60	58	52	52	53	55	57	58	58	63	62	62	63	63	64	64	61	61	64
15F	60.1	66	66	66	65	65	64	64	64	64	64	64	64	61	60	58	53	53	54	56	57	58	58	63	62	63	63	63	64	64	61	61	64
16F	63.2	66	66	66	65	65	65	64	64	64	64	64	64	61	61	59	53	53	54	56	57	58	58	63	62	63	63	63	64	65	61	62	64
17F	66.4	66	66	66	65	65	65	64	64	64	64	64	64	61	61	59	53	54	55	56	57	58	58	63	62	63	63	63	64	65	61	62	64
18F	69.6	66	66	66	65	65	65	64	64	64	64	64	64	61	61	59	54	54	55	56	58	58	59	63	62	63	63	63	64	65	61	62	64
19F	72.7	66	66	66	65	65	65	64	64	64	64	64	64	61	61	59	54	55	56	57	58	58	59	63	62	63	63	63	64	65	61	62	64
20F	75.8	66	66	66	65	65	65	64	64	64	64	64	64	61	62	59	55	55	56	57	58	58	59	63	62	63	63	63	64	65	62	62	64
21F	79	66	66	66	65	65	65	64	64	64	64	64	64	62	62	60	55	56	56	57	58	58	59	63	62	63	63	63	64	65	62	62	64
22F	82.2	66	66	66	65	65	65	64	64	64	64	64	64	62	62	60	56	56	57	57	58	59	59	63	62	63	63	63	64	65	62	62	64
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		**66**	**66**	**66**	**65**	**65**	**65**	**64**	**64**	**64**	**64**	**64**	**64**	**62**	**62**	**60**	**56**	**56**	**57**	**57**	**58**	**59**	**59**	**63**	**62**	**63**	**63**	**63**	**64**	**65**	**62**	**62**	**64**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

		HZ																																				
		5B-A																																				
		1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16		
GBP Floor	mPD,m	CH01-1	CH01-1A	CH01-2	CH02-1	CH02-2	CH03-1	CH03-2	CH04-1	CH05-1	CH05-2	CH06-1	CH06-2	CH07-1	CH07-2	CH08-1	CH08-2	CH08-3	CH08-3A	CH09-1	CH09-2	CH09-3	CH10-1	CH10-2	CH11-1	CH11-2	CH12-1	CH12-2	CH13-1	CH13-2	CH13-2A	CH14-1	CH14-1A	CH14-2	CH15-1	CH16-1	CH16-2	CH16-2A
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	73	67	65	67	67	68	67	67	67	66	66	66	66	65	65	66	65	57	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	71	72	73
24F	88.4	73	67	65	67	67	67	67	67	67	66	66	66	66	65	65	66	65	57	66	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	71	72	73
25F	91.6	73	67	65	66	67	67	67	67	67	66	66	66	65	65	65	65	65	57	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	71	72	73
26F	94.8	73	66	65	66	67	67	67	67	67	66	66	66	65	65	65	65	65	57	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	71	71	72
27F	97.9	73	66	65	66	67	67	67	67	67	66	66	65	65	65	65	65	65	57	66	66	66	66	67	67	67	67	68	68	68	68	69	69	69	70	70	71	72
28F	101	73	66	65	66	67	67	67	67	66	66	66	65	65	65	65	65	65	57	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	71	72
29F	104.2	73	66	65	66	67	67	67	67	66	66	66	65	65	65	65	65	65	57	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	71	72
30F	107.4	72	66	65	66	67	67	67	67	66	66	66	65	65	65	65	65	65	58	66	66	66	66	66	67	67	67	67	68	68	68	68	68	69	70	70	71	72
31F	110.7	72	66	64	66	67	67	67	66	66	66	66	65	65	65	65	65	65	58	66	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	71	72
32F	114.2	72	66	64	66	67	67	67	66	66	66	65	65	65	65	65	65	65	58	66	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	71	72
33F	117.7	72	66	64	66	67	67	67	66	66	66	66	65	65	65	65	65	65	59	65	66	66	66	66	66	67	67	67	67	68	68	68	68	69	69	70	71	72
Max Noise Level, dB(A)		**73**	**67**	**65**	**67**	**67**	**68**	**67**	**67**	**67**	**66**	**66**	**66**	**66**	**65**	**65**	**66**	**65**	**59**	**66**	**66**	**67**	**67**	**67**	**67**	**68**	**68**	**68**	**68**	**69**	**69**	**69**	**69**	**70**	**70**	**71**	**72**	**73**
No. of Exceedance Per NSR		**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**11**	**11**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(PM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	DH01-1	DH01-2	DH02-1	DH02-2	DH03-1	DH03-2	DH04-1	DH04-2	DH05-1	DH05-2	DH06-1	DH07-1	DH08-1	DH08-2	DH08-3	DH08-4	DH09-1	DH09-2	DH10-1	DH10-2	DH10-3	DH10-4	DH11-1	DH11-2	DH12-1	DH12-2	DH13-1	DH13-2	DH14-1	DH14-2	DH15-1	DH15-2
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	66	66	66	65	65	65	65	64	64	64	64	64	62	62	60	56	57	57	58	59	59	59	63	62	63	63	63	64	65	62	62	64
24F	88.4	66	66	66	65	65	65	64	64	64	64	64	64	62	62	60	57	57	58	58	59	59	60	63	62	63	63	63	64	65	62	62	64
25F	91.6	66	66	66	65	65	65	64	64	64	64	64	64	62	63	60	57	58	58	59	59	60	60	63	62	63	63	63	64	65	62	62	64
26F	94.8	66	66	66	65	65	65	64	64	64	64	64	64	62	63	61	58	58	59	59	60	60	60	63	62	63	63	63	64	65	62	62	64
27F	97.9	66	66	66	65	65	65	65	64	64	64	64	64	63	63	61	59	59	60	60	60	60	61	63	62	63	63	63	64	65	62	62	64
28F	101	66	66	66	65	65	65	65	64	64	64	64	64	63	63	61	59	59	60	60	60	61	61	63	62	63	63	63	65	65	62	62	64
29F	104.2	66	66	66	65	65	65	65	64	64	64	64	64	63	63	62	60	60	60	60	61	61	61	63	62	63	63	63	65	65	62	62	64
30F	107.4	66	66	66	65	65	65	65	64	64	64	64	64	63	64	62	60	61	61	61	61	61	62	63	62	63	63	63	65	65	62	62	64
31F	110.7	66	66	66	65	65	65	64	64	64	64	64	64	64	64	63	61	61	61	62	62	62	62	63	62	63	63	63	65	65	63	63	64
32F	114.2	65	66	66	65	65	65	65	64	64	64	64	64	64	64	63	62	62	62	62	62	62	63	63	62	63	63	63	65	65	63	63	64
33F	117.7	65	66	66	65	65	65	65	64	64	64	64	64	64	64	63	62	62	62	62	63	63	63	63	62	63	63	63	65	65	63	63	65
Max Noise Level, dB(A)		**66**	**66**	**66**	**65**	**65**	**65**	**65**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**63**	**62**	**62**	**62**	**62**	**63**	**63**	**63**	**63**	**62**	**63**	**63**	**63**	**65**	**65**	**63**	**63**	**65**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Appendix 2.3 Predicted Road Traffic Noise [$L10_{(1hr)}$ dB(A)] at Selected Receivers under Mitigated Scenario

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

Result Summary (Detail)(Site 5A)(KC-018)- Mitigated Case (AM)

| | | LZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | 5A-A | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | Z | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

Result Summary (Detail)(Site 5B)(KC-019)- Mitigated Case (AM)

		LZ																																					
		5B-A																																						
		1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16			
GBP Floor	mPD,m	C01-1	C01-1A	C01-2	C02-1	C02-2	C03-1	C03-2	C04-1	C05-1	C05-2	C06-1	C06-2	C07-1	C07-2	C08-1	C08-2	C08-3	C08-3A	C09-1	C09-2	C09-3	C10-1	C10-2	C11-1	C11-2	C12-1	C12-2	C13-1	C13-2	C13-2A	C14-1	C14-1A	C14-2	C15-1	C16-1	C16-2	C16-2A
3F	22.3	FG	70	67	68	68	68	67	66	65	64	64	63	63	62	62	65	66	56	65	66	66	67	67	68	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
4F	25.4	FG	70	68	70	70	70	69	68	68	67	67	66	66	65	65	67	66	57	66	67	67	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
5F	28.6	FG	70	68	70	70	70	70	69	69	68	68	67	67	66	66	67	66	57	67	67	68	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
6F	31.8	FG	70	68	70	70	70	70	69	69	68	68	67	67	67	66	67	66	57	67	67	68	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
7F	34.9	FG	70	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	70	70	SD	SD	70	70	70	70	SD	70
8F	38	FG	70	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	70	70	SD	SD	70	70	70	70	SD	70
9F	41.2	FG	69	68	69	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	70	70	SD	SD	70	70	70	70	SD	70
10F	44.4	FG	69	67	69	70	70	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
11F	47.5	FG	69	67	69	70	70	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
12F	50.6	FG	69	67	69	69	69	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	SD	SD	70	70	70	70	SD	70
13F	53.8	FG	69	67	69	69	69	69	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	69	70	70	70	70	SD	70	70	70	70	SD	70
14F	57	FG	69	67	68	69	69	69	69	68	68	68	67	67	67	67	67	66	57	67	67	68	68	68	68	69	69	70	70	70	70	SD	70	70	70	70	SD	70
15F	60.1	FG	68	67	68	69	69	69	69	68	68	68	67	67	67	66	67	66	57	67	67	68	68	68	68	69	69	69	70	70	70	70	70	70	70	70	SD	70
16F	63.2	FG	68	67	68	69	69	69	68	68	68	67	67	67	67	66	67	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	70	70	70	SD	70
17F	66.4	FG	68	66	68	69	69	69	68	68	68	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	69	70	70	70	70	70	70	70	70	SD	70
18F	69.6	FG	68	66	68	69	69	69	68	68	67	67	67	67	66	66	67	66	57	67	67	67	68	68	68	69	69	69	69	70	70	70	70	70	70	70	SD	70
19F	72.7	FG	68	66	68	68	69	68	68	68	67	67	67	67	66	66	67	66	57	67	67	67	68	68	68	68	69	69	69	70	70	70	70	70	70	70	SD	70
20F	75.8	FG	68	66	68	68	68	68	68	68	67	67	67	66	66	66	67	66	57	67	67	67	67	68	68	68	69	69	69	69	70	70	70	70	70	70	SD	70
21F	79	FG	68	66	67	68	68	68	68	68	67	67	67	66	66	66	66	66	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	70	70	SD	70
22F	82.2	FG	67	66	67	68	68	68	68	68	67	67	66	66	66	66	66	66	57	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	70	70	SD	70
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		FG	70	68	70	70	70	70	69	69	68	68	67	67	67	67	67	66	57	67	67	68	68	68	69	69	70	70	70	70	70	70	70	70	70	70	SD	70
No. of Exceedance Per NSR		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Legend	
Acoustic Window (Baffle Type)	AW(BT)
Self-closing Door	SD
Acoustic Door (Baffle Type)	AD(BT)
Fixed Glazing with or without Maintenance	FG

/ Non-residential unit

*** The assessment point is located at 1m in front of the most exposed part of an openable window for ventilation at a habitable room (NSRs) and 1.2m above the floor level of individual floors of the residential towers of the proposed development.**
The predicted noise levels are not the actual noise levels at the external façade after the application of innovative noise mitigation measures (acoustic window/door).
These predicted noise levels are the equivalent noise levels at 1m from the external façade after accounting the reduction in noise levels inside the room offered by the proposed noise mitigation measures.

No. of Exceedance	
Total no. of units	950
Total no. of units with exceedance	N.A
Max SPL	70
Compliance %	100%

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	D01-1	D01-2	D02-1	D02-2	D03-1	D03-2	D04-1	D04-2	D05-1	D05-2	D06-1	D07-1	D08-1	D08-2	D08-3	D08-4	D09-1	D09-2	D10-1	D10-2	D10-3	D10-4	D11-1	D11-2	D12-1	D12-2	D13-1	D13-2	D14-1	D14-2	D15-1	D15-2
3F	22.3	63	63	63	62	62	61	61	61	60	60	60	59	58	60	57	49	50	51	55	55	56	56	58	57	58	57	58	58	59	58	59	62
4F	25.4	64	64	64	63	63	63	63	62	62	62	61	61	58	60	57	50	50	51	55	55	56	57	61	60	60	61	61	62	62	60	60	63
5F	28.6	65	64	64	64	64	63	63	63	63	62	62	62	58	60	57	50	50	51	55	56	57	57	62	62	62	62	62	63	63	61	61	64
6F	31.8	65	65	65	64	64	63	63	63	63	63	62	62	58	60	57	50	50	51	55	56	57	58	62	62	62	63	63	63	63	61	61	64
7F	34.9	65	65	65	64	64	64	64	63	63	63	63	62	59	60	58	51	51	52	55	56	58	58	63	62	62	63	63	63	63	61	62	64
8F	38	65	65	65	65	64	64	64	64	63	63	63	63	59	60	58	51	51	52	55	56	58	58	63	62	62	63	63	64	64	62	62	64
9F	41.2	66	65	65	65	65	64	64	64	64	63	63	63	60	60	58	51	51	52	55	57	58	58	63	62	63	63	63	64	64	62	62	64
10F	44.4	66	66	65	65	65	64	64	64	64	64	63	63	60	60	58	51	52	53	55	57	58	58	63	62	63	63	63	64	64	62	62	64
11F	47.5	66	66	66	65	65	64	64	64	64	64	64	63	61	61	58	52	52	53	55	57	58	58	63	63	63	63	63	64	64	62	62	64
12F	50.6	66	66	66	65	65	64	64	64	64	64	64	64	61	61	58	52	52	53	55	57	58	58	63	63	63	63	63	64	64	62	62	64
13F	53.8	66	66	66	65	65	65	64	64	64	64	64	64	60	60	58	52	53	53	56	57	58	58	63	63	63	63	63	64	65	62	62	64
14F	57	66	66	66	65	65	65	65	64	64	64	64	64	61	61	59	53	53	54	56	57	58	58	63	63	63	63	63	64	65	62	62	64
15F	60.1	66	66	66	65	65	65	65	64	64	64	64	64	61	61	59	53	53	54	56	57	58	59	63	63	63	63	64	65	65	62	62	64
16F	63.2	66	66	66	66	65	65	65	64	64	64	64	64	61	61	59	54	54	55	56	58	58	59	63	63	63	63	64	65	65	62	62	64
17F	66.4	66	66	66	66	65	65	65	65	64	64	64	64	61	61	59	54	54	55	57	58	58	59	63	63	63	63	64	65	65	62	62	64
18F	69.6	66	66	66	66	65	65	65	65	65	64	65	64	62	61	59	54	55	56	57	58	58	59	63	63	63	63	64	65	65	62	62	64
19F	72.7	66	66	66	66	65	65	65	65	65	64	65	64	62	62	60	55	55	56	57	58	59	59	63	63	63	63	64	65	65	62	62	64
20F	75.8	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	55	56	57	57	58	59	59	63	63	63	63	64	65	65	62	62	64
21F	79	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	56	56	57	58	59	59	59	63	63	63	63	64	65	65	62	62	64
22F	82.2	66	66	66	66	65	65	65	65	65	64	65	65	62	62	60	56	57	57	58	59	59	60	63	63	63	63	64	65	65	62	62	64
23F	85.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	88.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	91.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	94.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	97.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	101	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	104.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	107.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	110.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	114.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	117.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max Noise Level, dB(A)		**66**	**66**	**66**	**66**	**65**	**65**	**65**	**65**	**65**	**64**	**65**	**65**	**62**	**62**	**60**	**56**	**57**	**57**	**58**	**59**	**59**	**60**	**63**	**63**	**63**	**63**	**64**	**65**	**65**	**62**	**62**	**64**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

		HZ																																				
		5B-A																																				
		1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16			
GBP Floor	mPD,m	CH01-1	CH01-1A	CH01-2	CH02-1	CH02-2	CH03-1	CH03-2	CH04-1	CH05-1	CH05-2	CH06-1	CH06-2	CH07-1	CH07-2	CH08-1	CH08-2	CH08-3	CH08-3A	CH09-1	CH09-2	CH09-3	CH10-1	CH10-2	CH11-1	CH11-2	CH12-1	CH12-2	CH13-1	CH13-2	CH13-2A	CH14-1	CH14-1A	CH14-2	CH15-1	CH16-1	CH16-2	CH16-2A
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	FG	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	66	57	67	67	67	67	67	68	68	68	69	69	69	69	69	70	70	70	70	SD	70
24F	88.4	FG	67	66	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	70	70	SD	70
25F	91.6	FG	67	65	67	68	68	68	68	67	67	67	66	66	66	66	66	65	57	66	67	67	67	67	67	68	68	68	69	69	69	69	69	70	70	70	SD	70
26F	94.8	FG	67	65	67	68	68	68	67	67	67	67	66	66	66	66	66	65	57	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	SD	70
27F	97.9	FG	67	65	67	68	68	68	67	67	67	66	66	66	66	66	66	65	58	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	70	SD	70
28F	101	FG	67	65	67	67	68	67	67	67	67	66	66	66	66	65	66	65	58	66	66	67	67	67	67	68	68	68	68	69	69	69	69	69	70	70	SD	70
29F	104.2	FG	67	65	67	67	67	67	67	67	66	66	66	66	65	65	66	65	58	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	SD	70
30F	107.4	FG	67	65	66	67	67	67	67	67	66	66	66	66	65	65	66	65	58	66	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70	70	SD	70
31F	110.7	FG	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	58	66	66	66	67	67	67	67	67	68	68	68	68	68	69	69	70	70	SD	70
32F	114.2	FG	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	59	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	SD	70
33F	117.7	FG	66	65	66	67	67	67	67	67	66	66	66	65	65	65	66	65	60	66	66	66	66	67	67	67	67	68	68	68	68	68	69	69	70	70	SD	70
Max Noise Level, dB(A)		**FG**	**67**	**66**	**67**	**68**	**68**	**68**	**68**	**67**	**67**	**67**	**66**	**66**	**66**	**66**	**66**	**66**	**60**	**67**	**67**	**67**	**67**	**67**	**68**	**68**	**68**	**69**	**69**	**69**	**69**	**69**	**70**	**70**	**70**	**70**	**SD**	**70**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

		5B-B																															
		1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	mPD,m	DH01-1	DH01-2	DH02-1	DH02-2	DH03-1	DH03-2	DH04-1	DH04-2	DH05-1	DH05-2	DH06-1	DH07-1	DH08-1	DH08-2	DH08-3	DH08-4	DH09-1	DH09-2	DH10-1	DH10-2	DH10-3	DH10-4	DH11-1	DH11-2	DH12-1	DH12-2	DH13-1	DH13-2	DH14-1	DH14-2	DH15-1	DH15-2
3F	22.3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	25.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	28.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	31.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	34.9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	38	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	41.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	44.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	47.5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	50.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	53.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	57	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	60.1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	63.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	66.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	69.6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	72.7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	75.8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	79	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	82.2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	85.3	66	66	66	66	65	65	65	65	65	64	65	65	62	63	60	57	57	58	58	59	59	60	63	63	63	63	64	65	65	62	62	64
24F	88.4	66	66	66	66	65	65	65	65	65	64	65	65	62	63	61	57	58	58	59	60	60	60	63	63	63	63	64	65	65	62	62	64
25F	91.6	66	66	66	66	65	65	65	65	65	64	65	65	63	63	61	58	58	59	59	60	60	60	63	63	63	63	64	65	65	62	63	64
26F	94.8	66	66	66	66	65	65	65	65	65	64	65	65	63	63	61	59	59	60	60	60	61	61	63	63	63	63	64	65	65	62	63	64
27F	97.9	66	66	66	66	65	65	65	65	65	64	65	65	63	63	62	59	60	60	60	61	61	61	63	63	63	63	64	65	65	62	63	64
28F	101	66	66	66	66	65	65	65	65	65	64	65	65	63	64	62	60	60	60	60	61	61	61	63	63	63	63	64	65	65	63	63	64
29F	104.2	66	66	66	66	65	65	65	65	65	64	65	65	64	64	62	60	60	61	61	61	61	62	63	63	63	63	64	65	65	63	63	65
30F	107.4	66	66	66	66	65	65	65	65	65	64	65	65	64	64	63	61	61	61	61	62	62	62	63	63	63	63	64	65	65	63	63	65
31F	110.7	66	66	66	66	65	65	65	65	65	64	65	65	64	64	63	62	62	62	62	62	63	63	63	63	63	63	64	65	66	63	63	65
32F	114.2	66	66	66	66	65	65	65	65	65	64	65	65	64	65	63	62	62	63	63	63	63	63	63	63	63	63	64	65	66	63	63	65
33F	117.7	66	66	66	66	65	65	65	65	65	65	65	65	65	65	64	62	63	63	63	63	63	64	63	63	63	63	64	65	66	63	64	65
Max Noise Level, dB(A)		**66**	**66**	**66**	**66**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**65**	**64**	**62**	**63**	**63**	**63**	**63**	**63**	**64**	**63**	**63**	**63**	**63**	**64**	**65**	**66**	**63**	**64**	**65**
No. of Exceedance Per NSR		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Appendix 2.4 Predicted Road Traffic Noise [$L10_{(1hr)}$ dB(A)] at Selected Receivers under Base Case Scenario and Mitigated Scenario (Worst Case Scenario)

Result Summary (Detail)(Site 5A)(KC-018)- Base Case (AM)(Worst Case Scenario)

| | | LZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | 5A-A | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Base Case Scenario)(Detail)(AM)

| | | Z | | |

Result Summary (Detail)(Site 5A)(KC-018)- Base Case (AM)(Worst Case Scenario)

| | | LZ | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | 5A-A | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Results of Road Traffic Noise Impact Assessment (Mitigated Case Scenario)(Detail)(AM)

| | | Z | | |

Appendix 2.5 Noise Reduction Performance of the Baffle Type Acoustic Window/ Door

Road Traffic Noise Impact Assessment

Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type)

Table of Major Parameters and Room Size of the Subject Site and Corresponding Reference Case, and Sound Attenuation Adjustment

Subject Site					Reference Case (NPE)										Subject Site			
NSR	Unit	Room	Outer opening width, m	Outer opening height, m	Outer opening area, m^2	Inner opening width, m	Inner opening height, m	Inner opening area, m^2	Air gap, mm	Overlapping length, mm	MPA applied?	No. of Outer Opening	Room area (RAref), m^2	Ref. sound attenuation, dB(A)	Room area (RA), m^2	Adjustment based on Room area of Reference Case: 10xlog(RA / RAref) (adjust downward only), dB(A) (RAref)	Adjusted sound attenuation, dB(A)	**Final Adjusted sound attenuation, dB(A)**
A01-1	1	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	31.96	-0.8	8.0	**8.0**
A01-2A	1	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
A02-1	2	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
A02-1A	2	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
A02-2	2	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	31.93	-0.8	8.0	**8.0**
A03-1	3	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	31.93	-0.8	8.0	**8.0**
A03-2A	3	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
A04-1	4	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
A04-2	4	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	31.87	-0.8	8.0	**8.0**
AH01-1A	1	MER	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	15.97	-3.8	5.0	**5.0**
AH01-2	1	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	7.15	0.0	6.9	**6.9**
AH01-3	1	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	7.15	0.0	6.9	**6.9**
AH01-4	1	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	39.36	0.0	8.8	**8.8**
AH02-1	2	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	31.93	-0.8	8.0	**8.0**
AH02-2A	2	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.43	0.0	6.9	**6.9**
AH03-1	3	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	9.4	0.0	6.9	**6.9**
AH03-2	3	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	27.9	-1.4	7.4	**7.4**
AH04-1	4	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	30.0	-1.1	7.7	**7.7**
C013-1	13	BR	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	27.9	-1.4	7.4	**7.4**
C13-2	13	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	6.7	-0.1	6.8	**6.8**
C14-1A	14	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	6.7	-0.1	6.8	**6.8**
C14-2	14	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	32.0	-0.8	8.0	**8.0**
C15-1	15	BR	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	23.0	-2.2	6.6	**6.6**
C16-1	16	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	25.2	-1.8	7.0	**7.0**
C16-2A	16	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	6.5	-0.2	6.7	**6.7**
CH15-1	15	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	26.2	-1.7	7.1	**7.1**
CH16-1	16	LV	1.275	2.535	3.23	1.480	2.535	3.75	100	275	No	1	38.3	8.8	25.2	-1.8	7.0	**7.0**
CH16-2A	16	BR	0.600	1.165	0.70	1.397	2.400	3.35	100	253	Yes	1	6.8	6.9	6.5	-0.2	6.7	**6.7**

Adopted Sound Attenuation of Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development (Site 5A)(KC-018)

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Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

| | 5A-B | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

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Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

| | Z | | |

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

Adopted Sound Attenuation of Acoustic Window (Baffle Type) and Acoustic Door (Bafflr Type) for Residential Development (Site 5B)(KC-019)

	LZ																																			
	5B-A																																			
	1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16		
GBP Floor	C01-1	C01-1A	C01-2	C02-1	C02-2	C03-1	C03-2	C04-1	C05-1	C05-2	C06-1	C06-2	C07-1	C07-2	C08-1	C08-2	C08-3	C08-3A	C09-1	C09-2	C09-3	C10-1	C10-2	C11-1	C11-2	C12-1	C12-2	C13-1	C13-2	C13-2A	C14-1	C14-1A	C14-2	C15-1	C16-1	C16-2	C16-2A
3F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	SD	SD	-1.0	-1.7	-3.0	-4.1	SD	-6.5
4F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.4	SD	SD	-1.3	-2.0	-3.4	-4.2	SD	-6.3
5F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.4	SD	SD	-1.5	-2.1	-3.3	-4.0	SD	-6.0
6F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	-0.6	SD	SD	-1.4	-2.0	-3.1	-3.7	SD	-5.8
7F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	-0.5	SD	SD	-1.3	-1.9	-2.8	-3.5	SD	-5.5
8F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	-0.4	SD	SD	-1.2	-1.7	-2.7	-3.3	SD	-5.3
9F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.3	SD	SD	-1.0	-1.5	-2.5	-3.1	SD	-5.1
10F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.2	SD	SD	-0.8	-1.3	-2.3	-2.9	SD	-4.9
11F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	SD	-0.7	-1.2	-2.1	-2.7	SD	-4.7
12F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	SD	-0.5	-1.0	-1.9	-2.6	SD	-4.5
13F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	-0.4	-0.9	-1.8	-2.3	SD	-4.3
14F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	-0.3	-0.8	-1.6	-2.2	SD	-4.1
15F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.2	-0.6	-1.5	-2.0	SD	-4.0
16F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.5	-1.3	-1.9	SD	-3.8
17F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.4	-1.1	-1.7	SD	-3.6
18F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.2	-1.0	-1.6	SD	-3.5
19F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	-0.8	-1.4	SD	-3.3
20F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.7	-1.3	SD	-3.2
21F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.6	-1.1	SD	-3.0
22F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.4	-1.0	SD	-2.9
23F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	-0.6	-0.9	-1.2	-1.5	-2.1	-3.4	-4.2	SD	-6.5

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

	5B-B																															
	1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	D01-1	D01-2	D02-1	D02-2	D03-1	D03-2	D04-1	D04-2	D05-1	D05-2	D06-1	D07-1	D08-1	D08-2	D08-3	D08-4	D09-1	D09-2	D10-1	D10-2	D10-3	D10-4	D11-1	D11-2	D12-1	D12-2	D13-1	D13-2	D14-1	D14-2	D15-1	D15-2
3F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
26F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
27F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
30F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
31F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
32F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
33F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

	HZ																																							
	5B-A																																								
	1			2		3		4	5		6		7		8				9				10	11		12		13			14			15	16						
GBP Floor	CH01-1	CH01-1A	CH01-2	CH02-1	CH02-2	CH03-1	CH03-2	CH04-1	CH05-1	CH05-2	CH06-1	CH06-2	CH07-1	CH07-2	CH08-1	CH08-2	CH08-3	CH08-3A	CH09-1	CH09-2	CH09-3	CH10-1	CH10-2	CH11-1	CH11-2	CH12-1	CH12-2	CH13-1	CH13-2	CH13-2A	CH14-1	CH14-1A	CH14-2	CH15-1	CH16-1	CH16-2	CH16-2A				
3F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.3	-0.9	SD	-2.8			
24F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.2	-0.7	SD	-2.6			
25F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.6	SD	-2.5			
26F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.5	SD	-2.4			
27F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.4	SD	-2.3			
28F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.3	SD	-2.2			
29F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.2	SD	-2.1			
30F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-0.1	SD	-1.9			
31F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	-1.9			
32F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	-1.7			
33F	FG	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	SD	-1.6			
Max	**FG**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**/**	**-0.3**	**-0.9**	**SD**	**-2.8**			

Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (Site 5A)(KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (Site 5B)(KC-019)
Sound Attenuation for Acoustic Window (Baffle Type) and Acoustic Door (Baffle Type) for Residential Development

	5B-B																															
	1		2		3		4		5		6	7	8				9		10				11		12		13		14		15	
GBP Floor	DH01 1	DH01 2	DH02 1	DH02 2	DH03 1	DH03 2	DH04 1	DH04 2	DH05 1	DH05 2	DH06 1	DH07 1	DH08 1	DH08 2	DH08 3	DH08 4	DH09 1	DH09 2	DH10 1	DH10 2	DH10 3	DH10 4	DH11 1	DH11 2	DH12 1	DH12 2	DH13 1	DH13 2	DH14 1	DH14 2	DH15 1	DH15 2
3F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
14F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
15F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
16F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
21F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
22F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
23F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
24F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
25F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
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27F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
28F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
29F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
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33F	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Max	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Appendix 2.6 Schedule of Noise Mitigation Measures

Road Traffic Noise Impact Assessment

Location of Mitigation Measures

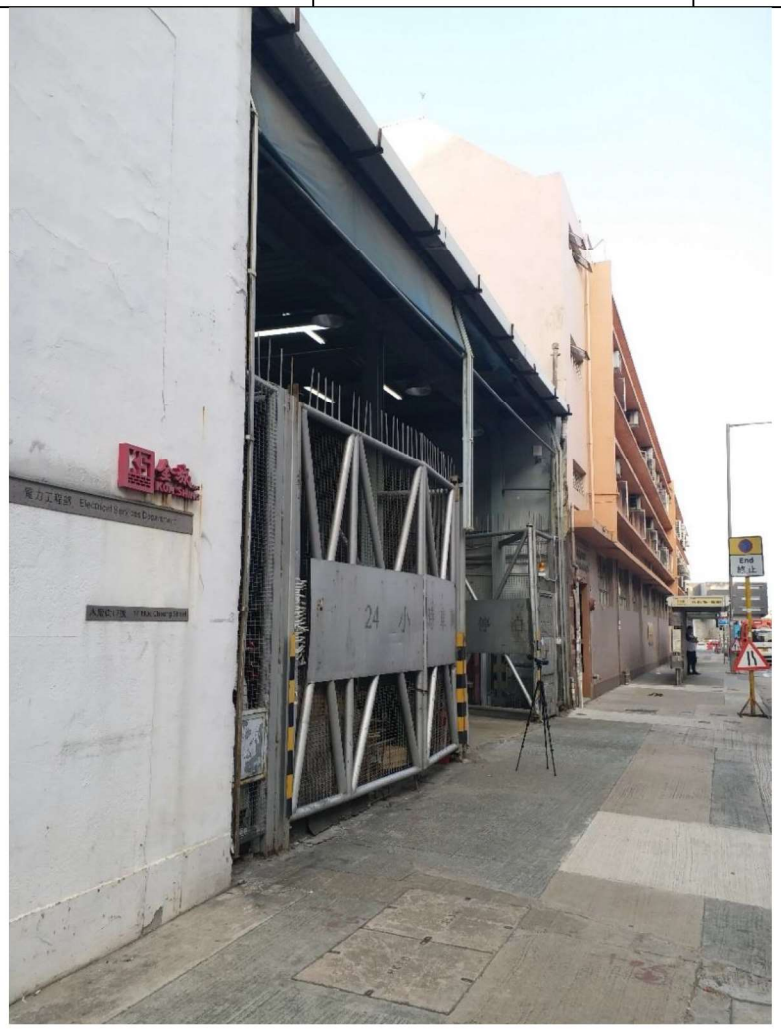
Tower	NSR	Unit	Mitigation Measures	Floor Range with Mitigation Measures
5A-A	**A01-1**	1	AD	3/F - 7/F
5A-A	**A01-1A**	1	FG	3/F - 7/F
5A-A	**A01-2**	1	SD	3/F - 7/F
5A-A	**A01-2A**	1	AW	3/F - 7/F
5A-A	**A02-1**	2	AW	3/F - 7/F
5A-A	**A02-1A**	2	FG	4/F - 7/F
5A-A	**A02-2**	2	AD	4/F - 7/F
5A-A	**A02-2A**	2	FG	4/F - 7/F
5A-A	**A03-1**	3	AD	5/F - 7/F
5A-A	**A03-1A**	3	FG	5/F - 7/F
5A-A	**A03-2**	3	SD	5/F - 7/F
5A-A	**A03-2A**	3	AW	5/F - 7/F
5A-A	**A04-1**	4	AW	6/F - 7/F
5A-A	**A04-1A**	4	SD	6/F - 7/F
5A-A	**A04-2**	4	AD	7/F
5A-A	**A04-2A**	4	FG	6/F-7/F
5A-A	**A22-2A**	22	SD	5/F - 7/F
5A-A	**AH01-1**	1	SD	8/F - 33/F
5A-A	**AH01-1A**	1	AW	8/F - 33/F
5A-A	**AH01-2**	1	AW	8/F - 26/F
5A-A	**AH01-3**	1	AW	8/F - 23/F
5A-A	**AH01-4**	1	AD	8/F - 20/F
5A-A	**AH02-1**	2	AD	8/F - 19/F
5A-A	**AH02-1A**	2	FG	8/F - 18/F
5A-A	**AH02-2**	2	SD	8/F - 18/F
5A-A	**AH02-2A**	2	AW	8/F - 17/F
5A-A	**AH03-1**	3	AW	8/F - 17/F
5A-A	**AH03-1A**	3	SD	8/F - 16/F
5A-A	**AH03-2**	3	AD	8/F - 15/F
5A-A	**AH03-2A**	3	FG	8/F - 16/F
5A-A	**AH04-1**	4	AD	8/F - 14/F
5A-A	**AH04-1A**	4	FG	9/F - 13/F
5A-A	**AH21-2A**	21	SD	8/F - 12/F
5B-A	**C01-1**	1	FG	3/F - 22/F
5A-A	**C13-1**	13	AD	6/F - 8/F
5B-A	**C13-2**	13	AW	3/F - 10/F
5B-A	**C13-2A**	13	SD	3/F - 12/F
5B-A	**C14-1**	14	SD	3/F - 14/F
5B-A	**C14-1A**	14	AW	3/F - 15/F
5B-A	**C14-2**	14	AD	3/F - 19/F
5B-A	**C15-1**	15	AD	3/F - 22/F
5B-A	**C16-1**	16	AD	3/F - 22/F
5B-A	**C16-2**	16	SD	3/F - 22/F
5B-A	**C16-2A**	16	AW	3/F - 22/F
5B-A	**CH01-1**	1	FG	23/F - 33/F
5B-A	**CH15-1**	15	AD	23/F - 24/F
5B-A	**CH16-1**	16	AD	23/F - 30/F
5B-A	**CH16-2**	16	SD	23/F - 33/F
5B-A	**CH16-2A**	16	AW	23/F - 33/F

Note:

1. AW: Acoustic Window (Baffle Type)
2. AD: Acoustic Door (Baffle Type)
3. SD: Self-Closing Access Door (not for ventilation purpose)
4. FG: Fixed Glazing

Appendix 3.1 Site Visit and Noise Sources Surveys

Source ID	Name	Date & Time	Source Description
G1	Kum Shing – Electrical Services Department	23 June 2020 & 25 Oct 2017 09:00-18:00	Operation Noise (eg. Operation of Electric drill)



Source ID	Name	Date & Time	Source Description
G2	Joly Auto Service	23 June 2020 & 25 Oct 2017 09:00-20:00	Car Repairing



Source ID	Name	Date & Time	Source Description
G3	Gainfull Motors Services Limited	23 June 2020 & 25 Oct 2017 09:00-18:00	Car Repairing



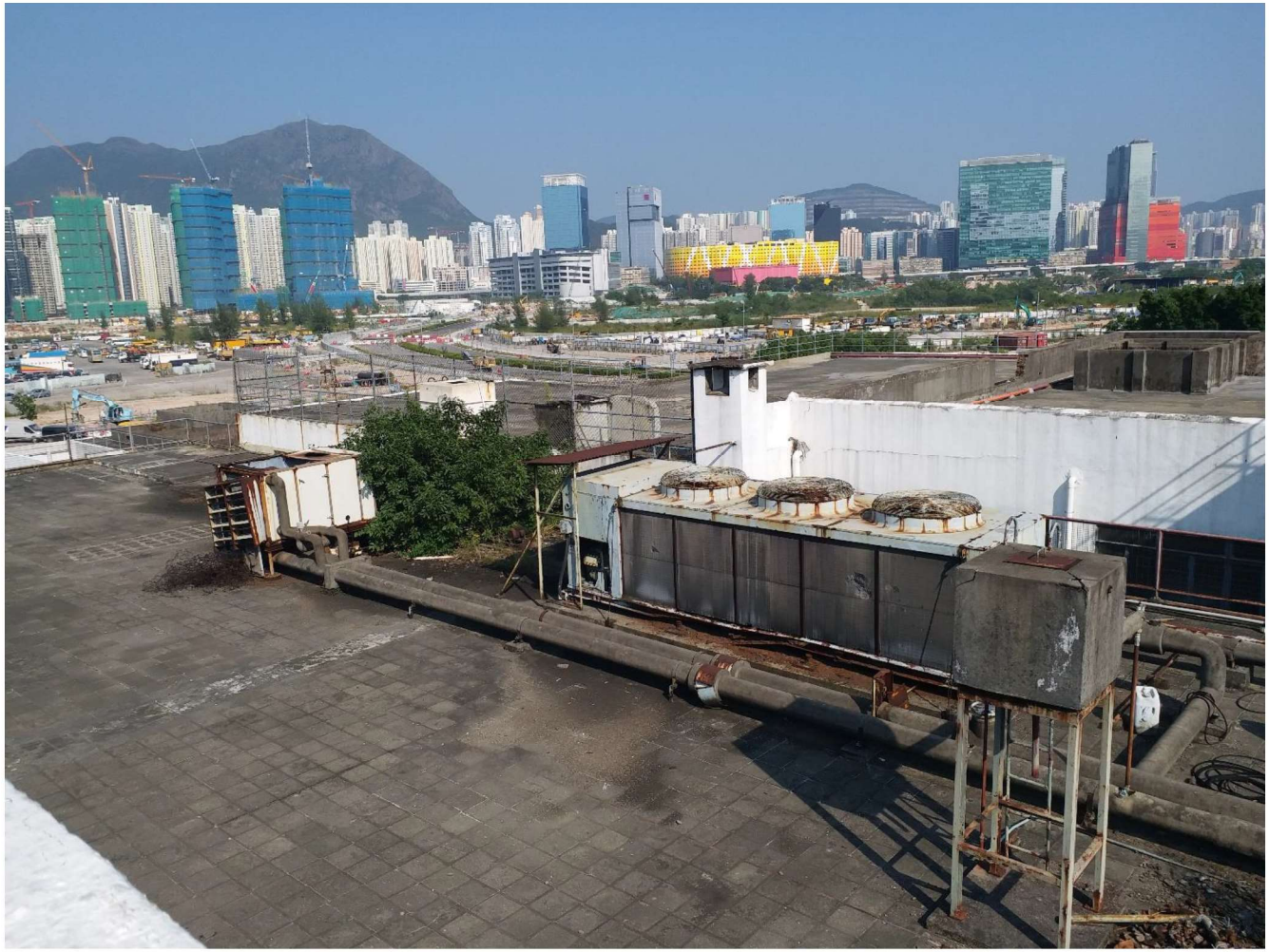
Source ID	Name	Date & Time	Source Description
G4	ETC Hong Kong Limited	23 June 2020 & 25 Oct 2017 09:00-18:00	Operation Noise (eg. Ventilation Fan)



Source ID	Name	Date & Time	Source Description
C1	Roof top of Wacker Industrial Building	23 June 2020 & 25 Oct 2017 09:00-18:00	Ryoden Cooling Tower



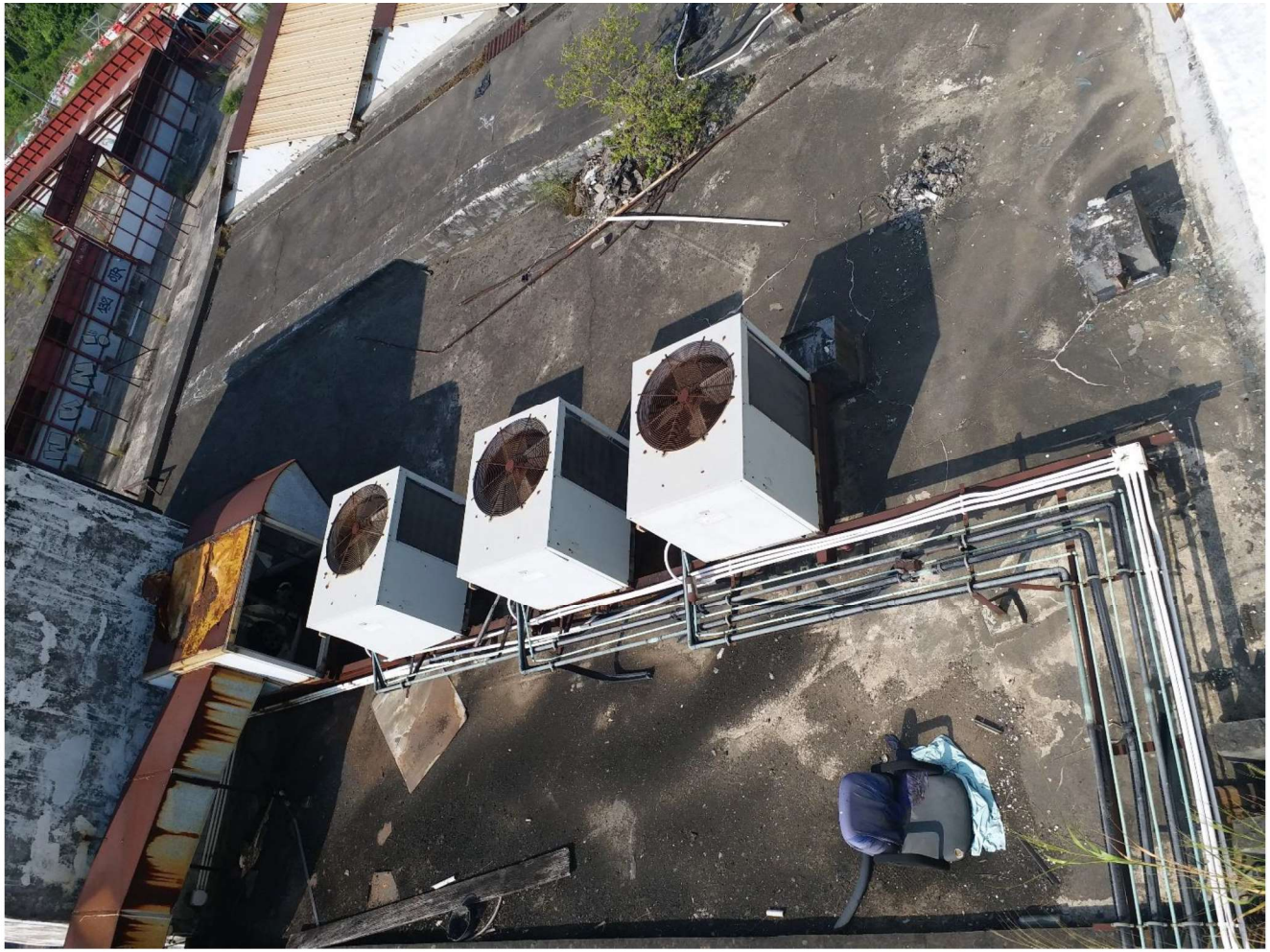
Source ID	Name	Date & Time	Source Description
C2	D.H.L. House Rooftop	23 June 2020 & 25 Oct 2017 09:00-18:00	Idle Chillers



Source ID	Name	Date & Time	Source Description
C3	D.H.L. House Rooftop	23 June 2020 & 25 Oct 2017 09:00-18:00	Idle Chillers

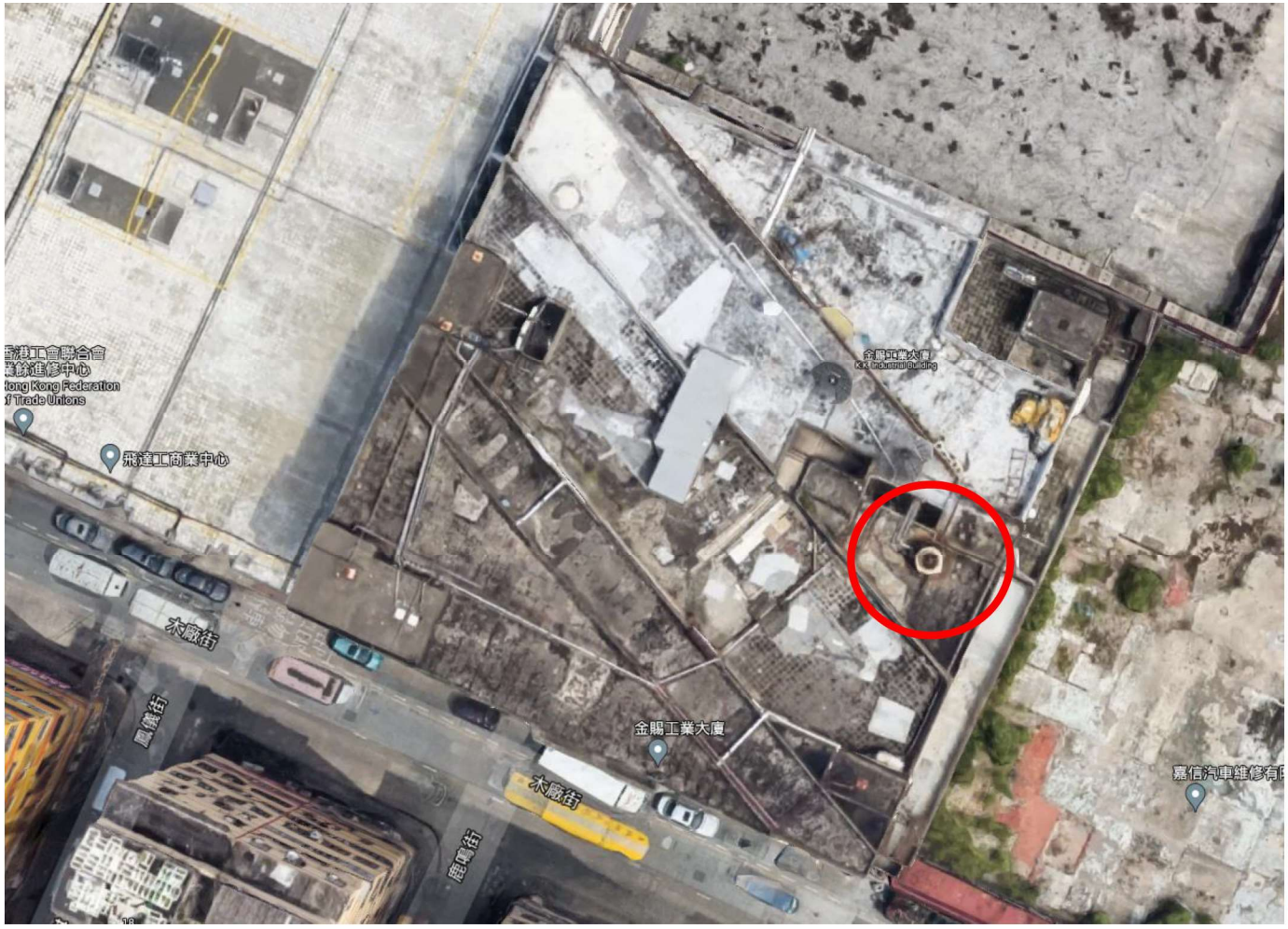


Source ID	Name	Date & Time	Source Description
C4-C6	Rooftop of Gainfull Motors	23 June 2020 & 25 Oct 2017 09:00-18:00	Idle Chillers



Appendix 3.1 Photo Records of Site Surveys

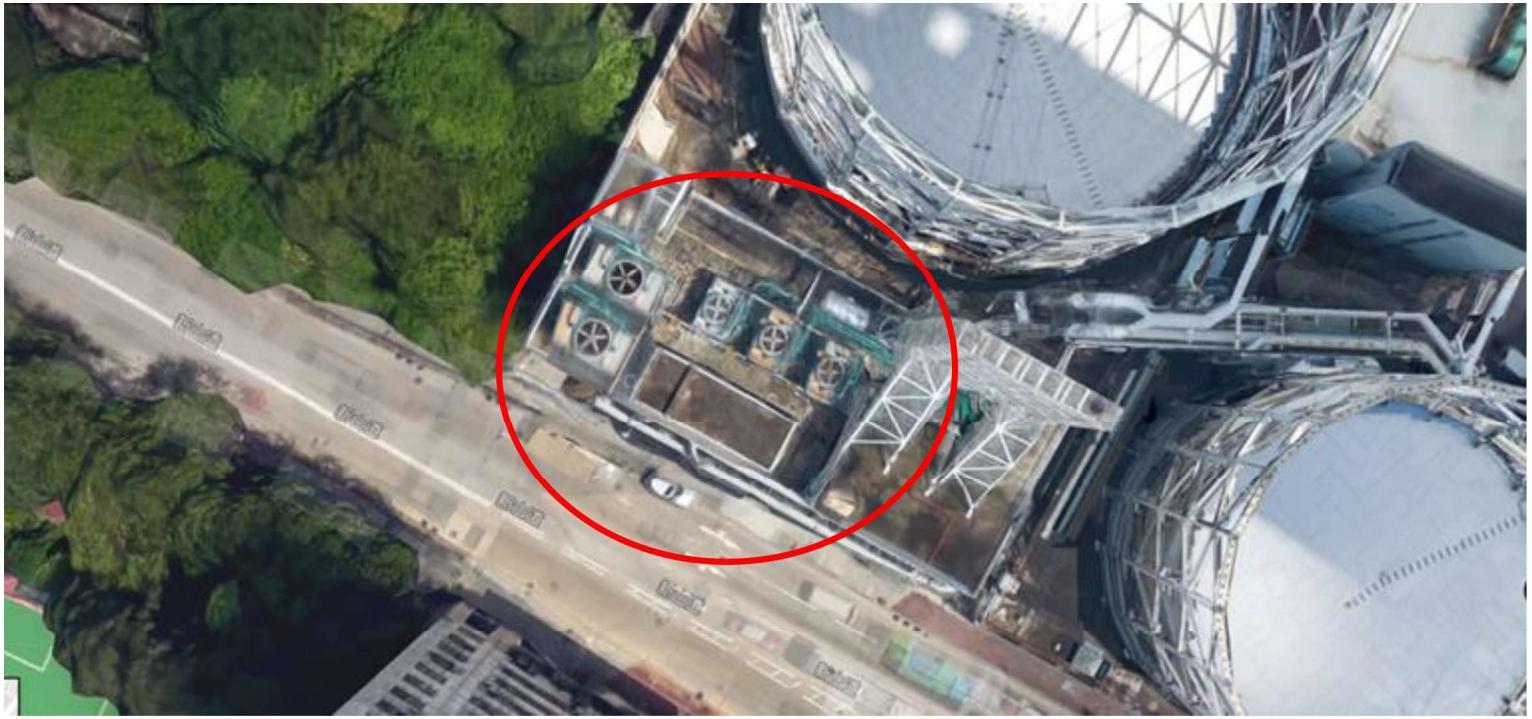
Source ID	Name	Date & Time	Source Description	
C7	KK Industrial Building Rooftop		23 June 2020 & 25 Oct 2017 09:00-18:00	Idle Chillers



Source ID	Name	Date & Time	Source Description
C8-C11	Ma Tau Kok Gas Work-north bound office	25 Oct 2017 09:00-18:00	Chillers



Source ID	Name	Date & Time	Source Description
C12-C16	Ma Tau Kok Gas Work-sound bound block	23 June 2020 & 25 Oct 2017	Chillers



Source ID	Name	Date & Time	Source Description
SR1-SR5	Rooftop of Sewage Pumping Station	23 June 2020 & 25 Oct 2017	Pumping Station



Source ID	Name	Date & Time	Source Description
SE1, SW1-SW3	Sewage Pumping Station	23 June 2020 & 25 Oct 2017	Pumping Station



Appendix 3.2 Extracted Pages from the NIA-MTK Report

1.0 DESCRIPTION

Allied Environmental Consultants Limited was commissioned to conduct the noise impact assessment for the Proposed Comprehensive Residential Development at KIL 10578, 7628 and 7626 in Ma Tau Kok. A noise measurement was conducted to obtain the noise level produced by the motor services workshops under operation, which are identified as the fixed noise sources in the vicinity, for the fixed plant noise assessment.

2.0 SITE SURVEY AND NOISE MEASUREMENT

2.1 DATE AND TIME

Several site surveys for daytime and nighttime were conducted on 21 September 2015, 26 February, 27 February, 1 March, 2 March and 17 March 2016. Noise measurement was conducted on 17 March 2016 to obtain noise data for evaluating the industrial noise impact. Photographs taken on site are given in ***Appendix J.***

2.2 SURVEY PERSONNEL

The following personnel took part in the measurements.

Mr. Ronan Chan	Consultant (AEC)
Ms. Cathy Man	Senior Consultant (AEC)

2.3 WEATHER CONDITIONS

The weather conditions on site were checked to ensure the measurements were made only during "dry" weather conditions without the presence of fog and rain. The wind speed had been checked to ensure that the wind speed did not exceed 5m/s and 10m/s in any direction for steady and gusty wind respectively.

2.4 SITE OBSERVATIONS

The area consists primarily of domestic premises and industrial/ office buildings. There are a recycling workshop, a number of motor services workshops and restaurants on ground floor. ***Figure 6*** shows the location of the identified noise sources. The inventory of fixed noise sources is given in ***Table 2-1***.

The restaurants are not considered as industrial noise sources. There are several cooling towers and chillers identified at the roof of the industrial buildings in the vicinity. These noise sources are excluded from calculation. It can be referred to Section 7.1 of the Noise Impact Assessment Report for details.

The recycling workshop (S16) is located at Mok Cheong Street opposite to the Subject Site. As observed and confirmed by the operators of the recycling workshop, only

trading of materials and materials handling are carried out in the workshop. There are no major operations (i.e. repair and maintenance works with tools/ machines) carried out. Hence it is not considered as an industrial noise source.

A number of motor services workshops are the potential noise sources that might impose impact on the proposed Development. As observed during the site inspections and confirmed by the operators, typical operations at the workshops include manual operations as well as tools/machine assisted operations (i.e. Hand-held Pneumatic Tools, Vehicle lifting machine, hammering, grinding), which are short in duration (in less than 5 minutes).

Based on our several site inspections conducted in Feb 2016 and March 2016, it is observed that most works at motor services workshops were carried out in the afternoon. It is also confirmed by the operators of the motor services workshops that afternoon, around 14:00 to 15:00 hours, are the busiest operation time. It is also observed during the night time site visits and confirmed by the operators that there is no nighttime operation at the motor services workshops.

Inventory of identified fixed noise sources is provided below.

Table 2-1 Inventory of fixed noise sources

Source ID	Source Type	Quantity	Location	Shortest Horizontal Distance to Site Boundary (m)	Remark
S1	Cooling Tower	6	Freder Centre	3	U.B.W. and excluded from assessment
S2	Cooling Tower	1	Wacker Factory	22	U.B.W. and excluded from assessment
S3	Chillers	2	DHL House	40	Abandoned
S4	Motor services workshop	1	20 Fung Yi Street	42	No night time operation
S5	Motor services workshop	1	18 Fung Yi Street (禧記)	50	
S6	Motor services workshop	1	23 Lun Cheung Street	34	
S7	Motor services workshop	1	26 Ying Yeung Street (遠東- 新興)	36	
S8	Motor services workshop	1	24 Ying Yueng Street (名城)	47	

S9	Motor services workshop	1	23 Ying Yueng Street	42
S10	Motor services workshop	1	19 Ying Yueng Street(恒進)	53
S11	Motor services workshop	1	15 Ying Yueng Street (合益)	66
S12	Motor services workshop	1	28 Pang Ching Street (龍華)	16
S13	Motor services workshop	1	24 Hung Wan Street	72
S14	Motor services workshop	1	25-27 Hung Wan Street	39
S15	Motor services workshop	1	27 Shim Luen Street	59
S16	Recycling Workshop	1	Mok Cheong Street (銘興五金)	12
S17	Motor services workshop	1	Mok Cheong Street (新張記)	50
S18	Motor services workshop	1	Mok Cheong Street (洗車達人)	29

Note:
U.B.W.: Unauthorized Building Works

2.5 NOISE MEASUREMENT

Noise measurements have been conducted on 17 March 2016 in both non traffic peak time (around 12:00 to 13:00 hours) and busiest time of operation, with all of the operation activities, i.e. Hand-held Pneumatic Tools, Vehicle lifting machine, hammering, grinding, captured during noise survey.

Noise survey was carried out at site boundary location as well as workshops simultaneously, with noise data recorded at 10s intervals. Workshop Noise Measurement points were located at 2m distance from the motor services workshops whenever possible. Noise measurements at each motor services workshop were carried out at the shop front and at the side near the activities. The location of noise monitoring points (NMP) is shown in ***Annex A and Table 2-2***. The sound level meters set up positions are indicated in ***Annex E***.

The workshops are of similar size and nature, i.e. car repairing activities including manual and tools/machine assisted operations. In this connection, the total sound power level of the activities at each workshop is similar. All the activities observed at each workshop were closer to the ground rather than the ceiling so that no measurement at the top of each shop front was conducted. As conservative approach, the highest sound pressure level recorded amongst the surveyed workshops, during the busiest operation hours were adopted for evaluation of sound power level emission with reference to ISO 3746.

Table 2-2 Location of Noise Measurement Point

NMP ID	Location
NMP 1	Site Boundary
NMP 2	20 Fung Yi Street
NMP 3	23 Lun Cheung Street
NMP 4	26 Ying Yeung Street (遠東- 新興)
NMP 5	28 Pang Ching Street (龍華)
NMP 6	24 Hung Wan Street
NMP 7	Mok Cheong Street (銘興五金)
NMP 8	27 Shim Luen Street

As observed during survey and previous visits, the noise from manual operation at source is marginally noticeable while the noise from tools/machine assisted operations is noticeable at source. The noise climate is dominated by on-road traffic noise, merely heavy vehicle, i.e. buses and lorries during noise survey and visits.

2.6 INSTRUMENTATION

All noise measurements were conducted using the equipment listed in ***Table 2-3*** below. A copy of the calibration certificates for the sound level meter and calibrator are attached in ***Annex B***.

Table 2-3 List of Instrumentation

Type & Model		Quantity	Standard Complied
Sound Level Meter	B&K 2250	1	IEC 61672-1:2002 Class 1
Sound Level Meter	Solo –Slm 01dB	1	IEC 61672-1:2002 Class 1
Sound Level Calibrator	RION NC-73	1	IEC 60942

2.7 MEASUREMENT RESULT

A summary table of recorded noise levels ("Overall" and "Background" in $L_{Aeq5min}$ and $L_{Aeq30min}$) together with site observations is shown in ***Annex C***. Detailed recorded data is given in ***Annex D***. The "Background" is the recorded overall noise level with event duration edited out.

With reference to ***Annex C***, at the Site Boundary NMP, the recorded noise level differences between "Overall" and "Background" are within 1.0dB (in terms of both $L_{Aeq5min}$ and $L_{Aeq30min}$) for all the events (i.e. manual operations and tools/machine assisted operations). No tonal, impulsiveness/ intermittency were observed at Project Site Boundary and the site boundary of the adjacent buildings along Mok Cheong Street, namely Freder Centre and Wacker Industrial Building during operation.

3.0 CALCULATION OF SOUND POWER LEVEL OF MOTOR SERVICES WORKSHOPS

This section evaluates the Sound Power Level emanated from motor services workshops. The sound power level (SWL) of the motor services workshops is calculated in accordance with ISO3746:2010.

Step 1: Measurement of Sound Pressure Level
(Details refer to Section 2.5)

Step 2: Calculation of mean time-averaged sound pressure levels-
Background noise correction is applied to recorded sound pressure level during operation activities to obtain mean time-averaged sound pressure level for the workshops. (Refer to Plate 1 below)

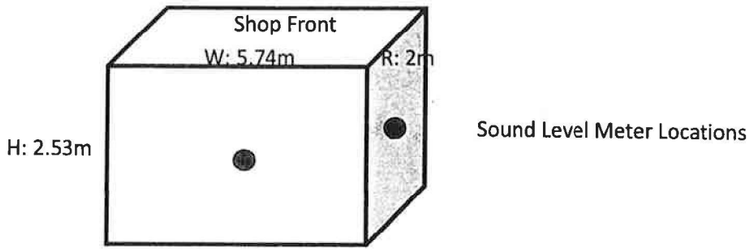
Step 3: Calculation of sound energy levels
Parallelepiped measurement surface offset from shopfront of motor services workshop, according to measurement distance, is used to determine the total area of measurement surface.
The calculation of SWL is determined by the following equation:

$$SWL = SPL + 10\log(S)dB$$

As confirmed by site survey and observations, the motor services workshops are of similar size and nature, i.e. car repairing activities including manual and tool/ machine assisted operation. In this connection, the total sound power level of the activities at each workshop is similar. For evaluation of Sound Power Level, the highest Sound Pressure Level (SPL) in $L_{Aeq(30mins)}$ obtained from the noise survey during the busiest workshop operation hour is adopted for the calculation, which is considered representative to a worst case scenario. This highest sound pressure level is recorded at NMP 6 during grinding and is adopted for evaluation. Detailed measurement data is provided in ***Annex D***.

Machine Data			
Dimension of Shop Front (Width)	W	5.74	m
Dimension of Shop Front (Height)	H	2.53	m
Measurement Distance	r	2	m
Total Measurement Surface	S	31.06	m^2
Calculation of Sound Power Level			
Sound Pressure Level ($L_{A,eq30min}$)	SPL	76.8	dB(A)
Measurement Surface	S	31.06	m^2
10log(S)		14.9	dB
Sound Power Level	SWL	91.7	dB

Plate 1: Diagram of the measurement surface and location of sound level meter



4.0 CONCLUSION

Noise measurement for obtaining SPL of motor service workshop was carried out. The calculated SWL was determined to be 91.7 dB.

Annex A
Location of Noise Monitoring Points

Appendix 3.3 Summary of SWL of Noise Sources

Noise Measurements Data for Determination of Sound Power Level

Noise Sources	Source Description	Noise Sources ID	Avg. Measured SPL, dB(A)	Measurement Distance from Source (d), m	SWL, dB(A) (SPL + 20 log (d)+8)	SWL adopted in Noise from Fixed Source Calculation, dB(A)	Remark
Kum Shing- Electrical Services Department	Drilling	G1	72.2	3.0	89.7	89.7	By on site mea
Joly Auto Service	Car repairing	G2	-	-	-	91.7	Reference is made to the "NIA-MTK Re
Gainfull Motors Services Limited	Car repairing	G3	-	-	-	91.7	
ETC Hong Kong Limited	Ventilation Fan	G4	73.0	3.0	90.6	90.6	By on site mea
Roof top of Joly Auto Motor	Cooling Tower	C1	-	-	-	86.4	By on site measurement, calculation o
D.H.L. House Roof	Idle Chiller	C2	-	-	-	87.3	
D.H.L. House Roof	Idle Chiller	C3	-	-	-	87.3	
Roof top of Gainfull Motors	Idle Chiller	C4	-	-	-	81.9	Projection by
Roof top of Gainfull Motors	Idle Chiller	C5	-	-	-	81.9	
Roof top of Gainfull Motors	Idle Chiller	C6	-	-	-	81.9	
K.K. Industrial Building	Cooling Tower	C7	50.0	16.0	82.1	82.1	
Ma Tau Kok Gas Work-north bound office	Chillers	C8	-	-	-	84.6	
Ma Tau Kok Gas Work-north bound office	Chillers	C9	-	-	-	84.6	
Ma Tau Kok Gas Work-north bound office	Chillers	C10	-	-	-	85.2	
Ma Tau Kok Gas Work-north bound office	Chillers	C11	-	-	-	85.2	
Ma Tau Kok Gas Work-south bound block	Chillers	C12	-	-	-	90.9	Projection by
Ma Tau Kok Gas Work-south bound block	Chillers	C13	-	-	-	90.9	
Ma Tau Kok Gas Work-south bound block	Chillers	C14	-	-	-	90.1	
Ma Tau Kok Gas Work-south bound block	Chillers	C15	-	-	-	90.1	
Ma Tau Kok Gas Work-south bound block	Chillers	C16	-	-	-	90.1	

*size of G2, G4, C7, is much smaller when compared ot the measurement distance so that it is assumed as point source

Projection of SWL based on ISO3746

Noise Sources ID	Avg. Measured SPL, dB(A)	Measurement Distance from Source (d), m	Dimension			Measurement Surface Area (S), m2	SWL, dB(A) (SPL + 10 log (S))
			L, m	W, m	H,m		
C2	66.0	3.8	3.0	1.0	1.2	136	87.3
C3	66.0	3.8	3.0	1.0	1.2	136	87.3
C4	64.0	2.8	0.8	0.8	1.0	61	81.9
C5	64.0	2.8	0.8	0.8	1.0	61	81.9
C6	64.0	2.8	0.8	0.8	1.0	61	81.9
C8	65.0	2.8	3.0	1.0	1.2	91	84.6
C9	65.0	2.8	3.0	1.0	1.2	91	84.6
C10	65.0	2.8	2.5	2.5	1.2	104	85.2
C11	65.0	2.8	2.5	2.5	1.2	104	85.2
C12	67.0	4.5	5.0	2.5	1.5	243	90.9
C13	67.0	4.5	5.0	2.5	1.5	243	90.9
C14	67.0	4.5	4.0	2.0	1.2	206	90.1
C15	67.0	4.5	4.0	2.0	1.2	206	90.1
C16	67.0	4.5	4.0	2.0	1.2	206	90.1

Sound Power Measurement Calculation Sheet

To: ISO3746:2010 (Survey Method)

Project No.	URAKCAA2, Action Area 2 District-based Study for Kowloon City
Measurement Date & Time:	Friday, February 2, 2018
Type of Sound Source:	Cooling Tower
Opeartion Conditions:	Stable

Overall, dB(A)			IBM_Iron Bending
Raw Data	$\overline{L'_{pA(ST)}} = 10 \lg\left[\frac{1}{N_M}\sum_{i=1}^{N_M} 10^{0,1L'_{pA\,i(ST)}}\right]$ dB	**Averaged L'$_{pA(ST)}$**	70.7
		Averaged L$_{pA(BG)}$	66.26 *

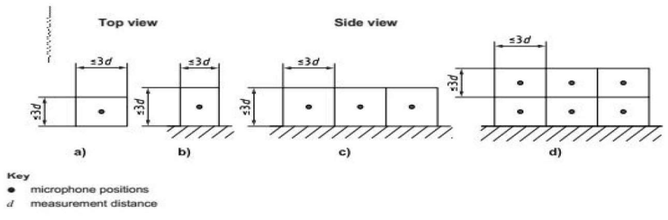
Surface Area	**No. of reflecting plane:**	1
	Measurement Distance, d (m):	1
	Surface Area of Measurement (m^2):	57.0

K$_{1A}$ Correction	$\Delta L_{pA} = \overline{L'_{pA(ST)}} - \overline{L_{pA(B)}}$	**ΔL_{pA}=L'$_{pA(ST)}$ - L$_{pA(BG)}$**	4.5
	$\Delta L_{pA} > 10$ dB, K_{1A} is assumed equal to zero.	**ΔL_{pA}>10**	
	3 dB $\leqslant \Delta L_{pA} \leqslant$ 10 dB $K_{1A} = -10 \lg\left(1-10^{-0,1\Delta L_{pA}}\right)$ dB	**3=<ΔL_{pA}<=10**	1.9
	$\Delta L_{pA} <$ 3 dB, K_{1A} to be applied in this case is 3 dB	**ΔL_{pA}<3**	
		K$_{1A}$	1.9

K$_{2A}$ Correction	$K_{2A} = 10 \lg\left[1+4\frac{S}{A}\right]$ dB	**A=α S$_V$**	Outdoor Env.
		K$_{2A}$	0

Results	$\overline{L_{pA}} = \overline{L'_{pA(ST)}} - K_{1A} - K_{2A}$	**Corrected L$_{pA}$**	68.8
	$L_{WA} = \overline{L_{pA}} + 10 \lg\frac{S}{S_0}$ dB	**Sound Power Level: L$_{WA}$**	**86.4**

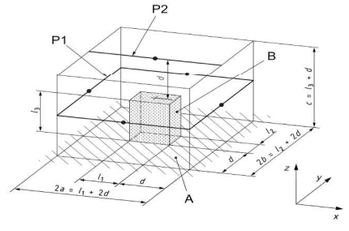
Determination of Microphone Arrays on Parallelepiped Measurement Surface



Key
● microphone positions
d measurement distance

Figure C.1 — Microphone positions on a parallelepiped measurement surface

Parallelepiped Measurement Surface and Microphone Positions and Paths for a Small Machine



Key
● microphone positions
A reflecting plane
B reference box
$2a$ measurement surface length
$2b$ measurement surface width
c measurement surface height
d measurement distance
l_1 reference box length
l_2 reference box width
l_3 reference box height
P1, P2 path 1, path 2

* Background noise measurement was limited by field condition as it is not feasible for turning off the cooling tower for background measurement. Therefore, the background noise levels were measured as far as possible from the cooling tower in order to minimise the effect generated by the cooling tower. As a result, the minimum measured background noise level has been selected for calculation.

Activity: Cooling Tower
Noise source ID: C1

ID of Measurement Points	Sound Source	Overall, dB(A)	$10^{li/10}$
839	Side	68.05	6382634.9
840		67.37	5457578.6
841		67.49	5610479.8
842		67.71	5902010.8
843		68.04	6367955.2
844		67.86	6109420.2
845		68.44	6982324
846		67.92	6194410.8
847	Top	73.80	23988329
848		73.36	21677041
850		73.65	23173946
851		73.93	24717241
$L'_{pA(ST)}$ = Average SPL		70.75	

Dimension of Cooling Tower

	H (m)	L (m)	W (m)
=	1.8	1.8	1.8

Dimension of measurement Surface

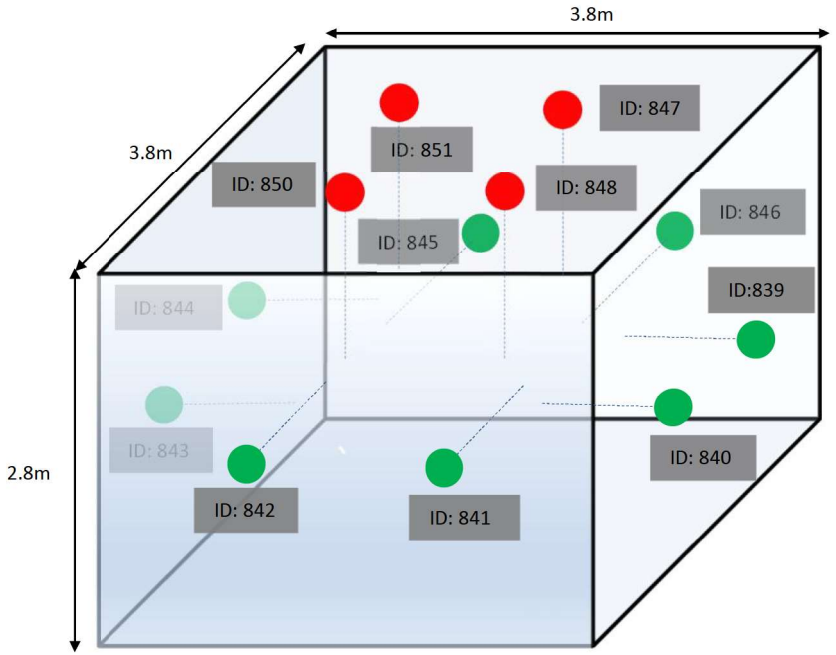
	H (m)	L (m)	W (m)
=	2.8	3.8	3.8

Total Measurement Surface

= 2.8*3.8*4+3.8*3.8

= 57 m^2

Noise Measurement for Cooling Tower
Noise source ID: C1



Representing 1m perpendicular distance from Iron Bending Machine

Measurement location over the noise source

Measurement location aside the noise source

Appendix 3.4 Detailed Calculations of Fixed Noise Impact Assessment

Detailed Calculations of Fixed Noise Impact Assessment (Daytime)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
A22-2A	837970	820094	G1	Kum Shing- Electrical Services Department	837964.7	820291.4	89.7	1	89.7	197.2	-53.9	0
			G2	Joly Auto Service	837902.6	820318.1	91.7	1	91.7	233.8	-55.4	0
			G3	Gainfull Motors Services Limited	837890.2	820323.7	91.7	1	91.7	243.0	-55.7	0
			G4	ETC Hong Kong Limited	837975.8	820383.1	90.6	1	90.6	289.0	-57.2	0
			C1	Roof top of Wacker Industrial Building	837924.5	820348.4	86.4	1	86.4	258.3	-56.2	0
			C2	D.H.L. House Roof	837937.6	820347.7	87.3	1	87.3	255.6	-56.2	0
			C3	D.H.L. House Roof	837930.6	820332.6	87.3	1	87.3	241.7	-55.7	0
			C4	Roof top of Gainfull Motors	837910.0	820359.4	81.9	1	81.9	272.0	-56.7	0
			C5	Roof top of Gainfull Motors	837908.7	820359.9	81.9	1	81.9	272.9	-56.7	0
			C6	Roof top of Gainfull Motors	837906.9	820360.8	81.9	1	81.9	274.1	-56.8	0
			C7	K.K. Industrial Building	837843.2	820365.9	82.1	1	82.1	300.1	-57.5	0
			C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	107.0	-48.6	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	105.2	-48.4	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	73.6	-45.3	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	70.5	-45.0	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	166.6	-52.4	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	164.2	-52.3	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	157.5	-51.9	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	153.3	-51.7	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	149.4	-51.5	0

Detailed Calculations of Fixed Noise Impact Assessment (Daytime)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
A01-1	837984	820119	G1	Kum Shing- Electrical Services Department	837964.7	820291.4	89.7	1	89.7	173.3	-52.8	0
			G2	Joly Auto Service	837902.6	820318.1	91.7	1	91.7	214.9	-54.6	0
			G3	Gainfull Motors Services Limited	837890.2	820323.7	91.7	1	91.7	225.0	-55.0	0
			G4	ETC Hong Kong Limited	837975.8	820383.1	90.6	1	90.6	264.2	-56.4	0
			C1	Roof top of Wacker Industrial Building	837924.5	820348.4	86.4	1	86.4	236.9	-55.5	0
			C2	D.H.L. House Roof	837937.6	820347.7	87.3	1	87.3	233.3	-55.4	0
			C3	D.H.L. House Roof	837930.6	820332.6	87.3	1	87.3	220.1	-54.9	0
			C4	Roof top of Gainfull Motors	837910.0	820359.4	81.9	1	81.9	251.4	-56.0	0
			C5	Roof top of Gainfull Motors	837908.7	820359.9	81.9	1	81.9	252.4	-56.0	0
			C6	Roof top of Gainfull Motors	837906.9	820360.8	81.9	1	81.9	253.8	-56.1	0
			C7	K.K. Industrial Building	837843.2	820365.9	82.1	1	82.1	284.3	-57.1	0
			C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	102.2	-48.2	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	99.3	-47.9	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	63.8	-44.1	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	60.2	-43.6	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	182.6	-53.2	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	179.7	-53.1	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	173.4	-52.8	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	169.5	-52.6	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	166.1	-52.4	0

Detailed Calculations of Fixed Noise Impact Assessment (Daytime)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
C16-2A	838018	820153	G1	Kum Shing- Electrical Services Department	837964.7	820291.4	89.7	1	89.7	148.6	-51.4	0
			G2	Joly Auto Service	837902.6	820318.1	91.7	1	91.7	201.6	-54.1	0
			G3	Gainfull Motors Services Limited	837890.2	820323.7	91.7	1	91.7	213.4	-54.6	0
			G4	ETC Hong Kong Limited	837975.8	820383.1	90.6	1	90.6	234.3	-55.4	0
			C1	Roof top of Wacker Industrial Building	837924.5	820348.4	86.4	1	86.4	216.9	-54.7	0
			C2	D.H.L. House Roof	837937.6	820347.7	87.3	1	87.3	211.0	-54.5	0
			C3	D.H.L. House Roof	837930.6	820332.6	87.3	1	87.3	200.1	-54.0	0
			C4	Roof top of Gainfull Motors	837910.0	820359.4	81.9	1	81.9	233.3	-55.4	0
			C5	Roof top of Gainfull Motors	837908.7	820359.9	81.9	1	81.9	234.4	-55.4	0
			C6	Roof top of Gainfull Motors	837906.9	820360.8	81.9	1	81.9	236.0	-55.5	0
			C7	K.K. Industrial Building	837843.2	820365.9	82.1	1	82.1	275.8	-56.8	0
			C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	122.9	-49.8	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	119.0	-49.5	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	84.6	-46.5	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	81.3	-46.2	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	223.1	-55.0	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	219.7	-54.8	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	213.9	-54.6	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	210.4	-54.5	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	207.4	-54.3	0

Detailed Calculations of Fixed Noise Impact Assessment (Daytime)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
C01-1	838026	820174	G1	Kum Shing- Electrical Services Department	837964.7	820291.4	89.7	1	89.7	132.1	-50.4	0
			G2	Joly Auto Service	837902.6	820318.1	91.7	1	91.7	189.3	-53.5	0
			G3	Gainfull Motors Services Limited	837890.2	820323.7	91.7	1	91.7	201.7	-54.1	0
			G4	ETC Hong Kong Limited	837975.8	820383.1	90.6	1	90.6	214.7	-54.6	0
			C1	Roof top of Wacker Industrial Building	837924.5	820348.4	86.4	1	86.4	201.5	-54.1	0
			C2	D.H.L. House Roof	837937.6	820347.7	87.3	1	87.3	194.6	-53.8	0
			C3	D.H.L. House Roof	837930.6	820332.6	87.3	1	87.3	184.8	-53.3	0
			C4	Roof top of Gainfull Motors	837910.0	820359.4	81.9	1	81.9	218.4	-54.8	0
			C5	Roof top of Gainfull Motors	837908.7	820359.9	81.9	1	81.9	219.6	-54.8	0
			C6	Roof top of Gainfull Motors	837906.9	820360.8	81.9	1	81.9	221.3	-54.9	0
			C7	K.K. Industrial Building	837843.2	820365.9	82.1	1	82.1	264.9	-56.5	0
			C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	129.5	-50.2	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	125.3	-50.0	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	93.9	-47.5	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	91.0	-47.2	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	237.6	-55.5	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	233.9	-55.4	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	228.4	-55.2	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	225.2	-55.1	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	222.5	-54.9	0

Detailed Calculations of Fixed Noise Impact Assessment (Night-time)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
A22-2A	837970	820094	C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	106.5	-48.5	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	104.7	-48.4	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	72.8	-45.2	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	70.5	-45.0	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	166.6	-52.4	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	164.2	-52.3	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	157.5	-51.9	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	153.3	-51.7	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	149.4	-51.5	0

Detailed Calculations of Fixed Noise Impact Assessment (Night-time)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
A01-1	837984	820119	C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	101.7	-48.1	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	98.8	-47.9	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	62.8	-44.0	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	60.2	-43.6	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	182.6	-53.2	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	179.7	-53.1	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	173.4	-52.8	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	169.5	-52.6	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	166.1	-52.4	0

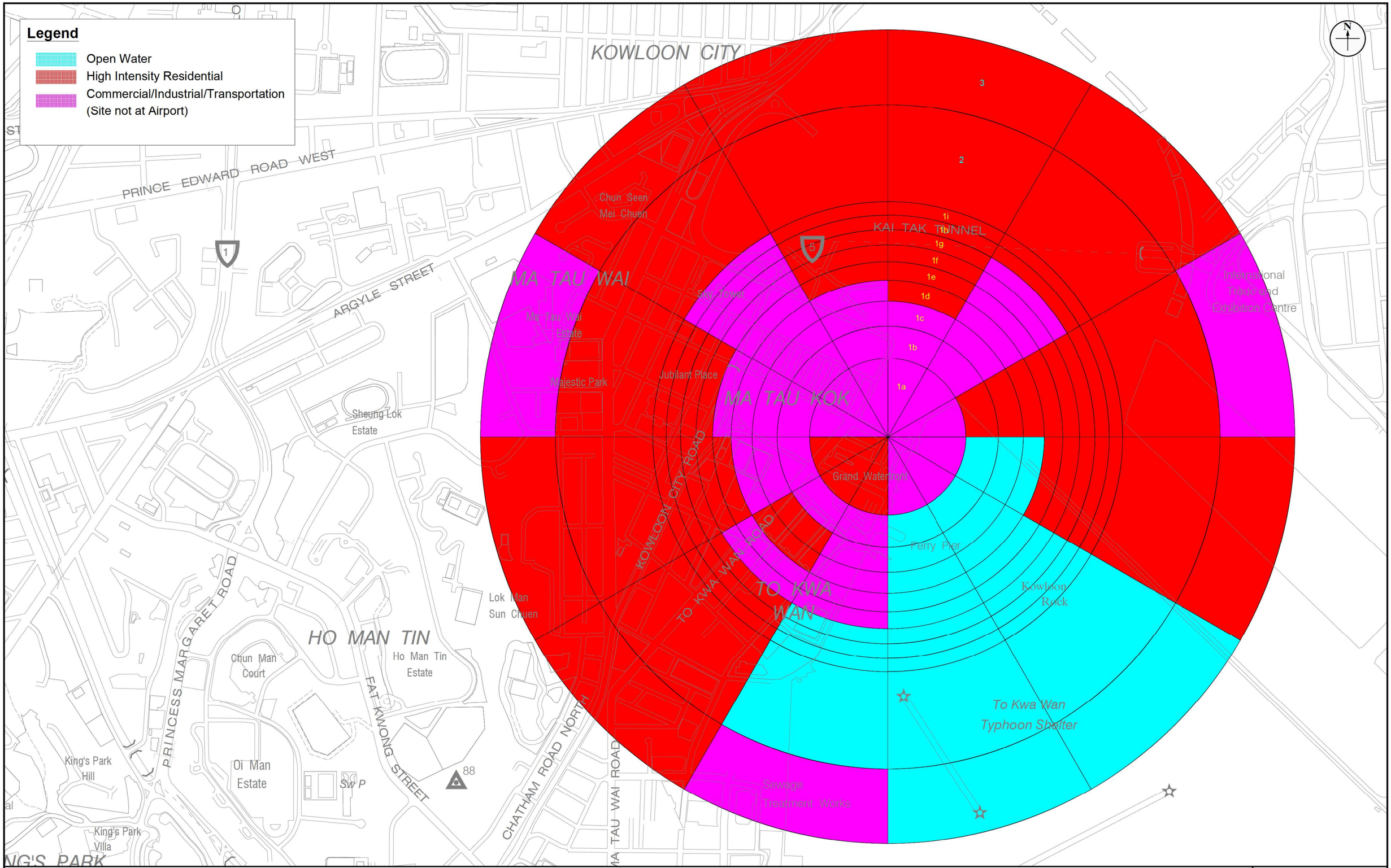
Detailed Calculations of Fixed Noise Impact Assessment (Night-time)

Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
C16-2A	838018	820153	C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	122.5	-49.8	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	118.6	-49.5	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	83.8	-46.5	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	81.3	-46.2	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	223.1	-55.0	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	219.7	-54.8	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	213.9	-54.6	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	210.4	-54.5	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	207.4	-54.3	0

Detailed Calculations of Fixed Noise Impact Assessment (Night-time)

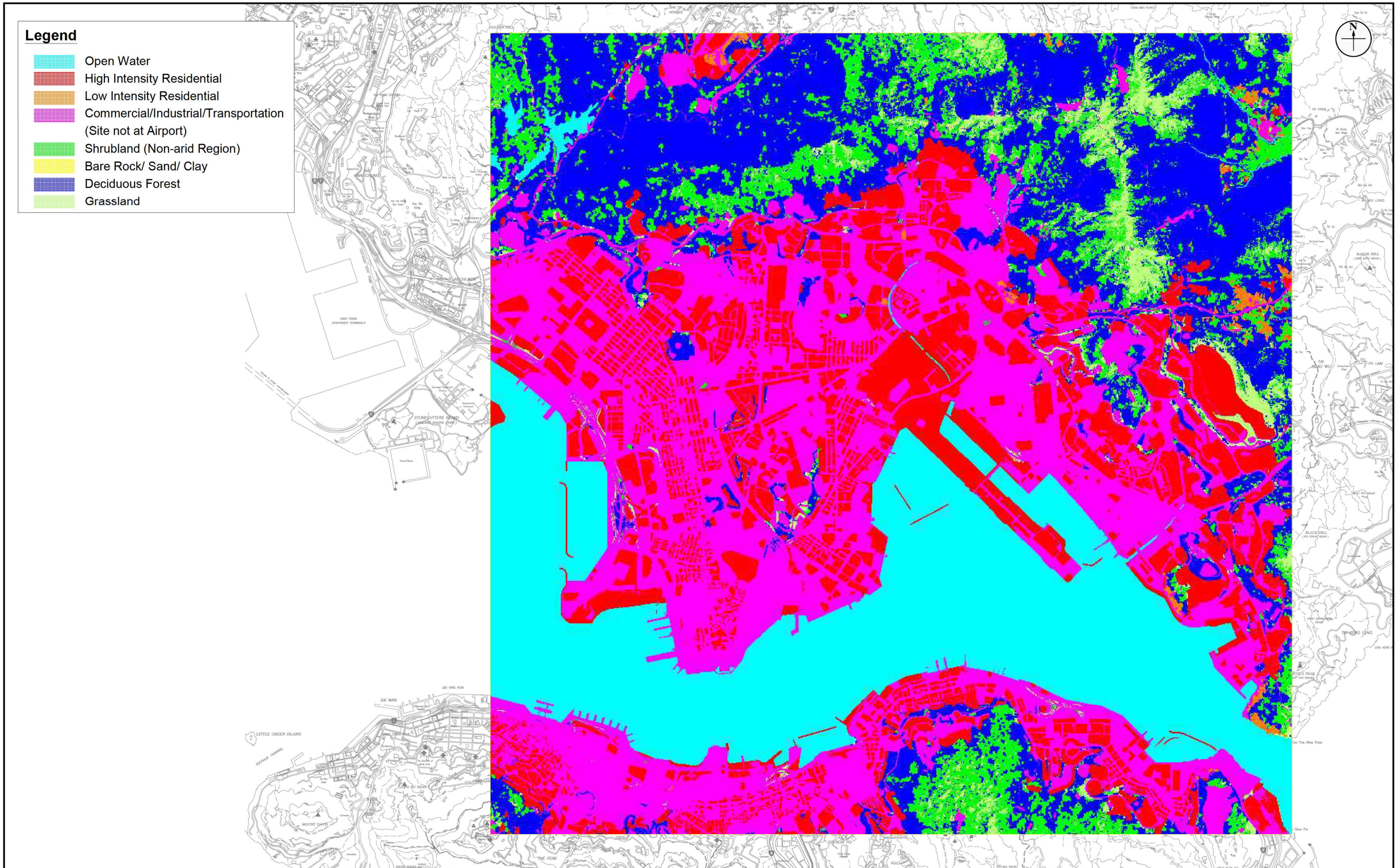
Noise Sensitive Receiver (NSR)	NSR (x)	NSR (y)	Noise Source (NS)	Description	Noise Source (x)	Noise Source (y)	SWL, dB(A)	No of Units	Overall SWL, dB(A)	Horizontal Distance from NSR to NS (m)	Distance Correction, dB(A)	Barrier Correction, dB(A)
C01-1	838026	820174	C8	Ma Tau Kok Gas Work-north bound office	837896.8	820171.5	84.6	1	84.6	129.1	-50.2	0
			C9	Ma Tau Kok Gas Work-north bound office	837900.9	820172.7	84.6	1	84.6	124.9	-49.9	0
			C10	Ma Tau Kok Gas Work-north bound office	837934.1	820157.4	85.2	1	85.2	93.2	-47.4	0
			C11	Ma Tau Kok Gas Work-north bound office	837936.6	820156.3	85.2	1	85.2	91.0	-47.2	0
			C12	Ma Tau Kok Gas Work-south bound block	837803.6	820090.2	90.9	1	90.9	237.6	-55.5	0
			C13	Ma Tau Kok Gas Work-south bound block	837805.9	820094.6	90.9	1	90.9	233.9	-55.4	0
			C14	Ma Tau Kok Gas Work-south bound block	837812.6	820092.3	90.1	1	90.1	228.4	-55.2	0
			C15	Ma Tau Kok Gas Work-south bound block	837816.8	820090.3	90.1	1	90.1	225.2	-55.1	0
			C16	Ma Tau Kok Gas Work-south bound block	837820.8	820087.8	90.1	1	90.1	222.5	-54.9	0

Appendix 4.1 Detailed Calculation Characterizing Landuse for AEARMET



Appendix: 4.2	RAMBOLL
Title: Landuse Parameter (Surface Roughness) Derivation by a Circle of 1km in Radius	Drawn by: LT Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: May 2022

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Appendix: 4.2		RAMBOLL
Title:	Landuse Parameter (Albedo Value, Bowen Ratio) Derivation by 10km x 10km Region	Drawn by: LT Checked by: BF
Project:	Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: May 2022

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Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)

Land Use Type as Extracted from LAKES = AERMOD

rows	Type	Season	Albedo Value	Bowen Ratio	Surface Roughness
1.	Open water	Winter	0.1	0.1	0.0010
		Spring	0.1	0.1	0.0010
		Summer	0.1	0.1	0.0010
		Autumn	0.1	0.1	0.0010
2.	Low Intensity Residential	Winter	0.18	1	0.3000
		Spring	0.16	0.8	0.4000
		Summer	0.16	0.8	0.4000
		Autumn	0.16	1	0.4000
3.	High Intensity Residential	Winter	0.18	1.5	1.0000
		Spring	0.18	1.5	1.0000
		Summer	0.18	1.5	1.0000
		Autumn	0.18	1.5	1.0000
4.	Woody Wetland	Winter	0.14	0.3	0.4000
		Spring	0.14	0.2	0.5000
		Summer	0.14	0.2	0.5000
		Autumn	0.14	0.2	0.5000
5.	Commercial/Industrial/Transportation (Not at Airport)	Winter	0.18	1.5	0.7000
		Spring	0.18	1.5	0.7000
		Summer	0.18	1.5	0.7000
		Autumn	0.18	1.5	0.7000
6.	Bare Rock/Sand/Clay (Non-arid region)	Winter	0.2	1.5	0.0500
		Spring	0.2	1.5	0.0500
		Summer	0.2	1.5	0.0500
		Autumn	0.2	1.5	0.0500
7.	Shrubland (Non-arid Region)	Winter	0.18	1.5	0.3000
		Spring	0.18	1	0.3000
		Summer	0.18	1	0.3000
		Autumn	0.18	1.5	0.3000
8.	Deciduous forest	Winter	0.17	1	0.6000
		Spring	0.16	0.7	1.0000
		Summer	0.16	0.3	1.3000
		Autumn	0.16	1	1.3000
9.	Grassland	Winter	0.2	1	0.0100
		Spring	0.18	0.4	0.0500
		Summer	0.18	0.8	0.1000
		Autumn	0.18	1	0.1000

Reference:

1. Tables A-1, A-2, A-3 from AERSURFACE User's Guide, USEPA, revised on 16 Jan 2013

Sector	Area of Concern	Season	Albedo Value	Bowen Ratio	Surface Roughness
1.	0° - 30° (clockwise from N)	Winter	0.1467	0.48076	0.89824
		Spring	0.1458	0.45941	0.89824
		Summer	0.1458	0.43246	0.89824
		Autumn	0.1458	0.48076	0.89824
2.	30° - 60° (clockwise from N)	Winter	0.1467	0.48076	0.84106
		Spring	0.1458	0.45941	0.84106
		Summer	0.1458	0.43246	0.84106
		Autumn	0.1458	0.48076	0.84106
3.	60° - 90° (clockwise from N)	Winter	0.1467	0.48076	0.88404
		Spring	0.1458	0.45941	0.88404
		Summer	0.1458	0.43246	0.88404
		Autumn	0.1458	0.48076	0.88404
4.	90° - 120° (clockwise from N)	Winter	0.1467	0.48076	0.23485
		Spring	0.1458	0.45941	0.23485
		Summer	0.1458	0.43246	0.23485
		Autumn	0.1458	0.48076	0.23485
5.	120° - 150° (clockwise from N)	Winter	0.1467	0.48076	0.00273
		Spring	0.1458	0.45941	0.00273
		Summer	0.1458	0.43246	0.00273
		Autumn	0.1458	0.48076	0.00273
6.	150° - 180° (clockwise from N)	Winter	0.1467	0.48076	0.00273
		Spring	0.1458	0.45941	0.00273
		Summer	0.1458	0.43246	0.00273
		Autumn	0.1458	0.48076	0.00273
7.	180° - 210° (clockwise from N)	Winter	0.1467	0.48076	0.06906
		Spring	0.1458	0.45941	0.06906
		Summer	0.1458	0.43246	0.06906
		Autumn	0.1458	0.48076	0.06906
8.	210° - 240° (clockwise from N)	Winter	0.1467	0.48076	0.93972
		Spring	0.1458	0.45941	0.93972
		Summer	0.1458	0.43246	0.93972
		Autumn	0.1458	0.48076	0.93972
9.	240° - 270° (clockwise from N)	Winter	0.1467	0.48076	0.93054
		Spring	0.1458	0.45941	0.93054
		Summer	0.1458	0.43246	0.93054
		Autumn	0.1458	0.48076	0.93054
10.	270° - 300° (clockwise from N)	Winter	0.1467	0.48076	0.80877
		Spring	0.1458	0.45941	0.80877
		Summer	0.1458	0.43246	0.80877
		Autumn	0.1458	0.48076	0.80877
11.	300° - 330° (clockwise from N)	Winter	0.1467	0.48076	0.81988
		Spring	0.1458	0.45941	0.81988
		Summer	0.1458	0.43246	0.81988
		Autumn	0.1458	0.48076	0.81988
12.	330° - 360° (clockwise from N)	Winter	0.1467	0.48076	0.88108
		Spring	0.1458	0.45941	0.88108
		Summer	0.1458	0.43246	0.88108
		Autumn	0.1458	0.48076	0.88108

Notes:

1. The determination of the surface roughness length should be based on an inverse-distance weighted geometric mean for a default upwind distance of 1 kilometer relative to the measurement site. Surface roughness length may be varied by sector to account for variations in land cover near the measurement site; however, the sector widths should be no smaller than 30 degrees.

2. The determination of the Albedo and Bowen ratio should be based on an applicable land fraction to weight each value.
3. Seasonal average of these parameters were adpoted except the parameter in winter season (4 - Winter with continuous snow on ground).

4 Option of seasonal average in AERMET is adopted to define the land surface characteristics over the year.

Determination of Albedo Value and Bowen Ratio by 10km x 10km Region

Land Type	Albedo Value (A)				Bowen Ratio (B)				Occupied Area (km^2)	Frac of Area (Frac)	A x Frac				B^Frac			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn			Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
Open water	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40.80	0.41	0.0408	0.0408	0.0408	0.0408	0.3909	0.3909	0.3909	0.3909
Low Intensity Residential	0.18	0.16	0.16	0.16	1	0.8	0.8	1	0.47	0.00	0.0008	0.0007	0.0007	0.0007	1.0000	0.9990	0.9990	1.0000
High Intensity Residential	0.18	0.18	0.18	0.18	1.5	1.5	1.5	1.5	18.21	0.18	0.0328	0.0328	0.0328	0.0328	1.0766	1.0766	1.0766	1.0766
Woody Wetland	0.14	0.14	0.14	0.14	0.3	0.2	0.2	0.2	0.00	0.00	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Commercial/Industrial/Transportation (Not at Airport)	0.18	0.18	0.18	0.18	1.5	1.5	1.5	1.5	28.96	0.29	0.0521	0.0521	0.0521	0.0521	1.1246	1.1246	1.1246	1.1246
Bare Rock/Sand/Clay (Non-arid region)	0.2	0.2	0.2	0.2	1.5	1.5	1.5	1.5	0.11	0.00	0.0002	0.0002	0.0002	0.0002	1.0005	1.0005	1.0005	1.0005
Shrubland (Non-arid Region)	0.18	0.18	0.18	0.18	1.5	1	1	1.5	3.77	0.04	0.0068	0.0068	0.0068	0.0068	1.0154	1.0000	1.0000	1.0154
Deciduous forest	0.17	0.16	0.16	0.16	1	0.7	0.3	1	7.38	0.07	0.0125	0.0118	0.0118	0.0118	1.0000	0.9740	0.9150	1.0000
Grassland	0.2	0.18	0.18	0.18	1	0.4	0.8	1	0.30	0.00	0.0006	0.0005	0.0005	0.0005	1.0000	0.9972	0.9993	1.0000
								Sum	100	1								

Overall Value of Area of Concern

Season	Winter	Spring	Summer	Autumn
Albedo value	0.1467	0.1458	0.1458	0.1458
Bowen ratio	0.4808	0.4594	0.4325	0.4808

Determination of Surface Roughness in each sector

Sector 1 (0° - 30°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.1288	0.2876	0.9025	0.9025	0.9025	0.9025
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.2359	0.1570	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.3074	0.1205	0.9579	0.9579	0.9579	0.9579
1d	High Intensity Residential	1	1	1	1	0.01	0.0370	0.3647	0.1016	1.0000	1.0000	1.0000	1.0000
1e	High Intensity Residential	1	1	1	1	0.01	0.0370	0.4139	0.0895	1.0000	1.0000	1.0000	1.0000
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.4579	0.0809	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.4979	0.0744	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.5349	0.0692	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.5695	0.0650	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.7077	0.4710	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.9224	0.3614	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.8982	0.8982	0.8982	0.8982								

Sector 2 (30° - 60°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.41393	0.089476571	0.9686	0.9686	0.9686	0.9686
1f	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.45786	0.08089162	0.9716	0.9716	0.9716	0.9716
1g	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.49789	0.074387991	0.9738	0.9738	0.9738	0.9738
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.8411	0.8411	0.8411	0.8411								

Sector 3 (60° - 90°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	High Intensity Residential	1	1	1	1	0.01	0.0370	0.23588	0.157016436	1.0000	1.0000	1.0000	1.0000
1c	High Intensity Residential	1	1	1	1	0.01	0.0370	0.30743	0.120473074	1.0000	1.0000	1.0000	1.0000
1d	High Intensity Residential	1	1	1	1	0.01	0.0370	0.36468	0.101560374	1.0000	1.0000	1.0000	1.0000
1e	High Intensity Residential	1	1	1	1	0.01	0.0370	0.41393	0.089476571	1.0000	1.0000	1.0000	1.0000
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.45786	0.08089162	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.09	0.3333	0.92235	0.36139571	0.8791	0.8791	0.8791	0.8791
	Inverse distance geometric mean =	0.8840	0.8840	0.8840	0.8840								

Determination of Surface Roughness in each sector

Sector 4 (90° - 120°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.23588	0.157016436	0.3380	0.3380	0.3380	0.3380
1c	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.30743	0.120473074	0.4351	0.4351	0.4351	0.4351
1d	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.36468	0.101560374	0.4958	0.4958	0.4958	0.4958
1e	High Intensity Residential	1	1	1	1	0.01	0.0370	0.41393	0.089476571	1.0000	1.0000	1.0000	1.0000
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.45786	0.08089162	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.2348	0.2348	0.2348	0.2348								

Sector 5 (120° - 150°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.23588	0.157016436	0.3380	0.3380	0.3380	0.3380
1c	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.30743	0.120473074	0.4351	0.4351	0.4351	0.4351
1d	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.36468	0.101560374	0.4958	0.4958	0.4958	0.4958
1e	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.41393	0.089476571	0.5390	0.5390	0.5390	0.5390
1f	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.45786	0.08089162	0.5719	0.5719	0.5719	0.5719
1g	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.49789	0.074387991	0.5982	0.5982	0.5982	0.5982
1h	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.53492	0.06923846	0.6198	0.6198	0.6198	0.6198
1i	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.56954	0.065029738	0.6381	0.6381	0.6381	0.6381
2	Open water	0.001	0.001	0.001	0.001	0.09	0.3333	0.70774	0.470982753	0.0386	0.0386	0.0386	0.0386
3	Open water	0.001	0.001	0.001	0.001	0.09	0.3333	0.92235	0.36139571	0.0824	0.0824	0.0824	0.0824
	Inverse distance geometric mean =	0.0027	0.0027	0.0027	0.0027								

Sector 6 (150° - 180°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.23588	0.157016436	0.3380	0.3380	0.3380	0.3380
1c	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.30743	0.120473074	0.4351	0.4351	0.4351	0.4351
1d	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.36468	0.101560374	0.4958	0.4958	0.4958	0.4958
1e	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.41393	0.089476571	0.5390	0.5390	0.5390	0.5390
1f	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.45786	0.08089162	0.5719	0.5719	0.5719	0.5719
1g	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.49789	0.074387991	0.5982	0.5982	0.5982	0.5982
1h	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.53492	0.06923846	0.6198	0.6198	0.6198	0.6198
1i	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.56954	0.065029738	0.6381	0.6381	0.6381	0.6381
2	Open water	0.001	0.001	0.001	0.001	0.09	0.3333	0.70774	0.470982753	0.0386	0.0386	0.0386	0.0386
3	Open water	0.001	0.001	0.001	0.001	0.09	0.3333	0.92235	0.36139571	0.0824	0.0824	0.0824	0.0824
	Inverse distance geometric mean =	0.0027	0.0027	0.0027	0.0027								

Determination of Surface Roughness in each sector

Sector 7 (180^0 - 210^0) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	High Intensity Residential	1	1	1	1	0.01	0.0370	0.12877	0.287621628	1.0000	1.0000	1.0000	1.0000
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.41393	0.089476571	0.9686	0.9686	0.9686	0.9686
1f	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.45786	0.08089162	0.9716	0.9716	0.9716	0.9716
1g	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.49789	0.074387991	0.5982	0.5982	0.5982	0.5982
1h	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.53492	0.06923846	0.6198	0.6198	0.6198	0.6198
1i	Open water	0.001	0.001	0.001	0.001	0.01	0.0370	0.56954	0.065029738	0.6381	0.6381	0.6381	0.6381
2	Open water	0.001	0.001	0.001	0.001	0.09	0.3333	0.70774	0.470982753	0.0386	0.0386	0.0386	0.0386
3	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.09	0.3333	0.92235	0.36139571	0.8791	0.8791	0.8791	0.8791
	Inverse distance geometric mean =	0.0691	0.0691	0.0691	0.0691								

Sector 8 (210^0 - 240^0) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	High Intensity Residential	1	1	1	1	0.01	0.0370	0.12877	0.287621628	1.0000	1.0000	1.0000	1.0000
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	High Intensity Residential	1	1	1	1	0.01	0.0370	0.30743	0.120473074	1.0000	1.0000	1.0000	1.0000
1d	High Intensity Residential	1	1	1	1	0.01	0.0370	0.36468	0.101560374	1.0000	1.0000	1.0000	1.0000
1e	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.41393	0.089476571	0.9686	0.9686	0.9686	0.9686
1f	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.45786	0.08089162	0.9716	0.9716	0.9716	0.9716
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.9397	0.9397	0.9397	0.9397								

Sector 9 (240^0 - 270^0) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area (km2)	Frac of Area (Frac)	Distance from centre (km) (Dist)	Weighting (Frac/Dist)	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn					Winter	Spring	Summer	Autumn
1a	High Intensity Residential	1	1	1	1	0.01	0.0370	0.12877	0.287621628	1.0000	1.0000	1.0000	1.0000
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	High Intensity Residential	1	1	1	1	0.01	0.0370	0.41393	0.089476571	1.0000	1.0000	1.0000	1.0000
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.45786	0.08089162	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.9305	0.9305	0.9305	0.9305								

Determination of Surface Roughness in each sector

Sector 10 (270° - 300°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area	Frac of Area	Distance from centre	Weighting	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn	(km2)	(Frac)	(km) (Dist)	(Frac/Dist)	Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.41393	0.089476571	0.9686	0.9686	0.9686	0.9686
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.45786	0.08089162	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.09	0.3333	0.92235	0.36139571	0.8791	0.8791	0.8791	0.8791
	Inverse distance geometric mean =	0.8088	0.8088	0.8088	0.8088								

Sector 11 (300° - 330°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area	Frac of Area	Distance from centre	Weighting	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn	(km2)	(Frac)	(km) (Dist)	(Frac/Dist)	Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.41393	0.089476571	0.9686	0.9686	0.9686	0.9686
1f	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.45786	0.08089162	0.9716	0.9716	0.9716	0.9716
1g	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.49789	0.074387991	0.9738	0.9738	0.9738	0.9738
1h	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.53492	0.06923846	0.9756	0.9756	0.9756	0.9756
1i	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.56954	0.065029738	0.9771	0.9771	0.9771	0.9771
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.8199	0.8199	0.8199	0.8199								

Sector 12 (330° - 360°) (clockwise from N)

Fraction Index	Land Type	Surface Roughness (Z)				Area	Frac of Area	Distance from centre	Weighting	Z^(Frac/Dist)			
		Winter	Spring	Summer	Autumn	(km2)	(Frac)	(km) (Dist)	(Frac/Dist)	Winter	Spring	Summer	Autumn
1a	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.12877	0.287621628	0.9025	0.9025	0.9025	0.9025
1b	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.23588	0.157016436	0.9455	0.9455	0.9455	0.9455
1c	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.30743	0.120473074	0.9579	0.9579	0.9579	0.9579
1d	Commercial/Industrial/Transportation (Not at Airport)	0.7	0.7	0.7	0.7	0.01	0.0370	0.36468	0.101560374	0.9644	0.9644	0.9644	0.9644
1e	High Intensity Residential	1	1	1	1	0.01	0.0370	0.41393	0.089476571	1.0000	1.0000	1.0000	1.0000
1f	High Intensity Residential	1	1	1	1	0.01	0.0370	0.45786	0.08089162	1.0000	1.0000	1.0000	1.0000
1g	High Intensity Residential	1	1	1	1	0.01	0.0370	0.49789	0.074387991	1.0000	1.0000	1.0000	1.0000
1h	High Intensity Residential	1	1	1	1	0.01	0.0370	0.53492	0.06923846	1.0000	1.0000	1.0000	1.0000
1i	High Intensity Residential	1	1	1	1	0.01	0.0370	0.56954	0.065029738	1.0000	1.0000	1.0000	1.0000
2	High Intensity Residential	1	1	1	1	0.09	0.3333	0.70774	0.470982753	1.0000	1.0000	1.0000	1.0000
3	High Intensity Residential	1	1	1	1	0.09	0.3333	0.92235	0.36139571	1.0000	1.0000	1.0000	1.0000
	Inverse distance geometric mean =	0.8811	0.8811	0.8811	0.8811								

Appendix 4.2 Input Parameters of Industrial, Marine and Portal Sources in AERMOD

Chimney - Point Source

ID	X	Y	Z	SO2	NOx	RSP	FSP	Exit Temperature [1]	Exit Velocity [1]	Internal diameter [1]	Release Height	Operation Hours [2]
				g/s	g/s	g/s	g/s	K	m/s	m	(mAG)	
TG1	837904	820141	4.3	0	0.3472	0	0	473	5.5	1.00	34.0	Full day
TG2	837913	820136	4.3	0	0.3472	0	0	473	5.5	1.00	34.0	
TG3	837921	820133	4.3	0	0.3472	0	0	473	5.5	1.00	34.0	
TG4	837928	820130	4.3	0	0.3472	0	0	473	5.5	1.00	34.0	
TG5	837837	820081	4.3	0	0.1667	0	0	450	20.4	0.50	44.5	
EP1	839439	822851	65.8	0	0.1407	0.0037	0.0018	273	10	0.24	30.2	0800 - 2200
EP2	839439	822850	65.8	0	0.1814	0.0047	0.0024	273	10	0.27	30.2	
EP3	839439	822849	65.8	0	0.1407	0.0037	0.0018	273	10	0.24	30.2	
EP4	839443	822851	65.8	0	0.1814	0.0047	0.0024	273	10	0.27	30.2	
EP5	839443	822850	65.8	0	0.1407	0.0037	0.0018	273	10	0.24	30.2	
EP6	839442	822849	65.8	0	0.1407	0.0037	0.0018	273	10	0.24	30.2	

Notes:

1. For Chimney ID TG1-5, information from the operator is not available. Exit Temperature, exit velocity and internal diameter of the chimney are referenced to Appendix 4.9 of approved EIA report "Central Kowloon Route" (AEIAR-171/2013). Emission height is verified by site observations. Operating hours are assumed to be full day for a conservative approach.
2. Emission details of Chimney ID EP1-EP6 are obtained from the latest Specified Process Licence (L-12-006(1)) and Air Pollution Control Plan of Diamond Hill Crematorium at Diamond Hill

Marine Emission - Point Source

ID	X	Y	Z [1]	SO2	NOx	RSP	FSP	Exit Temperature [2][3]	Exit Velocity	Internal diameter [2][3]	Emission Height [2][3]	Operation Hours
				g/s	g/s	g/s	g/s	K	m/s	m	mAG	
NP1	838070	819596	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	Please refer to the coral sea ferry frequency
NP2	838096	819671	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	
NP3	838161	819715	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	
NP4	838209	819771	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	
NP5	838167	819829	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	
NP6	838104	819876	2.73	7.61E-05	3.65E-03	1.10E-04	1.06E-04	373	0	0.3	1	
NPH	838104	819876	2.73	1.37E-04	6.57E-03	2.63E-04	2.56E-04	373	0	0.3	1	
HT1	838085	819590	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HT2	838110	819666	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HT3	838133	819743	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HT4	838155	819820	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HT5	838149	819888	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HT6	838080	819928	2.73	1.01E-04	4.87E-03	1.46E-04	1.41E-04	373	0	0.3	1	
HTH	838080	819928	2.73	2.19E-04	1.05E-02	4.20E-04	4.10E-04	373	0	0.3	1	
H1	839744	818698	3	6.02	34.85	8.42E-01	7.54E-01	537	24.6	1.9	52 [1]	Full day
H2	840021	818427	3	5.36	30.56	7.44E-01	6.65E-01	537	24.6	1.9	62 [2]	

Note:

1. Mean Sea Level is 1.5m, referenced to 2016 data of Hong Kong Observatory. Hong Kong Principal Datum is 1.23m below the Mean Sea Level, referenced to Hong Kong geographic data, Lands Department.
2. Information from the operator is not available. Exit Temperature, exit velocity, internal diameter and release height of the ferry are referenced to Appendix 3.15 of approved EIA report "Tung Chung New Town Extension" (AEIAR-196/2016). Emission height is verified by site observations.
3. Information from the operator is not available. Exit Temperature, exit velocity, internal diameter and release height of the barge are referenced to Appendix 5.3.15-6 of approved EIA report "Expansion of Hong Kong International Airport into a Three-Runway System" (AEIAR-185/2014).

Marine Emission from Cruises at Kai Tak Cruise Terminal

Cruise Vessels Emisson - Point Source

Emission Point	Source Description	Source	Coordinates of Sources			Emission Rate (g/s)				Emission Height	Exhaust	Exit Velocity	Equivalent Stack
			x	y	z	RSP	FSP	NOx	SO_2	(m)	Temperature (K)	(m/s)	Diameter (m)
H1	Hotelling of World Dream	Point	839743.7	818698.1	3	0.8423	0.7544	34.8490	6.0165	52 [1]	537	24.6	1.9
H2	Hotelling of Spectrum of the Seas	Point	840021.4	818426.8	3	0.7436	0.6649	30.5624	5.3627	62 [2]	537	24.6	1.9

Note:

[1] The emission height of the chimney of World Dream is estimated based on the observation. The estimated height is about 50m (above water surface) which is close to the height of the Panamax (52m above water surface) as stated in the Aproved EIA Report for Kai Tak Development. Therefore, the height of 52m above water surface has been adopted fro the assessment.

[2] The emission height of the chimney of Spectrum of the Seas is estimated based on the observation. The estimated height is about 60m (above water surface) which is close to the height of the Post-Panamax (62m above water surface) as stated in the Aproved EIA Report for Kai Tak Development. Therefore, the height of 62m above water surface has been adopted fro the assessment.

Emission Inventory for Tunnel Portal - 1st Quarter

Road No.	Emission Source ID	Portal Description	Tunnel Length	Source Type	x-coordinate	y-coordinate	Release Height	Initial Lateral Dimension	Initial Vertical Dimension	Hourly Emission Rate (g/s)			
			(km)				(m)	(m)	(m)	NO2	NO	RSP	FSP
L084 & L085	KTTW01	Kai Tak Tunnel (WB)	1.230	Volume	837684	820271	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW02		1.230	Volume	837682	820264	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW03		1.230	Volume	837680	820257	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW04		1.230	Volume	837678	820250	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW05		1.230	Volume	837676	820243	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW06		1.230	Volume	837674	820236	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW07		1.230	Volume	837671	820229	2.75	3.44	2.56	1.43E-03	1.05E-02	3.35E-04	3.08E-04
	KTTW08		1.230	Volume	837669	820222	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW09		1.230	Volume	837667	820215	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW10		1.230	Volume	837665	820208	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW11		1.230	Volume	837663	820201	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW12		1.230	Volume	837661	820194	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW13		1.230	Volume	837659	820187	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
	KTTW14		1.230	Volume	837656	820179	2.75	3.44	2.56	7.16E-04	5.23E-03	1.67E-04	1.54E-04
L001	D2ENB01	D2 Landscape Deck (NB)	0.125	Volume	838356	820573	4.00	12.09	3.72	3.48E-04	1.59E-03	4.24E-05	3.88E-05
	D2ENB02		0.125	Volume	838366	820575	4.00	12.09	3.72	3.48E-04	1.59E-03	4.24E-05	3.88E-05
	D2ENB03		0.125	Volume	838376	820578	4.00	12.09	3.72	3.48E-04	1.59E-03	4.24E-05	3.88E-05
	D2ENB04		0.125	Volume	838384	820580	4.00	12.09	3.72	3.48E-04	1.59E-03	4.24E-05	3.88E-05
	D2ENB05		0.125	Volume	838394	820582	4.00	12.09	3.72	3.48E-04	1.59E-03	4.24E-05	3.88E-05
	D2ENB06		0.125	Volume	838404	820584	4.00	12.09	3.72	1.74E-04	7.93E-04	2.12E-05	1.94E-05
	D2ENB07		0.125	Volume	838414	820587	4.00	12.09	3.72	1.74E-04	7.93E-04	2.12E-05	1.94E-05
	D2ENB08		0.125	Volume	838424	820589	4.00	12.09	3.72	1.74E-04	7.93E-04	2.12E-05	1.94E-05
	D2ENB09		0.125	Volume	838432	820591	4.00	12.09	3.72	1.74E-04	7.93E-04	2.12E-05	1.94E-05
	D2ENB10		0.125	Volume	838442	820594	4.00	12.09	3.72	1.74E-04	7.93E-04	2.12E-05	1.94E-05
L002	D2MSB01	D2 Landscape Deck (SB)	0.125	Volume	838239	820513	4.00	12.09	3.72	2.82E-04	1.50E-03	3.66E-05	3.36E-05
	D2MSB02		0.125	Volume	838231	820506	4.00	12.09	3.72	2.82E-04	1.50E-03	3.66E-05	3.36E-05
	D2MSB03		0.125	Volume	838224	820501	4.00	12.09	3.72	2.82E-04	1.50E-03	3.66E-05	3.36E-05
	D2MSB04		0.125	Volume	838215	820495	4.00	12.09	3.72	2.82E-04	1.50E-03	3.66E-05	3.36E-05
	D2MSB05		0.125	Volume	838208	820489	4.00	12.09	3.72	2.82E-04	1.50E-03	3.66E-05	3.36E-05
	D2MSB06		0.125	Volume	838199	820483	4.00	12.09	3.72	1.41E-04	7.51E-04	1.83E-05	1.68E-05
	D2MSB07		0.125	Volume	838192	820476	4.00	12.09	3.72	1.41E-04	7.51E-04	1.83E-05	1.68E-05
	D2MSB08		0.125	Volume	838184	820471	4.00	12.09	3.72	1.41E-04	7.51E-04	1.83E-05	1.68E-05
	D2MSB09		0.125	Volume	838176	820465	4.00	12.09	3.72	1.41E-04	7.51E-04	1.83E-05	1.68E-05
	D2MSB10		0.125	Volume	838168	820458	4.00	12.09	3.72	1.41E-04	7.51E-04	1.83E-05	1.68E-05
L003a	D2MNB01	D2 Landscape Deck (NB)	0.037	Volume	838131	820444	4.00	4.65	3.72	1.18E-04	5.06E-04	1.57E-05	1.43E-05
	D2MNB02		0.037	Volume	838138	820451	4.00	4.65	3.72	1.18E-04	5.06E-04	1.57E-05	1.43E-05
	D2MNB03		0.037	Volume	838145	820459	4.00	4.65	3.72	1.18E-04	5.06E-04	1.57E-05	1.43E-05
	D2MNB04		0.037	Volume	838152	820465	4.00	4.65	3.72	1.18E-04	5.06E-04	1.57E-05	1.43E-05
	D2MNB05		0.037	Volume	838159	820472	4.00	4.65	3.72	1.18E-04	5.06E-04	1.57E-05	1.43E-05
	D2MNB06		0.037	Volume	838166	820479	4.00	4.65	3.72	5.90E-05	2.53E-04	7.84E-06	7.17E-06
	D2MNB07		0.037	Volume	838174	820485	4.00	4.65	3.72	5.90E-05	2.53E-04	7.84E-06	7.17E-06
	D2MNB08		0.037	Volume	838181	820492	4.00	4.65	3.72	5.90E-05	2.53E-04	7.84E-06	7.17E-06
	D2MNB09		0.037	Volume	838187	820499	4.00	4.65	3.72	5.90E-05	2.53E-04	7.84E-06	7.17E-06
	D2MNB10		0.037	Volume	838194	820506	4.00	4.65	3.72	5.90E-05	2.53E-04	7.84E-06	7.17E-06
L004b	D2WSB01	D2 Landscape Deck (SB)	0.037	Volume	838115	820393	4.00	4.65	3.72	1.07E-04	4.01E-04	1.52E-05	1.38E-05
	D2WSB02		0.037	Volume	838110	820384	4.00	4.65	3.72	1.07E-04	4.01E-04	1.52E-05	1.38E-05
	D2WSB03		0.037	Volume	838105	820376	4.00	4.65	3.72	1.07E-04	4.01E-04	1.52E-05	1.38E-05
	D2WSB04		0.037	Volume	838100	820367	4.00	4.65	3.72	1.07E-04	4.01E-04	1.52E-05	1.38E-05
	D2WSB05		0.037	Volume	838096	820358	4.00	4.65	3.72	1.07E-04	4.01E-04	1.52E-05	1.38E-05
	D2WSB06		0.037	Volume	838091	820349	4.00	4.65	3.72	5.37E-05	2.01E-04	7.58E-06	6.90E-06
	D2WSB07		0.037	Volume	838086	820340	4.00	4.65	3.72	5.37E-05	2.01E-04	7.58E-06	6.90E-06
	D2WSB08		0.037	Volume	838082	820332	4.00	4.65	3.72	5.37E-05	2.01E-04	7.58E-06	6.90E-06
	D2WSB09		0.037	Volume	838077	820323	4.00	4.65	3.72	5.37E-05	2.01E-04	7.58E-06	6.90E-06
	D2WSB10		0.037	Volume	838072	820314	4.00	4.65	3.72	5.37E-05	2.01E-04	7.58E-06	6.90E-06
L158	CKRTEEB01	CKR Tunnel Portal Emission (EB)	1.750	Volume	838421	820121	3.50	8.84	3.26	5.87E-03	4.66E-02	1.57E-03	1.44E-03
	CKRTEEB02		1.750	Volume	838430	820138	3.50	8.84	3.26	5.87E-03	4.66E-02	1.57E-03	1.44E-03
	CKRTEEB03		1.750	Volume	838439	820155	3.50	8.84	3.26	5.87E-03	4.66E-02	1.57E-03	1.44E-03
	CKRTEEB04		1.750	Volume	838448	820172	3.50	8.84	3.26	2.93E-03	2.33E-02	7.83E-04	7.21E-04
	CKRTEEB05		1.750	Volume	838457	820188	3.50	8.84	3.26	2.93E-03	2.33E-02	7.83E-04	7.21E-04
	CKRTEEB06		1.750	Volume	838466	820205	3.50	8.84	3.26	2.93E-03	2.33E-02	7.83E-04	7.21E-04
L159	CKRLDSWB01	CKR Landscape Deck (SWB)	0.195	Volume	838482	820186	5.45	7.91	5.07	1.49E-03	1.05E-02	3.16E-04	2.92E-04
	CKRLDSWB02		0.195	Volume	838474	820171	5.45	7.91	5.07	1.49E-03	1.05E-02	3.16E-04	2.92E-04
	CKRLDSWB03		0.195	Volume	838465	820157	5.45	7.91	5.07	1.49E-03	1.05E-02	3.16E-04	2.92E-04
	CKRLDSWB04		0.195	Volume	838457	820142	5.45	7.91	5.07	7.46E-04	5.24E-03	1.58E-04	1.46E-04
	CKRLDSWB05		0.195	Volume	838449	820127	5.45	7.91	5.07	7.46E-04	5.24E-03	1.58E-04	1.46E-04
	CKRLDSWB06		0.195	Volume	838440	820112	5.45	7.91	5.07	7.46E-04	5.24E-03	1.58E-04	1.46E-04
L158	CKRLDNEB01	CKR Landscape Deck (NEB)	0.195	Volume	838613	820371	5.45	9.91	5.07	1.31E-03	1.04E-02	3.49E-04	3.21E-04
	CKRLDNEB02		0.195	Volume	838632	820381	5.45	9.91	5.07	1.31E-03	1.04E-02	3.49E-04	3.21E-04
	CKRLDNEB03		0.195	Volume	838651	820390	5.45	9.91	5.07	1.31E-03	1.04E-02	3.49E-04	3.21E-04
	CKRLDNEB04		0.195	Volume	838670	820399	5.45	9.91	5.07	6.54E-04	5.19E-03	1.75E-04	1.61E-04
	CKRLDNEB05		0.195	Volume	838689	820409	5.45	9.91	5.07	6.54E-04	5.19E-03	1.75E-04	1.61E-04
	CKRLDNEB06		0.195	Volume	838708	820418	5.45	9.91	5.07	6.54E-04	5.19E-03	1.75E-04	1.61E-04

Calculated AERMOD input data:

Release Height, m = "Height of Tunnel" / 2

Initial Lateral Dimension, m = "Width of tunnel" / 2.15

Initial Vertical Dimension, m = "Height of tunnel" / 2.15

Emissions from portals were predicted assuming the emissions behave a volume sources in accordance with the recommendations in the 1991 Permanent International Association of Road Congress Report (1991 PIARC Report) as adopted in Route 3 Tai Lam Tunnel & Yuen Long Approach Northern Section - Volume 1 Detailed Environmental Impact Assessment - Final Report

Emission Inventory for Tunnel Portal - 2nd Quarter

Road No.	Emission Source ID	Portal Description	Tunnel Length	Source Type	x-coordinate	y-coordinate	Release Height	Initial Lateral Dimension	Initial Vertical Dimension	Hourly Emission Rate (g/s)			
			(km)				(m)	(m)	(m)	NO2	NO	RSP	FSP
L084 & L085	KTTW01	Kai Tak Tunnel (WB)	1.23	Volume	837684	820271	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW02		1.23	Volume	837682	820264	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW03		1.23	Volume	837680	820257	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW04		1.23	Volume	837678	820250	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW05		1.23	Volume	837676	820243	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW06		1.23	Volume	837674	820236	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW07		1.23	Volume	837671	820229	2.75	3.44	2.56	1.34E-03	9.18E-03	3.35E-04	3.08E-04
	KTTW08		1.23	Volume	837669	820222	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW09		1.23	Volume	837667	820215	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW10		1.23	Volume	837665	820208	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW11		1.23	Volume	837663	820201	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW12		1.23	Volume	837661	820194	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW13		1.23	Volume	837659	820187	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
	KTTW14		1.23	Volume	837656	820179	2.75	3.44	2.56	6.72E-04	4.59E-03	1.67E-04	1.54E-04
L001	D2ENB01	D2 Landscape Deck (NB)	0.125	Volume	838356	820573	4.00	12.09	3.72	3.35E-04	1.41E-03	4.24E-05	3.88E-05
	D2ENB02		0.125	Volume	838366	820575	4.00	12.09	3.72	3.35E-04	1.41E-03	4.24E-05	3.88E-05
	D2ENB03		0.125	Volume	838376	820578	4.00	12.09	3.72	3.35E-04	1.41E-03	4.24E-05	3.88E-05
	D2ENB04		0.125	Volume	838384	820580	4.00	12.09	3.72	3.35E-04	1.41E-03	4.24E-05	3.88E-05
	D2ENB05		0.125	Volume	838394	820582	4.00	12.09	3.72	3.35E-04	1.41E-03	4.24E-05	3.88E-05
	D2ENB06		0.125	Volume	838404	820584	4.00	12.09	3.72	1.68E-04	7.06E-04	2.12E-05	1.94E-05
	D2ENB07		0.125	Volume	838414	820587	4.00	12.09	3.72	1.68E-04	7.06E-04	2.12E-05	1.94E-05
	D2ENB08		0.125	Volume	838424	820589	4.00	12.09	3.72	1.68E-04	7.06E-04	2.12E-05	1.94E-05
	D2ENB09		0.125	Volume	838432	820591	4.00	12.09	3.72	1.68E-04	7.06E-04	2.12E-05	1.94E-05
	D2ENB10		0.125	Volume	838442	820594	4.00	12.09	3.72	1.68E-04	7.06E-04	2.12E-05	1.94E-05
L002	D2MSB01	D2 Landscape Deck (SB)	0.125	Volume	838239	820513	4.00	12.09	3.72	2.72E-04	1.30E-03	3.66E-05	3.36E-05
	D2MSB02		0.125	Volume	838231	820506	4.00	12.09	3.72	2.72E-04	1.30E-03	3.66E-05	3.36E-05
	D2MSB03		0.125	Volume	838224	820501	4.00	12.09	3.72	2.72E-04	1.30E-03	3.66E-05	3.36E-05
	D2MSB04		0.125	Volume	838215	820495	4.00	12.09	3.72	2.72E-04	1.30E-03	3.66E-05	3.36E-05
	D2MSB05		0.125	Volume	838208	820489	4.00	12.09	3.72	2.72E-04	1.30E-03	3.66E-05	3.36E-05
	D2MSB06		0.125	Volume	838199	820483	4.00	12.09	3.72	1.36E-04	6.51E-04	1.83E-05	1.68E-05
	D2MSB07		0.125	Volume	838192	820476	4.00	12.09	3.72	1.36E-04	6.51E-04	1.83E-05	1.68E-05
	D2MSB08		0.125	Volume	838184	820471	4.00	12.09	3.72	1.36E-04	6.51E-04	1.83E-05	1.68E-05
	D2MSB09		0.125	Volume	838176	820465	4.00	12.09	3.72	1.36E-04	6.51E-04	1.83E-05	1.68E-05
	D2MSB10		0.125	Volume	838168	820458	4.00	12.09	3.72	1.36E-04	6.51E-04	1.83E-05	1.68E-05
L003a	D2MNB01	D2 Landscape Deck (NB)	0.0374	Volume	838131	820444	4.00	4.65	3.72	1.14E-04	4.49E-04	1.57E-05	1.43E-05
	D2MNB02		0.0374	Volume	838138	820451	4.00	4.65	3.72	1.14E-04	4.49E-04	1.57E-05	1.43E-05
	D2MNB03		0.0374	Volume	838145	820459	4.00	4.65	3.72	1.14E-04	4.49E-04	1.57E-05	1.43E-05
	D2MNB04		0.0374	Volume	838152	820465	4.00	4.65	3.72	1.14E-04	4.49E-04	1.57E-05	1.43E-05
	D2MNB05		0.0374	Volume	838159	820472	4.00	4.65	3.72	1.14E-04	4.49E-04	1.57E-05	1.43E-05
	D2MNB06		0.0374	Volume	838166	820479	4.00	4.65	3.72	5.70E-05	2.25E-04	7.84E-06	7.17E-06
	D2MNB07		0.0374	Volume	838174	820485	4.00	4.65	3.72	5.70E-05	2.25E-04	7.84E-06	7.17E-06
	D2MNB08		0.0374	Volume	838181	820492	4.00	4.65	3.72	5.70E-05	2.25E-04	7.84E-06	7.17E-06
	D2MNB09		0.0374	Volume	838187	820499	4.00	4.65	3.72	5.70E-05	2.25E-04	7.84E-06	7.17E-06
	D2MNB10		0.0374	Volume	838194	820506	4.00	4.65	3.72	5.70E-05	2.25E-04	7.84E-06	7.17E-06
L004b	D2WSB01	D2 Landscape Deck (SB)	0.0374	Volume	838115	820393	4.00	4.65	3.72	1.04E-04	3.67E-04	1.52E-05	1.38E-05
	D2WSB02		0.0374	Volume	838110	820384	4.00	4.65	3.72	1.04E-04	3.67E-04	1.52E-05	1.38E-05
	D2WSB03		0.0374	Volume	838105	820376	4.00	4.65	3.72	1.04E-04	3.67E-04	1.52E-05	1.38E-05
	D2WSB04		0.0374	Volume	838100	820367	4.00	4.65	3.72	1.04E-04	3.67E-04	1.52E-05	1.38E-05
	D2WSB05		0.0374	Volume	838096	820358	4.00	4.65	3.72	1.04E-04	3.67E-04	1.52E-05	1.38E-05
	D2WSB06		0.0374	Volume	838091	820349	4.00	4.65	3.72	5.19E-05	1.84E-04	7.58E-06	6.90E-06
	D2WSB07		0.0374	Volume	838086	820340	4.00	4.65	3.72	5.19E-05	1.84E-04	7.58E-06	6.90E-06
	D2WSB08		0.0374	Volume	838082	820332	4.00	4.65	3.72	5.19E-05	1.84E-04	7.58E-06	6.90E-06
	D2WSB09		0.0374	Volume	838077	820323	4.00	4.65	3.72	5.19E-05	1.84E-04	7.58E-06	6.90E-06
	D2WSB10		0.0374	Volume	838072	820314	4.00	4.65	3.72	5.19E-05	1.84E-04	7.58E-06	6.90E-06
L158	CKRTEEB01	CKR Tunnel Portal Emission (EB)	1.750	Volume	838421	820121	3.50	8.84	3.26	5.28E-03	3.87E-02	1.57E-03	1.44E-03
	CKRTEEB02		1.750	Volume	838430	820138	3.50	8.84	3.26	5.28E-03	3.87E-02	1.57E-03	1.44E-03
	CKRTEEB03		1.750	Volume	838439	820155	3.50	8.84	3.26	5.28E-03	3.87E-02	1.57E-03	1.44E-03
	CKRTEEB04		1.750	Volume	838448	820172	3.50	8.84	3.26	2.64E-03	1.93E-02	7.83E-04	7.21E-04
	CKRTEEB05		1.750	Volume	838457	820188	3.50	8.84	3.26	2.64E-03	1.93E-02	7.83E-04	7.21E-04
	CKRTEEB06		1.750	Volume	838466	820205	3.50	8.84	3.26	2.64E-03	1.93E-02	7.83E-04	7.21E-04
L159	CKRLDSWB01	CKR Landscape Deck (SWB)	0.195	Volume	838482	820186	5.45	7.91	5.07	1.35E-03	8.75E-03	3.16E-04	2.92E-04
	CKRLDSWB02		0.195	Volume	838474	820171	5.45	7.91	5.07	1.35E-03	8.75E-03	3.16E-04	2.92E-04
	CKRLDSWB03		0.195	Volume	838465	820157	5.45	7.91	5.07	1.35E-03	8.75E-03	3.16E-04	2.92E-04
	CKRLDSWB04		0.195	Volume	838457	820142	5.45	7.91	5.07	6.74E-04	4.38E-03	1.58E-04	1.46E-04
	CKRLDSWB05		0.195	Volume	838449	820127	5.45	7.91	5.07	6.74E-04	4.38E-03	1.58E-04	1.46E-04
	CKRLDSWB06		0.195	Volume	838440	820112	5.45	7.91	5.07	6.74E-04	4.38E-03	1.58E-04	1.46E-04
L158	CKRLDNEB01	CKR Landscape Deck (NEB)	0.195	Volume	838613	820371	5.45	9.91	5.07	1.18E-03	8.62E-03	3.49E-04	3.21E-04
	CKRLDNEB02		0.195	Volume	838632	820381	5.45	9.91	5.07	1.18E-03	8.62E-03	3.49E-04	3.21E-04
	CKRLDNEB03		0.195	Volume	838651	820390	5.45	9.91	5.07	1.18E-03	8.62E-03	3.49E-04	3.21E-04
	CKRLDNEB04		0.195	Volume	838670	820399	5.45	9.91	5.07	5.88E-04	4.31E-03	1.75E-04	1.61E-04
	CKRLDNEB05		0.195	Volume	838689	820409	5.45	9.91	5.07	5.88E-04	4.31E-03	1.75E-04	1.61E-04
	CKRLDNEB06		0.195	Volume	838708	820418	5.45	9.91	5.07	5.88E-04	4.31E-03	1.75E-04	1.61E-04

Calculated AERMOD input data:

Release Height, m = "Height of Tunnel" / 2

Initial Lateral Dimension, m = "Width of tunnel" / 2.15

Initial Vertical Dimension, m = "Height of tunnel" / 2.15

Emissions from portals were predicted assuming the emissions behave a volume sources in accordance with the recommendations in the 1991 Permanent International Association of Road Congress Report (1991 PIARC Report) as adopted in Route 3 Tai Lam Tunnel & Yuen Long Approach Northern Section - Volume 1 Detailed Environmental Impact Assessment - Final Report

Emission Inventory for Tunnel Portal - 3rd Quarter

Road No.	Emission Source ID	Portal Description	Tunnel Length	Source Type	x-coordinate	y-coordinate	Release Height	Initial Lateral Dimension	Initial Vertical Dimension	Hourly Emission Rate (g/s)			
			(km)				(m)	(m)	(m)	NO2	NO	RSP	FSP
L084 & L085	KTTW01	Kai Tak Tunnel (WB)	1.23	Volume	837684	820271	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW02		1.23	Volume	837682	820264	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW03		1.23	Volume	837680	820257	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW04		1.23	Volume	837678	820250	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW05		1.23	Volume	837676	820243	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW06		1.23	Volume	837674	820236	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW07		1.23	Volume	837671	820229	2.75	3.44	2.56	1.28E-03	8.55E-03	3.35E-04	3.08E-04
	KTTW08		1.23	Volume	837669	820222	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW09		1.23	Volume	837667	820215	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW10		1.23	Volume	837665	820208	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW11		1.23	Volume	837663	820201	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW12		1.23	Volume	837661	820194	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW13		1.23	Volume	837659	820187	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
	KTTW14		1.23	Volume	837656	820179	2.75	3.44	2.56	6.41E-04	4.28E-03	1.67E-04	1.54E-04
L001	D2ENB01	D2 Landscape Deck (NB)	0.125	Volume	838356	820573	4.00	12.09	3.72	3.27E-04	1.34E-03	4.24E-05	3.88E-05
	D2ENB02		0.125	Volume	838366	820575	4.00	12.09	3.72	3.27E-04	1.34E-03	4.24E-05	3.88E-05
	D2ENB03		0.125	Volume	838376	820578	4.00	12.09	3.72	3.27E-04	1.34E-03	4.24E-05	3.88E-05
	D2ENB04		0.125	Volume	838384	820580	4.00	12.09	3.72	3.27E-04	1.34E-03	4.24E-05	3.88E-05
	D2ENB05		0.125	Volume	838394	820582	4.00	12.09	3.72	3.27E-04	1.34E-03	4.24E-05	3.88E-05
	D2ENB06		0.125	Volume	838404	820584	4.00	12.09	3.72	1.63E-04	6.69E-04	2.12E-05	1.94E-05
	D2ENB07		0.125	Volume	838414	820587	4.00	12.09	3.72	1.63E-04	6.69E-04	2.12E-05	1.94E-05
	D2ENB08		0.125	Volume	838424	820589	4.00	12.09	3.72	1.63E-04	6.69E-04	2.12E-05	1.94E-05
	D2ENB09		0.125	Volume	838432	820591	4.00	12.09	3.72	1.63E-04	6.69E-04	2.12E-05	1.94E-05
	D2ENB10		0.125	Volume	838442	820594	4.00	12.09	3.72	1.63E-04	6.69E-04	2.12E-05	1.94E-05
L002	D2MSB01	D2 Landscape Deck (SB)	0.125	Volume	838239	820513	4.00	12.09	3.72	2.64E-04	1.22E-03	3.66E-05	3.36E-05
	D2MSB02		0.125	Volume	838231	820506	4.00	12.09	3.72	2.64E-04	1.22E-03	3.66E-05	3.36E-05
	D2MSB03		0.125	Volume	838224	820501	4.00	12.09	3.72	2.64E-04	1.22E-03	3.66E-05	3.36E-05
	D2MSB04		0.125	Volume	838215	820495	4.00	12.09	3.72	2.64E-04	1.22E-03	3.66E-05	3.36E-05
	D2MSB05		0.125	Volume	838208	820489	4.00	12.09	3.72	2.64E-04	1.22E-03	3.66E-05	3.36E-05
	D2MSB06		0.125	Volume	838199	820483	4.00	12.09	3.72	1.32E-04	6.09E-04	1.83E-05	1.68E-05
	D2MSB07		0.125	Volume	838192	820476	4.00	12.09	3.72	1.32E-04	6.09E-04	1.83E-05	1.68E-05
	D2MSB08		0.125	Volume	838184	820471	4.00	12.09	3.72	1.32E-04	6.09E-04	1.83E-05	1.68E-05
	D2MSB09		0.125	Volume	838176	820465	4.00	12.09	3.72	1.32E-04	6.09E-04	1.83E-05	1.68E-05
	D2MSB10		0.125	Volume	838168	820458	4.00	12.09	3.72	1.32E-04	6.09E-04	1.83E-05	1.68E-05
L003a	D2MNB01	D2 Landscape Deck (NB)	0.0374	Volume	838131	820444	4.00	4.65	3.72	1.11E-04	4.23E-04	1.57E-05	1.43E-05
	D2MNB02		0.0374	Volume	838138	820451	4.00	4.65	3.72	1.11E-04	4.23E-04	1.57E-05	1.43E-05
	D2MNB03		0.0374	Volume	838145	820459	4.00	4.65	3.72	1.11E-04	4.23E-04	1.57E-05	1.43E-05
	D2MNB04		0.0374	Volume	838152	820465	4.00	4.65	3.72	1.11E-04	4.23E-04	1.57E-05	1.43E-05
	D2MNB05		0.0374	Volume	838159	820472	4.00	4.65	3.72	1.11E-04	4.23E-04	1.57E-05	1.43E-05
	D2MNB06		0.0374	Volume	838166	820479	4.00	4.65	3.72	5.55E-05	2.11E-04	7.84E-06	7.17E-06
	D2MNB07		0.0374	Volume	838174	820485	4.00	4.65	3.72	5.55E-05	2.11E-04	7.84E-06	7.17E-06
	D2MNB08		0.0374	Volume	838181	820492	4.00	4.65	3.72	5.55E-05	2.11E-04	7.84E-06	7.17E-06
	D2MNB09		0.0374	Volume	838187	820499	4.00	4.65	3.72	5.55E-05	2.11E-04	7.84E-06	7.17E-06
	D2MNB10		0.0374	Volume	838194	820506	4.00	4.65	3.72	5.55E-05	2.11E-04	7.84E-06	7.17E-06
L004b	D2WSB01	D2 Landscape Deck (SB)	0.0374	Volume	838115	820393	4.00	4.65	3.72	1.01E-04	3.50E-04	1.52E-05	1.38E-05
	D2WSB02		0.0374	Volume	838110	820384	4.00	4.65	3.72	1.01E-04	3.50E-04	1.52E-05	1.38E-05
	D2WSB03		0.0374	Volume	838105	820376	4.00	4.65	3.72	1.01E-04	3.50E-04	1.52E-05	1.38E-05
	D2WSB04		0.0374	Volume	838100	820367	4.00	4.65	3.72	1.01E-04	3.50E-04	1.52E-05	1.38E-05
	D2WSB05		0.0374	Volume	838096	820358	4.00	4.65	3.72	1.01E-04	3.50E-04	1.52E-05	1.38E-05
	D2WSB06		0.0374	Volume	838091	820349	4.00	4.65	3.72	5.05E-05	1.75E-04	7.58E-06	6.90E-06
	D2WSB07		0.0374	Volume	838086	820340	4.00	4.65	3.72	5.05E-05	1.75E-04	7.58E-06	6.90E-06
	D2WSB08		0.0374	Volume	838082	820332	4.00	4.65	3.72	5.05E-05	1.75E-04	7.58E-06	6.90E-06
	D2WSB09		0.0374	Volume	838077	820323	4.00	4.65	3.72	5.05E-05	1.75E-04	7.58E-06	6.90E-06
	D2WSB10		0.0374	Volume	838072	820314	4.00	4.65	3.72	5.05E-05	1.75E-04	7.58E-06	6.90E-06
L158	CKRTEEB01	CKR Tunnel Portal Emission (EB)	1.750	Volume	838421	820121	3.50	8.84	3.26	4.86E-03	3.48E-02	1.57E-03	1.44E-03
	CKRTEEB02		1.750	Volume	838430	820138	3.50	8.84	3.26	4.86E-03	3.48E-02	1.57E-03	1.44E-03
	CKRTEEB03		1.750	Volume	838439	820155	3.50	8.84	3.26	4.86E-03	3.48E-02	1.57E-03	1.44E-03
	CKRTEEB04		1.750	Volume	838448	820172	3.50	8.84	3.26	2.43E-03	1.74E-02	7.83E-04	7.21E-04
	CKRTEEB05		1.750	Volume	838457	820188	3.50	8.84	3.26	2.43E-03	1.74E-02	7.83E-04	7.21E-04
	CKRTEEB06		1.750	Volume	838466	820205	3.50	8.84	3.26	2.43E-03	1.74E-02	7.83E-04	7.21E-04
L159	CKRLDSWB01	CKR Landscape Deck (SWB)	0.195	Volume	838482	820186	5.45	7.91	5.07	1.24E-03	7.90E-03	3.16E-04	2.92E-04
	CKRLDSWB02		0.195	Volume	838474	820171	5.45	7.91	5.07	1.24E-03	7.90E-03	3.16E-04	2.92E-04
	CKRLDSWB03		0.195	Volume	838465	820157	5.45	7.91	5.07	1.24E-03	7.90E-03	3.16E-04	2.92E-04
	CKRLDSWB04		0.195	Volume	838457	820142	5.45	7.91	5.07	6.22E-04	3.95E-03	1.58E-04	1.46E-04
	CKRLDSWB05		0.195	Volume	838449	820127	5.45	7.91	5.07	6.22E-04	3.95E-03	1.58E-04	1.46E-04
	CKRLDSWB06		0.195	Volume	838440	820112	5.45	7.91	5.07	6.22E-04	3.95E-03	1.58E-04	1.46E-04
L158	CKRLDNEB01	CKR Landscape Deck (NEB)	0.195	Volume	838613	820371	5.45	9.91	5.07	1.08E-03	7.76E-03	3.49E-04	3.21E-04
	CKRLDNEB02		0.195	Volume	838632	820381	5.45	9.91	5.07	1.08E-03	7.76E-03	3.49E-04	3.21E-04
	CKRLDNEB03		0.195	Volume	838651	820390	5.45	9.91	5.07	1.08E-03	7.76E-03	3.49E-04	3.21E-04
	CKRLDNEB04		0.195	Volume	838670	820399	5.45	9.91	5.07	5.42E-04	3.88E-03	1.75E-04	1.61E-04
	CKRLDNEB05		0.195	Volume	838689	820409	5.45	9.91	5.07	5.42E-04	3.88E-03	1.75E-04	1.61E-04
	CKRLDNEB06		0.195	Volume	838708	820418	5.45	9.91	5.07	5.42E-04	3.88E-03	1.75E-04	1.61E-04

Calculated AERMOD input data:

Release Height, m = "Height of Tunnel" / 2

Initial Lateral Dimension, m = "Width of tunnel" / 2.15

Initial Vertical Dimension, m = "Height of tunnel" / 2.15

Emissions from portals were predicted assuming the emissions behave a volume sources in accordance with the recommendations in the 1991 Permanent International Association of Road Congress Report (1991 PIARC Report) as adopted in Route 3 Tai Lam Tunnel & Yuen Long Approach Northern Section - Volume 1 Detailed Environmental Impact Assessment - Final Report

Emission Inventory for Tunnel Portal - 4th Quarter

Road No.	Emission Source ID	Portal Description	Tunnel Length	Source Type	x-coordinate	y-coordinate	Release Height	Initial Lateral Dimension	Initial Vertical Dimension	Hourly Emission Rate (g/s)			
			(km)				(m)	(m)	(m)	NO2	NO	RSP	FSP
L084 & L085	KTTW01	Kai Tak Tunnel (WB)	1.23	Volume	837684	820271	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW02		1.23	Volume	837682	820264	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW03		1.23	Volume	837680	820257	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW04		1.23	Volume	837678	820250	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW05		1.23	Volume	837676	820243	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW06		1.23	Volume	837674	820236	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW07		1.23	Volume	837671	820229	2.75	3.44	2.56	1.42E-03	1.03E-02	3.35E-04	3.08E-04
	KTTW08		1.23	Volume	837669	820222	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW09		1.23	Volume	837667	820215	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW10		1.23	Volume	837665	820208	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW11		1.23	Volume	837663	820201	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW12		1.23	Volume	837661	820194	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW13		1.23	Volume	837659	820187	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
	KTTW14		1.23	Volume	837656	820179	2.75	3.44	2.56	7.11E-04	5.15E-03	1.67E-04	1.54E-04
L001	D2ENB01	D2 Landscape Deck (NB)	0.125	Volume	838356	820573	4.00	12.09	3.72	3.47E-04	1.56E-03	4.24E-05	3.88E-05
	D2ENB02		0.125	Volume	838366	820575	4.00	12.09	3.72	3.47E-04	1.56E-03	4.24E-05	3.88E-05
	D2ENB03		0.125	Volume	838376	820578	4.00	12.09	3.72	3.47E-04	1.56E-03	4.24E-05	3.88E-05
	D2ENB04		0.125	Volume	838384	820580	4.00	12.09	3.72	3.47E-04	1.56E-03	4.24E-05	3.88E-05
	D2ENB05		0.125	Volume	838394	820582	4.00	12.09	3.72	3.47E-04	1.56E-03	4.24E-05	3.88E-05
	D2ENB06		0.125	Volume	838404	820584	4.00	12.09	3.72	1.73E-04	7.81E-04	2.12E-05	1.94E-05
	D2ENB07		0.125	Volume	838414	820587	4.00	12.09	3.72	1.73E-04	7.81E-04	2.12E-05	1.94E-05
	D2ENB08		0.125	Volume	838424	820589	4.00	12.09	3.72	1.73E-04	7.81E-04	2.12E-05	1.94E-05
	D2ENB09		0.125	Volume	838432	820591	4.00	12.09	3.72	1.73E-04	7.81E-04	2.12E-05	1.94E-05
	D2ENB10		0.125	Volume	838442	820594	4.00	12.09	3.72	1.73E-04	7.81E-04	2.12E-05	1.94E-05
L002	D2MSB01	D2 Landscape Deck (SB)	0.125	Volume	838239	820513	4.00	12.09	3.72	2.81E-04	1.47E-03	3.66E-05	3.36E-05
	D2MSB02		0.125	Volume	838231	820506	4.00	12.09	3.72	2.81E-04	1.47E-03	3.66E-05	3.36E-05
	D2MSB03		0.125	Volume	838224	820501	4.00	12.09	3.72	2.81E-04	1.47E-03	3.66E-05	3.36E-05
	D2MSB04		0.125	Volume	838215	820495	4.00	12.09	3.72	2.81E-04	1.47E-03	3.66E-05	3.36E-05
	D2MSB05		0.125	Volume	838208	820489	4.00	12.09	3.72	2.81E-04	1.47E-03	3.66E-05	3.36E-05
	D2MSB06		0.125	Volume	838199	820483	4.00	12.09	3.72	1.40E-04	7.37E-04	1.83E-05	1.68E-05
	D2MSB07		0.125	Volume	838192	820476	4.00	12.09	3.72	1.40E-04	7.37E-04	1.83E-05	1.68E-05
	D2MSB08		0.125	Volume	838184	820471	4.00	12.09	3.72	1.40E-04	7.37E-04	1.83E-05	1.68E-05
	D2MSB09		0.125	Volume	838176	820465	4.00	12.09	3.72	1.40E-04	7.37E-04	1.83E-05	1.68E-05
	D2MSB10		0.125	Volume	838168	820458	4.00	12.09	3.72	1.40E-04	7.37E-04	1.83E-05	1.68E-05
L003a	D2MNB01	D2 Landscape Deck (NB)	0.0374	Volume	838131	820444	4.00	4.65	3.72	1.18E-04	4.98E-04	1.57E-05	1.43E-05
	D2MNB02		0.0374	Volume	838138	820451	4.00	4.65	3.72	1.18E-04	4.98E-04	1.57E-05	1.43E-05
	D2MNB03		0.0374	Volume	838145	820459	4.00	4.65	3.72	1.18E-04	4.98E-04	1.57E-05	1.43E-05
	D2MNB04		0.0374	Volume	838152	820465	4.00	4.65	3.72	1.18E-04	4.98E-04	1.57E-05	1.43E-05
	D2MNB05		0.0374	Volume	838159	820472	4.00	4.65	3.72	1.18E-04	4.98E-04	1.57E-05	1.43E-05
	D2MNB06		0.0374	Volume	838166	820479	4.00	4.65	3.72	5.88E-05	2.49E-04	7.84E-06	7.17E-06
	D2MNB07		0.0374	Volume	838174	820485	4.00	4.65	3.72	5.88E-05	2.49E-04	7.84E-06	7.17E-06
	D2MNB08		0.0374	Volume	838181	820492	4.00	4.65	3.72	5.88E-05	2.49E-04	7.84E-06	7.17E-06
	D2MNB09		0.0374	Volume	838187	820499	4.00	4.65	3.72	5.88E-05	2.49E-04	7.84E-06	7.17E-06
	D2MNB10		0.0374	Volume	838194	820506	4.00	4.65	3.72	5.88E-05	2.49E-04	7.84E-06	7.17E-06
L004b	D2WSB01	D2 Landscape Deck (SB)	0.0374	Volume	838115	820393	4.00	4.65	3.72	1.07E-04	3.96E-04	1.52E-05	1.38E-05
	D2WSB02		0.0374	Volume	838110	820384	4.00	4.65	3.72	1.07E-04	3.96E-04	1.52E-05	1.38E-05
	D2WSB03		0.0374	Volume	838105	820376	4.00	4.65	3.72	1.07E-04	3.96E-04	1.52E-05	1.38E-05
	D2WSB04		0.0374	Volume	838100	820367	4.00	4.65	3.72	1.07E-04	3.96E-04	1.52E-05	1.38E-05
	D2WSB05		0.0374	Volume	838096	820358	4.00	4.65	3.72	1.07E-04	3.96E-04	1.52E-05	1.38E-05
	D2WSB06		0.0374	Volume	838091	820349	4.00	4.65	3.72	5.35E-05	1.98E-04	7.58E-06	6.90E-06
	D2WSB07		0.0374	Volume	838086	820340	4.00	4.65	3.72	5.35E-05	1.98E-04	7.58E-06	6.90E-06
	D2WSB08		0.0374	Volume	838082	820332	4.00	4.65	3.72	5.35E-05	1.98E-04	7.58E-06	6.90E-06
	D2WSB09		0.0374	Volume	838077	820323	4.00	4.65	3.72	5.35E-05	1.98E-04	7.58E-06	6.90E-06
	D2WSB10		0.0374	Volume	838072	820314	4.00	4.65	3.72	5.35E-05	1.98E-04	7.58E-06	6.90E-06
L158	CKRTEEB01	CKR Tunnel Portal Emission (EB)	1.750	Volume	838421	820121	3.50	8.84	3.26	5.82E-03	4.56E-02	1.57E-03	1.44E-03
	CKRTEEB02		1.750	Volume	838430	820138	3.50	8.84	3.26	5.82E-03	4.56E-02	1.57E-03	1.44E-03
	CKRTEEB03		1.750	Volume	838439	820155	3.50	8.84	3.26	5.82E-03	4.56E-02	1.57E-03	1.44E-03
	CKRTEEB04		1.750	Volume	838448	820172	3.50	8.84	3.26	2.91E-03	2.28E-02	7.83E-04	7.21E-04
	CKRTEEB05		1.750	Volume	838457	820188	3.50	8.84	3.26	2.91E-03	2.28E-02	7.83E-04	7.21E-04
	CKRTEEB06		1.750	Volume	838466	820205	3.50	8.84	3.26	2.91E-03	2.28E-02	7.83E-04	7.21E-04
L159	CKRLDSWB01	CKR Landscape Deck (SWB)	0.195	Volume	838482	820186	5.45	7.91	5.07	1.48E-03	1.03E-02	3.16E-04	2.92E-04
	CKRLDSWB02		0.195	Volume	838474	820171	5.45	7.91	5.07	1.48E-03	1.03E-02	3.16E-04	2.92E-04
	CKRLDSWB03		0.195	Volume	838465	820157	5.45	7.91	5.07	1.48E-03	1.03E-02	3.16E-04	2.92E-04
	CKRLDSWB04		0.195	Volume	838457	820142	5.45	7.91	5.07	7.39E-04	5.13E-03	1.58E-04	1.46E-04
	CKRLDSWB05		0.195	Volume	838449	820127	5.45	7.91	5.07	7.39E-04	5.13E-03	1.58E-04	1.46E-04
	CKRLDSWB06		0.195	Volume	838440	820112	5.45	7.91	5.07	7.39E-04	5.13E-03	1.58E-04	1.46E-04
L158	CKRLDNEB01	CKR Landscape Deck (NEB)	0.195	Volume	838613	820371	5.45	9.91	5.07	1.30E-03	1.02E-02	3.49E-04	3.21E-04
	CKRLDNEB02		0.195	Volume	838632	820381	5.45	9.91	5.07	1.30E-03	1.02E-02	3.49E-04	3.21E-04
	CKRLDNEB03		0.195	Volume	838651	820390	5.45	9.91	5.07	1.30E-03	1.02E-02	3.49E-04	3.21E-04
	CKRLDNEB04		0.195	Volume	838670	820399	5.45	9.91	5.07	6.48E-04	5.08E-03	1.75E-04	1.61E-04
	CKRLDNEB05		0.195	Volume	838689	820409	5.45	9.91	5.07	6.48E-04	5.08E-03	1.75E-04	1.61E-04
	CKRLDNEB06		0.195	Volume	838708	820418	5.45	9.91	5.07	6.48E-04	5.08E-03	1.75E-04	1.61E-04

Calculated AERMOD input data:

Release Height, m = "Height of Tunnel" / 2

Initial Lateral Dimension, m = "Width of tunnel" / 2.15

Initial Vertical Dimension, m = "Height of tunnel" / 2.15

Emissions from portals were predicted assuming the emissions behave a volume sources in accordance with the recommendations in the 1991 Permanent International Association of Road Congress Report (1991 PIARC Report) as adopted in Route 3 Tai Lam Tunnel & Yuen Long Approach Northern Section - Volume 1 Detailed Environmental Impact Assessment - Final Report

Appendix 4.3 Site Records for Active Chimney Identification



Appendix: 4.3	RAMBOLL
Title: Site Records for Active Chimney Identification	Drawn by: BF
	Checked by: CC
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0
	Date: May 2020

Appendix 4.4 Derivation of Emission Rate of Active Chimneys

Calculation of Chimney Emission

Company	Source Type	Chimney ID	x-coordinate	y-coordinate	Release Height	Exit Temperature	Exit Velocity	Internal Diameter	Emission Rate				Operation Hours
									NOx	RSP	FSP	SO_2	
					(mAG)	(K)	(m/s)	(m)	(g/s)	(g/s)	(g/s)	(g/s)	
The Hong Kong and China Gas Company Limited	Point	TG1	837904	820141	34.0	473	5.5	1.00	0.3472	0	0	0	24 hours (0000-2400)
		TG2	837913	820136	34.0	473	5.5	1.00	0.3472	0	0	0	
		TG3	837921	820133	34.0	473	5.5	1.00	0.3472	0	0	0	
		TG4	837928	820130	34.0	473	5.5	1.00	0.3472	0	0	0	
		TG5	837837	820081	44.5	450	20.4	0.50	0.1667	0	0	0	
Diamon Hill Crematorium	Point	EP1	839439	822851	30.2	373	10	0.24	0.1407	0.0037	0.0018	0	0800 - 2200
		EP2	839439	822850	30.2	373	10	0.27	0.1814	0.0047	0.0024	0	
		EP3	839439	822849	30.2	373	10	0.24	0.1407	0.0037	0.0018	0	
		EP4	839443	822851	30.2	373	10	0.27	0.1814	0.0047	0.0024	0	
		EP5	839443	822850	30.2	373	10	0.24	0.1407	0.0037	0.0018	0	
		EP6	839442	822849	30.2	373	10	0.24	0.1407	0.0037	0.0018	0	

Notes:

[1] Fugitive Emission and NOx from Chimney ID TG1-TG5 are based on SP License (No. L-8-004(5)) and Appendix 3.5 of Environmental Assessment Study Report for the Section 12A Planning Application of Proposed Rezoning of the Application Site from “Other Specified Uses” annotated “Tunnel Ventilation Shaft” and “Government, Institution or Community” to “Commercial (9)” Zone to enable a Proposed Commercial/ Office Redevelopment at Nos. 3-5 San Ma Tau Street, Ma Tau Kok, Kowloon (Application No. Y/K22/3), and to be 0. By making reference to Note (7) under the table in the Appendix 3.5 in the Approved EIA Report for Kai Tak Multi-purpose Sports Complex (Register No.: AEIAR-204/2017, general load factors of 41% during day time and 23% during night time are recommended by EPD and were employed for this assessment.

[2] Emission details of Chimney ID EP1-EP6 are obtained from the latest Specified Process Licence (L-12-006(1)) and Air Pollution Control Plan of Diamond Hill Crematorium at Diamond Hill.

Appendix 4.5 Derivation of Emission Rate of Ferry

Emission Rates for Ferry Service between North Point and Kowloon City

Main Engine (for slow cruise)

Referenced to Final Report - Study of Marine Vessels Emission Inventory

E = P x LF x TIM x EF

where E = Emission Rate (g)

	Gross Registered Tonnage (GRT)			Remark
	0-499	500-999	≥ 1000	
P = Engine Power (kW)	643			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.83, Table 4-5, Feb 2012 According to Table 25 in 2018 Port of Hong Kong Statistical Tables, Marine Department - Class I (e) Primitve Vessel, all licensed Primitive Vessels (i.e. kaito) have the registered tonnage of less than 300 tons.
	Slow Cruise			
LF = Loading Factor	0.45			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.85, Table 4-7, Feb 2012
TIM = Time-in-mode (min)	3			Total duration is assumed to be 8 mins close to 500m assessment area, as observed by site visit
Time-in-mode (hr)	0.050			

EF of SO_2 = BSFC x 2 x 0.97753 x Fuel Sulphur Fraction — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.31, Feb 2012

BSFC (g/kWh) = 213 — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.27, Feb 2012

Fuel Sulphur Fraction = 0.05% — Air Pollution Control (Marine Light Diesel) Regulation, effective in April 2014

	SO2	RSP	FSP	NOx	Remark
EF = Emission Factor (g/kWh)	0.21	0.30	0.29	10.00	EF of RSP, FSP and NOx is extracted from Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.89, Table 4.16 (ME (Cat.1)), Feb 2012
Total Emissions (Slow Cruise) (g/hr) =	3.0	4.3	4.2	144.7	
Emission Rate (Slow Cruise) (g/s) =	**0.0001**	**0.0001**	**0.0001**	**0.0037**	Both incoming and outgoing crusing are completed within one hour. The emission rate is obtained so that the total emission in one hour is equivalent to the total emissions. 1 emission points are assumed for the whole incoming and outgoing cruising distance, so each emission point consitutes 1/11 of the total emissions.

Auxiliary Engine (for hotelling)

Referenced to Final Report - Study of Marine Vessels Emission Inventory

E = P x LF x TIM x EF

where E = Emission Rate (g)

	Gross Registered Tonnage (GRT)			Remark
	0-499	500-999	≥ 1000	
P = Engine Power (kW)	66			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.84, Table 4-6, Feb 2012 Port of Hong Kong Statistical Tables, Marine Department - Class I (e) Primitve Vessel, Table 25, 2015
	Hotelling			
LF = Loading Factor	0.43			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.85, Table 4-10, Feb 2012
TIM = Time-in-mode (min)	5			Total duration is assumed to be 8 mins close to 500m assessment area, as observed by site visit
Time-in-mode (hr)	0.083			

EF of SO_2 = BSFC x 2 x 0.97753 x Fuel Sulphur Fraction — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.31, Feb 2012

BSFC (g/kWh) = 213 — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.27, Feb 2012

Fuel Sulphur Fraction = 0.05% — Air Pollution Control (Marine Light Diesel) Regulation, effective in April 2014

	SO2	RSP	FSP	NOx	Remark
EF = Emission Factor (g/kWh)	0.21	0.40	0.39	10.00	EF of RSP, FSP and NOx are extracted from Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.89, Table 4.16 (AE), Feb 2012
Total Emissions (Hotelling) (g/hr) =	0.49	0.95	0.92	23.65	
Total Emissions (Hotelling) (g/s) =	**0.0001**	**0.0003**	**0.0003**	**0.0066**	The hotelling is completed within one hour. The emission rate is obtained so that the total emission in one hour is equivalent to the total emissions.

Emission Rates for Ferry Service between Harbour Tour

Main Engine (for slow cruise)

Referenced to Final Report - Study of Marine Vessels Emission Inventory

Remark

E = P x LF x TIM x EF

Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.99, Feb 2012

where E = Emission Rate (g)

	Gross Registered Tonnage (GRT)			
	0-499	500-999	≥ 1000	
P = Engine Power (kW)	643			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.83, Table 4-5, Feb 2012 According to Table 25 in 2018 Port of Hong Kong Statistical Tables, Marine Department - Class I (e) Primitve Vessel, all licensed Primitive Vessels (i.e. kaito) have the registered tonnage of less than 300 tons.
	Slow Cruise			
LF = Loading Factor	0.45			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.85, Table 4-7, Feb 2012
TIM = Time-in-mode (min)	4			Total duration is assumed to be 12 mins within 500m assessment area, as observed by site visit
Time-in-mode (hr)	0.067			

EF of SO_2 = BSFC x 2 x 0.97753 x Fuel Sulphur Fraction — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.31, Feb 2012

BSFC (g/kWh) = 213 — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.27, Feb 2012

Fuel Sulphur Fraction = 0.05% — Air Pollution Control (Marine Light Diesel) Regulation, effective in April 2014

	SO2	RSP	FSP	NOx	
EF = Emission Factor (g/kWh)	0.21	0.30	0.29	10.00	EF of RSP, FSP and NOx is extracted from Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.89, Table 4.16 (ME (Cat.1)), Feb 2012
Total Emissions (Slow Cruise) (g/hr) =	4.0	5.8	5.6	192.9	
Emission Rate (Slow Cruise) (g/s) =	**0.0001**	**0.0001**	**0.0001**	**0.0049**	Both incoming and outgoing crusing are completed within one hour. The emission rate is obtained so that the total emission in one hour is equivalent to the total emissions. 1 emission points are assumed for the whole incoming and outgoing cruising distance, so each emission point consitutes 1/11 of the total emissions.

Auxiliary Engine (for hotelling)

Referenced to Final Report - Study of Marine Vessels Emission Inventory

Remark

E = P x LF x TIM x EF

Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.99, Feb 2012

where E = Emission Rate (g)

	Gross Registered Tonnage (GRT)			
	0-499	500-999	≥ 1000	
P = Engine Power (kW)	66			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.84, Table 4-6, Feb 2012 Port of Hong Kong Statistical Tables, Marine Department - Class I (e) Primitve Vessel, Table 25, 2015
	Hotelling			
LF = Loading Factor	0.43			Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.85, Table 4-10, Feb 2012
TIM = Time-in-mode (min)	8			Total duration is assumed to be 12 mins within 500m assessment area, as observed by site visit
Time-in-mode (hr)	0.133			

EF of SO_2 = BSFC x 2 x 0.97753 x Fuel Sulphur Fraction — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.31, Feb 2012

BSFC (g/kWh) = 213 — Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.88, Section 4.2.27, Feb 2012

Fuel Sulphur Fraction = 0.05% — Air Pollution Control (Marine Light Diesel) Regulation, effective in April 2014

	SO2	RSP	FSP	NOx	
EF = Emission Factor (g/kWh)	0.21	0.40	0.39	10.00	EF of RSP, FSP and NOx are extracted from Study of Marine Vessels Emission Inventory - Final Report, HKUST, pp.89, Table 4.16 (AE), Feb 2012
Total Emissions (Hotelling) (g/hr) =	0.79	1.51	1.48	37.84	
Total Emissions (Hotelling) (g/s) =	**0.0002**	**0.0004**	**0.0004**	**0.0105**	The hotelling is completed within one hour. The emission rate is obtained so that the total emission in one hour is equivalent to the total emissions.

Appendix 4.6 Visiting Frequencies of Different Modes for Ferry Services

Ferry Frequency of Ferry Service between North Point and Kowloon City and Harbour tour

From Kowloon City to North Point (on Weekday)					
Time		No. of Service	No. of Activity Adopted in this Assessment		
From	To		Crusing (Arrival)	Hotelling	Crusing (Departure)
0700	0800	2	2	2	2
0800	0900	3	3	3	3
0900	1000	2	2	2	2
1000	1100	2	2	2	2
1100	1200	2	2	2	2
1200	1300	2	2	2	2
1300	1400	2	2	2	2
1400	1500	2	2	2	2
1500	1600	2	2	2	2
1600	1700	2	2	2	2
1700	1800	2	2	2	2
1800	1900	3	3	3	3
1900	2000	2	1	2	2

From North Point to Kowloon City (on Saturday, Sunday and Public Holiday)					
Time		No. of Service	No. of Activity Adopted in this Assessment		
From	To		Crusing (Arrival)	Hotelling	Crusing (Departure)
0700	0800	2	2	2	2
0800	0900	2	2	2	2
0900	1000	2	2	2	2
1000	1100	2	2	2	2
1100	1200	2	2	2	2
1200	1300	2	2	2	2
1300	1400	2	2	2	2
1400	1500	2	2	2	2
1500	1600	2	2	2	2
1600	1700	2	2	2	2
1700	1800	2	2	2	2
1800	1900	2	2	2	2
1900	2000	2	1	2	2

Note:

[1] Daily Schedule of the ferry service is based on operator's website (http://www.nwff.com.hk/route/get_route.php?id=6662173e-a9ee-489b-aa36-8ce56dec0a6b&route_id=6&submenu_num=3).

Harbour Tour (Round trip to and from Ma Tau Kok Public Pier)					
Time		No. of Service	No. of Activity		
From	To		Crusing (Arrival)	Hotelling	Crusing (Departure)
1700	1800	5	5	1	5
1800	1900	5	5	1	5
1900	2000	5	5	1	5
2000	2100	5	5	1	5

Note:

[1] The number of activity is assumed based on the observation and information colleacted during the site visits.

Appendix 4.7 Derivation of Emission Rate of Kai Tak Cruise Terminal

Marine Emission from Cruises at Kai Tak Cruise Terminal

Emission Factors for Cruises

Cruises	Engine Type	Engine Power kW	Loading Factor [5]	Emission Factor (g/kWh) [6]			
			Hotelling	RSP	FSP	NOx	SO_2
World Dream	Main Engine [1]	76800	0	0.31	0.29	13.2	1.98
	Auxiliary Engine [3]	21350	0.416	0.32	0.29	13.9	2.12
	Boiler [4]	1000	1	0.19	0.14	2.00	2.83
Spectrum of the Seas	Main Engine [2]	67200	0	0.31	0.29	13.2	1.98
	Auxiliary Engine [3]	18682	0.416	0.32	0.29	13.9	2.12
	Boiler [4]	1000	1	0.19	0.14	2.00	2.83

Note:

[1] Engine Power for the Main Engine of World Dream - Information is referred from website (http://www.nedcruise.info/world_dream.htm)

[2] Engine Power for the Main Engine of Spectrum of the Seas - Information is referred from website (http://www.nedcruise.info/spectrum%20of%20the%20seas.htm)

[3] Engine Power for the Auxiliary Engine - According to Table 3-20 of the Study on Marine Vessels Emissions Inventory, February 2012, the ratio of the engine power for the Auxiliary Engine is equal to 0.278 of the engine power of the Main Engine.

[4] Engine Power for the Boiler - According to Table 3-23 of the Study of Marine Vessels Emissions Inventory, February 2012, the engine power for the boiler of the Cruise with the passenger carrying capacity >= 2600 is adopted as the passenger carrying capacity of World Dream and Spectrum of the Seas are 3376 and 4246 respectively.

[5] Loading Factor for the Main Engine - Table 3-18 of the Study on Marine Vessels Emissions Inventory, February 2012 is referred.
Loading Factor for the Auxiliary Engine - Table 3-21 of the Study on Marine Vessels Emissions Inventory, February 2012 is referred.
Loading Factor for the Boiler - 100% of loading is assumed as a conservative approach.

[6] According to the Air Pollution Control (Fuel for Vessels) Regulation, starting from 1 January 2019, all vessels except for specified vessel types as set out in the Regulation, are required to use low sulphur marine fuel (i.e. with sulphur content no exceeding 0.5% by weight).

- Emission Factor for the Main Engine - According to Table 3-27 of the Study on Marine Vessels Emissions Inventory, February 2012 (assuming the engine type of Medium Speed Diesel engine and use of marine gas oil with 0.5% sulphur content).
- Emission Factor for the Auxiliary Engine - According to Table 3-28 of the Study on Marine Vessels Emissions Inventory, February 2012 (assuming the use of of marine gas oil with 0.5% sulphur content).
- Emission Factor for the Boiler - According to Table 3-29 of the Study on Marine Vessels Emissions Inventory, February 2012 (assuming the use of marine gas oil with 0.5% sulphur content).

Emission Rate (Hotelling)

Emission Rate = Engine Power x Loading Factor x Emission Factor

Cruises	Air Pollutants	Emission Rate (kg/hr)				Emission Rate for 60 mins within an hour (g/s)
		Main Engine	Auxiliary Engine	Boiler	Total	
World Dream	RSP	0.00	2.84	0.19	3.03	0.8423
	FSP	0.00	2.58	0.14	2.72	0.7544
	NOx	0.00	123.46	2	125.46	34.8490
	SO_2	0.00	18.83	2.83	21.66	6.0165
Spectrum of the Seas	RSP	0.00	2.49	0.19	2.68	0.7436
	FSP	0.00	2.25	0.14	2.39	0.6649
	NOx	0.00	108.02	2	110.02	30.5624
	SO_2	0.00	16.48	2.83	19.31	5.3627

Appendix 4.8 Derivation of Emission Rate of Portals

Calculation of Portal Emission - 1st Quarter

						NO2						NO						RSP						FSP					
						Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate
Road No.	Portal Description	Portal ID	Tunnel Length (km)	Hour	Total Vehicle (veh/hr)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)
L084 & L085	Kai Tak Tunnel (WB)	KTTW	1.230	1	850	0.048	0.030	4.36E-03	29%	4.16E-04	2.08E-04	0.483	0.300	4.36E-02	40%	4.15E-03	2.08E-03	0.012	0.008	1.13E-03	32%	1.07E-04	5.37E-05	0.011	0.007	1.03E-03	32%	9.85E-05	4.93E-05
				2	700	0.035	0.022	2.63E-03	17%	2.50E-04	1.25E-04	0.418	0.260	3.11E-02	28%	2.96E-03	1.48E-03	0.007	0.004	5.00E-04	14%	4.76E-05	2.38E-05	0.006	0.004	4.59E-04	14%	4.37E-05	2.19E-05
				3	550	0.044	0.028	2.59E-03	17%	2.47E-04	1.23E-04	0.490	0.305	2.86E-02	26%	2.72E-03	1.36E-03	0.007	0.005	4.33E-04	12%	4.12E-05	2.06E-05	0.007	0.004	3.98E-04	12%	3.79E-05	1.89E-05
				4	500	0.047	0.029	2.48E-03	17%	2.37E-04	1.18E-04	0.494	0.307	2.62E-02	24%	2.50E-03	1.25E-03	0.008	0.005	4.03E-04	11%	3.83E-05	1.92E-05	0.007	0.004	3.70E-04	11%	3.53E-05	1.76E-05
				5	450	0.056	0.035	2.70E-03	18%	2.57E-04	1.28E-04	0.518	0.322	2.47E-02	23%	2.36E-03	1.18E-03	0.008	0.005	4.03E-04	11%	3.83E-05	1.92E-05	0.008	0.005	3.70E-04	11%	3.52E-05	1.76E-05
				6	500	0.076	0.048	4.06E-03	27%	3.86E-04	1.93E-04	0.612	0.381	3.25E-02	30%	3.10E-03	1.55E-03	0.015	0.009	7.88E-04	22%	7.51E-05	3.75E-05	0.014	0.008	7.25E-04	22%	6.90E-05	3.45E-05
				7	1000	0.090	0.056	9.55E-03	64%	9.10E-04	4.55E-04	0.536	0.333	5.69E-02	52%	5.42E-03	2.71E-03	0.016	0.010	1.75E-03	50%	1.66E-04	8.31E-05	0.015	0.009	1.61E-03	50%	1.53E-04	7.64E-05
				8	1750	0.060	0.037	1.11E-02	74%	1.06E-03	5.28E-04	0.387	0.241	7.20E-02	66%	6.85E-03	3.43E-03	0.012	0.007	2.24E-03	64%	2.13E-04	1.07E-04	0.011	0.007	2.06E-03	64%	1.96E-04	9.81E-05
				9	2150	0.066	0.041	**1.50E-02**	**100%**	**1.43E-03**	**7.16E-04**	0.481	0.299	**1.10E-01**	**100%**	**1.05E-02**	**5.23E-03**	0.015	0.010	**3.52E-03**	**100%**	**3.35E-04**	**1.67E-04**	0.014	0.009	**3.24E-03**	**100%**	**3.08E-04**	**1.54E-04**
				10	1800	0.071	0.044	1.38E-02	91%	1.30E-03	6.49E-04	0.518	0.322	9.89E-02	90%	9.42E-03	4.71E-03	0.016	0.010	3.09E-03	88%	2.94E-04	1.47E-04	0.015	0.009	2.83E-03	87%	2.69E-04	1.35E-04
				11	1600	0.071	0.044	1.20E-02	80%	1.14E-03	5.71E-04	0.454	0.282	7.72E-02	70%	7.35E-03	3.68E-03	0.014	0.009	2.39E-03	68%	2.28E-04	1.14E-04	0.013	0.008	2.20E-03	68%	2.09E-04	1.05E-04
				12	1600	0.076	0.047	1.30E-02	86%	1.24E-03	6.18E-04	0.479	0.297	8.13E-02	74%	7.74E-03	3.87E-03	0.015	0.009	2.52E-03	72%	2.40E-04	1.20E-04	0.014	0.008	2.32E-03	72%	2.21E-04	1.10E-04
				13	1350	0.081	0.050	1.16E-02	77%	1.10E-03	5.52E-04	0.489	0.304	7.01E-02	64%	6.68E-03	3.34E-03	0.016	0.010	2.23E-03	64%	2.13E-04	1.06E-04	0.014	0.009	2.05E-03	63%	1.95E-04	9.76E-05
				14	1200	0.075	0.047	9.57E-03	64%	9.12E-04	4.56E-04	0.491	0.305	6.25E-02	57%	5.96E-03	2.98E-03	0.016	0.010	1.98E-03	56%	1.89E-04	9.44E-05	0.014	0.009	1.82E-03	56%	1.73E-04	8.67E-05
				15	1450	0.069	0.043	1.07E-02	71%	1.01E-03	5.07E-04	0.466	0.290	7.18E-02	65%	6.84E-03	3.42E-03	0.014	0.009	2.17E-03	62%	2.07E-04	1.03E-04	0.013	0.008	2.00E-03	62%	1.90E-04	9.50E-05
				16	1550	0.070	0.043	1.15E-02	76%	1.09E-03	5.46E-04	0.466	0.290	7.67E-02	70%	7.31E-03	3.65E-03	0.014	0.009	2.31E-03	66%	2.20E-04	1.10E-04	0.013	0.008	2.12E-03	66%	2.02E-04	1.01E-04
				17	1450	0.066	0.041	1.01E-02	67%	9.65E-04	4.83E-04	0.474	0.295	7.30E-02	66%	6.95E-03	3.48E-03	0.015	0.009	2.24E-03	64%	2.14E-04	1.07E-04	0.013	0.008	2.06E-03	64%	1.96E-04	9.82E-05
				18	2200	0.060	0.037	1.32E-02	92%	1.32E-03	6.62E-04	0.431	0.268	1.01E-01	92%	9.59E-03	4.80E-03	0.012	0.008	2.90E-03	83%	2.76E-04	1.38E-04	0.011	0.007	2.67E-03	83%	2.54E-04	1.27E-04
				19	2200	0.053	0.033	1.24E-02	83%	1.18E-03	5.92E-04	0.412	0.256	9.61E-02	88%	9.15E-03	4.58E-03	0.012	0.007	2.73E-03	78%	2.60E-04	1.30E-04	0.011	0.007	2.51E-03	78%	2.39E-04	1.19E-04
				20	1600	0.047	0.029	7.92E-03	53%	7.54E-04	3.77E-04	0.420	0.261	7.13E-02	65%	6.79E-03	3.39E-03	0.012	0.007	2.03E-03	58%	1.94E-04	9.69E-05	0.011	0.007	1.87E-03	58%	1.78E-04	8.91E-05
				21	1600	0.049	0.030	8.24E-03	55%	7.85E-04	3.93E-04	0.405	0.252	6.88E-02	63%	6.55E-03	3.28E-03	0.012	0.008	2.07E-03	59%	1.98E-04	9.88E-05	0.011	0.007	1.91E-03	59%	1.82E-04	9.08E-05
				22	1450	0.048	0.030	7.35E-03	49%	7.00E-04	3.50E-04	0.416	0.258	6.40E-02	58%	6.10E-03	3.05E-03	0.012	0.007	1.83E-03	52%	1.74E-04	8.70E-05	0.011	0.007	1.68E-03	52%	1.60E-04	8.00E-05
				23	1350	0.050	0.031	7.12E-03	47%	6.78E-04	3.39E-04	0.445	0.277	6.38E-02	58%	6.08E-03	3.04E-03	0.013	0.008	1.83E-03	52%	1.74E-04	8.72E-05	0.012	0.007	1.68E-03	52%	1.60E-04	8.02E-05
				24	1000	0.061	0.038	6.43E-03	43%	6.12E-04	3.06E-04	0.543	0.337	5.76E-02	52%	5.49E-03	2.74E-03	0.014	0.009	1.52E-03	43%	1.45E-04	7.25E-05	0.013	0.008	1.40E-03	43%	1.33E-04	6.67E-05
L001	D2 Landscape Deck (NB)	D2ENB	0.125	1	350	0.073	0.045	5.50E-04	21%	7.34E-05	3.67E-05	0.637	0.396	4.81E-03	40%	6.42E-04	3.21E-04	0.012	0.007	8.94E-05	28%	1.19E-05	5.96E-06	0.011	0.007	8.16E-05	28%	1.09E-05	5.44E-06
				2	300	0.081	0.050	5.26E-04	20%	7.01E-05	3.50E-05	0.603	0.375	3.90E-03	33%	5.20E-04	2.60E-04	0.011	0.007	6.99E-05	22%	9.32E-06	4.66E-06	0.010	0.006	6.40E-05	22%	8.53E-06	4.26E-06
				3	300	0.062	0.038	3.99E-04	15%	5.32E-05	2.66E-05	0.561	0.348	3.63E-03	31%	4.84E-04	2.42E-04	0.010	0.006	6.56E-05	21%	8.75E-06	4.38E-06	0.009	0.006	6.01E-05	21%	8.01E-06	4.01E-06
				4	300	0.075	0.047	4.87E-04	19%	6.49E-05	3.25E-05	0.595	0.369	3.85E-03	32%	5.13E-04	2.57E-04	0.010	0.006	6.44E-05	20%	8.58E-06	4.29E-06	0.009	0.006	5.91E-05	20%	7.88E-06	3.94E-06
				5	300	0.077	0.048	5.00E-04	19%	6.67E-05	3.33E-05	0.591	0.367	3.82E-03	32%	5.10E-04	2.55E-04	0.011	0.007	6.81E-05	21%	9.07E-06	4.54E-06	0.010	0.006	6.23E-05	21%	8.31E-06	4.16E-06
				6	300	0.092	0.057	5.95E-04	23%	7.94E-05	3.97E-05	0.605	0.376	3.91E-03	33%	5.22E-04	2.61E-04	0.012	0.007	7.48E-05	24%	9.97E-06	4.99E-06	0.011	0.007	6.84E-05	23%	9.12E-06	4.56E-06
				7	400	0.129	0.080	1.11E-03	42%	1.48E-04	7.40E-05	0.805	0.500	6.94E-03	58%	9.26E-04	4.63E-04	0.015	0.009	1.29E-04	40%	1.72E-05	8.58E-06	0.014	0.008	1.17E-04	40%	1.56E-05	7.81E-06
				8	750	0.122	0.076	1.98E-03	76%	2.64E-04	1.32E-04	0.656	0.408	1.06E-02	89%	1.42E-03	7.08E-04	0.014	0.009	2.33E-04	73%	3.10E-05	1.55E-05	0.013	0.008	2.14E-04	73%	2.85E-05	1.42E-05
				9	900	0.112	0.069	2.17E-03	83%	2.89E-04	1.44E-04	0.596	0.370	1.16E-02	97%	1.54E-03	7.72E-04	0.015	0.009	2.86E-04	90%	3.81E-05	1.90E-05	0.014	0.008	2.62E-04	90%	3.50E-05	1.75E-05
				10	600	0.185	0.115	2.29E-03	92%	3.19E-04	1.59E-04	0.798	0.496	1.03E-02	87%	1.38E-03	6.89E-04	0.018	0.011	2.28E-04	72%	3.04E-05	1.52E-05	0.016	0.010	2.08E-04	72%	2.78E-05	1.39E-05
				11	550	0.207	0.129	2.46E-03	94%	3.28E-04	1.64E-04	0.866	0.538	1.03E-02	86%	1.37E-03	6.85E-04	0.018	0.011	2.18E-04	68%	2.90E-05	1.45E-05	0.017	0.010	1.99E-04	68%	2.65E-05	1.33E-05
				12	550	0.197	0.122	2.33E-03	89%	3.11E-04	1.56E-04	0.824	0.512	9.77E-03	82%	1.30E-03	6.52E-04	0.018	0.011	2.08E-04	65%	2.77E-05	1.39E-05	0.016	0.010	1.90E-04	65%	2.53E-05	1.27E-05
				13	650	0.159	0.099	2.23E-03	85%	2.97E-04	1.49E-04	0.785	0.488	1.10E-02	92%	1.47E-03	7.34E-04	0.016	0.010	2.21E-04	69%	2.95E-05	1.47E-05	0.014	0.009	2.02E-04	69%	2.69E-05	1.35E-05
				14	600	0.174	0.108	2.26E-03	86%	3.01E-04	1.50E-04	0.810	0.504	1.05E-02	88%	1.40E-03	6.99E-04	0.017	0.010	2.16E-04	68%	2.89E-05	1.44E-05	0.015	0.009	1.98E-04	68%	2.64E-05	1.32E-05
				15	650	0.186	0.116	2.61E-03	100%	3.48E-04	1.74E-04	0.829	0.515	1.16E-02	98%	1.55E-03	7.75E-04	0.017	0.011	2.45E-04	77%	3.27E-05	1.64E-05	0.016	0.010	2.24E-04	77%	2.99E-05	1.49E-05
				16	700	0.173	0.107	**2.61E-03**	**100%**	**3.48E-04**	**1.74E-04**	0.779	0.484	1.18E-02	99%	1.57E-03	7.84E-04	0.016	0.010	2.48E-04	78%	3.30E-05	1.65E-05	0.015	0.009	2.27E-04	78%	3.02E-05	1.51E-05
				17	750	0.138	0.086	2.24E-03	80%	2.98E-04	1.49E-04	0.693	0.431	1.12E-02	94%	1.50E-03	7.48E-04	0.016	0.010	2.62E-04	82%	3.49E-05	1.74E-05	0.015	0.009	2.40E-04	82%	3.19E-05	1.60E-05
				18	850	0.107	0.066	1.95E-03	75%	2.61E-04	1.30E-04	0.580	0.361	1.06E-02	89%	1.42E-03	7.10E-04	0.016	0.010	2.92E-04	92%	3.89E-05	1.94E-05	0.015	0.009	2.67E-04	92%	3.56E-05	1.78E-05
				19	900	0.124	0.077	2.41E-03	92%	3.21E-04	1.61E-04	0.613	0.381	**1.19E-02**	**100%**	**1.59E-03**	**7.93E-04**	0.016	0.010	**3.18E-04**	**100%**	**4.24E-05**	**2.12E-05**	0.015	0.009	**2.91E-04**	**100%**	**3.88E-05**	**1.94E-05**
				20	700	0.075	0.047	1.14E-03	44%	1.52E-04	7.59E-05	0.565	0.351	8.53E-03	72%	1.14E-03	5.69E-04	0.015	0.009	2.29E-04	72%	3.05E-05	1.53E-05	0.014	0.009	2.09E-04	72%	2.78E-05	1.39E-05
				21	600	0.059	0.037	7.68E-04	29%	1.02E-04	5.12E-05	0.529	0.329	6.85E-03	58%	9.13E-04	4.57E-04	0.013	0.008	1.74E-04	55%	2.33E-05	1.16E-05	0.012	0.008	1.60E-04	55%	2.13E-05	1.06E-05
				22	550	0.063	0.039	7.44E-04	28%	9.93E-05	4.96E-05	0.530	0.329	6.29E-03	53%	8.39E-04	4.19E-04	0.013	0.008	1.52E-04	48%	2.03E-05	1.02E-05	0.012	0.007	1.39E-04	48%	1.86E-05	9.29E-06
				23	550	0.066	0.041	7.86E-04	30%	1.05E-04	5.24E-05	0.550	0.342	6.52E-03	55%	8.70E-04	4.35E-04	0.013	0.008	1.56E-04	49%	2.07E-05	1.04E-05	0.012	0.007	1.42E-04	49%	1.90E-05	9.48E-06
				24	450	0.069	0.043	6.69E-04	26%	8.92E-05	4.46E-05	0.602	0.374	5.85E-03	49%	7.79E-04	3.90E-04	0.012	0.007	1.13E-04	35%	1.50E-05	7.51E-06	0.011	0.007	1.03E-04	35%	1.37E-05	6.87E-06
L002	D2 Landscape Deck (SB)	D2MSB	0.125	1	300	0.077	0.048	4.99E-04	24%	6.65E-05	3.32E-05	0.660	0.410	4.27E-03	38%	5.70E-04	2.85E-04	0.012	0.007	7.68E-05	28%	1.02E-05	5.12E-06	0.011	0.007	7.02E-05	28%	9.35E-06	4.68E-06
				2	250	0.069	0.043	3.70E-04	17%	4.93E-05	2.46E-05	0.584	0.363	3.15E-03	28%	4.20E-04	2.10E-04	0.010	0.006	5.48E-05	20%	7.30E-06	3.65E-06	0.009	0.006	5.01E-05	20%	6.68E-06	3.34E-06
				3	250	0.068	0.042	3.66E-04	17%	4.88E-05	2.44E-05	0.579	0.360	3.12E-03	28%	4.17E-04	2.08E-04	0.011	0.007	6.09E-05	22%	8.12E-06	4.06E-06	0.010	0.006	5.56E-05	22%	7.41E-06	3.71E-06
				4	250	0.077	0.048	4.17E-04	20%	5.56E-05	2.78E-05	0.602	0.374	3.25E-03	29%	4.33E-04	2.16E-04	0.010	0.006	5.36E-05	20%	7.15E-06	3.57E-06	0.009	0.006	4.92E-05	20%	6.56E-06	3.28E-06
				5	250	0.079	0.049	4.23E-04	20%	5.65E-05	2.82E-05	0.596	0.370	3.21E-03	29%	4.29E-04	2.14E-04	0.010	0.006	5.57E-05	20%	7.42E-06	3.71E-06	0.009	0.006	5.10E-05	20%	6.80E-06	3.40E-06
				6	250	0.077	0.048	4.16E-04	20%	5.54E-05	2.77E-05	0.582	0.362	3.14E-03	28%	4.19E-04	2.09E-04	0.011	0.007	6.03E-05	22%	8.04E-06	4.02E-06	0.010	0.006	5.51E-05	22%	7.35E-06	3.67E-06
				7	350	0.137	0.085	1.04E-03	49%	1.38E-04	6.92E-05	0.838	0.521	6.33E-03	56%	8.44E-04	4.22E-04	0.015	0.010	1.16E-04	42%	1.55E-05	7.75E-06	0.014	0.009	1.06E-04	42%	1.41E-05	7.06E-06
				8	650	0.128	0.079	1.79E-03	85%	2.39E-04	1.19E-04	0.696	0.432	9.76E-03	87%	1.30E-03	6.51E-04	0.015	0.009	2.09E-04	76%	2.79E-05	1.40E-05	0.014	0.009	1.92E-04	76%	2.56E-05	1.28E-05
				9	850	0.111	0.069	2.03E-03	96%	2.71E-04	1.35E-04	0.614	0.382	**1.13E-02**	**100%**	**1.50E-03**	**7.51E-04**	0.015	0.009	**2.74E-04**	**100%**	**3.66E-05**	**1.83E-05**	0.014	0.009	**2.52E-04**	**100%**	**3.36E-05**	**1.68E-05**
				10	500	0.182	0.113	1.96E-03	93%	2.62E-04	1.31E-04	0.812	0.505	8.76E-03	78%	1.17E-03	5.84E-04	0.018	0.011	1.96E-04	71%	2.61E-05	1.30E-05	0.017	0.010	1.79E-04	71%	2.39E-05	1.19E-05
				11	450	0.199	0.124	1.93E-03	91%	2.58E-04	1.29E-04	0.889	0.552	8.63E-03	77%	1.15E-03	5.75E-04	0.019	0.012	1.83E-04	67%	2.43E-05	1.22E-05	0.017	0.011	1.67E-04	66%	2.22E-05	1.11E-05
				12	400	0.184	0.114	1.59E-03	75%	2.12E-04	1.06E-04	0.825	0.513	7.12E-03	63%	9.50E-04	4.75E-04	0.018	0.011	1.55E-04	56%	2.07E-05	1.03E-05	0.016	0.010	1.42E-04	56%	1.89E-05	9.44E-06
				13	500	0.160	0.100	1.73E-03	82%	2.31E-04	1.15E-04	0.809	0.503	8.73E-03	77%	1.16E-03	5.82E-04	0.018	0.011	1.90E-04	69%	2.53E-05	1.27E-05	0.016	0.010	1.73E-04	69%	2.31E-05	1.16E-05
				14	450	0.170	0.105	1.65E-03	78%	2.20E-04	1.10E-04	0.815	0.506	7.91E-03	70%	1.05E-03	5.27E-04	0.018	0.011	1.75E-04	64%	2.33E-05	1.16E-05	0.016	0.010	1.60E-04	63%	2.13E-05	1.06E-05
				15	500	0.196	0.122	**2.11E-03**	**100%**	**2.82E-04**	**1.41E-04**	0.862	0.536	9.30E-03	83%	1.24E-03	6.20E-04	0.019	0.012	2.05E-04	75%	2.73E-05	1.37E-05	0.017	0.011	1.87E-04	74%	2.49E-05	1.25E-05
				16	550	0.176	0.109	2.09E-03	99%	2.78E-04	1.39E-04	0.804	0.499	9.54E-03	85%	1.27E-03	6.36E-04	0.018	0.011	2.12E-04	77%	2.82E-05	1.41E-05	0.016	0.010	1.94E-04	77%	2.59E-05	1.29E-05
				17	600	0.144	0.089	1.86E-03	88%	2.48E-04	1.24E-04	0.703	0.437	9.11E-03	81%	1.21E-03	6.07E-04	0.018	0.011	2.31E-04	84%	3.08E-05	1.54E-05	0.016	0.010	2.11E-04	84%	2.82E-05	1.41E-05
				18	650	0.113	0.070	1.58E-03	75%	2.11E-04	1.06E-04	0.622	0.386	8.72E-03	77%	1.16E-03	5.81E-04	0.017	0.011	2.38E-04	87%	3.17E-05	1.59E-05	0.016	0.010	2.18E-04	86%	2.90E-05	1.45E-05
				19	650	0.118	0.073	1.65E-03	78%	2.20E-04	1.10E-04	0.618	0.384	8.66E-03	77%	1.16E-03	5.78E-04	0.017	0.011	2.42E-04	88%	3.23E-05	1.61E-05	0.016	0.010	2.21E-04	88%	2.95E-05	1.48E-05
				20	550	0.075	0.046	8.86E-04	42%	1.18E-04	5.91E-05	0.573	0.356	6.80E-03	60%	9.06E-04	4.53E-04	0.016	0.010	1.91E-04	70%	2.54E-05	1.27E-05	0.015	0.009	1.74E-04	69%	2.32E-05	1.16E-05
				21	500	0.069	0.043	7.41E-04	35%	9.88E-05	4.94E-05	0.566	0.352	6.10E-03	54%	8.14E-04	4.07E-04	0.014	0.009	1.56E-04	57%	2.08E-05	1.04E-05	0.013	0.008	1.43E-04	57%	1.90E-05	9.51E-06
				22	450	0.057	0.035	5.52E-04	26%	7.35E-05	3.68E-05	0.512	0.318	4.97E-03	44%	6.63E-04	3.31E-04	0.014	0.008	1.32E-04	48%	1.76E-05	8.79E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.04E-06
				23	450	0.065	0.041	6.34E-04	30%	8.46E-05	4.23E-05	0.545	0.339	5.29E-03	47%	7.06E-04	3.53E-04	0.014	0.008	1.32E-04	48%	1.76E-05	8.81E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.06E-06
				24	350	0.074	0.046	5.57E-04	26%	7.43E-05	3.71E-05	0.601	0.373	4.54E-03	40%	6.05E-04	3.02E-04	0.014	0.008	1.07E-04	39%	1.43E-05	7.15E-06	0.012	0.007	8.85E-05	36%	1.19E-05	5.95E-06
L003a	D2 Landscape Deck (NB)	D2MNB	0.037	1	350	0.085	0.053	1.91E-04	22%	2.55E-05	1.27E-05	0.626	0.389	1.41E-03	37%	1.89E-04	9.43E-05	0.014	0.009	3.09E-05	26%	4.12E-06	2.06E-06	0.012	0.008	2.82E-05	26%	3.76E-06	1.88E-06
				2	300	0.087	0.054	1.68E-04	19%	2.24E-05	1.12E-05	0.581	0.361	1.13E-03	30%	1.50E-04	7.50E-05	0.012	0.007	2.30E-05	20%	3.06E-06	1.53E-06	0.011	0.007	2.10E-05	20%	2.81E-06	1.40E-06
				3	300	0.073	0.045	1.42E-04	16%	1.89E-05	9.44E-06	0.556	0.346	1.08E-03	28%	1.44E-04	7.18E-05	0.013	0.008	2.51E-05	21%	3.35E-06	1.68E-06	0.012	0.007	2.29E-05	21%	3.06E-06	1.53E-06
				4	300	0.086	0.054	1.67E-04	19%	2.23E-05	1.11E-05	0.581	0.361	1.13E-03	30%	1.50E-04	7.50E-05	0.011	0.007	2.20E-05	19%	2.93E-06	1.47E-06	0.010	0.006	2.02E-05	19%	2.69E-06	1.35E-06
				5	250	0.086	0.053	1.38E-04	16%	1.85E-05	9.23E-06	0.578	0.359	9.32E-04	25%	1.24E-04	6.22E-05	0.012	0.007	1.89E-05	16%	2.52E-06	1.26E-06	0.011	0.007	1.73E-05	16%	2.31E-06	1.15E-06
				6	300	0.097	0.060	1.88E-04	21%	2.51E-05	1.25E-05	0.585	0.363	1.13E-03	30%	1.51E-04	7.55E-05	0.013	0.008	2.51E-05	21%	3.34E-06	1.67E-06	0.012	0.007	2.29E-05	21%	3.05E-06	1.53E-06
				7	400	0.148	0.092	3.83E-04	43%	5.10E-05	2.55E-05	0.826	0.513	2.13E-03	56%	2.84E-04	1.42E-04	0.018	0.011	4.60E-05	39%	6.13E-06	3.07E-06	0.016	0.010	4.19E-05	39%	5.58E-06	2.79E-06
				8	800	0.137	0.085	7.08E-04	80%	9.45E-05	4.72E-05	0.656	0.408	3.39E-03	89%	4.52E-04	2.26E-04	0.017	0.010	8.56E-05	73%	1.14E-05	5.70E-06	0.015	0.009	7.85E-05	73%	1.05E-05	5.23E-06
				9	900	0.149	0.093	8.65E-04	98%	1.15E-04	5.77E-05	0.630	0.391	3.66E-03	96%	4.88E-04	2.44E-04	0.017	0.011	9.86E-05	84%	1.32E-05	6.58E-06	0.016	0.010	9.07E-05	84%	1.21E-05	6.04E-06
				10	600	0.212	0.132	8.22E-04	93%	1.10E-04	5.48E-05	0.829	0.515	3.21E-03	85%	4.28E-04	2.14E-04	0.020	0.012	7.79E-05	66%	1.04E-05	5.19E-06	0.018	0.011	7.13E-05	66%	9.51E-06	4.76E

L004b	D2 Landscape Deck (WSB)	D2WSB	0.037	1	250	0.110	0.068	1.77E-04	22%	2.36E-05	1.18E-05	0.622	0.386	1.00E-03	33%	1.34E-04	6.69E-05	0.019	0.012	3.01E-05	26%	4.01E-06	2.01E-06	0.017	0.011	2.74E-05	27%	3.66E-06	1.83E-06
				2	200	0.105	0.065	1.35E-04	17%	1.80E-05	9.01E-06	0.535	0.333	6.91E-04	23%	9.22E-05	4.61E-05	0.016	0.010	2.05E-05	18%	2.73E-06	1.37E-06	0.015	0.009	1.87E-05	18%	2.50E-06	1.25E-06
				3	200	0.098	0.061	1.26E-04	16%	1.68E-05	8.40E-06	0.526	0.327	6.79E-04	23%	9.06E-05	4.53E-05	0.018	0.011	2.29E-05	20%	3.05E-06	1.52E-06	0.016	0.010	2.08E-05	20%	2.78E-06	1.39E-06
				4	200	0.123	0.076	1.59E-04	20%	2.12E-05	1.06E-05	0.566	0.352	7.30E-04	24%	9.74E-05	4.87E-05	0.015	0.010	2.00E-05	18%	2.66E-06	1.33E-06	0.014	0.009	1.83E-05	18%	2.44E-06	1.22E-06
				5	200	0.119	0.074	1.54E-04	19%	2.05E-05	1.03E-05	0.562	0.349	7.26E-04	24%	9.68E-05	4.84E-05	0.016	0.010	2.02E-05	18%	2.69E-06	1.34E-06	0.014	0.009	1.85E-05	18%	2.46E-06	1.23E-06
				6	250	0.132	0.082	2.13E-04	26%	2.84E-05	1.42E-05	0.587	0.365	9.48E-04	32%	1.26E-04	6.32E-05	0.018	0.011	2.92E-05	26%	3.89E-06	1.94E-06	0.017	0.010	2.66E-05	26%	3.55E-06	1.78E-06
				7	300	0.211	0.131	4.09E-04	51%	5.45E-05	2.72E-05	0.870	0.541	1.69E-03	56%	2.25E-04	1.12E-04	0.026	0.016	4.97E-05	44%	6.63E-06	3.31E-06	0.023	0.014	4.52E-05	44%	6.02E-06	3.01E-06
				8	650	0.182	0.113	7.62E-04	95%	1.02E-04	5.08E-05	0.700	0.435	2.94E-03	98%	3.92E-04	1.96E-04	0.022	0.014	9.13E-05	80%	1.22E-05	6.09E-06	0.020	0.012	8.37E-05	81%	1.12E-05	5.58E-06
				9	850	0.133	0.083	7.31E-04	91%	9.75E-05	4.87E-05	0.548	0.341	3.01E-03	100%	4.01E-04	2.01E-04	0.019	0.012	1.03E-04	91%	1.38E-05	6.89E-06	0.017	0.011	9.50E-05	92%	1.27E-05	6.33E-06
				10	500	0.247	0.154	7.98E-04	99%	1.06E-04	5.32E-05	0.842	0.523	2.72E-03	90%	3.62E-04	1.81E-04	0.026	0.016	8.29E-05	73%	1.10E-05	5.52E-06	0.023	0.015	7.57E-05	73%	1.01E-05	5.05E-06
				11	450	0.248	0.154	7.21E-04	89%	9.61E-05	4.80E-05	0.898	0.558	2.61E-03	87%	3.48E-04	1.74E-04	0.028	0.018	8.20E-05	72%	1.09E-05	5.47E-06	0.026	0.016	7.45E-05	72%	9.94E-06	4.97E-06
				12	450	0.242	0.150	7.03E-04	87%	9.37E-05	4.68E-05	0.856	0.532	2.49E-03	83%	3.31E-04	1.66E-04	0.025	0.016	7.31E-05	64%	9.75E-06	4.88E-06	0.023	0.014	6.67E-05	64%	8.90E-06	4.45E-06
				13	500	0.200	0.124	6.45E-04	80%	8.60E-05	4.30E-05	0.792	0.492	2.56E-03	85%	3.41E-04	1.70E-04	0.025	0.015	7.95E-05	70%	1.06E-05	5.30E-06	0.022	0.014	7.24E-05	70%	9.66E-06	4.83E-06
				14	450	0.230	0.143	6.68E-04	83%	8.90E-05	4.45E-05	0.839	0.521	2.44E-03	81%	3.25E-04	1.62E-04	0.025	0.016	7.32E-05	64%	9.76E-06	4.88E-06	0.023	0.014	6.68E-05	65%	8.91E-06	4.45E-06
				15	500	0.250	0.155	**8.05E-04**	**100%**	**1.07E-04**	**5.37E-05**	0.869	0.540	2.80E-03	93%	3.74E-04	1.87E-04	0.026	0.016	8.47E-05	75%	1.13E-05	5.65E-06	0.024	0.015	7.73E-05	75%	1.03E-05	5.15E-06
				16	550	0.224	0.139	7.97E-04	99%	1.06E-04	5.31E-05	0.816	0.507	2.90E-03	96%	3.86E-04	1.93E-04	0.024	0.015	8.69E-05	77%	1.16E-05	5.80E-06	0.022	0.014	7.94E-05	77%	1.06E-05	5.30E-06
				17	650	0.182	0.113	7.64E-04	95%	1.02E-04	5.09E-05	0.716	0.445	**3.00E-03**	**100%**	**4.00E-04**	**2.00E-04**	0.024	0.015	9.95E-05	88%	1.33E-05	6.63E-06	0.022	0.013	9.08E-05	88%	1.21E-05	6.05E-06
				18	700	0.134	0.083	6.03E-04	75%	8.05E-05	4.02E-05	0.590	0.366	2.66E-03	89%	3.55E-04	1.78E-04	0.022	0.014	9.82E-05	86%	1.31E-05	6.55E-06	0.020	0.012	8.95E-05	87%	1.19E-05	5.97E-06
				19	700	0.164	0.102	7.39E-04	92%	9.86E-05	4.93E-05	0.644	0.400	2.91E-03	97%	3.88E-04	1.94E-04	0.025	0.016	**1.14E-04**	**100%**	**1.52E-05**	**7.58E-06**	0.023	0.014	**1.03E-04**	**100%**	**1.38E-05**	**6.90E-06**
				20	600	0.083	0.051	3.20E-04	40%	4.27E-05	2.13E-05	0.545	0.338	2.11E-03	70%	2.81E-04	1.41E-04	0.022	0.013	8.34E-05	73%	1.11E-05	5.56E-06	0.020	0.012	7.57E-05	73%	1.01E-05	5.04E-06
				21	550	0.073	0.045	2.58E-04	32%	3.45E-05	1.72E-05	0.502	0.312	1.78E-03	59%	2.37E-04	1.19E-04	0.018	0.011	6.46E-05	57%	8.62E-06	4.31E-06	0.017	0.010	5.90E-05	57%	7.86E-06	3.93E-06
				22	450	0.069	0.043	2.00E-04	25%	2.67E-05	1.33E-05	0.474	0.295	1.38E-03	46%	1.84E-04	9.19E-05	0.018	0.011	5.09E-05	45%	6.78E-06	3.39E-06	0.016	0.010	4.64E-05	45%	6.19E-06	3.09E-06
				23	450	0.075	0.047	2.17E-04	27%	2.90E-05	1.45E-05	0.498	0.310	1.45E-03	48%	1.93E-04	9.65E-05	0.018	0.011	5.22E-05	46%	6.95E-06	3.48E-06	0.016	0.010	4.76E-05	46%	6.34E-06	3.17E-06
				24	350	0.091	0.056	2.05E-04	25%	2.74E-05	1.37E-05	0.553	0.343	1.25E-03	41%	1.66E-04	8.32E-05	0.018	0.011	3.99E-05	35%	5.32E-06	2.66E-06	0.016	0.010	3.64E-05	35%	4.85E-06	2.43E-06
L158	CKR Tunnel Portal Emission (EB)	CKRTEEB	1.750	1	900	0.046	0.029	6.29E-03	24%	1.40E-03	6.99E-04	0.372	0.231	5.05E-02	24%	1.12E-02	5.61E-03	0.013	0.008	1.76E-03	25%	3.91E-04	1.96E-04	0.013	0.008	1.71E-03	26%	3.81E-04	1.91E-04
				2	950	0.046	0.029	6.67E-03	25%	1.48E-03	7.41E-04	0.375	0.233	5.37E-02	26%	1.19E-02	5.97E-03	0.013	0.008	1.88E-03	27%	4.18E-04	2.09E-04	0.011	0.007	1.59E-03	25%	3.54E-04	1.77E-04
				3	500	0.046	0.028	3.44E-03	13%	7.65E-04	3.83E-04	0.378	0.235	2.85E-02	14%	6.34E-03	3.17E-03	0.013	0.008	9.75E-04	14%	2.17E-04	1.08E-04	0.011	0.007	8.27E-04	13%	1.84E-04	9.19E-05
				4	500	0.045	0.028	3.40E-03	13%	7.57E-04	3.78E-04	0.376	0.233	2.84E-02	14%	6.31E-03	3.15E-03	0.013	0.008	9.72E-04	14%	2.16E-04	1.08E-04	0.011	0.007	8.24E-04	13%	1.83E-04	9.16E-05
				5	500	0.045	0.028	3.38E-03	13%	7.52E-04	3.76E-04	0.380	0.236	2.87E-02	14%	6.37E-03	3.19E-03	0.013	0.008	9.71E-04	14%	2.16E-04	1.08E-04	0.011	0.007	8.23E-04	13%	1.83E-04	9.14E-05
				6	950	0.047	0.029	6.70E-03	25%	1.49E-03	7.44E-04	0.382	0.237	5.48E-02	26%	1.22E-02	6.09E-03	0.013	0.008	1.88E-03	27%	4.19E-04	2.09E-04	0.011	0.007	1.60E-03	25%	3.55E-04	1.77E-04
				7	1400	0.046	0.029	9.82E-03	37%	2.18E-03	1.09E-03	0.383	0.238	8.10E-02	39%	1.80E-02	9.00E-03	0.012	0.008	2.58E-03	37%	5.74E-04	2.87E-04	0.011	0.007	2.37E-03	37%	5.28E-04	2.64E-04
				8	2350	0.046	0.029	1.65E-02	62%	3.66E-03	1.83E-03	0.387	0.240	1.37E-01	65%	3.05E-02	1.52E-02	0.013	0.008	4.51E-03	64%	1.00E-03	5.01E-04	0.011	0.007	4.01E-03	62%	8.92E-04	4.46E-04
				9	2950	0.048	0.030	2.14E-02	81%	4.75E-03	2.37E-03	0.407	0.253	1.81E-01	86%	4.03E-02	2.01E-02	0.012	0.008	5.55E-03	79%	1.23E-03	6.17E-04	0.011	0.007	5.01E-03	77%	1.11E-03	5.57E-04
				10	2800	0.049	0.030	2.07E-02	78%	4.60E-03	2.30E-03	0.399	0.248	1.69E-01	80%	3.75E-02	1.87E-02	0.013	0.008	5.54E-03	79%	1.23E-03	6.15E-04	0.012	0.008	5.12E-03	79%	1.14E-03	5.69E-04
				11	2350	0.046	0.029	1.64E-02	62%	3.65E-03	1.82E-03	0.383	0.238	1.36E-01	65%	3.02E-02	1.51E-02	0.013	0.008	4.46E-03	63%	9.92E-04	4.96E-04	0.012	0.007	4.20E-03	65%	9.33E-04	4.66E-04
				12	2300	0.046	0.029	1.61E-02	61%	3.58E-03	1.79E-03	0.381	0.236	1.32E-01	63%	2.94E-02	1.47E-02	0.013	0.008	4.40E-03	62%	9.78E-04	4.89E-04	0.012	0.007	4.15E-03	64%	9.22E-04	4.61E-04
				13	2300	0.046	0.029	1.61E-02	61%	3.57E-03	1.78E-03	0.379	0.236	1.32E-01	63%	2.93E-02	1.46E-02	0.013	0.008	4.37E-03	62%	9.71E-04	4.85E-04	0.012	0.007	4.12E-03	63%	9.15E-04	4.57E-04
				14	2300	0.046	0.029	1.61E-02	61%	3.58E-03	1.79E-03	0.380	0.236	1.32E-01	63%	2.93E-02	1.47E-02	0.013	0.008	4.35E-03	62%	9.67E-04	4.83E-04	0.012	0.007	4.09E-03	63%	9.10E-04	4.55E-04
				15	2700	0.048	0.030	1.95E-02	74%	4.34E-03	2.17E-03	0.383	0.238	1.56E-01	74%	3.47E-02	1.73E-02	0.013	0.008	5.40E-03	77%	1.20E-03	6.00E-04	0.012	0.008	5.00E-03	77%	1.11E-03	5.55E-04
				16	2700	0.047	0.029	1.93E-02	73%	4.30E-03	2.15E-03	0.381	0.237	1.55E-01	74%	3.45E-02	1.73E-02	0.013	0.008	5.34E-03	76%	1.19E-03	5.94E-04	0.012	0.008	4.95E-03	76%	1.10E-03	5.50E-04
				17	2650	0.046	0.029	1.85E-02	70%	4.11E-03	2.05E-03	0.378	0.235	1.51E-01	72%	3.36E-02	1.68E-02	0.013	0.008	5.09E-03	72%	1.13E-03	5.65E-04	0.012	0.007	4.70E-03	72%	1.05E-03	5.23E-04
				18	2650	0.047	0.029	1.86E-02	71%	4.14E-03	2.07E-03	0.380	0.236	1.52E-01	73%	3.38E-02	1.69E-02	0.013	0.008	5.08E-03	72%	1.13E-03	5.65E-04	0.012	0.007	4.71E-03	73%	1.05E-03	5.23E-04
				19	3400	0.051	0.032	**2.64E-02**	**100%**	**5.87E-03**	**2.93E-03**	0.408	0.254	**2.10E-01**	**100%**	**4.66E-02**	**2.33E-02**	0.014	0.009	**7.05E-03**	**100%**	**1.57E-03**	**7.83E-04**	0.013	0.008	**6.49E-03**	**100%**	**1.44E-03**	**7.21E-04**
				20	2200	0.045	0.028	1.51E-02	57%	3.35E-03	1.68E-03	0.366	0.228	1.22E-01	58%	2.70E-02	1.35E-02	0.013	0.008	4.27E-03	61%	9.49E-04	4.75E-04	0.012	0.008	4.05E-03	62%	8.99E-04	4.50E-04
				21	1800	0.046	0.029	1.25E-02	47%	2.78E-03	1.39E-03	0.367	0.228	9.99E-02	48%	2.22E-02	1.11E-02	0.013	0.008	3.49E-03	49%	7.75E-04	3.87E-04	0.012	0.007	3.15E-03	49%	7.01E-04	3.50E-04
				22	1800	0.046	0.029	1.26E-02	48%	2.79E-03	1.40E-03	0.369	0.229	1.00E-01	48%	2.23E-02	1.12E-02	0.013	0.008	3.52E-03	50%	7.83E-04	3.92E-04	0.012	0.007	3.19E-03	49%	7.09E-04	3.55E-04
				23	1350	0.046	0.029	9.35E-03	36%	2.08E-03	1.04E-03	0.370	0.230	7.55E-02	36%	1.68E-02	8.39E-03	0.013	0.008	2.62E-03	37%	5.83E-04	2.91E-04	0.012	0.007	2.43E-03	37%	5.40E-04	2.70E-04
				24	1350	0.045	0.028	9.25E-03	35%	2.05E-03	1.03E-03	0.369	0.229	7.52E-02	36%	1.67E-02	8.36E-03	0.013	0.008	2.62E-03	37%	5.81E-04	2.91E-04	0.012	0.007	2.42E-03	37%	5.37E-04	2.68E-04
L159	CKR Landscape Deck (SWB)	CKRLDSWB	0.195	1	1300	0.028	0.017	1.21E-03	18%	2.70E-04	1.35E-04	0.211	0.131	9.25E-03	20%	2.06E-03	1.03E-03	0.008	0.005	3.38E-04	24%	7.50E-05	3.75E-05	0.007	0.004	3.12E-04	24%	6.92E-05	3.46E-05
				2	1300	0.028	0.017	1.21E-03	18%	2.69E-04	1.35E-04	0.212	0.132	9.28E-03	20%	2.06E-03	1.03E-03	0.008	0.005	3.36E-04	24%	7.47E-05	3.73E-05	0.007	0.004	3.10E-04	24%	6.89E-05	3.45E-05
				3	700	0.028	0.018	6.64E-04	10%	1.47E-04	7.37E-05	0.216	0.134	5.09E-03	11%	1.13E-03	5.65E-04	0.008	0.005	1.84E-04	13%	4.08E-05	2.04E-05	0.007	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				4	700	0.028	0.018	6.64E-04	10%	1.48E-04	7.38E-05	0.217	0.135	5.11E-03	11%	1.13E-03	5.67E-04	0.008	0.005	1.83E-04	13%	4.08E-05	2.04E-05	0.007	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				5	700	0.028	0.017	6.48E-04	10%	1.44E-04	7.20E-05	0.216	0.134	5.10E-03	11%	1.13E-03	5.66E-04	0.008	0.005	1.79E-04	13%	3.97E-05	1.98E-05	0.007	0.004	1.65E-04	13%	3.66E-05	1.83E-05
				6	1350	0.028	0.017	1.26E-03	19%	2.81E-04	1.41E-04	0.216	0.134	9.82E-03	21%	2.18E-03	1.09E-03	0.008	0.005	3.46E-04	24%	7.69E-05	3.84E-05	0.007	0.004	3.19E-04	24%	7.09E-05	3.55E-05
				7	2000	0.028	0.017	1.89E-03	28%	4.19E-04	2.09E-04	0.217	0.135	1.46E-02	31%	3.25E-03	1.62E-03	0.008	0.005	5.15E-04	36%	1.15E-04	5.73E-05	0.007	0.004	4.75E-04	36%	1.06E-04	5.28E-05
				8	3350	0.030	0.019	3.38E-03	50%	7.52E-04	3.76E-04	0.235	0.146	2.65E-02	56%	5.89E-03	2.94E-03	0.008	0.005	8.77E-04	62%	1.95E-04	9.75E-05	0.007	0.004	8.08E-04	61%	1.79E-04	8.97E-05
				9	4700	0.042	0.026	**6.71E-03**	**100%**	**1.49E-03**	**7.46E-04**	0.298	0.185	**4.72E-02**	**100%**	**1.05E-02**	**5.24E-03**	0.009	0.006	**1.42E-03**	**100%**	**3.16E-04**	**1.58E-04**	0.008	0.005	**1.31E-03**	**100%**	**2.92E-04**	**1.46E-04**
				10	3950	0.034	0.021	4.52E-03	67%	1.00E-03	5.02E-04	0.253	0.157	3.37E-02	71%	7.49E-03	3.74E-03	0.008	0.005	1.09E-03	76%	2.41E-04	1.21E-04	0.008	0.005	1.00E-03	76%	2.23E-04	1.11E-04
				11	3300	0.030	0.019	3.34E-03	50%	7.43E-04	3.72E-04	0.234	0.145	2.60E-02	55%	5.77E-03	2.88E-03	0.008	0.005	8.71E-04	61%	1.93E-04	9.67E-05	0.007	0.004	8.01E-04	61%	1.78E-04	8.90E-05
				12	3300	0.030	0.019	3.31E-03	49%	7.36E-04	3.68E-04	0.232	0.144	2.58E-02	55%	5.74E-03	2.87E-03	0.008	0.005	8.66E-04	61%	1.92E-04	9.62E-05	0.007	0.004	7.97E-04	61%	1.77E-04	8.85E-05
				13	3250	0.029	0.018	3.22E-03	48%	7.15E-04	3.57E-04	0.229	0.142	2.50E-02	53%	5.56E-03	2.78E-03	0.008	0.005	8.48E-04	60%	1.88E-04	9.42E-05	0.007	0.004	7.83E-04	60%	1.74E-04	8.70E-05
				14	3250	0.029	0.018	3.22E-03	48%	7.16E-04	3.58E-04	0.230	0.143	2.51E-02	53%	5.58E-03	2.79E-03	0.008	0.005	8.49E-04	60%	1.89E-04	9.44E-05	0.007	0.004	7.85E-04	60%	1.74E-04	8.72E-05
				15	3850	0.033	0.020	4.26E-03	64%	9.48E-04	4.74E-04	0.243	0.151	3.15E-02	67%	7.01E-03	3.51E-03	0.008	0.005	1.06E-03	74%	2.35E-04	1.17E-04	0.008	0.005	9.73E-04	74%	2.16E-04	1.08E-04
				16	3800	0.033	0.020	4.18E-03	62%	9.29E-04	4.64E-04	0.243	0.151	3.11E-02	66%	6.90E-03	3.45E-03	0.008	0.005	1.04E-03	73%	2.31E-04	1.15E-04	0.007	0.005	9.57E-04	73%	2.13E-04	1.06E-04
				17	3800	0.032	0.020	4.14E-03	62%	9.19E-04	4.60E-04	0.243	0.151	3.10E-02	66%	6.89E-03	3.45E-03	0.008	0.005	1.03E-03	72%	2.29E-04	1.15E-04	0.007	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				18	3800	0.032	0.020	4.13E-03	62%	9.18E-04	4.59E-04	0.242	0.151	3.10E-02	66%	6.89E-03	3.44E-03	0.008	0.005	1.03E-03	72%	2.29E-04	1.14E-04	0.007	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				19	4300	0.035	0.021	5.00E-03	75%	1.11E-03	5.56E-04	0.259	0.161	3.75E-02	79%	8.32E-03	4.16E-03	0.008	0.005	1.17E-03	82%	2.61E-04	1.30E-04	0.007	0.005	1.07E-03	82%	2.38E-04	1.19E-04
				20	3150	0.029	0.018	3.05E-03	45%	6.78E-04	3.39E-04	0.221	0.138	2.35E-02	50%	5.22E-03	2.61E-03	0.008	0.005	8.26E-04	58%	1.84E-04	9.18E-05	0.007	0.004	7.59E-04	58%	1.69E-04	8.43E-05
				21	2550	0.028	0.018	2.42E-03	36%	5.38E-04	2.69E-04	0.213	0.132	1.83E-02	39%	4.06E-03	2.03E-03	0.008	0.005	6.68E-04	47%	1.49E-04	7.43E-05	0.007	0.004	6.15E-04	47%	1.37E-04	6.84E-05
				22	2550	0.028	0.017	2.40E-03	36%	5.33E-04	2.67E-04	0.213	0.132	1.83E-02	39%	4.06E-03	2.03E-03	0.008	0.005	6.62E-04	46%	1.47E-04	7.35E-05	0.007	0.004	6.09E-04	46%	1.35E-04	6.77E-05
				23	1950	0.027	0.017	1.78E-03	26%	3.95E-04	1.98E-04	0.209	0.130	1.37E-02	29%	3.05E-03	1.53E-03	0.008	0.005	4.98E-04	35%	1.11E-04	5.53E-05	0.007	0.004	4.60E-04	35%	1.02E-04	5.11E-05
				24	1950	0.027	0.017	1.80E-03	27%	3.99E-04	2.00E-04	0.210	0.131	1.38E-02	29%	3.07E-03	1.53E-03	0.008	0.005	5.02E-04	35%	1.12E-04	5.58E-05	0.007	0.004	4.63E-04	35%	1.03E-04	5.15E-05
L158	CKR Landscape Deck (NEB)	CKRLDNEB	0.195	1	900	0.046	0.029	1.40E-03	24%	3.11E-04	1.56E-04	0.372	0.231	1.13E-02	24%	2.50E-03	1.25E-03	0.013	0.008	3.92E-04	25%	8.72E-05	4.36E-05	0.013	0.008	3.82E-04	26%	8.49E-05	4.25E-05
				2	950	0.046	0.029	1.49E-03	25%	3.30E-04	1.65E-04	0.375	0.233	1.20E-02	26%	2.66E-03	1.33E-03	0.013	0.008	4.20E-04	27%	9.32E-05	4.66E-05	0.011	0.007	3.55E-04	25%	7.90E-05	3.95E-05
				3	500	0.046	0.028	7.68E-04	13%	1.71E-04	8.53E-05	0.378	0.235	6.36E-03	14%	1.41E-03	7.06E-04	0.013	0.008	2.17E-04	14%	4.83E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.10E-05	2.05E-05
				4	500	0.045	0.028	7.59E-04	13%	1.69E-04	8.43E-05	0.376	0.233	6.32E-03	14%	1.41E-03	7.03E-04	0.013	0.008	2.17E-04	14%	4.81E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.08E-05	2.04E-05
				5	500	0.045	0.028	7.54E-04	13%	1.68E-04	8.38E-05	0.380	0.236	6.39E-03	14%	1.42E-03	7.10E-04	0.013	0.008	2.16E-04	14%	4.81E-05	2.40E-05	0.011	0.007	1.83E-04	13%	4.07E-05	2.04E-05
				6	950	0.047	0.029	1.49E-03	25%	3.32E-04	1.66E-04	0.382	0.237	1.22E-02	26%	2.71E-03	1.36E-03	0.013	0.008	4.20E-04	27%	9.33E-05	4.66E-05	0.011	0.007	3.56E-04	25%	7.91E-05	3.95E-05
				7	1400	0.046	0.029	2.19E-03	37%	4.87E-04	2.43E-04	0.383	0.238	1.80E-02	39%	4.01E-03	2.01E-03	0.012	0.008	5.76E-04	37%	1.28E-04	6.39E-05	0.011	0.007	5.29E-04	37%	1.18E-04	5.88E-05
				8	2350	0.046	0.029	3.67E-03	62%	8.16E-04	4.08E-04	0.387	0.240	3.06E-02	65%	6.79E-03	3.40E-03	0.013	0.008	1.01E-03	64%	2.23E-04	1.12E-04	0.011	0.007	8.94E-04	62%	1.99E-04	9.93E-05
				9	2950	0.048	0.030	4.76E-03	81%	1.06E-03	5.29E-04	0.407	0.253	4.04E-02	86%	8.98E-03	4.49E-03	0.012	0.008	1.24E-03	79%	2.75E-04	1.37E-04	0.011	0.007	1.12E-03	77%	2.48E-04	1.24E-04
				10	2800	0.049	0.030	4.62E-03	78%	1.03E-03	5.13E-04	0.399	0.248	3.76E-02	80%	8.35E-03	4.18E-03	0.013	0.008	1.23E-03	79%	2.74E-04	1.37E-04	0.012	0.008	1.14E-03	79%	2.53E-04	1.27E-04
				11	2350	0.046	0.029	3.66E-03	62%	8.12E-04	4.06E-04	0.383	0.238	3.03E-02	65%	6.74E-03	3.37E-03	0.013	0.008	9.95E-04	63%	2.21E-04	1.11E-04	0.012	0.007	9.36E-04	65%	2.08E-04	1.04E-04
				12	2300	0.046	0.029	3.59E-03	61%	7.98E-04	3.99E-04	0.381	0.236	2.95E-02	63%	6.55E-03	3.27E-03	0.013	0.008	9.81E-04	62%	2.18E-04	1.09E-04	0.012	0.007	9.24E-04	64%	2.05E-04	1.03E-04
				13	2300	0.046	0.029	3.58E-03	61%	7.95E-04	3.98E-04	0.379	0.236	2.94E-02	63%	6.52E-03	3.26E

Calculation of Portal Emission - 2nd Quarter

						NO2						NO						RSP						FSP					
						Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate
Road No.	Portal Description	Portal ID	Tunnel Length (km)	Hour	Total Vehicle (veh/hr)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)
L084 & L085	Kai Tak Tunnel (WB)	KTTW	1.230	1	850	0.045	0.028	4.06E-03	29%	3.86E-04	1.93E-04	0.4138	0.25712	3.73E-02	39%	3.56E-03	1.78E-03	0.0125	0.0078	1.13E-03	32%	1.07E-04	5.37E-05	0.0115	0.0071	1.03E-03	32%	9.85E-05	4.93E-05
				2	700	0.032	0.020	2.37E-03	17%	2.26E-04	1.13E-04	0.3333	0.20710	2.48E-02	26%	2.36E-03	1.18E-03	0.0067	0.0042	5.00E-04	14%	4.76E-05	2.38E-05	0.0062	0.0038	4.59E-04	14%	4.37E-05	2.19E-05
				3	550	0.040	0.025	2.36E-03	17%	2.24E-04	1.12E-04	0.3932	0.24432	2.30E-02	24%	2.19E-03	1.09E-03	0.0074	0.0046	4.33E-04	12%	4.12E-05	2.06E-05	0.0068	0.0042	3.98E-04	12%	3.79E-05	1.89E-05
				4	500	0.043	0.026	2.26E-03	16%	2.15E-04	1.08E-04	0.3961	0.24612	2.10E-02	22%	2.00E-03	1.00E-03	0.0076	0.0047	4.03E-04	11%	3.83E-05	1.92E-05	0.0070	0.0043	3.70E-04	11%	3.53E-05	1.76E-05
				5	450	0.052	0.032	2.48E-03	18%	2.37E-04	1.18E-04	0.4229	0.26275	2.02E-02	21%	1.92E-03	9.62E-04	0.0084	0.0052	4.03E-04	11%	3.83E-05	1.92E-05	0.0077	0.0048	3.70E-04	11%	3.52E-05	1.76E-05
				6	500	0.072	0.044	3.80E-03	27%	3.62E-04	1.81E-04	0.5263	0.32700	2.79E-02	29%	2.66E-03	1.33E-03	0.0149	0.0092	7.88E-04	22%	7.51E-05	3.75E-05	0.0137	0.0085	7.25E-04	22%	6.90E-05	3.45E-05
				7	1000	0.085	0.053	9.06E-03	64%	8.62E-04	4.31E-04	0.4761	0.29584	5.05E-02	52%	4.81E-03	2.41E-03	0.0164	0.0102	1.75E-03	50%	1.66E-04	8.31E-05	0.0151	0.0094	1.61E-03	50%	1.53E-04	7.64E-05
				8	1750	0.056	0.035	1.04E-02	74%	9.90E-04	4.95E-04	0.3335	0.20723	6.20E-02	64%	5.90E-03	2.95E-03	0.0121	0.0075	2.24E-03	64%	2.13E-04	1.07E-04	0.0111	0.0069	2.06E-03	64%	1.96E-04	9.81E-05
				9	2150	0.062	0.038	**1.41E-02**	**100%**	**1.34E-03**	**6.72E-04**	0.4226	0.26258	**9.64E-02**	**100%**	**9.18E-03**	**4.59E-03**	0.0154	0.0096	**3.52E-03**	**100%**	**3.35E-04**	**1.67E-04**	0.0142	0.0088	**3.24E-03**	**100%**	**3.08E-04**	**1.54E-04**
				10	1800	0.067	0.042	1.29E-02	91%	1.23E-03	6.13E-04	0.4610	0.28643	8.81E-02	91%	8.39E-03	4.19E-03	0.0162	0.0100	3.09E-03	88%	2.94E-04	1.47E-04	0.0148	0.0092	2.83E-03	87%	2.69E-04	1.35E-04
				11	1600	0.067	0.041	1.13E-02	80%	1.08E-03	5.39E-04	0.3989	0.24786	6.77E-02	70%	6.45E-03	3.23E-03	0.0141	0.0087	2.39E-03	68%	2.28E-04	1.14E-04	0.0129	0.0080	2.20E-03	68%	2.09E-04	1.05E-04
				12	1600	0.072	0.045	1.23E-02	87%	1.17E-03	5.84E-04	0.4217	0.26202	7.16E-02	74%	6.82E-03	3.41E-03	0.0149	0.0092	2.52E-03	72%	2.40E-04	1.20E-04	0.0136	0.0085	2.32E-03	72%	2.21E-04	1.10E-04
				13	1350	0.077	0.048	1.10E-02	78%	1.05E-03	5.23E-04	0.4329	0.26898	6.20E-02	64%	5.91E-03	2.95E-03	0.0156	0.0097	2.23E-03	64%	2.13E-04	1.06E-04	0.0143	0.0089	2.05E-03	63%	1.95E-04	9.76E-05
				14	1200	0.071	0.044	9.03E-03	64%	8.60E-04	4.30E-04	0.4313	0.26802	5.49E-02	57%	5.23E-03	2.62E-03	0.0156	0.0097	1.98E-03	56%	1.89E-04	9.44E-05	0.0143	0.0089	1.82E-03	56%	1.73E-04	8.67E-05
				15	1450	0.065	0.041	1.01E-02	71%	9.57E-04	4.79E-04	0.4090	0.25413	6.30E-02	65%	6.00E-03	3.00E-03	0.0141	0.0088	2.17E-03	62%	2.07E-04	1.03E-04	0.0130	0.0081	2.00E-03	62%	1.90E-04	9.50E-05
				16	1550	0.066	0.041	1.08E-02	77%	1.03E-03	5.15E-04	0.4080	0.25352	6.71E-02	70%	6.39E-03	3.20E-03	0.0140	0.0087	2.31E-03	66%	2.20E-04	1.10E-04	0.0129	0.0080	2.12E-03	66%	2.02E-04	1.01E-04
				17	1450	0.062	0.038	9.54E-03	68%	9.08E-04	4.54E-04	0.4154	0.25810	6.39E-02	66%	6.09E-03	3.04E-03	0.0146	0.0091	2.24E-03	64%	2.14E-04	1.07E-04	0.0134	0.0083	2.06E-03	64%	1.96E-04	9.82E-05
				18	2200	0.056	0.035	1.31E-02	93%	1.24E-03	6.22E-04	0.3747	0.23281	8.75E-02	91%	8.33E-03	4.17E-03	0.0124	0.0077	2.90E-03	83%	2.76E-04	1.38E-04	0.0114	0.0071	2.67E-03	83%	2.54E-04	1.27E-04
				19	2200	0.050	0.031	1.17E-02	83%	1.11E-03	5.57E-04	0.3564	0.22145	8.32E-02	86%	7.93E-03	3.96E-03	0.0117	0.0073	2.73E-03	78%	2.60E-04	1.30E-04	0.0107	0.0067	2.51E-03	78%	2.39E-04	1.19E-04
				20	1600	0.043	0.027	7.37E-03	52%	7.02E-04	3.51E-04	0.3599	0.22362	6.11E-02	63%	5.82E-03	2.91E-03	0.0120	0.0074	2.03E-03	58%	1.94E-04	9.69E-05	0.0110	0.0068	1.87E-03	58%	1.78E-04	8.91E-05
				21	1600	0.045	0.028	7.68E-03	54%	7.31E-04	3.66E-04	0.3472	0.21575	5.90E-02	61%	5.62E-03	2.81E-03	0.0122	0.0076	2.07E-03	59%	1.98E-04	9.88E-05	0.0112	0.0070	1.91E-03	59%	1.82E-04	9.08E-05
				22	1450	0.045	0.028	6.86E-03	49%	6.53E-04	3.26E-04	0.3575	0.22212	5.50E-02	57%	5.24E-03	2.62E-03	0.0119	0.0074	1.83E-03	52%	1.74E-04	8.70E-05	0.0109	0.0068	1.68E-03	52%	1.60E-04	8.00E-05
				23	1350	0.046	0.029	6.64E-03	47%	6.32E-04	3.16E-04	0.3835	0.23827	5.50E-02	57%	5.23E-03	2.62E-03	0.0128	0.0079	1.83E-03	52%	1.74E-04	8.72E-05	0.0118	0.0073	1.68E-03	52%	1.60E-04	8.02E-05
				24	1000	0.057	0.035	6.04E-03	43%	5.75E-04	2.88E-04	0.4733	0.29410	5.02E-02	52%	4.78E-03	2.39E-03	0.0143	0.0089	1.52E-03	43%	1.45E-04	7.25E-05	0.0132	0.0082	1.40E-03	43%	1.33E-04	6.67E-05
L001	D2 Landscape Deck (NB)	D2ENB	0.125	1	350	0.068	0.043	5.17E-04	21%	6.89E-05	3.45E-05	0.5430	0.3374	4.10E-03	39%	5.47E-04	2.73E-04	0.0118	0.0074	8.94E-05	28%	1.19E-05	5.96E-06	0.011	0.007	8.16E-05	28%	1.09E-05	5.44E-06
				2	300	0.077	0.048	4.96E-04	20%	6.02E-05	3.31E-05	0.5149	0.3199	3.33E-03	31%	4.44E-04	2.22E-04	0.0108	0.0067	6.99E-05	22%	9.32E-06	4.66E-06	0.010	0.000	6.40E-05	22%	8.53E-06	4.26E-06
				3	300	0.057	0.036	3.72E-04	15%	4.96E-05	2.48E-05	0.4734	0.2941	3.06E-03	29%	4.09E-04	2.04E-04	0.0101	0.0063	6.56E-05	21%	8.75E-06	4.38E-06	0.009	0.006	6.01E-05	21%	8.01E-06	4.01E-06
				4	300	0.071	0.044	4.58E-04	18%	6.11E-05	3.05E-05	0.5076	0.3154	3.29E-03	31%	4.38E-04	2.19E-04	0.0099	0.0062	6.44E-05	20%	8.58E-06	4.29E-06	0.009	0.006	5.91E-05	20%	7.88E-06	3.94E-06
				5	300	0.073	0.045	4.71E-04	19%	6.28E-05	3.14E-05	0.5072	0.3152	3.28E-03	31%	4.38E-04	2.19E-04	0.0105	0.0065	6.81E-05	21%	9.07E-06	4.54E-06	0.010	0.006	6.23E-05	21%	8.31E-06	4.16E-06
				6	300	0.087	0.054	5.66E-04	22%	7.54E-05	3.77E-05	0.5250	0.3262	3.40E-03	32%	4.53E-04	2.27E-04	0.0116	0.0072	7.48E-05	24%	9.97E-06	4.99E-06	0.011	0.007	6.84E-05	23%	9.12E-06	4.56E-06
				7	400	0.123	0.076	1.06E-03	42%	1.41E-04	7.05E-05	0.7002	0.4351	6.04E-03	57%	8.06E-04	4.03E-04	0.0149	0.0093	1.29E-04	40%	1.72E-05	8.58E-06	0.014	0.008	1.17E-04	40%	1.56E-05	7.81E-06
				8	750	0.117	0.073	1.89E-03	75%	2.52E-04	1.26E-04	0.5750	0.3573	9.30E-03	88%	1.24E-03	6.20E-04	0.0144	0.0089	2.33E-04	73%	3.10E-05	1.55E-05	0.013	0.008	2.14E-04	73%	2.85E-05	1.42E-05
				9	900	0.107	0.066	2.07E-03	82%	2.76E-04	1.38E-04	0.5224	0.3246	1.01E-02	96%	1.35E-03	6.76E-04	0.0147	0.0091	2.86E-04	90%	3.81E-05	1.90E-05	0.014	0.008	2.62E-04	90%	3.50E-05	1.75E-05
				10	600	0.178	0.111	2.30E-03	92%	3.07E-04	1.54E-04	0.7237	0.4497	6.37E-03	88%	1.25E-03	6.25E-04	0.0176	0.0109	2.28E-04	72%	3.04E-05	1.52E-05	0.016	0.010	2.08E-04	72%	2.78E-05	1.39E-05
				11	550	0.200	0.125	2.38E-03	95%	3.17E-04	1.59E-04	0.7907	0.4913	9.38E-03	89%	1.25E-03	6.25E-04	0.0183	0.0114	2.18E-04	68%	2.90E-05	1.45E-05	0.017	0.010	1.99E-04	68%	2.65E-05	1.33E-05
				12	550	0.190	0.118	2.25E-03	90%	3.01E-04	1.50E-04	0.7515	0.4669	8.92E-03	84%	1.19E-03	5.94E-04	0.0175	0.0109	2.08E-04	65%	2.77E-05	1.39E-05	0.016	0.010	1.90E-04	65%	2.53E-05	1.27E-05
				13	650	0.153	0.095	2.14E-03	85%	2.86E-04	1.43E-04	0.7054	0.4383	9.89E-03	93%	1.32E-03	6.59E-04	0.0158	0.0098	2.21E-04	69%	2.95E-05	1.47E-05	0.014	0.009	2.02E-04	69%	2.69E-05	1.35E-05
				14	600	0.168	0.104	2.17E-03	86%	2.90E-04	1.45E-04	0.7294	0.4532	9.44E-03	89%	1.26E-03	6.29E-04	0.0167	0.0104	2.16E-04	68%	2.89E-05	1.44E-05	0.015	0.009	1.98E-04	68%	2.64E-05	1.32E-05
				15	650	0.179	0.111	2.52E-03	100%	3.35E-04	1.68E-04	0.7509	0.4666	1.05E-02	99%	1.40E-03	7.02E-04	0.0175	0.0109	2.45E-04	77%	3.27E-05	1.64E-05	0.016	0.010	2.24E-04	77%	2.99E-05	1.49E-05
				16	700	0.167	0.103	**2.51E-03**	**100%**	**3.35E-04**	**1.68E-04**	0.7016	0.4360	**1.06E-02**	**100%**	**1.41E-03**	**7.06E-04**	0.0164	0.0102	2.48E-04	78%	3.30E-05	1.65E-05	0.015	0.009	2.27E-04	78%	3.02E-05	1.51E-05
				17	750	0.133	0.082	2.15E-03	85%	2.86E-04	1.43E-04	0.6171	0.3835	9.95E-03	94%	1.33E-03	6.66E-04	0.0162	0.0100	2.62E-04	82%	3.49E-05	1.74E-05	0.015	0.009	2.40E-04	82%	3.19E-05	1.60E-05
				18	850	0.102	0.063	1.87E-03	74%	2.49E-04	1.25E-04	0.5100	0.3169	9.35E-03	88%	1.25E-03	6.24E-04	0.0159	0.0099	2.92E-04	92%	3.89E-05	1.94E-05	0.015	0.009	2.67E-04	92%	3.56E-05	1.78E-05
				19	900	0.119	0.074	2.31E-03	92%	3.08E-04	1.54E-04	0.5439	0.3379	1.06E-02	100%	1.41E-03	7.04E-04	0.0164	0.0102	**3.18E-04**	**100%**	**4.24E-05**	**2.12E-05**	0.015	0.009	**2.91E-04**	**100%**	**3.88E-05**	**1.94E-05**
				20	700	0.071	0.044	1.08E-03	43%	1.43E-04	7.17E-05	0.4855	0.3017	7.33E-03	69%	9.78E-04	4.89E-04	0.0152	0.0094	2.29E-04	72%	3.05E-05	1.53E-05	0.014	0.009	2.09E-04	72%	2.78E-05	1.39E-05
				21	600	0.056	0.034	7.18E-04	29%	9.58E-05	4.79E-05	0.4504	0.2798	5.83E-03	55%	7.77E-04	3.89E-04	0.0135	0.0084	1.74E-04	55%	2.33E-05	1.16E-05	0.012	0.008	1.60E-04	55%	2.13E-05	1.06E-05
				22	550	0.059	0.037	6.98E-04	28%	9.31E-05	4.65E-05	0.4497	0.2794	5.34E-03	50%	7.12E-04	3.56E-04	0.0128	0.0080	1.52E-04	48%	2.03E-05	1.02E-05	0.012	0.007	1.39E-04	48%	1.86E-05	9.29E-06
				23	550	0.062	0.039	7.37E-04	29%	9.82E-05	4.91E-05	0.4682	0.2909	5.56E-03	52%	7.41E-04	3.70E-04	0.0131	0.0081	1.56E-04	49%	2.07E-05	1.04E-05	0.012	0.007	1.42E-04	49%	1.90E-05	9.48E-06
				24	450	0.064	0.040	6.26E-04	25%	8.35E-05	4.17E-05	0.5099	0.3169	4.95E-03	47%	6.60E-04	3.30E-04	0.0116	0.0072	1.13E-04	35%	1.50E-05	7.51E-06	0.011	0.007	1.03E-04	35%	1.37E-05	6.87E-06
L002	D2 Landscape Deck (SB)	D2MSB	0.125	1	300	0.072	0.045	4.68E-04	23%	6.24E-05	3.12E-05	0.5589	0.3473	3.62E-03	37%	4.82E-04	2.41E-04	0.0119	0.0074	7.68E-05	28%	1.02E-05	5.12E-06	0.011	0.007	7.02E-05	28%	9.35E-06	4.68E-06
				2	250	0.064	0.040	3.45E-04	17%	4.61E-05	2.30E-05	0.4890	0.3038	2.64E-03	27%	3.52E-04	1.76E-04	0.0102	0.0063	5.48E-05	20%	7.30E-06	3.65E-06	0.009	0.006	5.01E-05	20%	6.68E-06	3.34E-06
				3	250	0.063	0.039	3.41E-04	17%	4.55E-05	2.28E-05	0.4854	0.3016	2.62E-03	27%	3.49E-04	1.75E-04	0.0113	0.0070	6.09E-05	22%	8.12E-06	4.06E-06	0.010	0.006	5.56E-05	22%	7.41E-06	3.71E-06
				4	250	0.073	0.045	3.92E-04	19%	5.22E-05	2.61E-05	0.5081	0.3157	2.74E-03	28%	3.65E-04	1.83E-04	0.0099	0.0062	5.36E-05	20%	7.15E-06	3.57E-06	0.009	0.006	4.92E-05	20%	6.56E-06	3.28E-06
				5	250	0.074	0.046	3.98E-04	20%	5.31E-05	2.65E-05	0.5055	0.3141	2.73E-03	28%	3.64E-04	1.82E-04	0.0103	0.0064	5.57E-05	20%	7.42E-06	3.71E-06	0.009	0.006	5.10E-05	20%	6.80E-06	3.40E-06
				6	250	0.073	0.045	3.92E-04	19%	5.22E-05	2.61E-05	0.4957	0.3080	2.67E-03	27%	3.57E-04	1.78E-04	0.0112	0.0069	6.03E-05	22%	8.04E-06	4.02E-06	0.010	0.006	5.51E-05	22%	7.35E-06	3.67E-06
				7	350	0.131	0.081	9.89E-04	49%	1.32E-04	6.60E-05	0.7268	0.4516	5.49E-03	56%	7.32E-04	3.66E-04	0.0154	0.0096	1.16E-04	42%	1.55E-05	7.75E-06	0.014	0.009	1.06E-04	42%	1.41E-05	7.06E-06
				8	650	0.122	0.076	1.71E-03	84%	2.28E-04	1.14E-04	0.6089	0.3784	8.54E-03	87%	1.14E-03	5.69E-04	0.0149	0.0093	2.09E-04	76%	2.79E-05	1.40E-05	0.014	0.009	1.92E-04	76%	2.56E-05	1.28E-05
				9	850	0.106	0.066	1.94E-03	95%	2.58E-04	1.29E-04	0.5326	0.3309	**9.77E-03**	**100%**	**1.30E-03**	**6.51E-04**	0.0150	0.0093	**2.74E-04**	**100%**	**3.66E-05**	**1.83E-05**	0.014	0.009	**2.52E-04**	**100%**	**3.36E-05**	**1.68E-05**
				10	500	0.175	0.109	1.89E-03	93%	2.52E-04	1.26E-04	0.7318	0.4547	7.89E-03	81%	1.05E-03	5.26E-04	0.0181	0.0113	1.96E-04	71%	2.61E-05	1.30E-05	0.017	0.010	1.79E-04	71%	2.39E-05	1.19E-05
				11	450	0.192	0.119	1.86E-03	91%	2.48E-04	1.24E-04	0.8067	0.5013	7.83E-03	80%	1.04E-03	5.22E-04	0.0188	0.0117	1.83E-04	67%	2.43E-05	1.22E-05	0.017	0.011	1.67E-04	66%	2.22E-05	1.11E-05
				12	400	0.177	0.110	1.53E-03	75%	2.04E-04	1.02E-04	0.7462	0.4637	6.44E-03	66%	8.59E-04	4.29E-04	0.0180	0.0112	1.55E-04	56%	2.07E-05	1.03E-05	0.016	0.010	1.42E-04	56%	1.89E-05	9.44E-06
				13	500	0.154	0.096	1.66E-03	82%	2.22E-04	1.11E-04	0.7268	0.4516	7.84E-03	80%	1.05E-03	5.23E-04	0.0176	0.0109	1.90E-04	69%	2.53E-05	1.27E-05	0.016	0.010	1.73E-04	69%	2.31E-05	1.16E-05
				14	450	0.163	0.101	1.58E-03	78%	2.11E-04	1.06E-04	0.7320	0.4548	7.11E-03	73%	9.48E-04	4.74E-04	0.0180	0.0112	1.75E-04	64%	2.33E-05	1.16E-05	0.016	0.010	1.60E-04	63%	2.13E-05	1.06E-05
				15	500	0.189	0.117	**2.04E-03**	**100%**	**2.72E-04**	**1.36E-04**	0.7827	0.4863	8.44E-03	86%	1.13E-03	5.63E-04	0.0190	0.0118	2.05E-04	75%	2.73E-05	1.37E-05	0.017	0.011	1.87E-04	74%	2.49E-05	1.25E-05
				16	550	0.169	0.105	2.01E-03	98%	2.67E-04	1.34E-04	0.7233	0.4495	8.58E-03	88%	1.14E-03	5.72E-04	0.0179	0.0111	2.12E-04	77%	2.82E-05	1.41E-05	0.016	0.010	1.94E-04	77%	2.59E-05	1.29E-05
				17	600	0.138	0.085	1.78E-03	87%	2.37E-04	1.19E-04	0.6286	0.3906	8.14E-03	83%	1.09E-03	5.43E-04	0.0178	0.0111	2.31E-04	84%	3.08E-05	1.54E-05	0.016	0.010	2.11E-04	84%	2.82E-05	1.41E-05
				18	650	0.108	0.067	1.52E-03	74%	2.02E-04	1.01E-04	0.5495	0.3414	7.71E-03	79%	1.03E-03	5.14E-04	0.0170	0.0106	2.38E-04	87%	3.17E-05	1.59E-05	0.016	0.010	2.18E-04	86%	2.90E-05	1.45E-05
				19	650	0.112	0.070	1.58E-03	77%	2.10E-04	1.05E-04	0.5452	0.3388	7.65E-03	78%	1.02E-03	5.10E-04	0.0173	0.0107	2.42E-04	88%	3.23E-05	1.61E-05	0.016	0.010	2.21E-04	88%	2.95E-05	1.48E-05
				20	550	0.070	0.044	8.35E-04	41%	1.11E-04	5.57E-05	0.4930	0.3064	5.85E-03	60%	7.80E-04	3.90E-04	0.0161	0.0100	1.91E-04	70%	2.54E-05	1.27E-05	0.015	0.009	1.74E-04	69%	2.32E-05	1.16E-05
				21	500	0.065	0.040	6.98E-04	34%	9.30E-05	4.65E-05	0.4867	0.3024	5.25E-03	54%	7.00E-04	3.50E-04	0.0145	0.0090	1.56E-04	57%	2.08E-05	1.04E-05	0.013	0.008	1.43E-04	57%	1.90E-05	9.51E-06
				22	450	0.053	0.033	5.15E-04	25%	6.87E-05	3.43E-05	0.4351	0.2703	4.22E-03	43%	5.63E-04	2.82E-04	0.0136	0.0084	1.32E-04	48%	1.76E-05	8.79E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.04E-06
				23	450	0.061	0.038	5.95E-04	29%	7.93E-05	3.96E-05	0.4649	0.2889	4.51E-03	46%	6.02E-04	3.01E-04	0.0136	0.0085	1.32E-04	48%	1.76E-05	8.81E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.06E-06
				24	350	0.069	0.043	5.24E-04	26%	6.98E-05	3.49E-05	0.5142	0.3195	3.88E-03	40%	5.18E-04	2.59E-04	0.0130	0.0081	9.79E-05	36%	1.31E-05	6.53E-06	0.012	0.007	8.95E-05	36%	1.19E-05	5.95E-06
L003a	D2 Landscape Deck (NB)	D2MNB	0.037	1	350	0.080	0.050	1.81E-04	21%	2.41E-05	1.21E-05	0.5383	0.3345	1.22E-03	36%	1.62E-04	8.11E-05	0.0137	0.0085	3.09E-05	26%	4.12E-06	2.06E-06	0.012	0.008	2.82E-05	26%	3.76E-06	1.88E-06
				2	300	0.082	0.051	1.59E-04	19%	2.12E-05	1.06E-05	0.4987	0.3098	9.66E-04	29%	1.29E-04	6.44E-05	0.0119	0.0074	2.30E-05	20%	3.06E-06	1.53E-06	0.011	0.007	2.10E-05	20%	2.81E-06	1.40E-06
				3	300	0.069	0.043	1.33E-04	16%	1.78E-05	8.88E-06	0.4744	0.2948	9.19E-04	27%	1.22E-04	6.12E-05	0.0130	0.0081	2.51E-05	21%	3.35E-06	1.68E-06	0.012	0.007	2.29E-05	21%	3.06E-06	1.53E-06
				4	300	0.082	0.051	1.58E-04	19%	2.11E-05	1.06E-05	0.5002	0.3108	9.69E-04	29%	1.29E-04	6.46E-05	0.0114	0.0071	2.20E-05	19%	2.93E-06	1.47E-06	0.010	0.006	2.02E-05	19%	2.69E-06	1.35E-06
				5	250	0.081	0.051	1.31E-04	15%	1.75E-05	8.75E-06	0.4991	0.3101	8.05E-04	24%	1.07E-04	5.37E-05	0.0117	0.0073	1.89E-05	16%	2.52E-06	1.26E-06	0.011	0.007	1.73E-05	16%	2.31E-06	1.15E-06
				6	300	0.093	0.058	1.73E-04	21%	2.39E-05	1.20E-05	0.5104	0.3171	9.88E-04	29%	1.32E-04	6.59E-05	0.0129	0.0080	2.51E-05	21%	3.34E-06	1.67E-06	0.012	0.007	2.29E-05	21%	3.05E-06	1.53E-06
				7	400	0.142	0.088	3.66E-04	43%	4.88E-05	2.44E-05	0.7252	0.4506	1.87E-03	56%	2.50E-04	1.25E-04	0.0178	0.0111	4.60E-05	39%	6.13E-06	3.07E-06	0.016	0.010	4.19E-05	39%	5.58E-06	2.79E-06
				8	800	0.132	0.082	6.80E-04	80%	9.06E-05	4.53E-05	0.5798	0.3603	2.99E-03	89%	3.99E-04	2.00E-04	0.0166	0.0103	8.56E-05	73%	1.14E-05	5.70E-06	0.015	0.009	7.85E-05	73%	1.05E-05	5.23E-06

L004b	D2 Landscape Deck (WSB)	D2WSB	0.037	1	250	0.105	0.065	1.69E-04	22%	2.26E-05	1.13E-05	0.5533	0.3438	8.93E-04	32%	1.19E-04	5.95E-05	0.0186	0.0116	3.01E-05	26%	4.01E-06	2.01E-06	0.017	0.011	2.74E-05	27%	3.66E-06	1.83E-06
				2	200	0.100	0.062	1.29E-04	17%	1.72E-05	8.61E-06	0.4728	0.2938	6.10E-04	22%	8.14E-05	4.07E-05	0.0159	0.0099	2.05E-05	18%	2.73E-06	1.37E-06	0.015	0.009	1.87E-05	18%	2.50E-06	1.25E-06
				3	200	0.093	0.058	1.20E-04	15%	1.60E-05	7.99E-06	0.4630	0.2877	5.98E-04	22%	7.97E-05	3.99E-05	0.0177	0.0110	2.29E-05	20%	3.05E-06	1.52E-06	0.016	0.010	2.08E-05	20%	2.78E-06	1.39E-06
				4	200	0.118	0.073	1.52E-04	20%	2.03E-05	1.01E-05	0.5053	0.3140	6.52E-04	24%	8.70E-05	4.35E-05	0.0155	0.0096	2.00E-05	18%	2.66E-06	1.33E-06	0.014	0.009	1.83E-05	18%	2.44E-06	1.22E-06
				5	200	0.114	0.071	1.47E-04	19%	1.97E-05	9.83E-06	0.5023	0.3121	6.49E-04	24%	8.65E-05	4.32E-05	0.0156	0.0097	2.02E-05	18%	2.69E-06	1.34E-06	0.014	0.009	1.85E-05	18%	2.46E-06	1.23E-06
				6	250	0.127	0.079	2.05E-04	26%	2.73E-05	1.37E-05	0.5288	0.3286	8.53E-04	31%	1.14E-04	5.69E-05	0.0181	0.0112	2.92E-05	26%	3.89E-06	1.94E-06	0.017	0.010	2.66E-05	26%	3.55E-06	1.78E-06
				7	300	0.203	0.126	3.93E-04	51%	5.24E-05	2.62E-05	0.7904	0.4911	1.53E-03	56%	2.04E-04	1.02E-04	0.0257	0.0159	4.97E-05	44%	6.63E-06	3.31E-06	0.023	0.014	4.52E-05	44%	6.02E-06	3.01E-06
				8	650	0.175	0.109	7.35E-04	94%	9.80E-05	4.90E-05	0.6409	0.3982	2.69E-03	98%	3.59E-04	1.79E-04	0.0218	0.0135	9.13E-05	80%	1.22E-05	6.09E-06	0.020	0.012	8.37E-05	81%	1.12E-05	5.58E-06
				9	850	0.128	0.080	7.02E-04	90%	9.36E-05	4.68E-05	0.4932	0.3065	2.71E-03	98%	3.61E-04	1.80E-04	0.0188	0.0117	1.03E-04	91%	1.38E-05	6.89E-06	0.017	0.011	9.50E-05	92%	1.27E-05	6.33E-06
				10	500	0.239	0.149	7.71E-04	99%	1.03E-04	5.14E-05	0.7826	0.4863	2.53E-03	92%	3.37E-04	1.68E-04	0.0257	0.0160	8.29E-05	73%	1.10E-05	5.52E-06	0.023	0.015	7.57E-05	73%	1.01E-05	5.05E-06
				11	450	0.240	0.149	6.96E-04	89%	9.29E-05	4.64E-05	0.8321	0.5171	2.42E-03	88%	3.22E-04	1.61E-04	0.0282	0.0175	8.20E-05	72%	1.09E-05	5.47E-06	0.026	0.016	7.45E-05	72%	9.94E-06	4.97E-06
				12	450	0.234	0.145	6.75E-04	87%	9.00E-05	4.33E-05	0.7958	0.4945	2.31E-03	84%	3.08E-04	1.54E-04	0.0232	0.0156	7.31E-05	64%	9.73E-06	4.88E-06	0.023	0.014	6.67E-05	64%	8.90E-06	4.45E-06
				13	500	0.192	0.120	6.21E-04	80%	8.28E-05	4.14E-05	0.7274	0.4520	2.35E-03	85%	3.13E-04	1.57E-04	0.0246	0.0153	7.95E-05	70%	1.06E-05	5.30E-06	0.022	0.014	7.24E-05	70%	9.66E-06	4.83E-06
				14	450	0.222	0.138	6.45E-04	83%	8.59E-05	4.30E-05	0.7756	0.4819	2.25E-03	82%	3.00E-04	1.50E-04	0.0252	0.0157	7.32E-05	64%	9.76E-06	4.88E-06	0.023	0.014	6.68E-05	65%	8.91E-06	4.45E-06
				15	500	0.241	0.150	**7.78E-04**	**100%**	**1.04E-04**	**5.19E-05**	0.8065	0.5011	2.60E-03	95%	3.47E-04	1.74E-04	0.0263	0.0163	8.47E-05	75%	1.13E-05	5.65E-06	0.024	0.015	7.73E-05	75%	1.03E-05	5.15E-06
				16	550	0.217	0.135	7.69E-04	99%	1.03E-04	5.13E-05	0.7536	0.4683	2.68E-03	97%	3.57E-04	1.78E-04	0.0245	0.0152	8.69E-05	77%	1.16E-05	5.80E-06	0.022	0.014	7.94E-05	77%	1.06E-05	5.30E-06
				17	650	0.175	0.109	7.35E-04	94%	9.80E-05	4.90E-05	0.6560	0.4076	**2.75E-03**	**100%**	**3.67E-04**	**1.84E-04**	0.0237	0.0147	9.95E-05	88%	1.33E-05	6.63E-06	0.022	0.013	9.08E-05	88%	1.21E-05	6.05E-06
				18	700	0.128	0.080	5.79E-04	74%	7.72E-05	3.86E-05	0.5302	0.3295	2.40E-03	87%	3.19E-04	1.60E-04	0.0217	0.0135	9.82E-05	86%	1.31E-05	6.55E-06	0.020	0.012	8.95E-05	87%	1.19E-05	5.97E-06
				19	700	0.157	0.098	7.12E-04	91%	9.49E-05	4.74E-05	0.5904	0.3668	2.67E-03	97%	3.56E-04	1.78E-04	0.0251	0.0156	**1.14E-04**	**100%**	**1.52E-05**	**7.58E-06**	0.023	0.014	**1.03E-04**	**100%**	**1.38E-05**	**6.90E-06**
				20	600	0.078	0.049	3.03E-04	39%	4.04E-05	2.02E-05	0.4763	0.2960	1.84E-03	67%	2.46E-04	1.23E-04	0.0215	0.0134	8.34E-05	73%	1.11E-05	5.56E-06	0.020	0.012	7.57E-05	73%	1.01E-05	5.04E-06
				21	550	0.069	0.043	2.44E-04	31%	3.26E-05	1.63E-05	0.4365	0.2713	1.55E-03	56%	2.07E-04	1.03E-04	0.0182	0.0113	6.46E-05	57%	8.62E-06	4.31E-06	0.017	0.010	5.90E-05	57%	7.86E-06	3.93E-06
				22	450	0.065	0.040	1.89E-04	24%	2.52E-05	1.26E-05	0.4130	0.2566	1.20E-03	44%	1.60E-04	8.00E-05	0.0175	0.0109	5.09E-05	45%	6.78E-06	3.39E-06	0.016	0.010	4.64E-05	45%	6.19E-06	3.09E-06
				23	450	0.071	0.044	2.06E-04	26%	2.74E-05	1.37E-05	0.4352	0.2704	1.26E-03	46%	1.69E-04	8.43E-05	0.0180	0.0112	5.22E-05	46%	6.95E-06	3.48E-06	0.016	0.010	4.76E-05	46%	6.34E-06	3.17E-06
				24	350	0.087	0.054	1.96E-04	25%	2.61E-05	1.30E-05	0.4879	0.3032	1.10E-03	40%	1.47E-04	7.35E-05	0.0177	0.0110	3.99E-05	35%	5.32E-06	2.66E-06	0.016	0.010	3.64E-05	35%	4.85E-06	2.43E-06
L158	CKR Tunnel Portal Emission (EB)	CKRTEEB	1.750	1	900	0.041	0.026	5.63E-03	24%	1.25E-03	6.26E-04	0.3045	0.1892	4.14E-02	24%	9.20E-03	4.60E-03	0.0130	0.0080	1.76E-03	25%	3.91E-04	**1.96E-04**	0.0126	0.008	1.71E-03	26%	3.81E-04	**1.91E-04**
				2	950	0.042	0.026	5.97E-03	25%	1.33E-03	6.64E-04	0.3063	0.1903	4.39E-02	25%	9.77E-03	4.88E-03	0.0131	0.0082	1.88E-03	27%	4.18E-04	2.09E-04	0.0111	0.007	1.59E-03	25%	3.54E-04	1.77E-04
				3	500	0.041	0.025	3.08E-03	13%	6.84E-04	3.42E-04	0.3088	0.1919	2.33E-02	13%	5.18E-03	2.59E-03	0.0129	0.0080	9.75E-04	14%	2.17E-04	1.08E-04	0.0110	0.007	8.27E-04	13%	1.84E-04	9.19E-05
				4	500	0.040	0.025	3.04E-03	13%	6.76E-04	3.38E-04	0.3069	0.1907	2.32E-02	13%	5.15E-03	2.57E-03	0.0129	0.0080	9.72E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.24E-04	13%	1.83E-04	9.16E-05
				5	500	0.040	0.025	3.02E-03	13%	6.71E-04	3.36E-04	0.3095	0.1923	2.34E-02	13%	5.19E-03	2.60E-03	0.0129	0.0080	9.71E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.23E-04	13%	1.83E-04	9.14E-05
				6	950	0.042	0.026	5.99E-03	25%	1.33E-03	6.65E-04	0.3112	0.1934	4.47E-02	26%	9.92E-03	4.96E-03	0.0131	0.0082	1.88E-03	27%	4.19E-04	2.09E-04	0.0111	0.007	1.60E-03	25%	3.55E-04	1.77E-04
				7	1400	0.042	0.026	8.78E-03	37%	1.95E-03	9.76E-04	0.3116	0.1936	6.59E-02	38%	1.46E-02	7.32E-03	0.0122	0.0076	2.58E-03	37%	5.74E-04	2.87E-04	0.0112	0.007	2.37E-03	37%	5.28E-04	2.64E-04
				8	2350	0.042	0.026	1.48E-02	62%	3.28E-03	1.64E-03	0.3140	0.1951	1.11E-01	64%	2.48E-02	1.24E-02	0.0127	0.0079	4.51E-03	64%	1.00E-03	5.01E-04	0.0113	0.007	4.01E-03	62%	8.92E-04	4.46E-04
				9	2950	0.043	0.027	1.91E-02	80%	4.24E-03	2.12E-03	0.3292	0.2046	1.47E-01	84%	3.26E-02	1.63E-02	0.0125	0.0077	5.55E-03	79%	1.23E-03	6.17E-04	0.0113	0.007	5.01E-03	77%	1.11E-03	5.57E-04
				10	2800	0.044	0.027	1.86E-02	78%	4.13E-03	2.06E-03	0.3252	0.2021	1.38E-01	79%	3.06E-02	1.53E-02	0.0131	0.0081	5.54E-03	79%	1.23E-03	6.15E-04	0.0121	0.008	5.12E-03	79%	1.14E-03	5.69E-04
				11	2350	0.041	0.026	1.47E-02	62%	3.27E-03	1.63E-03	0.3117	0.1937	1.11E-01	64%	2.46E-02	1.23E-02	0.0126	0.0078	4.46E-03	63%	9.92E-04	4.96E-04	0.0118	0.007	4.20E-03	65%	9.33E-04	4.66E-04
				12	2300	0.041	0.026	1.44E-02	61%	3.20E-03	1.60E-03	0.3101	0.1927	1.08E-01	62%	2.39E-02	1.20E-02	0.0127	0.0079	4.40E-03	62%	9.78E-04	4.89E-04	0.0119	0.007	4.15E-03	64%	9.22E-04	4.61E-04
				13	2300	0.041	0.026	1.44E-02	60%	3.19E-03	1.60E-03	0.3094	0.1923	1.07E-01	62%	2.39E-02	1.19E-02	0.0126	0.0078	4.37E-03	62%	9.71E-04	4.85E-04	0.0118	0.007	4.12E-03	63%	9.15E-04	4.57E-04
				14	2300	0.042	0.026	1.44E-02	61%	3.21E-03	1.60E-03	0.3103	0.1928	1.08E-01	62%	2.39E-02	1.20E-02	0.0125	0.0078	4.35E-03	62%	9.67E-04	4.83E-04	0.0118	0.007	4.09E-03	63%	9.10E-04	4.55E-04
				15	2700	0.043	0.027	1.75E-02	74%	3.90E-03	1.95E-03	0.3147	0.1955	1.28E-01	74%	2.85E-02	1.43E-02	0.0132	0.0082	5.40E-03	77%	1.20E-03	6.00E-04	0.0123	0.008	5.00E-03	77%	1.11E-03	5.55E-04
				16	2700	0.043	0.026	1.74E-02	73%	3.86E-03	1.93E-03	0.3134	0.1948	1.28E-01	73%	2.84E-02	1.42E-02	0.0131	0.0081	5.34E-03	76%	1.19E-03	5.94E-04	0.0121	0.008	4.95E-03	76%	1.10E-03	5.50E-04
				17	2650	0.041	0.026	1.66E-02	70%	3.68E-03	1.84E-03	0.3106	0.1930	1.24E-01	71%	2.76E-02	1.38E-02	0.0127	0.0079	5.09E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.70E-03	72%	1.05E-03	5.23E-04
				18	2650	0.042	0.026	1.67E-02	70%	3.72E-03	1.86E-03	0.3127	0.1943	1.25E-01	72%	2.78E-02	1.39E-02	0.0127	0.0079	5.08E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.71E-03	73%	1.05E-03	5.23E-04
				19	3400	0.046	0.029	**2.38E-02**	**100%**	**5.28E-03**	**2.64E-03**	0.3390	0.2106	**1.74E-01**	**100%**	**3.87E-02**	**1.93E-02**	0.0137	0.0085	**7.05E-03**	**100%**	**1.57E-03**	**7.83E-04**	0.0126	0.008	**6.49E-03**	**100%**	**1.44E-03**	**7.21E-04**
				20	2200	0.041	0.025	1.35E-02	57%	3.01E-03	1.50E-03	0.3013	0.1873	1.00E-01	58%	2.23E-02	1.11E-02	0.0129	0.0080	4.27E-03	61%	9.49E-04	4.75E-04	0.0122	0.008	4.05E-03	62%	8.99E-04	4.50E-04
				21	1800	0.041	0.026	1.12E-02	47%	2.50E-03	1.25E-03	0.3023	0.1879	8.22E-02	47%	1.83E-02	9.13E-03	0.0128	0.0080	3.49E-03	49%	7.75E-04	3.87E-04	0.0116	0.007	3.15E-03	49%	7.01E-04	3.50E-04
				22	1800	0.041	0.026	1.13E-02	47%	2.50E-03	1.25E-03	0.3035	0.1886	8.25E-02	47%	1.83E-02	9.17E-03	0.0130	0.0081	3.52E-03	50%	7.83E-04	3.92E-04	0.0117	0.007	3.19E-03	49%	7.09E-04	3.55E-04
				23	1850	0.041	0.026	8.28E-03	35%	1.86E-03	9.31E-04	0.3039	0.1888	6.20E-02	36%	1.38E-02	6.88E-03	0.0129	0.0080	2.62E-03	37%	5.83E-04	2.91E-04	0.0119	0.007	2.43E-03	37%	5.40E-04	2.70E-04
				24	1350	0.041	0.025	8.28E-03	35%	1.84E-03	9.20E-04	0.3023	0.1878	6.16E-02	35%	1.37E-02	6.85E-03	0.0128	0.0080	2.62E-03	37%	5.81E-04	2.91E-04	0.0118	0.007	2.42E-03	37%	5.37E-04	2.68E-04
L159	CKR Landscape Deck (SWB)	CKRLDSWB	0.195	1	1300	0.025	0.016	1.09E-03	18%	2.43E-04	1.21E-04	0.1748	0.1086	7.65E-03	19%	1.70E-03	8.50E-04	0.0077	0.0048	3.38E-04	24%	7.50E-05	3.75E-05	0.007	0.004	3.12E-04	24%	6.92E-05	3.46E-05
				2	1300	0.025	0.015	1.09E-03	18%	2.42E-04	1.21E-04	0.1750	0.1087	7.66E-03	19%	1.70E-03	8.51E-04	0.0077	0.0048	3.36E-04	24%	7.47E-05	3.73E-05	0.007	0.004	3.10E-04	24%	6.89E-05	3.45E-05
				3	700	0.025	0.016	5.96E-04	10%	1.32E-04	6.62E-05	0.1783	0.1108	4.20E-03	11%	9.33E-04	4.67E-04	0.0078	0.0048	1.84E-04	13%	4.08E-05	2.04E-05	0.007	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				4	700	0.025	0.016	5.96E-04	10%	1.33E-04	6.63E-05	0.1788	0.1111	4.21E-03	11%	9.36E-04	4.68E-04	0.0078	0.0048	1.83E-04	13%	4.08E-05	2.04E-05	0.007	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				5	700	0.025	0.015	5.81E-04	10%	1.29E-04	6.46E-05	0.1780	0.1106	4.19E-03	11%	9.32E-04	4.66E-04	0.0076	0.0047	1.79E-04	13%	3.97E-05	1.98E-05	0.007	0.004	1.65E-04	13%	3.66E-05	1.83E-05
				6	1350	0.025	0.016	1.13E-03	19%	2.52E-04	1.26E-04	0.1775	0.1103	8.06E-03	20%	1.79E-03	8.96E-04	0.0076	0.0047	3.46E-04	24%	7.69E-05	3.84E-05	0.007	0.004	3.19E-04	24%	7.09E-05	3.55E-05
				7	2000	0.025	0.016	1.69E-03	28%	3.76E-04	1.88E-04	0.1782	0.1107	1.20E-02	30%	2.67E-03	1.33E-03	0.0077	0.0048	5.15E-04	36%	1.15E-04	5.73E-05	0.007	0.004	4.75E-04	36%	1.06E-04	5.28E-05
				8	3350	0.027	0.017	3.04E-03	50%	6.76E-04	3.38E-04	0.1938	0.1204	2.18E-02	55%	4.86E-03	2.43E-03	0.0078	0.0048	8.77E-04	62%	1.95E-04	9.75E-05	0.007	0.004	8.08E-04	61%	1.79E-04	8.97E-05
				9	4700	0.038	0.024	**6.06E-03**	**100%**	**1.35E-03**	**6.74E-04**	0.2489	0.1547	**3.94E-02**	**100%**	**8.75E-03**	**4.38E-03**	0.0090	0.0056	**1.42E-03**	**100%**	**3.16E-04**	**1.58E-04**	0.008	0.005	**1.31E-03**	**100%**	**2.92E-04**	**1.46E-04**
				10	3950	0.031	0.019	4.07E-03	67%	9.05E-04	4.52E-04	0.2101	0.1306	2.79E-02	71%	6.21E-03	3.10E-03	0.0082	0.0051	1.09E-03	76%	2.41E-04	1.21E-04	0.008	0.005	1.00E-03	76%	2.23E-04	1.11E-04
				11	3300	0.027	0.017	3.01E-03	50%	6.69E-04	3.34E-04	0.1930	0.1200	2.14E-02	54%	4.76E-03	2.38E-03	0.0078	0.0049	8.71E-04	61%	1.93E-04	9.67E-05	0.007	0.004	8.01E-04	61%	1.78E-04	8.90E-05
				12	3300	0.027	0.017	2.98E-03	49%	6.63E-04	3.31E-04	0.1921	0.1194	2.13E-02	54%	4.74E-03	2.37E-03	0.0078	0.0048	8.66E-04	61%	1.92E-04	9.62E-05	0.007	0.004	7.97E-04	61%	1.77E-04	8.85E-05
				13	3250	0.026	0.016	2.89E-03	48%	6.43E-04	3.21E-04	0.1893	0.1176	2.07E-02	53%	4.60E-03	2.30E-03	0.0077	0.0048	8.48E-04	60%	1.88E-04	9.42E-05	0.007	0.004	7.83E-04	60%	1.74E-04	8.70E-05
				14	3250	0.027	0.016	2.90E-03	48%	6.44E-04	3.22E-04	0.1901	0.1181	2.08E-02	53%	4.62E-03	2.31E-03	0.0078	0.0048	8.49E-04	60%	1.89E-04	9.44E-05	0.007	0.004	7.85E-04	60%	1.74E-04	8.72E-05
				15	3850	0.030	0.018	3.86E-03	64%	8.57E-04	4.28E-04	0.2034	0.1264	2.64E-02	67%	5.86E-03	2.93E-03	0.0082	0.0051	1.06E-03	74%	2.35E-04	1.17E-04	0.008	0.005	9.73E-04	74%	2.16E-04	1.08E-04
				16	3800	0.030	0.018	3.78E-03	62%	8.40E-04	4.20E-04	0.2030	0.1261	2.60E-02	66%	5.77E-03	2.88E-03	0.0081	0.0050	1.04E-03	73%	2.31E-04	1.15E-04	0.007	0.005	9.57E-04	73%	2.13E-04	1.06E-04
				17	3800	0.029	0.018	3.74E-03	62%	8.31E-04	4.16E-04	0.2028	0.1260	2.59E-02	66%	5.77E-03	2.88E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.15E-04	0.007	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				18	3800	0.029	0.018	3.73E-03	62%	8.30E-04	4.15E-04	0.2028	0.1260	2.59E-02	66%	5.76E-03	2.88E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.14E-04	0.007	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				19	4300	0.031	0.019	4.52E-03	75%	1.00E-03	5.02E-04	0.2164	0.1345	3.13E-02	80%	6.96E-03	3.48E-03	0.0081	0.0050	1.17E-03	82%	2.61E-04	1.30E-04	0.007	0.005	1.07E-03	82%	2.38E-04	1.19E-04
				20	3150	0.026	0.016	2.75E-03	45%	6.12E-04	3.06E-04	0.1846	0.1147	1.96E-02	50%	4.35E-03	2.18E-03	0.0078	0.0048	8.26E-04	58%	1.84E-04	9.18E-05	0.007	0.004	7.59E-04	58%	1.69E-04	8.43E-05
				21	2550	0.025	0.016	2.18E-03	36%	4.85E-04	2.43E-04	0.1770	0.1100	1.52E-02	39%	3.38E-03	1.69E-03	0.0078	0.0048	6.68E-04	47%	1.49E-04	7.43E-05	0.007	0.004	6.15E-04	47%	1.37E-04	6.84E-05
				22	2550	0.025	0.016	2.16E-03	36%	4.80E-04	2.40E-04	0.1768	0.1098	1.52E-02	39%	3.37E-03	1.69E-03	0.0077	0.0048	6.62E-04	46%	1.47E-04	7.35E-05	0.007	0.004	6.09E-04	46%	1.35E-04	6.77E-05
				23	1950	0.024	0.015	1.60E-03	26%	3.55E-04	1.78E-04	0.1730	0.1075	1.14E-02	29%	2.52E-03	1.26E-03	0.0076	0.0047	4.98E-04	35%	1.11E-04	5.53E-05	0.007	0.004	4.60E-04	35%	1.02E-04	5.11E-05
				24	1950	0.025	0.015	1.61E-03	27%	3.59E-04	1.79E-04	0.1738	0.1080	1.14E-02	29%	2.54E-03	1.27E-03	0.0077	0.0048	5.02E-04	35%	1.12E-04	5.58E-05	0.007	0.004	4.63E-04	35%	1.03E-04	5.15E-05
L158	CKR Landscape Deck (NEB)	CKRLDNEB	0.195	1	900	0.041	0.026	1.26E-03	24%	2.79E-04	1.40E-04	0.304	0.189	9.22E-03	24%	2.05E-03	1.02E-03	0.013	0.008	3.92E-04	25%	8.72E-05	4.36E-05	0.013	0.008	3.82E-04	26%	8.49E-05	4.25E-05
				2	950	0.042	0.026	1.33E-03	25%	2.96E-04	1.48E-04	0.306	0.190	9.79E-03	25%	2.18E-03	1.09E-03	0.013	0.008	4.20E-04	27%	9.32E-05	4.66E-05	0.011	0.007	3.55E-04	25%	7.90E-05	3.95E-05
				3	500	0.041	0.025	6.86E-04	13%	1.53E-04	7.63E-05	0.309	0.192	5.20E-03	13%	1.15E-03	5.77E-04	0.013	0.008	2.17E-04	14%	4.83E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.10E-05	2.05E-05
				4	500	0.040	0.025	6.78E-04	13%	1.51E-04	7.54E-05	0.307	0.191	5.16E-03	13%	1.15E-03	5.74E-04	0.013	0.008	2.17E-04	14%	4.81E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.08E-05	2.04E-05
				5	500	0.040	0.025	6.73E-04	13%	1.50E-04	7.48E-05	0.309	0.192	5.21E-03	13%	1.16E-03	5.79E-04	0.013	0.008	2.16E-04	14%	4.81E-05	2.40E-05	0.011	0.007	1.83E-04	13%	4.07E-05	2.04E-05
				6	950	0.042	0.026	1.33E-03	25%	2.96E-04	1.48E-04	0.311	0.193	9.95E-03	26%	2.21E-03	1.11E-03	0.013	0.008	4.20E-04	27%	9.33E-05	4.66E-05	0.011	0.007	3.56E-04	25%	7.91E-05	3.95E-05
				7	1400	0.042	0.026	1.96E-03	37%	4.35E-04	2.17E-04	0.312	0.194	1.47E-02	38%	3.26E-03	1.63E-03	0.012	0.008	5.76E-04	37%	1.28E-04	6.39E-05	0.011	0.007	5.29E-04	37%	1.18E-04	5.88E-05
				8	2350	0.042	0.026	3.29E-03	62%	7.31E-04	3.66E-04	0.314	0.195	2.48E-02	64%	5.52E-03	2.76E-03	0.013	0.008	1.01E-03	64%	2.23E-04	1.12E-04	0.011	0.007	8.94E-04	62%	1.99E-04	9.93E-05
				9	2950	0.043	0.027	4.25E-03	80%	9.45E-04	4.73E-04	0.329	0.205	3.27E-02	84%	7.26E-03	3.63E-03	0.012	0.008	1.24E-03	79%	2.75E-04	1.37E-04	0.011	0.007	1.12E-03	77%	2.48E-04	1.24E-04
				10	2800	0.044	0.027	4.14E-03	78%	9.20E-04	4.60E-04	0.325	0.202	3.06E-02	79%	6.81E-03	3.40E-03	0.013	0.008	1.23E-03	79%	2.74E-04	1.37E-04	0.012	0.008	1.14E-03	79%	2.53E-04	1.27E-04
				11	2350	0.041	0.026	3.28E-03	62%	7.29E-04	3.64E-04	0.312	0.194	2.47E-02	64%	5.48E-03	2.74E-03	0.013	0.008	9.95E-04	63%	2.21E-04	1.11E-04	0.012	0.007	9.

Calculation of Portal Emission - 3rd Quarter

						NO2						NO						RSP						FSP					
						Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate
Road No.	Portal Description	Portal ID	Tunnel Length (km)	Hour	Total Vehicle (veh/hr)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)
L084 & L085	Kai Tak Tunnel (WB)	KTTW	1.230	1	850	0.0429	0.02668	3.87E-03	29%	3.69E-04	1.84E-04	0.3827	0.23780	3.45E-02	38%	3.29E-03	1.64E-03	0.0125	0.0078	1.13E-03	32%	1.07E-04	5.37E-05	0.0115	0.0071	1.03E-03	32%	9.85E-05	4.93E-05
				2	700	0.0301	0.01869	2.24E-03	17%	2.13E-04	1.06E-04	0.3001	0.18649	2.23E-02	25%	2.12E-03	1.06E-03	0.0067	0.0042	5.00E-04	14%	4.76E-05	2.38E-05	0.0062	0.0038	4.59E-04	14%	4.37E-05	2.19E-05
				3	550	0.0382	0.02371	2.23E-03	17%	2.12E-04	1.06E-04	0.3549	0.22054	2.07E-02	23%	1.97E-03	9.87E-04	0.0074	0.0046	4.33E-04	12%	4.12E-05	2.06E-05	0.0068	0.0042	3.98E-04	12%	3.79E-05	1.89E-05
				4	500	0.0402	0.02499	2.13E-03	16%	2.03E-04	1.02E-04	0.3572	0.22196	1.90E-02	21%	1.81E-03	9.03E-04	0.0076	0.0047	4.03E-04	11%	3.83E-05	1.92E-05	0.0070	0.0043	3.70E-04	11%	3.53E-05	1.76E-05
				5	450	0.0494	0.03071	2.36E-03	18%	2.25E-04	1.12E-04	0.3839	0.23857	1.83E-02	20%	1.75E-03	8.73E-04	0.0084	0.0052	4.03E-04	11%	3.83E-05	1.92E-05	0.0077	0.0048	3.70E-04	11%	3.52E-05	1.76E-05
				6	500	0.0683	0.04243	3.62E-03	27%	3.45E-04	1.73E-04	0.4864	0.30221	2.58E-02	29%	2.46E-03	1.23E-03	0.0149	0.0092	7.88E-04	22%	7.51E-05	3.75E-05	0.0137	0.0085	7.25E-04	22%	6.90E-05	3.45E-05
				7	1000	0.0819	0.05092	8.70E-03	65%	8.28E-04	4.14E-04	0.4461	0.27720	4.74E-02	53%	4.51E-03	2.25E-03	0.0164	0.0102	1.75E-03	50%	1.66E-04	8.31E-05	0.0151	0.0094	1.61E-03	50%	1.53E-04	7.64E-05
				8	1750	0.0535	0.03322	9.93E-03	74%	9.46E-04	4.73E-04	0.3085	0.19171	5.73E-02	64%	5.46E-03	2.73E-03	0.0121	0.0075	2.24E-03	64%	2.13E-04	1.07E-04	0.0111	0.0069	2.06E-03	64%	1.96E-04	9.81E-05
				9	2150	0.0590	0.03667	**1.35E-02**	**100%**	**1.28E-03**	**6.41E-04**	0.3935	0.24451	**8.98E-02**	**100%**	**8.55E-03**	**4.28E-03**	0.0154	0.0096	**3.52E-03**	**100%**	**3.35E-04**	**1.67E-04**	0.0142	0.0088	**3.24E-03**	**100%**	**3.08E-04**	**1.54E-04**
				10	1800	0.0645	0.04010	1.23E-02	92%	1.17E-03	5.87E-04	0.4313	0.26801	8.24E-02	92%	7.85E-03	3.92E-03	0.0162	0.0100	3.09E-03	88%	2.94E-04	1.47E-04	0.0148	0.0092	2.83E-03	87%	2.69E-04	1.35E-04
				11	1600	0.0638	0.03964	1.08E-02	80%	1.03E-03	5.16E-04	0.3714	0.23076	6.31E-02	70%	6.01E-03	3.00E-03	0.0141	0.0087	2.39E-03	68%	2.28E-04	1.14E-04	0.0129	0.0080	2.20E-03	68%	2.09E-04	1.05E-04
				12	1600	0.0692	0.04303	1.18E-02	87%	1.12E-03	5.60E-04	0.3932	0.24432	6.68E-02	74%	6.36E-03	3.18E-03	0.0149	0.0092	2.52E-03	72%	2.40E-04	1.20E-04	0.0136	0.0085	2.32E-03	72%	2.21E-04	1.10E-04
				13	1350	0.0735	0.04568	1.05E-02	78%	1.00E-03	5.02E-04	0.4046	0.25140	5.80E-02	65%	5.52E-03	2.76E-03	0.0156	0.0097	2.23E-03	64%	2.13E-04	1.06E-04	0.0143	0.0089	2.05E-03	63%	1.95E-04	9.76E-05
				14	1200	0.0680	0.04224	8.66E-03	64%	8.25E-04	4.12E-04	0.4023	0.24999	5.12E-02	57%	4.88E-03	2.44E-03	0.0156	0.0097	1.98E-03	56%	1.89E-04	9.44E-05	0.0143	0.0089	1.82E-03	56%	1.73E-04	8.67E-05
				15	1450	0.0626	0.03891	9.64E-03	72%	9.18E-04	4.59E-04	0.3813	0.23695	5.87E-02	65%	5.59E-03	2.79E-03	0.0141	0.0088	2.17E-03	62%	2.07E-04	1.03E-04	0.0130	0.0081	2.00E-03	62%	1.90E-04	9.50E-05
				16	1550	0.0631	0.03921	1.04E-02	77%	9.89E-04	4.94E-04	0.3801	0.23621	6.25E-02	70%	5.96E-03	2.98E-03	0.0140	0.0087	2.31E-03	66%	2.20E-04	1.10E-04	0.0129	0.0080	2.12E-03	66%	2.02E-04	1.01E-04
				17	1450	0.0593	0.03686	9.13E-03	68%	8.70E-04	4.35E-04	0.3869	0.24042	5.96E-02	66%	5.67E-03	2.84E-03	0.0146	0.0091	2.24E-03	64%	2.14E-04	1.07E-04	0.0134	0.0083	2.06E-03	64%	1.96E-04	9.82E-05
				18	2200	0.0536	0.03330	1.25E-02	93%	1.19E-03	5.96E-04	0.3480	0.21621	8.13E-02	90%	7.74E-03	3.87E-03	0.0124	0.0077	2.90E-03	83%	2.76E-04	1.38E-04	0.0114	0.0071	2.67E-03	83%	2.54E-04	1.27E-04
				19	2200	0.0480	0.02983	1.12E-02	83%	1.07E-03	5.34E-04	0.3307	0.20552	7.72E-02	86%	7.36E-03	3.68E-03	0.0117	0.0073	2.73E-03	78%	2.60E-04	1.30E-04	0.0107	0.0067	2.51E-03	78%	2.39E-04	1.19E-04
				20	1600	0.0413	0.02569	7.02E-03	52%	6.69E-04	3.34E-04	0.3328	0.20676	5.65E-02	63%	5.38E-03	2.69E-03	0.0120	0.0074	2.03E-03	58%	1.94E-04	9.69E-05	0.0110	0.0068	1.87E-03	58%	1.78E-04	8.91E-05
				21	1600	0.0430	0.02675	7.31E-03	54%	6.96E-04	3.48E-04	0.3207	0.19930	5.45E-02	61%	5.19E-03	2.59E-03	0.0122	0.0076	2.07E-03	59%	1.98E-04	9.88E-05	0.0112	0.0070	1.91E-03	59%	1.82E-04	9.08E-05
				22	1450	0.0425	0.02642	6.54E-03	49%	6.23E-04	3.12E-04	0.3309	0.20564	5.09E-02	57%	4.85E-03	2.43E-03	0.0119	0.0074	1.83E-03	52%	1.74E-04	8.70E-05	0.0109	0.0068	1.68E-03	52%	1.60E-04	8.00E-05
				23	1350	0.0442	0.02747	6.34E-03	47%	6.03E-04	3.02E-04	0.3553	0.22075	5.09E-02	57%	4.85E-03	2.42E-03	0.0128	0.0079	1.83E-03	52%	1.74E-04	8.72E-05	0.0118	0.0073	1.68E-03	52%	1.60E-04	8.02E-05
				24	1000	0.0546	0.03394	5.80E-03	43%	5.52E-04	2.76E-04	0.4413	0.27424	4.68E-02	52%	4.46E-03	2.23E-03	0.0143	0.0089	1.52E-03	43%	1.45E-04	7.25E-05	0.0132	0.0082	1.40E-03	43%	1.33E-04	6.67E-05
L001	D2 Landscape Deck (NB)	D2ENB	0.125	1	350	0.0659	0.0409	4.97E-04	20%	6.63E-05	3.32E-05	0.5030	0.3125	3.80E-03	38%	5.06E-04	2.53E-04	0.0118	0.0074	8.94E-05	28%	1.19E-05	5.96E-06	0.011	0.007	8.16E-05	28%	1.09E-05	5.44E-06
				2	300	0.0739	0.0459	4.78E-04	20%	6.38E-05	3.19E-05	0.4760	0.2957	3.08E-03	31%	4.11E-04	2.05E-04	0.0108	0.0067	6.99E-05	25%	9.32E-06	4.66E-06	0.010	0.000	6.40E-05	22%	8.53E-06	4.26E-06
				3	300	0.0550	0.0342	3.56E-04	15%	4.75E-05	2.37E-05	0.4351	0.2704	2.82E-03	28%	3.75E-04	1.88E-04	0.0101	0.0063	6.56E-05	21%	8.75E-06	4.38E-06	0.009	0.006	6.01E-05	21%	8.01E-06	4.01E-06
				4	300	0.0680	0.0422	4.40E-04	18%	5.87E-05	2.93E-05	0.4685	0.2911	3.03E-03	30%	4.04E-04	2.02E-04	0.0099	0.0062	6.44E-05	20%	8.58E-06	4.29E-06	0.009	0.006	5.91E-05	20%	7.88E-06	3.94E-06
				5	300	0.0699	0.0434	4.52E-04	18%	6.03E-05	3.01E-05	0.4689	0.2914	3.04E-03	30%	4.05E-04	2.02E-04	0.0105	0.0065	6.81E-05	21%	9.07E-06	4.54E-06	0.010	0.006	6.23E-05	21%	8.31E-06	4.16E-06
				6	300	0.0845	0.0525	5.47E-04	22%	7.29E-05	3.64E-05	0.4885	0.3035	3.16E-03	32%	4.22E-04	2.11E-04	0.0116	0.0072	7.48E-05	24%	9.97E-06	4.99E-06	0.011	0.007	6.84E-05	23%	9.12E-06	4.56E-06
				7	400	0.1187	0.0737	1.02E-03	42%	1.37E-04	6.83E-05	0.6549	0.4069	5.65E-03	56%	7.54E-04	3.77E-04	0.0149	0.0093	1.29E-04	40%	1.72E-05	8.58E-06	0.014	0.008	1.17E-04	40%	1.56E-05	7.81E-06
				8	750	0.1133	0.0704	1.83E-03	75%	2.45E-04	1.22E-04	0.5396	0.3353	8.73E-03	87%	1.16E-03	5.82E-04	0.0144	0.0089	2.33E-04	73%	3.10E-05	1.55E-05	0.013	0.008	2.14E-04	73%	2.85E-05	1.42E-05
				9	900	0.1037	0.0645	2.01E-03	82%	2.69E-04	1.34E-04	0.4910	0.3051	9.53E-03	95%	1.27E-03	6.36E-04	0.0147	0.0091	2.86E-04	90%	3.81E-05	1.90E-05	0.014	0.008	2.62E-04	90%	3.50E-05	1.75E-05
				10	600	0.1732	0.1076	2.24E-03	92%	2.99E-04	1.49E-04	0.6867	0.4267	8.89E-03	89%	1.19E-03	5.93E-04	0.0176	0.0109	2.28E-04	72%	3.04E-05	1.52E-05	0.016	0.010	2.08E-04	72%	2.78E-05	1.39E-05
				11	550	0.1954	0.1214	2.32E-03	95%	3.09E-04	1.55E-04	0.7526	0.4677	8.93E-03	89%	1.19E-03	5.95E-04	0.0183	0.0114	2.18E-04	68%	2.90E-05	1.45E-05	0.017	0.010	1.99E-04	68%	2.65E-05	1.33E-05
				12	550	0.1852	0.1151	2.20E-03	90%	2.93E-04	1.47E-04	0.7146	0.4441	8.48E-03	85%	1.13E-03	5.65E-04	0.0175	0.0109	2.08E-04	65%	2.77E-05	1.39E-05	0.016	0.010	1.90E-04	65%	2.53E-05	1.27E-05
				13	650	0.1484	0.0922	2.08E-03	85%	2.78E-04	1.39E-04	0.6670	0.4144	9.35E-03	93%	1.25E-03	6.24E-04	0.0158	0.0098	2.21E-04	69%	2.95E-05	1.47E-05	0.014	0.009	2.02E-04	69%	2.69E-05	1.35E-05
				14	600	0.1635	0.1016	2.12E-03	86%	2.82E-04	1.41E-04	0.6905	0.4291	8.94E-03	89%	1.19E-03	5.96E-04	0.0167	0.0104	2.16E-04	68%	2.89E-05	1.44E-05	0.015	0.009	1.98E-04	68%	2.64E-05	1.32E-05
				15	650	0.1747	0.1086	**2.45E-03**	**100%**	**3.27E-04**	**1.63E-04**	0.7127	0.4429	1.00E-02	100%	1.33E-03	6.66E-04	0.0175	0.0109	2.45E-04	77%	3.27E-05	1.64E-05	0.016	0.010	2.24E-04	77%	2.99E-05	1.49E-05
				16	700	0.1620	0.1007	2.45E-03	100%	3.26E-04	1.63E-04	0.6644	0.4128	**1.00E-02**	**100%**	**1.34E-03**	**6.69E-04**	0.0164	0.0102	2.48E-04	78%	3.30E-05	1.65E-05	0.015	0.009	2.27E-04	78%	3.02E-05	1.51E-05
				17	750	0.1288	0.0800	2.08E-03	85%	2.78E-04	1.39E-04	0.5818	0.3615	9.41E-03	94%	1.26E-03	6.28E-04	0.0162	0.0100	2.62E-04	82%	3.49E-05	1.74E-05	0.015	0.009	2.40E-04	82%	3.19E-05	1.60E-05
				18	850	0.0989	0.0615	1.81E-03	74%	2.42E-04	1.21E-04	0.4792	0.2978	8.79E-03	88%	1.17E-03	5.86E-04	0.0159	0.0099	2.92E-04	92%	3.89E-05	1.94E-05	0.015	0.009	2.67E-04	92%	3.56E-05	1.78E-05
				19	900	0.1158	0.0720	2.25E-03	92%	3.00E-04	1.50E-04	0.5129	0.3187	9.96E-03	99%	1.33E-03	6.64E-04	0.0164	0.0102	**3.18E-04**	**100%**	**4.24E-05**	**2.12E-05**	0.015	0.009	**2.91E-04**	**100%**	**3.88E-05**	1.94E-05
				20	700	0.0688	0.0428	1.04E-03	42%	1.39E-04	6.93E-05	0.4523	0.2810	6.83E-03	68%	9.11E-04	4.55E-04	0.0152	0.0094	2.29E-04	72%	3.05E-05	1.53E-05	0.014	0.009	2.09E-04	72%	2.78E-05	1.39E-05
				21	600	0.0534	0.0332	6.92E-04	28%	9.22E-05	4.61E-05	0.4178	0.2596	5.41E-03	54%	7.21E-04	3.61E-04	0.0135	0.0084	1.74E-04	55%	2.33E-05	1.16E-05	0.012	0.008	1.60E-04	55%	2.13E-05	1.06E-05
				22	550	0.0567	0.0353	6.73E-04	27%	8.98E-05	4.49E-05	0.4168	0.2590	4.95E-03	49%	6.60E-04	3.30E-04	0.0128	0.0080	1.52E-04	48%	2.03E-05	1.02E-05	0.012	0.007	1.39E-04	48%	1.86E-05	9.29E-06
				23	550	0.0598	0.0371	7.09E-04	29%	9.46E-05	4.73E-05	0.4342	0.2698	5.15E-03	51%	6.87E-04	3.43E-04	0.0131	0.0081	1.56E-04	49%	2.07E-05	1.04E-05	0.012	0.007	1.42E-04	49%	1.90E-05	9.48E-06
				24	450	0.0620	0.0385	6.02E-04	25%	8.02E-05	4.01E-05	0.4721	0.2934	4.58E-03	46%	6.11E-04	3.06E-04	0.0116	0.0072	1.13E-04	35%	1.50E-05	7.51E-06	0.011	0.007	1.03E-04	35%	1.37E-05	6.87E-06
L002	D2 Landscape Deck (SB)	D2MSB	0.125	1	300	0.0697	0.0433	4.51E-04	23%	6.01E-05	3.01E-05	0.5174	0.3215	3.35E-03	37%	4.47E-04	2.23E-04	0.0119	0.0074	7.68E-05	28%	1.02E-05	5.12E-06	0.011	0.007	7.02E-05	28%	9.35E-06	4.68E-06
				2	250	0.0614	0.0382	3.31E-04	17%	4.42E-05	2.21E-05	0.4491	0.2791	2.42E-03	27%	3.23E-04	1.62E-04	0.0102	0.0063	5.48E-05	20%	7.30E-06	3.65E-06	0.009	0.006	5.01E-05	20%	6.68E-06	3.34E-06
				3	250	0.0606	0.0377	3.27E-04	16%	4.36E-05	2.18E-05	0.4460	0.2771	2.41E-03	26%	3.21E-04	1.60E-04	0.0113	0.0070	6.09E-05	22%	8.12E-06	4.06E-06	0.010	0.006	5.56E-05	22%	7.41E-06	3.71E-06
				4	250	0.0698	0.0434	3.76E-04	19%	5.02E-05	2.51E-05	0.4679	0.2907	2.52E-03	28%	3.37E-04	1.68E-04	0.0099	0.0062	5.36E-05	20%	7.15E-06	3.57E-06	0.009	0.006	4.92E-05	20%	6.56E-06	3.28E-06
				5	250	0.0709	0.0441	3.82E-04	19%	5.10E-05	2.55E-05	0.4662	0.2897	2.51E-03	28%	3.35E-04	1.68E-04	0.0103	0.0064	5.57E-05	20%	7.42E-06	3.71E-06	0.009	0.006	5.10E-05	20%	6.80E-06	3.40E-06
				6	250	0.0699	0.0434	3.77E-04	19%	5.03E-05	2.51E-05	0.4584	0.2848	2.47E-03	27%	3.30E-04	1.65E-04	0.0112	0.0069	6.03E-05	22%	8.04E-06	4.02E-06	0.010	0.006	5.51E-05	22%	7.35E-06	3.67E-06
				7	350	0.1269	0.0789	9.58E-04	48%	1.28E-04	6.39E-05	0.6800	0.4226	5.14E-03	56%	6.85E-04	3.42E-04	0.0154	0.0096	1.16E-04	42%	1.55E-05	7.75E-06	0.014	0.009	1.06E-04	42%	1.41E-05	7.06E-06
				8	650	0.1183	0.0735	1.66E-03	84%	2.21E-04	1.11E-04	0.5718	0.3553	8.02E-03	88%	1.07E-03	5.35E-04	0.0149	0.0093	2.09E-04	76%	2.79E-05	1.40E-05	0.014	0.009	1.92E-04	76%	2.56E-05	1.28E-05
				9	850	0.1023	0.0636	1.88E-03	95%	2.50E-04	1.25E-04	0.4984	0.3097	**9.14E-03**	**100%**	**1.22E-03**	**6.09E-04**	0.0150	0.0093	**2.74E-04**	**100%**	**3.66E-05**	**1.83E-05**	0.014	0.009	**2.52E-04**	**100%**	**3.36E-05**	**1.68E-05**
				10	500	0.1703	0.1058	1.84E-03	93%	2.45E-04	1.22E-04	0.6936	0.4310	7.48E-03	82%	9.98E-04	4.99E-04	0.0181	0.0113	1.96E-04	71%	2.61E-05	1.30E-05	0.017	0.010	1.79E-04	71%	2.39E-05	1.19E-05
				11	450	0.1869	0.1161	1.81E-03	91%	2.42E-04	1.21E-04	0.7670	0.4766	7.45E-03	81%	9.93E-04	4.96E-04	0.0188	0.0117	1.83E-04	67%	2.43E-05	1.22E-05	0.017	0.011	1.67E-04	66%	2.22E-05	1.11E-05
				12	400	0.1723	0.1071	1.49E-03	75%	1.98E-04	9.92E-05	0.7078	0.4398	6.11E-03	67%	8.14E-04	4.07E-04	0.0180	0.0112	1.55E-04	56%	2.07E-05	1.03E-05	0.016	0.010	1.42E-04	56%	1.89E-05	9.44E-06
				13	500	0.1496	0.0930	1.61E-03	81%	2.15E-04	1.08E-04	0.6877	0.4273	7.42E-03	81%	9.89E-04	4.95E-04	0.0176	0.0109	1.90E-04	69%	2.53E-05	1.27E-05	0.016	0.010	1.73E-04	69%	2.31E-05	1.16E-05
				14	450	0.1586	0.0986	1.54E-03	78%	2.05E-04	1.03E-04	0.6928	0.4305	6.73E-03	74%	8.97E-04	4.48E-04	0.0180	0.0112	1.75E-04	64%	2.33E-05	1.16E-05	0.016	0.010	1.60E-04	63%	2.13E-05	1.06E-05
				15	500	0.1839	0.1143	**1.98E-03**	**100%**	**2.64E-04**	**1.32E-04**	0.7441	0.4623	8.03E-03	88%	1.07E-03	5.35E-04	0.0190	0.0118	2.05E-04	75%	2.73E-05	1.37E-05	0.017	0.011	1.87E-04	74%	2.49E-05	1.25E-05
				16	650	0.1641	0.1020	1.95E-03	98%	2.60E-04	1.30E-04	0.6848	0.4255	8.13E-03	89%	1.08E-03	5.42E-04	0.0179	0.0111	2.12E-04	77%	2.82E-05	1.41E-05	0.016	0.010	1.94E-04	77%	2.59E-05	1.29E-05
				17	600	0.1335	0.0829	1.73E-03	87%	2.30E-04	1.15E-04	0.5938	0.3689	7.69E-03	84%	1.02E-03	5.12E-04	0.0178	0.0111	2.31E-04	84%	3.08E-05	1.54E-05	0.016	0.010	2.11E-04	84%	2.82E-05	1.41E-05
				18	650	0.1050	0.0653	1.47E-03	74%	1.96E-04	9.82E-05	0.5178	0.3218	7.26E-03	79%	9.68E-04	4.84E-04	0.0170	0.0106	2.38E-04	87%	3.17E-05	1.59E-05	0.016	0.010	2.18E-04	86%	2.90E-05	1.45E-05
				19	650	0.1092	0.0678	1.53E-03	77%	2.04E-04	1.02E-04	0.5134	0.3190	7.20E-03	79%	9.60E-04	4.80E-04	0.0173	0.0107	2.42E-04	88%	3.23E-05	1.61E-05	0.016	0.010	2.21E-04	88%	2.95E-05	1.48E-05
				20	550	0.0679	0.0422	8.06E-04	41%	1.07E-04	5.37E-05	0.4596	0.2856	5.45E-03	60%	7.27E-04	3.64E-04	0.0161	0.0100	1.91E-04	70%	2.54E-05	1.27E-05	0.015	0.009	1.74E-04	69%	2.32E-05	1.16E-05
				21	500	0.0625	0.0388	6.74E-04	34%	8.99E-05	4.49E-05	0.4542	0.2822	4.90E-03	54%	6.53E-04	3.27E-04	0.0145	0.0090	1.56E-04	57%	2.08E-05	1.04E-05	0.013	0.008	1.43E-04	57%	1.90E-05	9.51E-06
				22	450	0.0511	0.0318	4.96E-04	25%	6.61E-05	3.31E-05	0.4036	0.2508	3.92E-03	43%	5.22E-04	2.61E-04	0.0136	0.0084	1.32E-04	48%	1.76E-05	8.79E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.04E-06
				23	450	0.0590	0.0367	5.73E-04	29%	7.64E-05	3.82E-05	0.4317	0.2682	4.19E-03	46%	5.59E-04	2.79E-04	0.0136	0.0085	1.32E-04	48%	1.76E-05	8.81E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.06E-06
				24	350	0.0667	0.0415	5.04E-04	25%	6.72E-05	3.36E-05	0.4782	0.2972	3.61E-03	40%	4.82E-04	2.41E-04	0.0130	0.0081	9.79E-05	30%	1.31E-05	6.53E-06	0.012	0.007	8.95E-05	30%	1.19E-05	5.97E-06
L003a	D2 Landscape Deck (NB)	D2MNB	0.037	1	350	0.0774	0.0481	1.75E-04	21%	2.33E-05	1.17E-05	0.5009	0.3113	1.13E-03	36%	1.51E-04	7.55E-05	0.0137	0.0085	3.09E-05	26%	4.12E-06	2.06E-06	0.012	0.008	2.82E-05	26%	3.76E-06	1.88E-06
				2	300	0.0795	0.0494	1.54E-04	18%	2.05E-05	1.03E-05	0.4622	0.2872	8.95E-04	28%	1.19E-04	5.97E-05	0.0119	0.0074	2.30E-05	20%	3.06E-06	1.53E-06	0.011	0.007	2.10E-05	20%	2.81E-06	1.40E-06
				3	300	0.0661	0.0411	1.28E-04	15%	1.71E-05	8.54E-06	0.4383	0.2723	8.49E-04	27%	1.13E-04	5.66E-05	0.0130	0.0081	2.51E-05	21%	3.35E-06	1.68E-06	0.012	0.007	2.29E-05	21%	3.06E-06	1.53E-06
				4	300	0.0789	0.0490	1.53E-04	18%	2.04E-05	1.02E-05	0.4637	0.2882	8.98E-04	28%	1.20E-04	5.99E-05	0.0114	0.0071	2.20E-05	19%	2.93E-06	1.47E-06	0.010	0.006	2.02E-05	19%	2.69E-06	1.35E-06
				5	250	0.0785	0.0488	1.27E-04	15%	1.69E-05	8.45E-06	0.4633	0.2879	7.48E-04	24%	9.97E-05	4.98E-05	0.0117	0.0073	1.89E-05	16%	2.52E-06	1.26E-06	0.011	0.007	1.73E-05	16%	2.31E-06	1.15E-06
				6	300	0.0897	0.0557	1.74E-04	21%	2.32E-05	1.16E-05	0.4763	0.2959	9.22E-04	29%	1.23E-04	6.15E-05	0.0129	0.0080	2.51E-05	21%	3.34E-06	1.67E-06	0.012	0.007	2.29E-05	21%	3.05E-06	1.53E-06
				7	400	0.1374	0.0854	3.55E-04	43%	4.73E-05	2.37E-05	0.6808	0.4230	1.76E-03	55%	2.34E-04	1.17E-04	0.0178	0.0111	4.60E-05	39%	6.13E-06	3.07E-06	0.016	0.010	4.19E-05	39%	5.58E-06	2.79E-06
				8	800	0.1278	0.0794	6.

L004b	D2 Landscape Deck (WSB)	D2WSB	0.037	1	250	0.1017	0.0632	1.64E-04	22%	2.19E-05	1.09E-05	0.5216	0.3241	8.42E-04	32%	1.12E-04	5.61E-05	0.0186	0.0116	3.01E-05	26%	4.01E-06	2.01E-06	0.017	0.011	2.74E-05	27%	3.66E-06	1.83E-06
				2	200	0.0967	0.0601	1.25E-04	16%	1.67E-05	8.33E-06	0.4428	0.2752	5.72E-04	22%	7.62E-05	3.81E-05	0.0159	0.0099	2.05E-05	18%	2.73E-06	1.37E-06	0.015	0.009	1.87E-05	18%	2.50E-06	1.25E-06
				3	200	0.0895	0.0556	1.16E-04	15%	1.54E-05	7.70E-06	0.4329	0.2690	5.59E-04	21%	7.45E-05	3.73E-05	0.0177	0.0110	2.29E-05	20%	3.05E-06	1.52E-06	0.016	0.010	2.08E-05	20%	2.78E-06	1.39E-06
				4	200	0.1139	0.0708	1.47E-04	19%	1.96E-05	9.81E-06	0.4751	0.2952	6.13E-04	23%	8.18E-05	4.09E-05	0.0155	0.0096	2.00E-05	18%	2.66E-06	1.33E-06	0.014	0.009	1.83E-05	18%	2.44E-06	1.22E-06
				5	200	0.1105	0.0687	1.43E-04	19%	1.90E-05	9.51E-06	0.4724	0.2935	6.10E-04	23%	8.13E-05	4.07E-05	0.0156	0.0097	2.02E-05	18%	2.69E-06	1.34E-06	0.014	0.009	1.85E-05	18%	2.46E-06	1.23E-06
				6	250	0.1230	0.0764	1.98E-04	26%	2.65E-05	1.32E-05	0.4992	0.3102	8.06E-04	31%	1.07E-04	5.37E-05	0.0181	0.0112	2.92E-05	26%	3.89E-06	1.94E-06	0.017	0.010	2.66E-05	26%	3.55E-06	1.78E-06
				7	300	0.1973	0.1226	3.82E-04	50%	5.09E-05	2.55E-05	0.7511	0.4667	1.45E-03	55%	1.94E-04	9.70E-05	0.0257	0.0159	4.97E-05	44%	6.63E-06	3.31E-06	0.023	0.014	4.52E-05	44%	6.02E-06	3.01E-06
				8	650	0.1703	0.1058	7.14E-04	94%	9.53E-05	4.76E-05	0.6115	0.3800	2.57E-03	98%	3.42E-04	1.71E-04	0.0218	0.0135	9.13E-05	80%	1.22E-05	6.09E-06	0.020	0.012	8.37E-05	81%	1.12E-05	5.58E-06
				9	850	0.1242	0.0772	6.82E-04	90%	9.09E-05	4.54E-05	0.4674	0.2904	2.56E-03	98%	3.42E-04	1.71E-04	0.0188	0.0117	1.03E-04	91%	1.38E-05	6.89E-06	0.017	0.011	9.50E-05	92%	1.27E-05	6.33E-06
				10	500	0.2327	0.1446	7.51E-04	99%	1.00E-04	5.01E-05	0.7497	0.4659	2.42E-03	92%	3.23E-04	1.61E-04	0.0257	0.0160	8.29E-05	73%	1.10E-05	5.52E-06	0.023	0.015	7.57E-05	73%	1.01E-05	5.05E-06
				11	450	0.2335	0.1451	6.78E-04	90%	9.04E-05	4.52E-05	0.7962	0.4947	2.31E-03	88%	3.08E-04	1.54E-04	0.0282	0.0175	8.20E-05	72%	1.09E-05	5.47E-06	0.026	0.016	7.45E-05	72%	9.94E-06	4.97E-06
				12	450	0.2278	0.1413	6.62E-04	87%	8.82E-05	4.41E-05	0.7624	0.4737	2.21E-03	84%	2.95E-04	1.48E-04	0.0252	0.0156	7.31E-05	64%	9.73E-06	4.88E-06	0.023	0.014	6.67E-05	64%	8.90E-06	4.45E-06
				13	500	0.1870	0.1162	6.04E-04	80%	8.05E-05	4.02E-05	0.6932	0.4308	2.24E-03	85%	2.98E-04	1.49E-04	0.0246	0.0153	7.95E-05	70%	1.06E-05	5.30E-06	0.022	0.014	7.24E-05	70%	9.66E-06	4.83E-06
				14	450	0.2159	0.1341	6.27E-04	83%	8.36E-05	4.18E-05	0.7413	0.4606	2.15E-03	82%	2.87E-04	1.44E-04	0.0252	0.0157	7.32E-05	64%	9.76E-06	4.88E-06	0.023	0.014	6.68E-05	65%	8.91E-06	4.45E-06
				15	500	0.2347	0.1458	**7.58E-04**	**100%**	**1.01E-04**	**5.05E-05**	0.7722	0.4798	2.49E-03	95%	3.32E-04	1.66E-04	0.0263	0.0163	8.47E-05	75%	1.13E-05	5.65E-06	0.024	0.015	7.73E-05	75%	1.03E-05	5.15E-06
				16	550	0.2106	0.1309	7.48E-04	99%	9.97E-05	4.98E-05	0.7200	0.4474	2.56E-03	97%	3.41E-04	1.70E-04	0.0245	0.0152	8.69E-05	77%	1.16E-05	5.80E-06	0.022	0.014	7.94E-05	77%	1.06E-05	5.30E-06
				17	650	0.1702	0.1058	7.14E-04	94%	9.52E-05	4.76E-05	0.6252	0.3885	**2.62E-03**	**100%**	**3.50E-04**	**1.75E-04**	0.0237	0.0147	9.95E-05	88%	1.33E-05	6.63E-06	0.022	0.013	9.08E-05	88%	1.21E-05	6.05E-06
				18	700	0.1244	0.0773	5.62E-04	74%	7.50E-05	3.75E-05	0.5023	0.3121	2.27E-03	87%	3.03E-04	1.51E-04	0.0217	0.0135	9.82E-05	86%	1.31E-05	6.55E-06	0.020	0.012	8.95E-05	87%	1.19E-05	5.97E-06
				19	700	0.1530	0.0951	6.91E-04	91%	9.22E-05	4.61E-05	0.5630	0.3498	2.54E-03	97%	3.39E-04	1.70E-04	0.0251	0.0156	**1.14E-04**	**100%**	**1.52E-05**	**7.58E-06**	0.023	0.014	**1.03E-04**	**100%**	**1.38E-05**	**6.90E-06**
				20	600	0.0755	0.0469	2.92E-04	39%	3.90E-05	1.95E-05	0.4466	0.2775	1.73E-03	66%	2.31E-04	1.15E-04	0.0215	0.0134	8.34E-05	73%	1.11E-05	5.56E-06	0.020	0.012	7.57E-05	73%	1.01E-05	5.04E-06
				21	550	0.0664	0.0413	2.36E-04	31%	3.15E-05	1.57E-05	0.4089	0.2541	1.45E-03	55%	1.94E-04	9.68E-05	0.0182	0.0113	6.46E-05	57%	8.62E-06	4.31E-06	0.017	0.010	5.90E-05	57%	7.86E-06	3.93E-06
				22	450	0.0631	0.0392	1.83E-04	24%	2.44E-05	1.22E-05	0.3869	0.2404	1.12E-03	43%	1.50E-04	7.49E-05	0.0175	0.0109	5.09E-05	45%	6.78E-06	3.39E-06	0.016	0.010	4.64E-05	45%	6.19E-06	3.09E-06
				23	450	0.0684	0.0425	1.99E-04	26%	2.65E-05	1.33E-05	0.4078	0.2534	1.18E-03	45%	1.58E-04	7.90E-05	0.0180	0.0112	5.22E-05	46%	6.95E-06	3.48E-06	0.016	0.010	4.76E-05	46%	6.34E-06	3.17E-06
				24	350	0.0838	0.0521	1.89E-04	25%	2.52E-05	1.26E-05	0.4593	0.2854	1.04E-03	40%	1.38E-04	6.92E-05	0.0177	0.0110	3.99E-05	35%	5.32E-06	2.66E-06	0.016	0.010	3.64E-05	35%	4.85E-06	2.43E-06
L158	CKR Tunnel Portal Emission (EB)	CKRTEEB	1.750	1	900	0.0383	0.0238	5.21E-03	24%	1.16E-03	5.79E-04	0.2729	0.1696	3.71E-02	24%	8.24E-03	4.12E-03	0.0130	0.0080	1.76E-03	25%	3.91E-04	**1.96E-04**	0.0126	0.008	1.71E-03	26%	3.81E-04	**1.91E-04**
				2	950	0.0385	0.0239	5.52E-03	25%	1.23E-03	6.13E-04	0.2745	0.1706	3.94E-02	25%	8.75E-03	4.38E-03	0.0131	0.0082	1.88E-03	27%	4.18E-04	2.09E-04	0.0111	0.007	1.59E-03	25%	3.54E-04	1.77E-04
				3	500	0.0377	0.0234	2.85E-03	13%	6.32E-04	3.16E-04	0.2765	0.1718	2.09E-02	13%	4.64E-03	2.32E-03	0.0129	0.0080	9.75E-04	14%	2.17E-04	1.08E-04	0.0110	0.007	8.27E-04	13%	1.84E-04	9.19E-05
				4	500	0.0372	0.0231	2.81E-03	13%	6.25E-04	3.12E-04	0.2747	0.1707	2.07E-02	13%	4.61E-03	2.30E-03	0.0129	0.0080	9.72E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.24E-04	13%	1.83E-04	9.16E-05
				5	500	0.0369	0.0229	2.79E-03	13%	6.20E-04	3.10E-04	0.2766	0.1718	2.09E-02	13%	4.64E-03	2.32E-03	0.0129	0.0080	9.71E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.23E-04	13%	1.83E-04	9.14E-05
				6	950	0.0385	0.0239	5.53E-03	25%	1.23E-03	6.14E-04	0.2784	0.1730	3.99E-02	25%	8.88E-03	4.44E-03	0.0131	0.0082	1.88E-03	27%	4.19E-04	2.09E-04	0.0111	0.007	1.60E-03	25%	3.55E-04	1.77E-04
				7	1400	0.0384	0.0238	8.11E-03	37%	1.80E-03	9.01E-04	0.2787	0.1732	5.89E-02	38%	1.31E-02	6.55E-03	0.0122	0.0076	2.58E-03	37%	5.74E-04	2.87E-04	0.0112	0.007	2.37E-03	37%	5.28E-04	2.64E-04
				8	2350	0.0383	0.0238	1.36E-02	62%	3.02E-03	1.51E-03	0.2810	0.1746	9.97E-02	64%	2.22E-02	1.11E-02	0.0127	0.0079	4.51E-03	64%	1.00E-03	5.01E-04	0.0113	0.007	4.01E-03	62%	8.92E-04	4.46E-04
				9	2950	0.0394	0.0245	1.75E-02	80%	3.90E-03	1.95E-03	0.2945	0.1830	1.31E-01	84%	2.92E-02	1.46E-02	0.0125	0.0077	5.55E-03	79%	1.23E-03	6.17E-04	0.0113	0.007	5.01E-03	77%	1.11E-03	5.57E-04
				10	2800	0.0404	0.0251	1.71E-02	78%	3.79E-03	1.90E-03	0.2917	0.1813	1.23E-01	79%	2.74E-02	1.37E-02	0.0131	0.0081	5.54E-03	79%	1.23E-03	6.15E-04	0.0121	0.008	5.12E-03	79%	1.14E-03	5.69E-04
				11	2350	0.0382	0.0237	1.35E-02	62%	3.01E-03	1.50E-03	0.2791	0.1734	9.91E-02	63%	2.20E-02	1.10E-02	0.0126	0.0078	4.46E-03	63%	9.92E-04	4.96E-04	0.0118	0.007	4.20E-03	65%	9.33E-04	4.66E-04
				12	2300	0.0383	0.0238	1.33E-02	61%	2.96E-03	1.48E-03	0.2777	0.1725	9.64E-02	62%	2.14E-02	1.07E-02	0.0127	0.0079	4.40E-03	62%	9.78E-04	4.89E-04	0.0119	0.007	4.15E-03	64%	9.22E-04	4.61E-04
				13	2300	0.0382	0.0238	1.33E-02	61%	2.95E-03	1.48E-03	0.2771	0.1722	9.63E-02	61%	2.14E-02	1.07E-02	0.0126	0.0078	4.37E-03	62%	9.71E-04	4.85E-04	0.0118	0.007	4.12E-03	63%	9.15E-04	4.57E-04
				14	2300	0.0384	0.0239	1.33E-02	61%	2.96E-03	1.48E-03	0.2779	0.1727	9.65E-02	62%	2.15E-02	1.07E-02	0.0125	0.0078	4.35E-03	62%	9.67E-04	4.83E-04	0.0118	0.007	4.09E-03	63%	9.10E-04	4.55E-04
				15	2700	0.0396	0.0246	1.62E-02	74%	3.59E-03	1.80E-03	0.2825	0.1755	1.15E-01	74%	2.56E-02	1.28E-02	0.0132	0.0082	5.40E-03	77%	1.20E-03	6.00E-04	0.0123	0.008	5.00E-03	77%	1.11E-03	5.55E-04
				16	2700	0.0392	0.0244	1.60E-02	73%	3.55E-03	1.78E-03	0.2814	0.1748	1.15E-01	73%	2.55E-02	1.27E-02	0.0131	0.0081	5.34E-03	76%	1.19E-03	5.94E-04	0.0121	0.008	4.95E-03	76%	1.10E-03	5.50E-04
				17	2650	0.0381	0.0237	1.53E-02	70%	3.39E-03	1.70E-03	0.2788	0.1732	1.12E-01	71%	2.48E-02	1.24E-02	0.0127	0.0079	5.09E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.70E-03	72%	1.05E-03	5.23E-04
				18	2650	0.0385	0.0239	1.54E-02	70%	3.42E-03	1.71E-03	0.2808	0.1745	1.12E-01	72%	2.50E-02	1.25E-02	0.0127	0.0079	5.08E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.71E-03	73%	1.05E-03	5.23E-04
				19	3400	0.0426	0.0265	**2.19E-02**	**100%**	**4.86E-03**	**2.43E-03**	0.3051	0.1896	**1.57E-01**	**100%**	**3.48E-02**	**1.74E-02**	0.0137	0.0085	**7.05E-03**	**100%**	**1.57E-03**	**7.83E-04**	0.0126	0.008	**6.49E-03**	**100%**	**1.44E-03**	**7.21E-04**
				20	2200	0.0376	0.0234	1.25E-02	57%	2.78E-03	1.39E-03	0.2704	0.1680	8.98E-02	57%	2.00E-02	9.98E-03	0.0129	0.0080	4.27E-03	61%	9.49E-04	4.75E-04	0.0122	0.008	4.05E-03	62%	8.99E-04	4.50E-04
				21	1800	0.0382	0.0238	1.04E-02	47%	2.31E-03	1.15E-03	0.2713	0.1686	7.37E-02	47%	1.64E-02	8.19E-03	0.0128	0.0080	3.49E-03	49%	7.75E-04	3.87E-04	0.0116	0.007	3.15E-03	49%	7.01E-04	3.50E-04
				22	1800	0.0383	0.0238	1.04E-02	48%	2.31E-03	1.16E-03	0.2722	0.1691	7.40E-02	47%	1.64E-02	8.22E-03	0.0130	0.0081	3.52E-03	50%	7.83E-04	3.92E-04	0.0117	0.007	3.19E-03	49%	7.09E-04	3.55E-04
				23	1350	0.0380	0.0236	7.75E-03	35%	1.72E-03	8.61E-04	0.2726	0.1693	5.56E-02	35%	1.23E-02	6.17E-03	0.0129	0.0080	2.62E-03	37%	5.83E-04	2.91E-04	0.0119	0.007	2.43E-03	37%	5.40E-04	2.70E-04
				24	1350	0.0375	0.0233	7.65E-03	35%	1.70E-03	8.50E-04	0.2709	0.1684	5.52E-02	35%	1.23E-02	6.14E-03	0.0128	0.0080	2.62E-03	37%	5.81E-04	2.91E-04	0.0118	0.007	2.42E-03	37%	5.37E-04	2.68E-04
L159	CKR Landscape Deck (SWB)	CKRLDSWB	0.195	1	1300	0.0231	0.0143	1.01E-03	18%	2.25E-04	1.12E-04	0.1571	0.0976	6.88E-03	19%	1.53E-03	7.64E-04	0.0077	0.0048	3.38E-04	24%	7.50E-05	3.75E-05	0.0071	0.004	3.12E-04	24%	6.92E-05	3.46E-05
				2	1300	0.0230	0.0143	1.01E-03	18%	2.24E-04	1.12E-04	0.1572	0.0977	6.88E-03	19%	1.53E-03	7.64E-04	0.0077	0.0048	3.36E-04	24%	7.47E-05	3.73E-05	0.0071	0.004	3.10E-04	24%	6.89E-05	3.45E-05
				3	700	0.0234	0.0145	5.51E-04	10%	1.23E-04	6.13E-05	0.1601	0.0995	3.77E-03	11%	8.38E-04	4.19E-04	0.0078	0.0048	1.84E-04	13%	4.08E-05	2.04E-05	0.0072	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				4	700	0.0234	0.0145	5.51E-04	10%	1.23E-04	6.13E-05	0.1606	0.0998	3.78E-03	11%	8.41E-04	4.20E-04	0.0078	0.0048	1.83E-04	13%	4.08E-05	2.04E-05	0.0072	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				5	700	0.0228	0.0142	5.37E-04	10%	1.19E-04	5.97E-05	0.1595	0.0991	3.76E-03	11%	8.35E-04	4.18E-04	0.0076	0.0047	1.79E-04	13%	3.97E-05	1.98E-05	0.0070	0.004	1.65E-04	13%	3.66E-05	1.83E-05
				6	1350	0.0231	0.0143	1.05E-03	19%	2.33E-04	1.17E-04	0.1592	0.0989	7.23E-03	20%	1.61E-03	8.04E-04	0.0076	0.0047	3.46E-04	24%	7.69E-05	3.84E-05	0.0070	0.004	3.19E-04	24%	7.09E-05	3.55E-05
				7	2000	0.0232	0.0144	1.56E-03	28%	3.48E-04	1.74E-04	0.1599	0.0993	1.08E-02	30%	2.39E-03	1.20E-03	0.0077	0.0048	5.15E-04	36%	1.15E-04	5.73E-05	0.0071	0.004	4.75E-04	36%	1.06E-04	5.28E-05
				8	3350	0.0248	0.0154	2.80E-03	50%	6.22E-04	3.11E-04	0.1743	0.1083	1.97E-02	55%	4.37E-03	2.18E-03	0.0078	0.0048	8.77E-04	62%	1.95E-04	9.75E-05	0.0072	0.004	8.08E-04	61%	1.79E-04	8.97E-05
				9	4700	0.0354	0.0220	**5.59E-03**	**100%**	**1.24E-03**	**6.22E-04**	0.2247	0.1396	**3.55E-02**	**100%**	**7.90E-03**	**3.95E-03**	0.0090	0.0056	**1.42E-03**	**100%**	**3.16E-04**	**1.58E-04**	0.0083	0.005	**1.31E-03**	**100%**	**2.92E-04**	**1.46E-04**
				10	3950	0.0282	0.0175	3.75E-03	67%	8.34E-04	4.17E-04	0.1893	0.1176	2.52E-02	71%	5.59E-03	2.80E-03	0.0082	0.0051	1.09E-03	76%	2.41E-04	1.21E-04	0.0075	0.005	1.00E-03	76%	2.23E-04	1.11E-04
				11	3300	0.0249	0.0155	2.77E-03	50%	6.16E-04	3.08E-04	0.1737	0.1080	1.93E-02	54%	4.29E-03	2.14E-03	0.0078	0.0049	8.71E-04	61%	1.93E-04	9.67E-05	0.0072	0.004	8.01E-04	61%	1.78E-04	8.90E-05
				12	3300	0.0247	0.0154	2.75E-03	49%	6.10E-04	3.05E-04	0.1730	0.1075	1.92E-02	54%	4.27E-03	2.13E-03	0.0078	0.0048	8.66E-04	61%	1.92E-04	9.62E-05	0.0072	0.004	7.97E-04	61%	1.77E-04	8.85E-05
				13	3250	0.0244	0.0152	2.67E-03	48%	5.93E-04	2.97E-04	0.1705	0.1059	1.86E-02	52%	4.14E-03	2.07E-03	0.0077	0.0048	8.48E-04	60%	1.88E-04	9.42E-05	0.0072	0.004	7.83E-04	60%	1.74E-04	8.70E-05
				14	3250	0.0245	0.0152	2.68E-03	48%	5.95E-04	2.97E-04	0.1712	0.1064	1.87E-02	53%	4.16E-03	2.08E-03	0.0078	0.0048	8.49E-04	60%	1.89E-04	9.44E-05	0.0072	0.004	7.85E-04	60%	1.74E-04	8.72E-05
				15	3850	0.0274	0.0170	3.55E-03	64%	7.90E-04	3.95E-04	0.1816	0.1141	2.38E-02	67%	5.29E-03	2.64E-03	0.0082	0.0051	1.06E-03	74%	2.35E-04	1.17E-04	0.0075	0.005	9.73E-04	74%	2.16E-04	1.08E-04
				16	3800	0.0272	0.0169	3.48E-03	62%	7.74E-04	3.87E-04	0.1832	0.1139	2.34E-02	66%	5.21E-03	2.60E-03	0.0081	0.0050	1.04E-03	73%	2.31E-04	1.15E-04	0.0075	0.005	9.57E-04	73%	2.13E-04	1.06E-04
				17	3800	0.0270	0.0167	3.45E-03	62%	7.66E-04	3.83E-04	0.1831	0.1138	2.34E-02	66%	5.21E-03	2.60E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.15E-04	0.0074	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				18	3800	0.0269	0.0167	3.44E-03	62%	7.65E-04	3.82E-04	0.1831	0.1138	2.34E-02	66%	5.20E-03	2.60E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.14E-04	0.0074	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				19	4300	0.0288	0.0179	4.17E-03	75%	9.27E-04	4.63E-04	0.1953	0.1213	2.83E-02	80%	6.28E-03	3.14E-03	0.0081	0.0050	1.17E-03	82%	2.61E-04	1.30E-04	0.0074	0.005	1.07E-03	82%	2.38E-04	1.19E-04
				20	3150	0.0239	0.0149	2.54E-03	45%	5.64E-04	2.82E-04	0.1664	0.1034	1.76E-02	50%	3.92E-03	1.96E-03	0.0078	0.0048	8.26E-04	58%	1.84E-04	9.18E-05	0.0072	0.004	7.59E-04	58%	1.69E-04	8.43E-05
				21	2550	0.0235	0.0146	2.01E-03	36%	4.48E-04	2.24E-04	0.1594	0.0991	1.37E-02	38%	3.04E-03	1.52E-03	0.0078	0.0048	6.68E-04	47%	1.49E-04	7.43E-05	0.0072	0.004	6.15E-04	47%	1.37E-04	6.84E-05
				22	2550	0.0232	0.0144	1.99E-03	36%	4.43E-04	2.22E-04	0.1591	0.0988	1.37E-02	38%	3.03E-03	1.52E-03	0.0077	0.0048	6.62E-04	46%	1.47E-04	7.35E-05	0.0071	0.004	6.09E-04	46%	1.35E-04	6.77E-05
				23	1950	0.0225	0.0140	1.48E-03	26%	3.29E-04	1.64E-04	0.1555	0.0966	1.02E-02	29%	2.27E-03	1.13E-03	0.0076	0.0047	4.98E-04	35%	1.11E-04	5.53E-05	0.0070	0.004	4.60E-04	35%	1.02E-04	5.11E-05
				24	1950	0.0228	0.0141	1.49E-03	27%	3.32E-04	1.66E-04	0.1562	0.0971	1.03E-02	29%	2.28E-03	1.14E-03	0.0077	0.0048	5.02E-04	35%	1.12E-04	5.58E-05	0.0071	0.004	4.63E-04	35%	1.03E-04	5.15E-05
L158	CKR Landscape Deck (NEB)	CKRLDNEB	0.195	1	900	0.038	0.024	1.16E-03	24%	2.58E-04	1.29E-04	0.273	0.170	8.27E-03	24%	1.84E-03	9.19E-04	0.013	0.008	3.92E-04	25%	8.72E-05	4.36E-05	0.013	0.008	3.82E-04	26%	8.49E-05	4.25E-05
				2	950	0.038	0.024	1.23E-03	25%	2.73E-04	1.37E-04	0.274	0.171	8.78E-03	25%	1.95E-03	9.75E-04	0.013	0.008	4.20E-04	27%	9.32E-05	4.66E-05	0.011	0.007	3.55E-04	25%	7.90E-05	3.95E-05
				3	500	0.038	0.023	6.34E-04	13%	1.41E-04	7.04E-05	0.276	0.172	4.65E-03	13%	1.03E-03	5.17E-04	0.013	0.008	2.17E-04	14%	4.83E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.10E-05	2.05E-05
				4	500	0.037	0.023	6.27E-04	13%	1.39E-04	6.96E-05	0.275	0.171	4.62E-03	13%	1.03E-03	5.14E-04	0.013	0.008	2.17E-04	14%	4.81E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.08E-05	2.04E-05
				5	500	0.037	0.023	6.21E-04	13%	1.38E-04	6.90E-05	0.277	0.172	4.65E-03	13%	1.03E-03	5.17E-04	0.013	0.008	2.16E-04	14%	4.81E-05	2.40E-05	0.011	0.007	1.83E-04	13%	4.07E-05	2.04E-05
				6	950	0.039	0.024	1.23E-03	25%	2.74E-04	1.37E-04	0.278	0.173	8.90E-03	25%	1.98E-03	9.89E-04	0.013	0.008	4.20E-04	27%	9.33E-05	4.66E-05	0.011	0.007	3.56E-04	25%	7.91E-05	3.95E-05
				7	1400	0.038	0.024	1.81E-03	37%	4.02E-04	2.01E-04	0.279	0.173	1.31E-02	38%	2.92E-03	1.46E-03	0.012	0.008	5.76E-04	37%	1.28E-04	6.39E-05	0.011	0.007	5.29E-04	37%	1.18E-04	5.88E-05
				8	2350	0.038	0.024	3.03E-03	62%	6.73E-04	3.37E-04	0.281	0.175	2.22E-02	64%	4.94E-03	2.47E-03	0.013	0.008	1.01E-03	64%	2.23E-04	1.12E-04	0.011	0.007	8.94E-04	62%	1.99E-04	9.93E-05
				9	2950	0.039	0.024	3.91E-03	80%	8.69E-04	4.34E-04	0.294	0.183	2.92E-02	84%	6.50E-03	3.25E-03	0.012	0.008	1.24E-03	79%	2.75E-04	1.37E-04	0.011	0.007	1.12E-03	77%	2.48E-04	1.24E-04
				10	2800	0.040	0.025	3.81E-03	78%	8.46E-04	4.23E-04	0.292	0.181	2.75E-02	79%	6.11E-03	3.05E-03	0.013	0.008	1.23E-03	79%	2.74E-04	1.37E-04	0.012	0.008	1.14E-03	79%	2.53E-04

Calculation of Portal Emission - 4th Quarter

						NO2						NO						RSP						FSP					
						Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 emission rate	Farest 50m - 1/3 emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate	Emission Rate		Total Emission	% of the maximum emission rate [a]	Nearest 50m - 2/3 of the total emission rate	Farest 50m - 1/3 of the total emission rate
Road No.	Portal Description	Portal ID	Tunnel Length (km)	Hour	Total Vehicle (veh/hr)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)	(g/veh/mile)	(g/veh/km)	(g/s)		(g/s)	(g/s)
L084 & L085	Kai Tak Tunnel (WB)	KTTW	1.230	1	850	0.0479	0.02977	4.32E-03	29%	4.12E-04	2.06E-04	0.4740	0.29450	4.28E-02	40%	4.07E-03	2.04E-03	0.0125	0.0078	1.13E-03	32%	1.07E-04	5.37E-05	0.0115	0.0071	1.03E-03	32%	9.85E-05	4.93E-05
				2	700	0.0349	0.02166	2.59E-03	17%	2.47E-04	1.23E-04	0.4064	0.25254	3.02E-02	28%	2.88E-03	1.44E-03	0.0067	0.0042	5.00E-04	14%	4.76E-05	2.38E-05	0.0062	0.0038	4.59E-04	14%	4.37E-05	2.19E-05
				3	550	0.0439	0.02727	2.56E-03	17%	2.44E-04	1.22E-04	0.4765	0.29610	2.78E-02	26%	2.65E-03	1.32E-03	0.0074	0.0046	4.33E-04	12%	4.12E-05	2.06E-05	0.0068	0.0042	3.98E-04	12%	3.79E-05	1.89E-05
				4	500	0.0463	0.02874	2.46E-03	16%	2.34E-04	1.17E-04	0.4803	0.29846	2.55E-02	24%	2.43E-03	1.21E-03	0.0076	0.0047	4.03E-04	11%	3.83E-05	1.92E-05	0.0070	0.0043	3.70E-04	11%	3.53E-05	1.76E-05
				5	450	0.0559	0.03471	2.67E-03	18%	2.54E-04	1.27E-04	0.5048	0.31366	2.41E-02	22%	2.30E-03	1.15E-03	0.0084	0.0052	4.03E-04	11%	3.83E-05	1.92E-05	0.0077	0.0048	3.70E-04	11%	3.52E-05	1.76E-05
				6	500	0.0759	0.04715	4.03E-03	27%	3.84E-04	1.92E-04	0.6010	0.37343	3.19E-02	30%	3.04E-03	1.52E-03	0.0149	0.0092	7.88E-04	22%	7.51E-05	3.75E-05	0.0137	0.0085	7.25E-04	22%	6.90E-05	3.45E-05
				7	1000	0.0895	0.05560	9.50E-03	64%	9.05E-04	4.52E-04	0.5280	0.32809	5.60E-02	52%	5.34E-03	2.67E-03	0.0164	0.0102	1.75E-03	50%	1.66E-04	8.31E-05	0.0151	0.0094	1.61E-03	50%	1.53E-04	7.64E-05
				8	1750	0.0593	0.03684	1.10E-02	74%	1.05E-03	5.24E-04	0.3802	0.23623	7.06E-02	65%	6.73E-03	3.36E-03	0.0121	0.0075	2.24E-03	64%	2.13E-04	1.07E-04	0.0111	0.0069	2.06E-03	64%	1.96E-04	9.81E-05
				9	2150	0.0655	0.04067	**1.49E-02**	**100%**	**1.42E-03**	**7.11E-04**	0.4736	0.29429	**1.08E-01**	**100%**	**1.03E-02**	**5.15E-03**	0.0154	0.0096	**3.52E-03**	**100%**	**3.35E-04**	**1.67E-04**	0.0142	0.0088	**3.24E-03**	**100%**	**3.08E-04**	**1.54E-04**
				10	1800	0.0709	0.04408	1.36E-02	91%	1.29E-03	6.45E-04	0.5104	0.31715	9.75E-02	90%	9.29E-03	4.64E-03	0.0162	0.0100	3.09E-03	88%	2.94E-04	1.47E-04	0.0148	0.0092	2.83E-03	87%	2.69E-04	1.35E-04
				11	1600	0.0702	0.04361	1.19E-02	80%	1.14E-03	5.68E-04	0.4472	0.27786	7.59E-02	70%	7.23E-03	3.62E-03	0.0141	0.0087	2.39E-03	68%	2.28E-04	1.14E-04	0.0129	0.0080	2.20E-03	68%	2.09E-04	1.05E-04
				12	1600	0.0760	0.04721	1.29E-02	86%	1.23E-03	6.14E-04	0.4712	0.29278	8.00E-02	74%	7.62E-03	3.81E-03	0.0149	0.0092	2.52E-03	72%	2.40E-04	1.20E-04	0.0136	0.0085	2.32E-03	72%	2.21E-04	1.10E-04
				13	1350	0.0805	0.05002	1.15E-02	77%	1.10E-03	5.49E-04	0.4821	0.29955	6.91E-02	64%	6.58E-03	3.29E-03	0.0156	0.0097	2.23E-03	64%	2.13E-04	1.06E-04	0.0143	0.0089	2.05E-03	63%	1.95E-04	9.76E-05
				14	1200	0.0747	0.04642	9.52E-03	64%	9.06E-04	4.53E-04	0.4831	0.30020	6.15E-02	57%	5.86E-03	2.93E-03	0.0156	0.0097	1.98E-03	56%	1.89E-04	9.44E-05	0.0143	0.0089	1.82E-03	56%	1.73E-04	8.67E-05
				15	1450	0.0688	0.04273	1.06E-02	71%	1.01E-03	5.04E-04	0.4588	0.28507	7.06E-02	65%	6.73E-03	3.36E-03	0.0141	0.0088	2.17E-03	62%	2.07E-04	1.03E-04	0.0130	0.0081	2.00E-03	62%	1.90E-04	9.50E-05
				16	1550	0.0693	0.04305	1.14E-02	76%	1.09E-03	5.43E-04	0.4586	0.28496	7.55E-02	70%	7.19E-03	3.59E-03	0.0140	0.0087	2.31E-03	66%	2.20E-04	1.10E-04	0.0129	0.0080	2.12E-03	66%	2.02E-04	1.01E-04
				17	1450	0.0654	0.04065	1.01E-02	67%	9.59E-04	4.79E-04	0.4666	0.28994	7.18E-02	66%	6.84E-03	3.42E-03	0.0146	0.0091	2.24E-03	64%	2.14E-04	1.07E-04	0.0134	0.0083	2.06E-03	64%	1.96E-04	9.82E-05
				18	2200	0.0591	0.03675	1.38E-02	92%	1.32E-03	6.58E-04	0.4238	0.26335	9.90E-02	92%	9.43E-03	4.71E-03	0.0124	0.0077	2.90E-03	83%	2.76E-04	1.38E-04	0.0114	0.0071	2.67E-03	83%	2.54E-04	1.27E-04
				19	2200	0.0529	0.03288	1.24E-02	83%	1.18E-03	5.88E-04	0.4042	0.25117	9.44E-02	87%	8.99E-03	4.50E-03	0.0117	0.0073	2.73E-03	78%	2.60E-04	1.30E-04	0.0107	0.0067	2.51E-03	78%	2.39E-04	1.19E-04
				20	1600	0.0463	0.02875	7.86E-03	53%	7.48E-04	3.74E-04	0.4117	0.25580	6.99E-02	65%	6.66E-03	3.33E-03	0.0120	0.0074	2.03E-03	58%	1.94E-04	9.69E-05	0.0110	0.0068	1.87E-03	58%	1.78E-04	8.91E-05
				21	1600	0.0482	0.02993	8.18E-03	55%	7.79E-04	3.90E-04	0.3973	0.24685	6.75E-02	62%	6.43E-03	3.21E-03	0.0122	0.0076	2.07E-03	59%	1.98E-04	9.88E-05	0.0112	0.0070	1.91E-03	59%	1.82E-04	9.08E-05
				22	1450	0.0474	0.02945	7.30E-03	49%	6.95E-04	3.47E-04	0.4079	0.25348	6.28E-02	58%	5.98E-03	2.99E-03	0.0119	0.0074	1.83E-03	52%	1.74E-04	8.70E-05	0.0109	0.0068	1.68E-03	52%	1.60E-04	8.00E-05
				23	1350	0.0493	0.03063	7.06E-03	47%	6.73E-04	3.36E-04	0.4369	0.27149	6.26E-02	58%	5.96E-03	2.98E-03	0.0128	0.0079	1.83E-03	52%	1.74E-04	8.72E-05	0.0118	0.0073	1.68E-03	52%	1.60E-04	8.02E-05
				24	1000	0.0601	0.03733	6.38E-03	43%	6.07E-04	3.04E-04	0.5334	0.33147	5.66E-02	52%	5.39E-03	2.70E-03	0.0143	0.0089	1.52E-03	43%	1.45E-04	7.25E-05	0.0132	0.0082	1.40E-03	43%	1.33E-04	6.67E-05
L001	D2 Landscape Deck (NB)	D2ENB	0.125	1	350	0.0723	0.0449	5.46E-04	21%	7.28E-05	3.64E-05	0.6244	0.3880	4.71E-03	40%	6.29E-04	3.14E-04	0.0118	0.0074	8.94E-05	28%	1.19E-05	5.96E-06	0.011	0.007	8.16E-05	28%	1.09E-05	5.44E-06
				2	300	0.0807	0.0501	5.22E-04	20%	6.96E-05	3.48E-05	0.5903	0.3672	3.82E-03	33%	5.10E-04	2.55E-04	0.0108	0.0067	6.99E-05	22%	9.32E-06	4.66E-06	0.010	0.000	6.40E-05	22%	8.53E-06	4.26E-06
				3	300	0.0612	0.0380	3.96E-04	15%	5.28E-05	2.64E-05	0.5489	0.3411	3.55E-03	30%	4.74E-04	2.37E-04	0.0101	0.0063	6.56E-05	21%	8.75E-06	4.38E-06	0.009	0.006	6.01E-05	21%	8.01E-06	4.01E-06
				4	300	0.0747	0.0464	4.84E-04	19%	6.45E-05	3.23E-05	0.5829	0.3622	3.77E-03	32%	5.03E-04	2.52E-04	0.0099	0.0062	6.44E-05	20%	8.58E-06	4.29E-06	0.009	0.006	5.91E-05	20%	7.88E-06	3.94E-06
				5	300	0.0767	0.0477	4.97E-04	19%	6.62E-05	3.31E-05	0.5797	0.3602	3.75E-03	32%	5.00E-04	2.50E-04	0.0105	0.0065	6.81E-05	21%	9.07E-06	4.54E-06	0.010	0.006	6.23E-05	21%	8.31E-06	4.16E-06
				6	300	0.0914	0.0568	5.92E-04	23%	7.89E-05	3.95E-05	0.5939	0.3691	3.84E-03	33%	5.13E-04	2.56E-04	0.0116	0.0072	7.48E-05	24%	9.97E-06	4.99E-06	0.011	0.007	6.84E-05	23%	9.12E-06	4.56E-06
				7	400	0.1279	0.0795	1.10E-03	42%	1.47E-04	7.36E-05	0.7902	0.4910	6.82E-03	58%	9.09E-04	4.55E-04	0.0149	0.0093	1.29E-04	40%	1.72E-05	8.58E-06	0.014	0.008	1.17E-04	40%	1.56E-05	7.81E-06
				8	750	0.1217	0.0756	1.97E-03	76%	2.63E-04	1.31E-04	0.6449	0.4007	1.04E-02	89%	1.39E-03	6.96E-04	0.0144	0.0089	2.33E-04	73%	3.10E-05	1.55E-05	0.013	0.008	2.14E-04	73%	2.85E-05	1.42E-05
				9	900	0.1110	0.0690	2.16E-03	83%	2.87E-04	1.44E-04	0.5855	0.3638	1.14E-02	97%	1.52E-03	7.58E-04	0.0147	0.0091	2.86E-04	90%	3.81E-05	1.90E-05	0.014	0.008	2.62E-04	90%	3.50E-05	1.75E-05
				10	600	0.1839	0.1143	2.38E-03	92%	3.17E-04	1.59E-04	0.7883	0.4898	1.02E-02	87%	1.36E-03	6.80E-04	0.0176	0.0109	2.28E-04	72%	3.04E-05	1.52E-05	0.016	0.010	2.08E-04	72%	2.78E-05	1.39E-05
				11	550	0.2066	0.1283	2.45E-03	94%	3.27E-04	1.63E-04	0.8560	0.5319	1.02E-02	87%	1.35E-03	6.77E-04	0.0183	0.0114	2.18E-04	68%	2.90E-05	1.45E-05	0.017	0.010	1.99E-04	68%	2.65E-05	1.33E-05
				12	550	0.1959	0.1217	2.32E-03	89%	3.10E-04	1.55E-04	0.8143	0.5060	9.66E-03	82%	1.29E-03	6.44E-04	0.0175	0.0109	2.08E-04	65%	2.77E-05	1.39E-05	0.016	0.010	1.90E-04	65%	2.53E-05	1.27E-05
				13	650	0.1582	0.0983	2.22E-03	85%	2.96E-04	1.48E-04	0.7742	0.4811	1.09E-02	93%	1.45E-03	7.24E-04	0.0158	0.0098	2.21E-04	69%	2.95E-05	1.47E-05	0.014	0.009	2.02E-04	69%	2.69E-05	1.35E-05
				14	600	0.1735	0.1078	2.25E-03	86%	2.99E-04	1.50E-04	0.7998	0.4970	1.04E-02	88%	1.38E-03	6.90E-04	0.0167	0.0104	2.16E-04	68%	2.89E-05	1.44E-05	0.015	0.009	1.98E-04	68%	2.64E-05	1.32E-05
				15	650	0.1853	0.1151	2.60E-03	100%	3.47E-04	1.73E-04	0.8186	0.5087	1.15E-02	98%	1.53E-03	7.65E-04	0.0175	0.0109	2.45E-04	77%	3.27E-05	1.64E-05	0.016	0.010	2.24E-04	77%	2.99E-05	1.49E-05
				16	700	0.1722	0.1070	**2.60E-03**	**100%**	**3.47E-04**	**1.73E-04**	0.7687	0.4776	1.16E-02	99%	1.55E-03	7.74E-04	0.0164	0.0102	2.48E-04	78%	3.30E-05	1.65E-05	0.015	0.009	2.27E-04	78%	3.02E-05	1.51E-05
				17	750	0.1376	0.0855	2.23E-03	86%	2.97E-04	1.48E-04	0.6831	0.4245	1.11E-02	94%	1.47E-03	7.37E-04	0.0162	0.0100	2.62E-04	82%	3.49E-05	1.74E-05	0.015	0.009	2.40E-04	82%	3.19E-05	1.60E-05
				18	850	0.1061	0.0659	1.95E-03	75%	2.59E-04	1.30E-04	0.5706	0.3546	1.05E-02	89%	1.40E-03	6.98E-04	0.0159	0.0099	2.92E-04	92%	3.89E-05	1.94E-05	0.015	0.009	2.67E-04	92%	3.56E-05	1.78E-05
				19	900	0.1236	0.0768	2.40E-03	92%	3.20E-04	1.60E-04	0.6033	0.3749	**1.17E-02**	**100%**	**1.56E-03**	**7.81E-04**	0.0164	0.0102	**3.18E-04**	**100%**	**4.24E-05**	**2.12E-05**	0.015	0.009	**2.91E-04**	**100%**	**3.88E-05**	**1.94E-05**
				20	700	0.0748	0.0465	1.13E-03	43%	1.51E-04	7.53E-05	0.5537	0.3440	8.36E-03	71%	1.11E-03	5.57E-04	0.0152	0.0094	2.29E-04	72%	3.05E-05	1.53E-05	0.014	0.009	2.09E-04	72%	2.78E-05	1.39E-05
				21	600	0.0588	0.0365	7.61E-04	29%	1.01E-04	5.07E-05	0.5182	0.3220	6.71E-03	57%	8.94E-04	4.47E-04	0.0135	0.0084	1.74E-04	55%	2.33E-05	1.16E-05	0.012	0.008	1.60E-04	55%	2.13E-05	1.06E-05
				22	550	0.0622	0.0386	7.38E-04	28%	9.84E-05	4.92E-05	0.5189	0.3224	6.16E-03	53%	8.21E-04	4.10E-04	0.0128	0.0080	1.52E-04	48%	2.03E-05	1.02E-05	0.012	0.007	1.39E-04	48%	1.86E-05	9.29E-06
				23	550	0.0657	0.0408	7.79E-04	30%	1.04E-04	5.19E-05	0.5384	0.3345	6.39E-03	55%	8.52E-04	4.26E-04	0.0131	0.0081	1.56E-04	49%	2.07E-05	1.04E-05	0.012	0.007	1.42E-04	49%	1.90E-05	9.48E-06
				24	450	0.0683	0.0424	6.63E-04	25%	8.84E-05	4.42E-05	0.5892	0.3661	5.72E-03	49%	7.63E-04	3.81E-04	0.0116	0.0072	1.13E-04	35%	1.50E-05	7.51E-06	0.011	0.007	1.03E-04	35%	1.37E-05	6.87E-06
L002	D2 Landscape Deck (SB)	D2MSB	0.125	1	300	0.0765	0.0475	4.95E-04	24%	6.60E-05	3.30E-05	0.6462	0.4015	4.18E-03	38%	5.58E-04	2.79E-04	0.0119	0.0074	7.68E-05	28%	1.02E-05	5.12E-06	0.011	0.007	7.02E-05	28%	9.35E-06	4.68E-06
				2	250	0.0680	0.0423	3.67E-04	17%	4.89E-05	2.45E-05	0.5710	0.3548	3.08E-03	28%	4.11E-04	2.05E-04	0.0102	0.0063	5.48E-05	20%	7.30E-06	3.65E-06	0.009	0.006	5.01E-05	20%	6.68E-06	3.34E-06
				3	250	0.0673	0.0418	3.63E-04	17%	4.84E-05	2.42E-05	0.5662	0.3518	3.05E-03	28%	4.07E-04	2.04E-04	0.0113	0.0070	6.09E-05	22%	8.12E-06	4.06E-06	0.010	0.006	5.56E-05	22%	7.41E-06	3.71E-06
				4	250	0.0768	0.0477	4.14E-04	20%	5.52E-05	2.76E-05	0.5891	0.3660	3.18E-03	29%	4.24E-04	2.12E-04	0.0099	0.0062	5.36E-05	20%	7.15E-06	3.57E-06	0.009	0.006	4.92E-05	20%	6.56E-06	3.28E-06
				5	250	0.0780	0.0484	4.21E-04	20%	5.61E-05	2.80E-05	0.5836	0.3626	3.15E-03	28%	4.20E-04	2.10E-04	0.0103	0.0064	5.57E-05	20%	7.42E-06	3.71E-06	0.009	0.006	5.10E-05	20%	6.80E-06	3.40E-06
				6	250	0.0765	0.0476	4.13E-04	20%	5.50E-05	2.75E-05	0.5701	0.3543	3.08E-03	28%	4.10E-04	2.05E-04	0.0112	0.0069	6.03E-05	22%	8.04E-06	4.02E-06	0.010	0.006	5.51E-05	22%	7.35E-06	3.67E-06
				7	350	0.1367	0.0849	1.03E-03	49%	1.38E-04	6.88E-05	0.8224	0.5110	6.21E-03	56%	8.28E-04	4.14E-04	0.0154	0.0096	1.16E-04	42%	1.55E-05	7.75E-06	0.014	0.009	1.06E-04	42%	1.41E-05	7.06E-06
				8	650	0.1271	0.0790	1.78E-03	85%	2.38E-04	1.19E-04	0.6840	0.4250	9.59E-03	87%	1.28E-03	6.39E-04	0.0149	0.0093	2.09E-04	76%	2.79E-05	1.40E-05	0.014	0.009	1.92E-04	76%	2.56E-05	1.28E-05
				9	850	0.1102	0.0685	2.02E-03	96%	2.69E-04	1.35E-04	0.6027	0.3745	**1.11E-02**	**100%**	**1.47E-03**	**7.37E-04**	0.0150	0.0093	**2.74E-04**	**100%**	**3.66E-05**	**1.83E-05**	0.014	0.009	**2.52E-04**	**100%**	**3.36E-05**	**1.68E-05**
				10	500	0.1812	0.1126	1.95E-03	93%	2.61E-04	1.30E-04	0.8014	0.4980	8.65E-03	78%	1.15E-03	5.76E-04	0.0181	0.0113	1.96E-04	71%	2.61E-05	1.30E-05	0.017	0.010	1.79E-04	71%	2.39E-05	1.19E-05
				11	450	0.1982	0.1231	1.92E-03	91%	2.57E-04	1.28E-04	0.8778	0.5454	8.52E-03	77%	1.14E-03	5.68E-04	0.0188	0.0117	1.83E-04	67%	2.43E-05	1.22E-05	0.017	0.011	1.67E-04	66%	2.22E-05	1.11E-05
				12	400	0.1831	0.1138	1.58E-03	75%	2.11E-04	1.05E-04	0.8149	0.5063	7.03E-03	64%	9.38E-04	4.69E-04	0.0180	0.0112	1.55E-04	56%	2.07E-05	1.03E-05	0.016	0.010	1.42E-04	56%	1.89E-05	9.44E-06
				13	500	0.1597	0.0992	1.72E-03	82%	2.30E-04	1.15E-04	0.7979	0.4958	8.61E-03	78%	1.15E-03	5.74E-04	0.0176	0.0109	1.90E-04	69%	2.53E-05	1.27E-05	0.016	0.010	1.73E-04	69%	2.31E-05	1.16E-05
				14	450	0.1690	0.1050	1.64E-03	78%	2.19E-04	1.09E-04	0.8037	0.4994	7.80E-03	71%	1.04E-03	5.20E-04	0.0180	0.0112	1.75E-04	64%	2.33E-05	1.16E-05	0.016	0.010	1.60E-04	63%	2.13E-05	1.06E-05
				15	500	0.1951	0.1212	**2.10E-03**	**100%**	**2.81E-04**	**1.40E-04**	0.8515	0.5291	9.19E-03	83%	1.22E-03	6.12E-04	0.0190	0.0118	2.05E-04	75%	2.73E-05	1.37E-05	0.017	0.011	1.87E-04	74%	2.49E-05	1.25E-05
				16	550	0.1751	0.1088	2.08E-03	99%	2.77E-04	1.39E-04	0.7931	0.4928	9.41E-03	85%	1.25E-03	6.27E-04	0.0179	0.0111	2.12E-04	77%	2.82E-05	1.41E-05	0.016	0.010	1.94E-04	77%	2.59E-05	1.29E-05
				17	600	0.1429	0.0888	1.85E-03	88%	2.47E-04	1.23E-04	0.6933	0.4308	8.97E-03	81%	1.20E-03	5.98E-04	0.0178	0.0111	2.31E-04	84%	3.08E-05	1.54E-05	0.016	0.010	2.11E-04	84%	2.82E-05	1.41E-05
				18	650	0.1125	0.0699	1.58E-03	75%	2.10E-04	1.05E-04	0.6117	0.3801	8.58E-03	78%	1.14E-03	5.72E-04	0.0170	0.0106	2.38E-04	87%	3.17E-05	1.59E-05	0.016	0.010	2.18E-04	86%	2.90E-05	1.45E-05
				19	650	0.1170	0.0727	1.64E-03	78%	2.19E-04	1.09E-04	0.6077	0.3776	8.52E-03	77%	1.14E-03	5.68E-04	0.0173	0.0107	2.42E-04	88%	3.23E-05	1.61E-05	0.016	0.010	2.21E-04	88%	2.95E-05	1.48E-05
				20	550	0.0742	0.0461	8.80E-04	42%	1.17E-04	5.87E-05	0.5616	0.3489	6.66E-03	60%	8.89E-04	4.44E-04	0.0161	0.0100	1.91E-04	70%	2.54E-05	1.27E-05	0.015	0.009	1.74E-04	69%	2.32E-05	1.16E-05
				21	500	0.0681	0.0423	7.34E-04	35%	9.79E-05	4.90E-05	0.5547	0.3447	5.98E-03	54%	7.98E-04	3.99E-04	0.0145	0.0090	1.56E-04	57%	2.08E-05	1.04E-05	0.013	0.008	1.43E-04	57%	1.90E-05	9.51E-06
				22	450	0.0563	0.0350	5.46E-04	26%	7.28E-05	3.64E-05	0.5013	0.3115	4.87E-03	44%	6.49E-04	3.24E-04	0.0136	0.0084	1.32E-04	48%	1.76E-05	8.79E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.04E-06
				23	450	0.0647	0.0402	6.29E-04	30%	8.38E-05	4.19E-05	0.5341	0.3319	5.19E-03	47%	6.91E-04	3.46E-04	0.0136	0.0085	1.32E-04	48%	1.76E-05	8.81E-06	0.012	0.008	1.21E-04	48%	1.61E-05	8.06E-06
				24	450	0.0732	0.0455	5.53E-04	26%	7.37E-05	3.68E-05	0.5886	0.3657	4.44E-03	40%	5.93E-04	2.96E-04	0.0130	0.0081	9.79E-05	30%	1.31E-05	6.53E-06	0.012	0.007	8.95E-05	30%	1.19E-05	5.97E-06
L003a	D2 Landscape Deck (NB)	D2MNB	0.037	1	350	0.0841	0.0522	1.90E-04	22%	2.53E-05	1.27E-05	0.6137	0.3813	1.39E-03	37%	1.85E-04	9.24E-05	0.0137	0.0085	3.09E-05	26%	4.12E-06	2.06E-06	0.012	0.008	2.82E-05	26%	3.76E-06	1.88E-06
				2	300	0.0862	0.0536	1.67E-04	19%	2.23E-05	1.11E-05	0.5699	0.3541	1.10E-03	30%	1.47E-04	7.36E-05	0.0119	0.0074	2.30E-05	20%	3.06E-06	1.53E-06	0.011	0.007	2.10E-05	20%	2.81E-06	1.40E-06
				3	300	0.0726	0.0451	1.41E-04	16%	1.87E-05	9.37E-06	0.5452	0.3387	1.06E-03	28%	1.41E-04	7.04E-05	0.0130	0.0081	2.51E-05	21%	3.35E-06	1.68E-06	0.012	0.007	2.29E-05	21%	3.06E-06	1.53E-06
				4	300	0.0858	0.0533	1.66E-04	19%	2.22E-05	1.11E-05	0.5703	0.3543	1.10E-03	30%	1.47E-04	7.36E-05	0.0114	0.0071	2.20E-05	19%	2.93E-06	1.47E-06	0.010	0.006	2.02E-05	19%	2.69E-06	1.35E-06
				5	250	0.0853	0.0530	1.38E-04	16%	1.83E-05	9.17E-06	0.5672	0.3524	9.15E-04	25%	1.22E-04	6.10E-05	0.0117	0.0073	1.89E-05	16%	2.52E-06	1.26E-06	0.011	0.007	1.73E-05	16%	2.31E-06	1.15E-06
				6	300	0.0966	0.0600	1.87E-04	21%	2.50E-05	1.25E-05	0.5747	0.3571	1.11E-03	30%	1.48E-04	7.42E-05	0.0129	0.0080	2.51E-05	21%	3.34E-06	1.67E-06	0.012	0.007	2.29E-05	21%	3.05E-06	1.53E-06
				7	400	0.1474	0.0916	3.81E-04	43%	5.07E-05	2.54E-05	0.8122	0.5047	2.10E-03	56%	2.80E-04	1.40E-04	0.0178	0.0111	4.60E-05	39%	6.13E-06	3.07E-06	0.016	0.010	4.19E-05	39%	5.58E-06	2.79E-06
				8	800	0.1366	0.0849	7.05

L004b	D2 Landscape Deck (WSB)	D2WSB	0.037	1	250	0.1091	0.0678	1.76E-04	22%	2.35E-05	1.17E-05	0.6123	0.3805	9.88E-04	33%	1.32E-04	6.59E-05	0.0186	0.0116	3.01E-05	26%	4.01E-06	2.01E-06	0.017	0.011	2.74E-05	27%	3.66E-06	1.83E-06
				2	200	0.1042	0.0647	1.35E-04	17%	1.79E-05	8.97E-06	0.5271	0.3275	6.81E-04	23%	9.07E-05	4.54E-05	0.0159	0.0099	2.05E-05	18%	2.73E-06	1.37E-06	0.015	0.009	1.87E-05	18%	2.50E-06	1.25E-06
				3	200	0.0970	0.0603	1.25E-04	16%	1.67E-05	8.35E-06	0.5177	0.3217	6.68E-04	23%	8.91E-05	4.46E-05	0.0177	0.0110	2.29E-05	20%	3.05E-06	1.52E-06	0.016	0.010	2.08E-05	20%	2.78E-06	1.39E-06
				4	200	0.1223	0.0760	1.58E-04	20%	2.11E-05	1.05E-05	0.5579	0.3467	7.20E-04	24%	9.60E-05	4.80E-05	0.0155	0.0096	2.00E-05	18%	2.66E-06	1.33E-06	0.014	0.009	1.83E-05	18%	2.44E-06	1.22E-06
				5	200	0.1186	0.0737	1.53E-04	19%	2.04E-05	1.02E-05	0.5544	0.3445	7.16E-04	24%	9.54E-05	4.77E-05	0.0156	0.0097	2.02E-05	18%	2.69E-06	1.34E-06	0.014	0.009	1.85E-05	18%	2.46E-06	1.23E-06
				6	250	0.1316	0.0818	2.12E-04	26%	2.83E-05	1.42E-05	0.5798	0.3602	9.36E-04	32%	1.25E-04	6.24E-05	0.0181	0.0112	2.92E-05	26%	3.89E-06	1.94E-06	0.017	0.010	2.66E-05	26%	3.55E-06	1.78E-06
				7	300	0.2101	0.1306	4.07E-04	51%	5.43E-05	2.71E-05	0.8594	0.5340	1.66E-03	56%	2.22E-04	1.11E-04	0.0257	0.0159	4.97E-05	44%	6.63E-06	3.31E-06	0.023	0.014	4.52E-05	44%	6.02E-06	3.01E-06
				8	650	0.1811	0.1125	7.60E-04	95%	1.01E-04	5.06E-05	0.6921	0.4301	2.90E-03	98%	3.87E-04	1.94E-04	0.0218	0.0135	9.13E-05	80%	1.22E-05	6.09E-06	0.020	0.012	8.37E-05	81%	1.12E-05	5.58E-06
				9	850	0.1327	0.0825	7.28E-04	91%	9.71E-05	4.85E-05	0.5409	0.3361	2.97E-03	100%	3.96E-04	1.98E-04	0.0188	0.0117	1.03E-04	91%	1.38E-05	6.89E-06	0.017	0.011	9.50E-05	92%	1.27E-05	6.33E-06
				10	500	0.2463	0.1531	7.95E-04	99%	1.06E-04	5.30E-05	0.8346	0.5186	2.69E-03	91%	3.59E-04	1.80E-04	0.0257	0.0160	8.29E-05	73%	1.10E-05	5.52E-06	0.023	0.015	7.57E-05	73%	1.01E-05	5.05E-06
				11	450	0.2472	0.1536	7.18E-04	89%	9.57E-05	4.79E-05	0.8894	0.5527	2.58E-03	87%	3.44E-04	1.72E-04	0.0282	0.0175	8.20E-05	72%	1.09E-05	5.47E-06	0.026	0.016	7.45E-05	72%	9.94E-06	4.97E-06
				12	450	0.2410	0.1497	7.00E-04	87%	9.33E-05	4.67E-05	0.8483	0.5271	2.46E-03	83%	3.29E-04	1.64E-04	0.0252	0.0156	7.31E-05	64%	9.73E-06	4.86E-06	0.023	0.014	6.67E-05	64%	8.90E-06	4.45E-06
				13	500	0.1989	0.1236	6.42E-04	80%	8.56E-05	4.28E-05	0.7836	0.4869	2.53E-03	85%	3.37E-04	1.69E-04	0.0246	0.0153	7.95E-05	70%	1.06E-05	5.30E-06	0.022	0.014	7.24E-05	70%	9.66E-06	4.83E-06
				14	450	0.2289	0.1422	6.65E-04	83%	8.87E-05	4.43E-05	0.8308	0.5162	2.41E-03	81%	3.22E-04	1.61E-04	0.0252	0.0157	7.32E-05	64%	9.76E-06	4.88E-06	0.023	0.014	6.68E-05	65%	8.91E-06	4.45E-06
				15	500	0.2486	0.1545	**8.02E-04**	**100%**	**1.07E-04**	**5.35E-05**	0.8610	0.5350	2.78E-03	94%	3.71E-04	1.85E-04	0.0263	0.0163	8.47E-05	75%	1.13E-05	5.65E-06	0.024	0.015	7.73E-05	75%	1.03E-05	5.15E-06
				16	550	0.2236	0.1390	7.94E-04	99%	1.06E-04	5.29E-05	0.8081	0.5021	2.87E-03	97%	3.83E-04	1.91E-04	0.0245	0.0152	8.69E-05	77%	1.16E-05	5.80E-06	0.022	0.014	7.94E-05	77%	1.06E-05	5.30E-06
				17	650	0.1813	0.1127	7.61E-04	95%	1.01E-04	5.07E-05	0.7078	0.4398	**2.97E-03**	**100%**	**3.96E-04**	**1.98E-04**	0.0237	0.0147	9.95E-05	88%	1.33E-05	6.63E-06	0.022	0.013	9.08E-05	88%	1.21E-05	6.05E-06
				18	700	0.1330	0.0826	6.01E-04	75%	8.01E-05	4.01E-05	0.5814	0.3612	2.63E-03	88%	3.50E-04	1.75E-04	0.0217	0.0135	9.82E-05	86%	1.31E-05	6.55E-06	0.020	0.012	8.95E-05	87%	1.19E-05	5.97E-06
				19	700	0.1630	0.1013	7.37E-04	92%	9.82E-05	4.91E-05	0.6369	0.3958	2.88E-03	97%	3.84E-04	1.92E-04	0.0251	0.0156	**1.14E-04**	**100%**	**1.52E-05**	**7.58E-06**	0.023	0.014	**1.03E-04**	**100%**	**1.38E-05**	**6.90E-06**
				20	600	0.0821	0.0510	3.18E-04	40%	4.24E-05	2.12E-05	0.5349	0.3324	2.07E-03	70%	2.76E-04	1.38E-04	0.0215	0.0134	8.34E-05	73%	1.11E-05	5.56E-06	0.020	0.012	7.57E-05	73%	1.01E-05	5.04E-06
				21	550	0.0723	0.0449	2.57E-04	32%	3.42E-05	1.71E-05	0.4923	0.3059	1.75E-03	59%	2.33E-04	1.17E-04	0.0182	0.0113	6.46E-05	57%	8.62E-06	4.31E-06	0.017	0.010	5.90E-05	57%	7.86E-06	3.93E-06
				22	450	0.0683	0.0424	1.98E-04	25%	2.65E-05	1.32E-05	0.4658	0.2894	1.35E-03	46%	1.80E-04	9.02E-05	0.0175	0.0109	5.09E-05	45%	6.78E-06	3.39E-06	0.016	0.010	4.64E-05	45%	6.19E-06	3.09E-06
				23	450	0.0743	0.0462	2.16E-04	27%	2.88E-05	1.44E-05	0.4896	0.3042	1.42E-03	48%	1.90E-04	9.48E-05	0.0180	0.0112	5.22E-05	46%	6.95E-06	3.48E-06	0.016	0.010	4.76E-05	46%	6.34E-06	3.17E-06
				24	350	0.0903	0.0561	2.04E-04	25%	2.72E-05	1.36E-05	0.5436	0.3378	1.23E-03	41%	1.64E-04	8.19E-05	0.0177	0.0110	3.99E-05	35%	5.32E-06	2.66E-06	0.016	0.010	3.64E-05	35%	4.85E-06	2.43E-06
L158	CKR Tunnel Portal Emission (EB)	CKRTEEB	1.750	1	900	0.0458	0.0285	6.23E-03	24%	1.38E-03	6.92E-04	0.3628	0.2254	4.93E-02	24%	1.10E-02	5.48E-03	0.0130	0.0080	1.76E-03	25%	3.91E-04	1.96E-04	0.0126	0.008	1.71E-03	26%	3.81E-04	1.91E-04
				2	950	0.0460	0.0286	6.60E-03	25%	1.47E-03	7.34E-04	0.3655	0.2271	5.24E-02	26%	1.17E-02	5.83E-03	0.0131	0.0082	1.88E-03	27%	4.18E-04	2.09E-04	0.0111	0.007	1.59E-03	25%	3.54E-04	1.77E-04
				3	500	0.0452	0.0281	3.41E-03	13%	7.58E-04	3.79E-04	0.3685	0.2290	2.78E-02	14%	6.18E-03	3.09E-03	0.0129	0.0080	9.75E-04	14%	2.17E-04	1.08E-04	0.0110	0.007	8.27E-04	13%	1.84E-04	9.19E-05
				4	500	0.0446	0.0277	3.37E-03	13%	7.49E-04	3.74E-04	0.3666	0.2278	2.77E-02	13%	6.15E-03	3.08E-03	0.0129	0.0080	9.72E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.24E-04	13%	1.83E-04	9.16E-05
				5	500	0.0443	0.0276	3.35E-03	13%	7.44E-04	3.72E-04	0.3703	0.2301	2.80E-02	14%	6.21E-03	3.11E-03	0.0129	0.0080	9.71E-04	14%	2.16E-04	1.08E-04	0.0109	0.007	8.23E-04	13%	1.83E-04	9.14E-05
				6	950	0.0462	0.0287	6.63E-03	25%	1.47E-03	7.36E-04	0.3726	0.2315	5.35E-02	26%	1.19E-02	5.94E-03	0.0131	0.0082	1.88E-03	27%	4.19E-04	2.09E-04	0.0111	0.007	1.60E-03	25%	3.55E-04	1.77E-04
				7	1400	0.0460	0.0286	9.73E-03	37%	2.16E-03	1.08E-03	0.3734	0.2320	7.90E-02	39%	1.75E-02	8.77E-03	0.0122	0.0076	2.58E-03	37%	5.74E-04	2.87E-04	0.0112	0.007	2.37E-03	37%	5.28E-04	2.64E-04
				8	2350	0.0460	0.0286	1.63E-02	62%	3.62E-03	1.81E-03	0.3768	0.2341	1.34E-01	65%	2.97E-02	1.49E-02	0.0127	0.0079	4.51E-03	64%	1.00E-03	5.01E-04	0.0113	0.007	4.01E-03	62%	8.92E-04	4.46E-04
				9	2950	0.0474	0.0295	2.11E-02	81%	4.70E-03	2.35E-03	0.3964	0.2463	1.77E-01	86%	3.92E-02	1.96E-02	0.0125	0.0077	5.55E-03	79%	1.23E-03	6.17E-04	0.0113	0.007	5.01E-03	77%	1.11E-03	5.57E-04
				10	2800	0.0483	0.0300	2.04E-02	78%	4.54E-03	2.27E-03	0.3892	0.2418	1.65E-01	80%	3.66E-02	1.83E-02	0.0131	0.0081	5.54E-03	79%	1.23E-03	6.15E-04	0.0121	0.008	5.12E-03	79%	1.14E-03	5.69E-04
				11	2350	0.0458	0.0284	1.62E-02	62%	3.61E-03	1.80E-03	0.3737	0.2322	1.33E-01	65%	2.95E-02	1.47E-02	0.0126	0.0078	4.46E-03	63%	9.92E-04	4.96E-04	0.0118	0.007	4.20E-03	65%	9.33E-04	4.66E-04
				12	2300	0.0459	0.0285	1.60E-02	61%	3.54E-03	1.77E-03	0.3711	0.2306	1.29E-01	63%	2.86E-02	1.43E-02	0.0127	0.0079	4.40E-03	62%	9.78E-04	4.89E-04	0.0119	0.007	4.15E-03	64%	9.22E-04	4.61E-04
				13	2300	0.0458	0.0284	1.59E-02	61%	3.53E-03	1.77E-03	0.3699	0.2298	1.28E-01	63%	2.86E-02	1.43E-02	0.0126	0.0078	4.37E-03	62%	9.71E-04	4.85E-04	0.0118	0.007	4.12E-03	63%	9.15E-04	4.57E-04
				14	2300	0.0460	0.0286	1.60E-02	61%	3.55E-03	1.77E-03	0.3706	0.2303	1.29E-01	63%	2.86E-02	1.43E-02	0.0125	0.0078	4.35E-03	62%	9.67E-04	4.83E-04	0.0118	0.007	4.09E-03	63%	9.10E-04	4.55E-04
				15	2700	0.0473	0.0294	1.93E-02	74%	4.29E-03	2.14E-03	0.3740	0.2324	1.53E-01	74%	3.39E-02	1.69E-02	0.0132	0.0082	5.40E-03	77%	1.20E-03	6.00E-04	0.0123	0.008	5.00E-03	77%	1.11E-03	5.55E-04
				16	2700	0.0468	0.0291	1.91E-02	73%	4.24E-03	2.12E-03	0.3725	0.2314	1.52E-01	74%	3.38E-02	1.69E-02	0.0131	0.0081	5.34E-03	76%	1.19E-03	5.94E-04	0.0121	0.008	4.95E-03	76%	1.10E-03	5.50E-04
				17	2650	0.0456	0.0283	1.82E-02	70%	4.05E-03	2.03E-03	0.3690	0.2293	1.48E-01	72%	3.28E-02	1.64E-02	0.0127	0.0079	5.09E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.70E-03	72%	1.05E-03	5.23E-04
				18	2650	0.0459	0.0285	1.84E-02	70%	4.09E-03	2.04E-03	0.3713	0.2307	1.49E-01	72%	3.30E-02	1.65E-02	0.0127	0.0079	5.08E-03	72%	1.13E-03	5.65E-04	0.0118	0.007	4.71E-03	73%	1.05E-03	5.23E-04
				19	3400	0.0510	0.0317	**2.62E-02**	**100%**	**5.82E-03**	**2.91E-03**	0.3993	0.2481	**2.05E-01**	**100%**	**4.56E-02**	**2.28E-02**	0.0137	0.0085	**7.05E-03**	**100%**	**1.57E-03**	**7.83E-04**	0.0126	0.008	**6.49E-03**	**100%**	**1.44E-03**	**7.21E-04**
				20	2200	0.0450	0.0280	1.50E-02	57%	3.32E-03	1.66E-03	0.3577	0.2222	1.19E-01	58%	2.64E-02	1.32E-02	0.0129	0.0080	4.27E-03	61%	9.49E-04	4.75E-04	0.0122	0.008	4.05E-03	62%	8.99E-04	4.50E-04
				21	1800	0.0457	0.0284	1.24E-02	47%	2.76E-03	1.38E-03	0.3588	0.2230	9.76E-02	48%	2.17E-02	1.08E-02	0.0128	0.0080	3.49E-03	49%	7.75E-04	3.87E-04	0.0116	0.007	3.15E-03	49%	7.01E-04	3.50E-04
				22	1800	0.0458	0.0284	1.24E-02	48%	2.77E-03	1.38E-03	0.3606	0.2240	9.80E-02	48%	2.18E-02	1.09E-02	0.0130	0.0081	3.52E-03	50%	7.83E-04	3.92E-04	0.0117	0.007	3.19E-03	49%	7.09E-04	3.55E-04
				23	1850	0.0464	0.0288	9.26E-03	36%	3.06E-03	1.03E-03	0.3616	0.2247	7.27E-02	36%	1.64E-02	8.19E-03	0.0129	0.0080	2.62E-03	37%	5.83E-04	2.91E-04	0.0119	0.007	2.43E-03	37%	5.40E-04	2.70E-04
				24	1350	0.0449	0.0279	9.16E-03	35%	2.03E-03	1.02E-03	0.3602	0.2238	7.34E-02	36%	1.63E-02	8.16E-03	0.0128	0.0080	2.62E-03	37%	5.81E-04	2.91E-04	0.0118	0.007	2.42E-03	37%	5.37E-04	2.68E-04
L159	CKR Landscape Deck (SWB)	CKRLDSWB	0.195	1	1300	0.0275	0.0171	1.20E-03	18%	2.67E-04	1.34E-04	0.2067	0.1284	9.04E-03	20%	2.01E-03	1.00E-03	0.0077	0.0048	3.38E-04	24%	7.50E-05	3.75E-05	0.0071	0.004	3.12E-04	24%	6.92E-05	3.46E-05
				2	1300	0.0274	0.0170	1.20E-03	18%	2.67E-04	1.33E-04	0.2072	0.1287	9.07E-03	20%	2.01E-03	1.01E-03	0.0077	0.0048	3.36E-04	24%	7.47E-05	3.73E-05	0.0071	0.004	3.10E-04	24%	6.89E-05	3.45E-05
				3	700	0.0279	0.0173	6.57E-04	10%	1.46E-04	7.30E-05	0.2110	0.1311	4.97E-03	11%	1.10E-03	5.52E-04	0.0078	0.0048	1.84E-04	13%	4.08E-05	2.04E-05	0.0072	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				4	700	0.0279	0.0173	6.58E-04	10%	1.46E-04	7.31E-05	0.2118	0.1316	4.99E-03	11%	1.11E-03	5.54E-04	0.0078	0.0048	1.83E-04	13%	4.08E-05	2.04E-05	0.0072	0.004	1.69E-04	13%	3.76E-05	1.88E-05
				5	700	0.0272	0.0169	6.42E-04	10%	1.43E-04	7.13E-05	0.2113	0.1313	4.98E-03	11%	1.11E-03	5.53E-04	0.0076	0.0047	1.79E-04	13%	3.97E-05	1.98E-05	0.0070	0.004	1.65E-04	13%	3.66E-05	1.83E-05
				6	1350	0.0276	0.0171	1.25E-03	19%	2.78E-04	1.39E-04	0.2109	0.1311	9.58E-03	21%	2.13E-03	1.06E-03	0.0076	0.0047	3.46E-04	24%	7.69E-05	3.84E-05	0.0070	0.004	3.19E-04	24%	7.09E-05	3.55E-05
				7	2000	0.0277	0.0172	1.87E-03	28%	4.15E-04	2.07E-04	0.2119	0.1317	1.43E-02	31%	3.17E-03	1.58E-03	0.0077	0.0048	5.15E-04	36%	1.15E-04	5.73E-05	0.0071	0.004	4.75E-04	36%	1.06E-04	5.28E-05
				8	3350	0.0297	0.0184	3.35E-03	50%	7.43E-04	3.72E-04	0.2296	0.1427	2.59E-02	56%	5.75E-03	2.88E-03	0.0078	0.0048	8.77E-04	62%	1.95E-04	9.75E-05	0.0072	0.004	8.08E-04	61%	1.79E-04	8.97E-05
				9	4700	0.0420	0.0261	**6.65E-03**	**100%**	**1.48E-03**	**7.39E-04**	0.2917	0.1813	**4.61E-02**	**100%**	**1.03E-02**	**5.13E-03**	0.0090	0.0056	**1.42E-03**	**100%**	**3.16E-04**	**1.58E-04**	0.0083	0.005	**1.31E-03**	**100%**	**2.92E-04**	**1.46E-04**
				10	3950	0.0336	0.0209	4.47E-03	67%	9.94E-04	4.97E-04	0.2477	0.1539	3.29E-02	71%	7.32E-03	3.66E-03	0.0082	0.0051	1.09E-03	76%	2.41E-04	1.21E-04	0.0075	0.005	1.00E-03	76%	2.23E-04	1.11E-04
				11	3300	0.0298	0.0185	3.31E-03	50%	7.35E-04	3.67E-04	0.2284	0.1419	2.54E-02	55%	5.64E-03	2.82E-03	0.0078	0.0049	8.71E-04	61%	1.93E-04	9.67E-05	0.0072	0.004	8.01E-04	61%	1.78E-04	8.90E-05
				12	3300	0.0295	0.0183	3.28E-03	49%	7.28E-04	3.64E-04	0.2272	0.1412	2.52E-02	55%	5.61E-03	2.80E-03	0.0078	0.0048	8.66E-04	61%	1.92E-04	9.62E-05	0.0072	0.004	7.97E-04	61%	1.77E-04	8.85E-05
				13	3250	0.0291	0.0181	3.18E-03	48%	7.07E-04	3.54E-04	0.2238	0.1390	2.45E-02	53%	5.44E-03	2.72E-03	0.0077	0.0048	8.48E-04	60%	1.88E-04	9.42E-05	0.0072	0.004	7.83E-04	60%	1.74E-04	8.70E-05
				14	3250	0.0292	0.0181	3.19E-03	48%	7.09E-04	3.55E-04	0.2245	0.1395	2.46E-02	53%	5.46E-03	2.73E-03	0.0078	0.0048	8.49E-04	60%	1.89E-04	9.44E-05	0.0072	0.004	7.85E-04	60%	1.74E-04	8.72E-05
				15	3850	0.0326	0.0203	4.23E-03	64%	9.39E-04	4.69E-04	0.2382	0.1480	3.09E-02	67%	6.86E-03	3.43E-03	0.0080	0.0051	1.06E-03	74%	2.35E-04	1.17E-04	0.0075	0.005	9.73E-04	74%	2.16E-04	1.08E-04
				16	3800	0.0324	0.0201	4.14E-03	62%	9.20E-04	4.60E-04	0.2376	0.1476	3.04E-02	66%	6.75E-03	3.38E-03	0.0081	0.0050	1.04E-03	73%	2.31E-04	1.15E-04	0.0075	0.005	9.57E-04	73%	2.13E-04	1.06E-04
				17	3800	0.0321	0.0199	4.10E-03	62%	9.11E-04	4.56E-04	0.2374	0.1475	3.04E-02	66%	6.75E-03	3.37E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.15E-04	0.0074	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				18	3800	0.0320	0.0199	4.09E-03	62%	9.09E-04	4.55E-04	0.2371	0.1473	3.03E-02	66%	6.74E-03	3.37E-03	0.0081	0.0050	1.03E-03	72%	2.29E-04	1.14E-04	0.0074	0.005	9.49E-04	72%	2.11E-04	1.05E-04
				19	4300	0.0342	0.0213	4.96E-03	75%	1.10E-03	5.51E-04	0.2534	0.1574	3.67E-02	79%	8.15E-03	4.07E-03	0.0081	0.0050	1.17E-03	82%	2.61E-04	1.30E-04	0.0074	0.005	1.07E-03	82%	2.38E-04	1.19E-04
				20	3150	0.0285	0.0177	3.02E-03	45%	6.72E-04	3.36E-04	0.2166	0.1346	2.30E-02	50%	5.10E-03	2.55E-03	0.0078	0.0048	8.26E-04	58%	1.84E-04	9.18E-05	0.0072	0.004	7.59E-04	58%	1.69E-04	8.43E-05
				21	2550	0.0279	0.0173	2.40E-03	36%	5.33E-04	2.66E-04	0.2083	0.1295	1.79E-02	39%	3.97E-03	1.99E-03	0.0078	0.0048	6.68E-04	47%	1.49E-04	7.43E-05	0.0072	0.004	6.15E-04	47%	1.37E-04	6.84E-05
				22	2550	0.0277	0.0172	2.37E-03	36%	5.27E-04	2.64E-04	0.2083	0.1295	1.79E-02	39%	3.97E-03	1.99E-03	0.0077	0.0048	6.62E-04	46%	1.47E-04	7.35E-05	0.0071	0.004	6.09E-04	46%	1.35E-04	6.77E-05
				23	1950	0.0268	0.0167	1.76E-03	26%	3.92E-04	1.96E-04	0.2044	0.1270	1.34E-02	29%	2.98E-03	1.49E-03	0.0076	0.0047	4.98E-04	35%	1.11E-04	5.53E-05	0.0070	0.004	4.60E-04	35%	1.02E-04	5.11E-05
				24	1950	0.0271	0.0169	1.78E-03	27%	3.96E-04	1.98E-04	0.2055	0.1277	1.35E-02	29%	3.00E-03	1.50E-03	0.0077	0.0048	5.02E-04	35%	1.12E-04	5.58E-05	0.0071	0.004	4.63E-04	35%	1.03E-04	5.15E-05
L158	CKR Landscape Deck (NEB)	CKRLDNEB	0.195	1	900	0.046	0.028	1.39E-03	24%	3.08E-04	1.54E-04	0.363	0.225	1.10E-02	24%	2.44E-03	1.22E-03	0.013	0.008	3.92E-04	25%	8.72E-05	4.36E-05	0.013	0.008	3.82E-04	26%	8.49E-05	4.25E-05
				2	950	0.046	0.029	1.47E-03	25%	3.27E-04	1.64E-04	0.365	0.227	1.17E-02	26%	2.60E-03	1.30E-03	0.013	0.008	4.20E-04	27%	9.32E-05	4.66E-05	0.011	0.007	3.55E-04	25%	7.90E-05	3.95E-05
				3	500	0.045	0.028	7.60E-04	13%	1.69E-04	8.44E-05	0.369	0.229	6.20E-03	14%	1.38E-03	6.89E-04	0.013	0.008	2.17E-04	14%	4.83E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.10E-05	2.05E-05
				4	500	0.045	0.028	7.51E-04	13%	1.67E-04	8.35E-05	0.367	0.228	6.17E-03	13%	1.37E-03	6.85E-04	0.013	0.008	2.17E-04	14%	4.81E-05	2.41E-05	0.011	0.007	1.84E-04	13%	4.08E-05	2.04E-05
				5	500	0.044	0.028	7.46E-04	13%	1.66E-04	8.29E-05	0.370	0.230	6.23E-03	14%	1.38E-03	6.92E-04	0.013	0.008	2.16E-04	14%	4.81E-05	2.40E-05	0.011	0.007	1.83E-04	13%	4.07E-05	2.04E-05
				6	950	0.046	0.029	1.48E-03	25%	3.28E-04	1.64E-04	0.373	0.232	1.19E-02	26%	2.65E-03	1.32E-03	0.013	0.008	4.20E-04	27%	9.33E-05	4.66E-05	0.011	0.007	3.56E-04	25%	7.91E-05	3.95E-05
				7	1400	0.046	0.029	2.17E-03	37%	4.82E-04	2.41E-04	0.373	0.232	1.76E-02	39%	3.91E-03	1.96E-03	0.012	0.008	5.76E-04	37%	1.28E-04	6.39E-05	0.011	0.007	5.29E-04	37%	1.18E-04	5.88E-05
				8	2350	0.046	0.029	3.64E-03	62%	8.08E-04	4.04E-04	0.377	0.234	2.98E-02	65%	6.62E-03	3.31E-03	0.013	0.008	1.01E-03	64%	2.23E-04	1.12E-04	0.011	0.007	8.94E-04	62%	1.99E-04	9.93E-05
				9	2950	0.047	0.029	4.71E-03	81%	1.05E-03	5.23E-04	0.396	0.246	3.94E-02	86%	8.75E-03	4.37E-03	0.012	0.008	1.24E-03	79%	2.75E-04	1.37E-04	0.011	0.007	1.12E-03	77%	2.48E-04	1.24E-04
				10	2800	0.048	0.030	4.56E-03	78%	1.01E-03	5.06E-04	0.389	0.242	3.67E-02	80%	8.15E-03	4.08E-03	0.013	0.008	1.23E-03	79%	2.74E-04	1.37E-04	0.012	0.008	1.14E-03	79%	2.

Appendix 4.9 Traffic Forecast (Years 2033, 2040 and 2048) for Air Quality Impact Assessment



Project Title

URA KC-018 AND KC-019 IN MA TAU KOK

J7167

Figure Title

LOCATION OF TRAFFIC DATA FOR AIR QUALITY IMPACT ASSESSMENT

Figure No.	Revision
AQIA/5AB	B

Designed by	Drawn by	Checked by
T H C	C C L	K C

Scale in A3	Date
N.T.S.	21 SEP 2022

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ANNEX I – SPEED LIMIT AND ROAD CLASSIFICATION

Job No.: J7167 Date: 08 四月 2022

Link ID	Road Section	From Road	To Road	Speed Limit (kph)	Road Classification
L001	Shing Kai Road (EB)	Unnamed Road	Muk Tai Street	50	DD
L002	Shing Kai Road (WB)	Shing Fung Road	Unnamed Road	50	DD
L003	Shing Kai Road (NB)	Sung Wong Toi Road	Unnamed Road	50	DD
L004	Shing Kai Road (SB)	Unnamed Road	Sung Wong Toi Road	50	DD
L005	To Kwa Wan Road (NB)	Mok Cheung Street	Sung Wong Toi Road	50	DD
L006	To Kwa Wan Road (SB)	Sung Wong Toi Road	Mok Cheong Street	50	DD
L007	Sung Wong Toi Road (EB)	Kowloon City Road	Shing Kai Road	50	DD
L008	Sung Wong Toi Road (WB)	To Kwa Wan Road	Kowloon City Road	50	DD
L009	Olympic Avenue Slip Road (SB)	Olympic Avenue	Sung Wong Toi Road	50	DD
L010	Sung Wong Toi Road (WB)	Kowloon City Road	Olympic Avenue Slip Road	50	DD
L011	Kowloon City Road (NB)	Mok Cheong Street	Sung Wong Toi Road	50	UT
L012	Olympic Avenue (EB)	Hang Wan Road	Kowloon City Road	50	DD
L013	Kai Tak Tunnel Slip Road (WB)	Kai Tak Tunnel	Sung Wong Toi Road	70	UT
L014	Sung Wong Toi Road (WB)	Olympic Avenue Slip Road	Kai Tak Tunnel Slip Road	50	DD
L016	Muk Yan Street (EB)	Muk Shun Street	End of section	50	LD
L017	Muk Yan Street (WB)	End of section	Muk Shun Street	50	LD
L051	Mok Cheong Street (EB)	Pak Tai Street	Pau Chung Street	50	DD
L052	Mok Cheong Street (EB)	Pau Chung Street	Kowloon City Road	50	DD
L053	Mok Cheong Street (EB)	Kowloon City Road	To Kwa Wan Road	50	DD
L054	To Kwa Wan Road (NB)	Ma Tau Chung Road	Mok Cheong Street	50	DD
L055	To Kwa Wan Road (SB)	Mok Cheong Street	Ma Tau Chung Road	50	DD
L056	Ma Tau Kok Road (WB)	To Kwa Wan Road	Kowloon City Road	50	DD
L057	Kowloon City Road (NB)	Ma Tau Chung Road	Mok Cheung Street	50	UT
L058	Ma Tau Kok Road (WB)	Kowloon City Road	Pau Chung Street	50	DD
L059	Pau Chung Street (SB)	Mok Cheong Street	Ma Tau Kok Road	50	LD
L060	Ma Tau Kok Road (WB)	Pau Chung Street	Pak Tai Street	50	DD
L074	San Shan Road (EB)	Pak Tai Street	Pau Chung Street	50	LD
L075	Pau Chung Street (NB)	San Shan Road	Ma Tau Kok Road	50	LD
L076	Pau Chung Street (SB)	Ma Tau Kok Road	San Shan Road	50	LD
L077	Pau Chung Street (NB)	Ma Hang Chung Road	San Shan Road	50	LD
L078	Pau Chung Street (SB)	San Shan Road	Ma Hang Chung Road	50	LD
L079	San Shan Road (WB)	Kowloon City Road	Pau Chung Street	50	LD
L080	Kowloon City Road (NB)	E Kowloon Corridor Slip Road	Ma Tau Kok Road	50	DD
L081	Kowloon City Road (NB)	San Shan Road	E Kowloon Corridor Slip Road	50	DD
L082	E Kowloon Corridor Slip Road (NB)	San Shan Road	Kowloon City Road	50	UT
L083	East Kowloon Corridor (NB)	San Shan Road	Kai Tak Tunnel	70	UT
L084	San Shan Road (EB)	Kai Tak Tunnel	To Kwa Wan Road	50	DD
L085	East Kowloon Corridor (SB)	Kai Tak Tunnel	San Shan Road	70	UT
L086	San Shan Road (WB)	To Kwa Wan Road	East Kowloon Corridor	50	DD
L087	To Kwa Wan Road (NB)	San Shan Road	Ma Tau Kok Road	50	DD
L088	To Kwa Wan Road (SB)	Ma Tau Kok Road	San Ma Tau Street	50	DD
L089	San Ma Tau Street (EB)	To Kwa Wan Road	End of section	50	LD
L090	San Ma Tau Street (WB)	End of section	To Kwa Wan Road	50	LD
L091	To Kwa Wan Road (NB)	San Ma Tau Street	San Shan Road	50	DD
L092	To Kwa Wan Road (SB)	San Ma Tau Street	San Ma Tau Street	50	DD
L093	San Ma Tau Street (EB)	To Kwa Wan Road	Mei King Street	50	LD
L094	San Ma Tau Street (EB)	Mei King Street	Wai King Street	50	LD
L095	San Ma Tau Street (EB)	Wai King Street	Long Yuet Street	50	LD
L096	Long Yuet Street (SB)	San Ma Tau Street	Shun Fung Street	50	LD
L097	Wai King Street (SB)	San Ma Tau Street	Kwei Chow Street	50	LD
L098	Mei King Street (NB)	Kwei Chow Street	San Ma Tau Street	50	LD
L099	To Kwa Wan Road (SB)	San Ma Tau Street	Kwei Chow Street	50	DD
L100	To Kwa Wan Road (NB)	Kwei Chow Street	San Ma Tau Street	50	DD

ANNEX I – SPEED LIMIT AND ROAD CLASSIFICATION

Job No.: J7167 Date: 08 四月 2022

Link ID	Road Section	From Road	To Road	Speed Limit (kph)	Road Classification
L101	Kwei Chow Street (WB)	Mei King Street	To Kwa Wan Road	50	LD
L102	Kwei Chow Street (WB)	Mei King Street	Mei Kwong Street	50	LD
L103	Kwei Chow Street (WB)	Wai King Street	Mei Kwong Street	50	LD
L104	Kwei Chow Street (WB)	Wai King Street	Long Yuet Street	50	LD
L105	Shun Fung Street (SB)	Long Yuet Street	Yuk Yat Street	50	LD
L106	Yuk Yat Street (NB)	Shun Fung Street	Kwei Chow Street	50	LD
L107	Yuk Yat Street (NB)	Lok Shan Road	Shun Fung Street	50	LD
L108	Yuk Yat Street (SB)	Shun Fung Street	Lok Shan Road	50	LD
L109	Mei Kwong Street (NB)	Mei King Street	Kwei Chow Street	50	LD
L110	Mei King Street (SB)	Kwei Chow Street	Mei Kwong Street	50	LD
L111	Mei King Street (SB)	Mei Kwong Street	Lok Shan Road	50	LD
L112	To Kwa Wan Road (NB)	Lok Shan Road	Sheung Heung Road	50	DD
L113	To Kwa Wan Road (SB)	Sheung Heung Road	Lok Shan Road	50	DD
L114	Sheung Heung Road (EB)	Cheung Ning Street	To Kwa Wan Road	50	LD
L115	Cheung Ning Street (NB)	Sheung Heung road	End of section	50	LD
L116	Cheung Ning Street (SB)	End of section	Sheung Heung Road	50	LD
L117	Cheung Ning Street (NB)	Lok Shan Road	Sheung Heung Road	50	LD
L118	Sheung Heung Road (EB)	Ha Heung Road	Cheung Ning Street	50	LD
L119	Ha Heung Road (NB)	Sheung Heung Road	Sheung Heung Road	50	LD
L120	Ha Heung Road (NB)	Lok Shan Road	Sheung Heung Road	50	LD
L121	Sheung Heung Road (EB)	Kowloon City Road	Ha Heung Road	50	LD
L122	Sheung Heung Road (WB)	Ha Heung Road	Kowloon City Road	50	LD
L123	Kowloon City Road (NB)	Lok Shan Road	Sheung Heung Road	50	DD
L124	Kowloon City Road (SB)	Sheung Heung Road	Lok Shan Road	50	DD
L125	East Kowloon Corridor (NB)	Lok Shan Road	E Kowloon Corridor Slip Road	70	UT
L126	East Kowloon Corridor (SB)	San Shan Road	Lok Shan Road	70	UT
L127	Kowloon City Road (NB)	Ma Hang Chung Road	San Shan Road	50	DD
L128	Ma Hang Chung Road (WB)	Kowloon City Road	Pau Chung Street	50	LD
L129	Kowloon City Road (NB)	Sheung Heung Road	Ma Hang Chung Road	50	DD
L130	Sheung Heung Road (EB)	Pau Chung Street	Kowloon City Road	50	LD
L131	Sheung Heung Road (WB)	Kowloon City Road	Pau Chung Street	50	LD
L132	Pau Chung Street (NB)	Sheung Heung Road	Ma Hang Chung Road	50	LD
L133	Pau Chung Street (SB)	Ma Hang Chung Road	Sheung Heung Road	50	LD
L152	Ma Hang Chung Road (WB)	Pau Chung Street	Pak Tai Street	50	LD
L156	Shing Fung Road (WB)	Shing Fung Road	Shing Fung Road	50	DD
L157	Shing Fung Road (EB)	Shing Fung Road	Shing Fung Road	50	DD
L158	Central Kowloon Route (EB)	Central Kowloon Route	Central Kowloon Route	80	UT
L159	Central Kowloon Route (WB)	Central Kowloon Route	Central Kowloon Route	80	UT

Note: UT – Urban Trunk Road
DD – District Distributor
LD – Local Distributor

TABLE D – HOURLY AVERAGE SPEED

YEAR 2033 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L001	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.25	37.50	39.00	39.25	39.25	38.75	39.00	38.75	38.50	38.25	37.75	37.50	38.50	39.00	39.25	39.25	39.75
L002	40.00	40.00	40.00	40.00	40.00	40.00	39.67	37.67	36.33	38.67	39.00	39.33	38.67	39.00	38.67	38.33	38.00	37.67	37.67	38.33	38.67	39.00	39.00	39.67
L003	39.67	40.00	40.00	40.00	40.00	40.00	39.33	36.67	36.00	38.00	38.33	38.33	38.00	38.00	37.67	37.33	36.67	35.67	35.33	37.00	37.33	37.67	38.00	39.00
L004	40.00	40.00	40.00	40.00	40.00	40.00	40.00	37.67	36.33	38.67	39.00	39.00	38.67	39.00	38.67	38.33	37.67	37.33	37.33	38.00	38.33	39.00	39.00	39.67
L005	39.33	39.67	39.67	39.67	39.67	39.33	38.67	35.67	34.33	37.00	37.00	37.33	36.67	37.00	36.67	36.33	35.67	34.33	34.00	35.67	36.67	37.00	37.33	38.33
L006	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.33	37.67	39.00	39.33	39.33	39.00	39.33	39.00	38.67	38.33	37.67	37.67	38.67	39.00	39.33	39.33	40.00
L007	39.00	40.00	39.50	39.50	40.00	39.50	39.00	36.00	35.00	37.00	37.50	37.50	37.00	37.00	37.00	36.50	36.00	34.50	34.00	36.00	36.50	37.00	37.50	38.50
L008	38.50	39.00	39.00	39.00	39.00	38.50	37.50	33.00	31.50	35.00	35.50	36.00	35.00	35.00	35.00	34.00	33.00	32.00	32.00	33.50	34.50	35.50	36.00	37.00
L009	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	34.00	37.00	37.00	37.00	37.00	37.00	37.00	36.00	35.00	33.00	34.00	35.00	36.00	37.00	37.00	38.00
L010	36.50	37.50	37.50	37.50	37.50	36.50	34.50	28.00	26.00	31.50	32.00	32.50	31.00	31.50	31.00	29.50	28.50	26.50	26.00	29.00	30.50	32.00	32.00	34.50
L011	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L012	39.33	39.67	39.67	39.67	40.00	39.33	39.00	36.00	35.00	37.00	37.33	37.67	37.00	37.33	37.00	36.33	35.67	34.33	34.00	36.00	36.67	37.33	37.33	38.33
L013	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	68.61	65.83	70.00	70.00	70.00	70.00	70.00
L014	37.33	38.33	38.00	38.00	38.33	37.67	36.00	30.67	29.00	33.00	34.00	34.33	33.00	33.67	33.00	32.00	30.67	28.67	28.67	31.33	32.67	33.67	34.00	35.67
L016	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L017	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L051	39.50	40.00	40.00	40.00	40.00	39.50	39.00	36.50	35.50	37.50	37.50	37.50	37.00	37.50	37.00	37.00	36.50	35.50	35.50	36.50	37.00	37.50	38.00	38.50
L052	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.14	37.44	38.84	38.84	39.19	38.84	38.84	38.84	38.49	38.14	37.79	37.79	38.49	38.84	39.19	39.19	39.54
L053	38.50	39.50	39.50	39.50	39.50	39.00	38.00	34.50	32.00	35.50	36.00	36.50	35.50	36.00	35.50	35.00	34.00	33.50	33.00	34.50	35.50	36.00	36.00	37.50
L054	40.00	40.00	40.00	40.00	40.00	40.00	39.67	38.00	37.67	38.67	39.00	39.00	38.67	38.67	38.67	38.33	38.00	37.00	37.00	38.00	38.67	39.00	39.00	39.67
L055	39.33	40.00	40.00	39.67	40.00	39.33	38.67	35.67	33.67	36.67	37.00	37.33	36.67	37.00	36.67	36.00	35.33	35.00	35.00	36.00	36.67	37.00	37.33	38.33
L056	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.49	38.49	39.19	39.19	39.54	39.19	39.19	39.19	39.19	38.49	38.14	37.79	38.84	39.19	39.54	39.54	39.89
L057	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L058	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.50	39.50	39.50	39.50	39.50	39.50	39.00	39.00	39.00	38.50	39.00	39.50	39.50	39.50	40.00
L059	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L060	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.32	38.84	38.84	39.37	39.37	38.84	38.84	38.84	38.84	38.32	38.32	37.79	38.84	38.84	39.37	39.37	39.89
L074	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	28.25	29.50	28.25	28.25	28.25	28.25	28.25	27.00	27.00	28.25	28.25	28.25	29.50	29.50
L075	29.50	29.50	29.50	29.50	29.50	29.50	29.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00
L076	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00
L077	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L078	27.00	27.00	27.00	27.00	27.00	27.00	24.50	22.00	19.50	22.00	24.50	24.50	22.00	24.50	22.00	22.00	22.00	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L079	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
L080	39.50	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	37.50	38.00	38.00	37.50	38.00	37.50	37.00	37.00	36.00	35.00	37.00	37.50	38.00	38.00	39.00
L081	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	38.00	38.00	39.00	39.00	39.00
L082	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L083	70.00	70.00	70.00	70.00	70.00	70.00	68.61	54.03	50.56	54.03	56.81	58.19	61.67	65.14	60.28	58.89	60.28	45.69	42.50	57.50	58.19	60.97	63.06	70.00
L084	39.00	39.50	40.00	40.00	40.00	40.00	38.50	36.00	34.00	36.00	36.50	36.50	37.50	38.00	37.00	36.50	37.00	34.50	35.00	36.50	36.50	37.00	37.50	38.50
L085	70.00	70.00	70.00	70.00	70.00	70.00	70.00	69.55	66.58	68.81	70.00	70.00	70.00	70.00	70.00	70.00	70.00	65.09	64.35	70.00	70.00	70.00	70.00	70.00
L086	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	32.00	36.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	34.00	34.00	35.00	36.00	37.00	37.00	38.00
L087	39.75	40.00	40.00	40.00	40.00	40.00	39.25	37.00	36.75	38.00	38.00	38.25	37.75	38.00	37.75	37.50	37.00	36.00	35.50	37.25	37.75	38.25	38.25	39.00
L088	40.00	40.00	40.00	40.00	40.00	40.00	39.75	37.50	36.00	38.25	38.50	38.75	38.25	38.25	38.25	37.75	37.25	37.00	37.00	37.75	38.25	38.50	38.75	39.50
L089	29.50	30.00	30.00	30.00	30.00	29.50	28.67	25.33	24.50	27.00	27.00	27.00	27.00	27.00	27.00	26.17	25.33	25.33	25.33	26.17	27.00	27.00	27.83	28.67
L090	28.67	29.50	29.50	29.50	29.50	29.50	27.83	25.33	24.50	26.17	26.17	26.17	26.17	26.17	25.33	25.33	24.50	24.50	24.50	25.33	26.17	27.00	27.00	27.83
L091	40.00	40.00	40.00	40.00	40.00	40.00	39.75	38.25	38.25	38.75	39.00	39.25	38.75	39.00	38.75	38.50	38.00	37.50	37.00	38.25	38.75	39.00	39.25	39.75
L092	39.00	40.00	40.00	39.67	40.00	39.67	38.33	35.67	34.00	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.33	35.00	35.00	35.67	36.33	37.00	37.00	38.00
L093	28.25	28.25	28.25	28.25	28.25	28.25	27.00	23.25	20.75	24.50	24.50	24.50	24.50	24.50	24.50	23.25	23.25	22.00	22.00	23.25	24.50	24.50	25.75	27.00
L094	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	20.33	20.33	20.33	20.33	18.67	17.00	17.00	15.33	18.67	20.33	20.33	22.00	23.67
L095	28.67	28.67	28.67	28.67	28.67	28.67	28.67	25.33	22.00	25.33	25.33	27.00	25.33	25.33	25.33	25.33	23.67	25.33	23.67	25.33	25.33	27.00	27.00	28.67
L096	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	17.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L097	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50

TABLE D – HOURLY AVERAGE SPEED

YEAR 2033 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L098	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50	29.50
L099	39.67	40.00	40.00	40.00	40.00	40.00	39.00	36.67	35.33	37.67	37.67	38.00	37.67	37.67	37.33	37.00	36.67	36.33	36.33	36.67	37.33	37.67	38.00	38.67
L100	39.00	40.00	40.00	39.67	40.00	39.67	38.33	35.67	35.67	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.67	34.67	34.00	36.00	36.67	37.33	37.33	38.33
L101	30.00	30.00	30.00	30.00	30.00	30.00	29.50	27.63	27.63	28.25	28.88	28.88	28.25	28.25	28.25	28.25	27.63	27.00	27.00	27.63	28.25	28.88	28.88	29.50
L102	25.75	27.00	27.00	27.00	27.00	25.75	24.50	18.25	18.25	20.75	20.75	22.00	20.75	20.75	20.75	19.50	18.25	17.00	15.75	19.50	20.75	22.00	22.00	24.50
L103	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	20.75	22.00	22.00	23.25	22.00	22.00	20.75	20.75	19.50	18.25	17.00	20.75	22.00	23.25	23.25	24.50
L104	29.50	29.50	29.50	29.50	29.50	29.50	28.25	25.75	25.75	25.75	25.75	27.00	25.75	25.75	25.75	25.75	24.50	24.50	23.25	25.75	27.00	27.00	27.00	28.25
L105	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	14.50	19.50	19.50	22.00	19.50	19.50	19.50	19.50	17.00	19.50	17.00	19.50	22.00	22.00	24.50	24.50
L106	28.25	29.50	29.50	29.50	29.50	28.25	27.00	24.50	24.50	24.50	25.75	25.75	25.75	24.50	24.50	24.50	24.50	24.50	23.25	25.75	25.75	27.00	27.00	28.25
L107	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	17.00	22.00	22.00	24.50	24.50	24.50
L108	27.00	27.00	27.00	27.00	27.00	27.00	27.00	22.00	19.50	24.50	24.50	24.50	24.50	24.50	24.50	22.00	22.00	22.00	22.00	22.00	24.50	24.50	24.50	27.00
L109	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	29.50	29.50	29.50	29.50	29.50
L110	29.14	30.00	30.00	30.00	30.00	29.14	29.14	27.71	27.71	27.71	27.71	29.14	27.71	27.71	27.71	27.71	27.71	27.71	26.29	27.71	29.14	29.14	29.14	29.14
L111	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	27.71	29.14	29.14	29.14	29.14	30.00
L112	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.33	39.33	39.67	39.67	39.33	39.33	39.33	39.33	39.00	38.67	38.00	39.00	39.33	39.67	39.67	40.00
L113	39.00	39.67	39.67	39.67	39.67	39.33	38.00	35.00	34.00	36.33	36.67	37.00	36.00	36.33	36.00	35.67	35.00	34.33	34.00	35.33	36.00	36.67	36.67	37.67
L114	29.50	30.00	30.00	30.00	30.00	29.50	28.25	26.38	26.38	27.00	27.63	27.63	27.00	27.63	27.00	27.00	26.38	25.75	25.13	27.00	27.00	27.63	27.63	28.88
L115	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L116	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L117	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	29.50	29.50	30.00	30.00	30.00	30.00
L118	27.00	28.25	28.25	28.25	28.25	28.25	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	23.25	22.00	20.75	20.75	23.25	23.25	24.50	24.50	25.75
L119	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50
L120	27.00	28.25	28.25	28.25	28.25	27.00	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	22.00	22.00	20.75	19.50	23.25	24.50	24.50	24.50	25.75
L121	24.50	27.00	27.00	24.50	27.00	24.50	22.00	14.50	14.50	17.00	19.50	19.50	17.00	19.50	19.50	17.00	17.00	14.50	14.50	17.00	19.50	19.50	19.50	22.00
L122	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	19.50	22.00	22.00	19.50	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50
L123	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	36.00	38.00	38.00	39.00	39.00	39.00
L124	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.00	39.00	39.00	40.00	40.00	40.00	40.00
L125	70.00	70.00	70.00	70.00	70.00	70.00	67.22	49.86	47.08	57.50	58.89	60.97	56.81	58.19	56.11	54.03	49.86	38.75	32.50	49.86	54.03	57.50	58.89	65.14
L126	70.00	70.00	70.00	70.00	70.00	70.00	70.00	65.83	61.67	69.31	70.00	70.00	69.31	70.00	68.61	67.92	65.83	60.97	60.97	65.14	67.92	70.00	70.00	70.00
L127	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	36.00	37.00	38.00	38.00	37.00	38.00	38.00	37.00	37.00	36.00	36.00	37.00	38.00	38.00	38.00	39.00
L128	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	29.50	29.50	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	29.50	29.50	29.50
L129	38.00	39.00	39.00	39.00	39.00	39.00	37.00	34.00	33.00	35.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	33.00	33.00	35.00	36.00	36.00	36.00	38.00
L130	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	22.00	20.33	20.33	20.33	20.33	18.67	17.00	15.33	18.67	20.33	22.00	22.00	23.67
L131	27.00	29.50	29.50	27.00	29.50	27.00	27.00	24.50	24.50	24.50	27.00	27.00	24.50	24.50	24.50	24.50	24.50	24.50	22.00	24.50	24.50	24.50	27.00	27.00
L132	27.00	27.00	27.00	27.00	27.00	27.00	24.50	22.00	19.50	22.00	24.50	24.50	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50
L133	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00
L152	28.67	29.50	29.50	29.50	29.50	28.67	27.83	25.33	24.50	27.00	27.00	27.00	26.17	27.00	26.17	26.17	25.33	24.50	24.50	25.33	26.17	27.00	27.00	27.83
L156	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	40.00	39.67	40.00	40.00	40.00	40.00
L157	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	39.00	40.00	40.00	40.00	40.00	40.00
L158	80.00	80.00	80.00	80.00	80.00	80.00	80.00	75.17	69.00	70.54	75.17	75.68	75.68	75.68	71.57	71.57	72.08	72.08	64.37	76.71	80.00	80.00	80.00	80.00
L159	80.00	80.00	80.00	80.00	80.00	80.00	78.77	64.88	51.00	58.71	65.40	65.40	65.91	65.91	59.74	60.26	60.26	60.26	55.11	66.94	73.11	73.11	79.28	79.28

TABLE D – HOURLY AVERAGE SPEED

YEAR 2040 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L001	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.25	37.50	39.00	39.25	39.25	38.75	39.00	38.75	38.50	38.25	37.75	37.50	38.50	39.00	39.25	39.25	39.75
L002	40.00	40.00	40.00	40.00	40.00	40.00	39.67	37.67	36.33	38.67	39.00	39.00	38.67	39.00	38.67	38.33	38.00	37.67	37.67	38.33	38.67	39.00	39.00	39.67
L003	39.67	40.00	40.00	40.00	40.00	40.00	39.33	36.67	36.00	38.00	38.00	38.33	38.00	38.00	37.67	37.33	36.67	35.67	35.00	37.00	37.33	37.67	38.00	39.00
L004	40.00	40.00	40.00	40.00	40.00	40.00	40.00	37.67	36.33	38.67	38.67	39.00	38.67	39.00	38.67	38.33	37.67	37.33	37.33	38.00	38.33	39.00	39.00	39.67
L005	39.33	39.67	39.67	39.67	39.67	39.33	38.67	35.67	34.33	37.00	37.00	37.33	36.67	37.00	36.67	36.33	35.67	34.33	34.00	35.67	36.67	37.00	37.33	38.33
L006	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.33	37.67	39.00	39.33	39.33	39.00	39.33	39.00	38.67	38.33	37.67	37.67	38.67	39.00	39.33	39.33	40.00
L007	39.00	40.00	39.50	39.50	40.00	39.50	39.00	36.00	35.00	37.00	37.00	37.50	37.00	37.00	37.00	36.50	35.50	34.50	34.00	36.00	36.50	37.00	37.50	38.50
L008	38.50	39.00	39.00	39.00	39.00	38.50	37.50	33.00	31.50	35.00	35.50	36.00	35.00	35.00	35.00	34.00	33.00	32.00	32.00	33.50	34.50	35.50	36.00	37.00
L009	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	34.00	37.00	37.00	37.00	37.00	37.00	37.00	36.00	35.00	33.00	34.00	35.00	36.00	37.00	37.00	38.00
L010	36.50	37.50	37.50	37.00	37.50	36.50	34.50	28.00	26.00	31.00	32.00	32.50	31.00	31.50	31.00	29.50	28.50	26.50	26.00	29.00	30.50	31.50	32.00	34.50
L011	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L012	39.33	39.67	39.67	39.67	40.00	39.33	39.00	36.00	35.00	37.00	37.33	37.67	37.00	37.33	37.00	36.33	35.67	34.33	34.00	36.00	36.67	37.33	37.33	38.33
L013	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	68.61	65.83	70.00	70.00	70.00	70.00	70.00
L014	37.33	38.33	38.00	38.00	38.33	37.67	36.00	30.67	29.00	33.00	34.00	34.33	33.00	33.33	33.00	31.67	30.67	28.67	28.67	31.33	32.67	33.67	34.00	35.67
L016	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L017	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L051	39.50	40.00	40.00	40.00	40.00	39.50	39.00	36.50	35.50	37.50	37.50	37.50	37.00	37.50	37.00	37.00	36.50	35.50	35.50	36.50	37.00	37.50	38.00	38.50
L052	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.14	37.44	38.84	38.84	39.19	38.84	38.84	38.84	38.49	38.14	37.79	37.79	38.49	38.84	39.19	39.19	39.54
L053	38.50	39.50	39.50	39.50	39.50	39.00	38.00	34.50	32.00	35.50	36.00	36.00	35.50	36.00	35.50	35.00	34.00	33.00	33.00	34.50	35.50	36.00	36.00	37.50
L054	40.00	40.00	40.00	40.00	40.00	40.00	39.67	38.00	37.67	38.67	39.00	39.00	38.67	38.67	38.67	38.33	38.00	37.00	37.00	38.00	38.67	39.00	39.00	39.67
L055	39.33	40.00	40.00	39.67	40.00	39.33	38.67	35.67	33.67	36.67	37.00	37.33	36.67	37.00	36.67	36.00	35.33	35.00	35.00	35.67	36.67	37.00	37.33	38.33
L056	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.49	38.49	39.19	39.19	39.54	39.19	39.19	39.19	38.84	38.49	38.14	37.79	38.84	39.19	39.54	39.54	39.89
L057	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L058	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.50	39.50	39.50	39.50	39.50	39.50	39.00	39.00	39.00	38.50	39.00	39.50	39.50	39.50	40.00
L059	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L060	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.32	38.84	38.84	39.37	39.37	38.84	38.84	38.84	38.84	38.32	38.32	37.79	38.84	38.84	39.37	39.37	39.89
L074	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	28.25	29.50	28.25	28.25	28.25	28.25	28.25	27.00	27.00	28.25	28.25	28.25	29.50	29.50
L075	29.50	29.50	29.50	29.50	29.50	29.50	29.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00
L076	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00
L077	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L078	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	24.50	24.50	22.00	24.50	22.00	22.00	22.00	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L079	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
L080	39.50	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	37.50	38.00	38.00	37.50	38.00	37.50	37.00	37.00	36.00	35.00	37.00	37.50	38.00	38.00	39.00
L081	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	38.00	38.00	39.00	39.00	39.00
L082	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L083	70.00	70.00	70.00	70.00	70.00	70.00	68.61	53.33	50.56	54.03	56.81	58.19	61.67	65.14	60.28	58.89	60.28	45.00	42.50	57.50	58.19	60.97	63.06	70.00
L084	39.00	39.50	40.00	40.00	40.00	40.00	38.50	36.00	34.00	35.50	36.50	36.50	37.00	38.00	37.00	36.50	37.00	34.50	35.00	36.50	36.50	37.00	37.50	38.50
L085	70.00	70.00	70.00	70.00	70.00	70.00	70.00	69.55	66.58	68.81	70.00	70.00	70.00	70.00	70.00	70.00	70.00	64.35	64.35	70.00	70.00	70.00	70.00	70.00
L086	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	32.00	36.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	34.00	34.00	35.00	36.00	37.00	37.00	38.00
L087	39.75	40.00	40.00	40.00	40.00	40.00	39.25	37.00	36.50	38.00	38.00	38.25	37.75	38.00	37.75	37.50	37.00	36.00	35.50	37.00	37.75	38.00	38.25	39.00
L088	40.00	40.00	40.00	40.00	40.00	40.00	39.50	37.50	36.00	38.25	38.50	38.50	38.25	38.25	38.00	37.75	37.25	37.00	37.00	37.75	38.25	38.50	38.75	39.50
L089	29.50	30.00	30.00	30.00	30.00	29.50	28.67	25.33	24.50	27.00	27.00	27.00	27.00	27.00	27.00	26.17	25.33	25.33	25.33	26.17	27.00	27.00	27.83	28.67
L090	28.67	29.50	29.50	29.50	29.50	29.50	27.83	24.50	24.50	26.17	26.17	26.17	26.17	26.17	25.33	25.33	24.50	24.50	24.50	25.33	26.17	27.00	27.00	27.83
L091	40.00	40.00	40.00	40.00	40.00	40.00	39.75	38.00	38.25	38.75	39.00	39.25	38.75	39.00	38.75	38.50	38.00	37.50	37.00	38.25	38.75	39.00	39.25	39.75
L092	39.00	40.00	39.67	39.67	40.00	39.67	38.33	35.67	34.00	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.33	35.00	34.67	35.67	36.33	37.00	37.00	38.00
L093	28.25	28.25	28.25	28.25	28.25	28.25	27.00	23.25	20.75	24.50	24.50	24.50	24.50	24.50	24.50	23.25	23.25	22.00	22.00	23.25	24.50	24.50	24.50	27.00
L094	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	20.33	20.33	20.33	20.33	18.67	17.00	17.00	15.33	18.67	20.33	20.33	22.00	23.67
L095	28.67	28.67	28.67	28.67	28.67	28.67	28.67	25.33	22.00	25.33	25.33	27.00	25.33	25.33	25.33	25.33	23.67	25.33	23.67	25.33	25.33	27.00	27.00	28.67
L096	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	17.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L097	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50

TABLE D – HOURLY AVERAGE SPEED

YEAR 2040 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L098	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50	29.50
L099	39.33	40.00	40.00	40.00	40.00	40.00	39.00	36.67	35.33	37.67	37.67	38.00	37.33	37.67	37.33	37.00	36.67	36.33	36.33	36.67	37.33	37.67	38.00	38.67
L100	39.00	40.00	40.00	39.67	40.00	39.67	38.33	35.67	35.67	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.67	34.67	34.00	36.00	36.67	37.33	37.33	38.33
L101	30.00	30.00	30.00	30.00	30.00	30.00	29.50	27.63	27.63	28.25	28.88	28.88	28.25	28.25	28.25	28.25	27.63	27.00	27.00	27.63	28.25	28.88	28.88	29.50
L102	25.75	27.00	27.00	27.00	27.00	25.75	24.50	18.25	18.25	20.75	20.75	22.00	20.75	20.75	20.75	19.50	18.25	17.00	15.75	19.50	20.75	22.00	22.00	24.50
L103	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	23.25	22.00	22.00	20.75	20.75	19.50	18.25	17.00	20.75	22.00	23.25	23.25	24.50
L104	29.50	29.50	29.50	29.50	29.50	29.50	28.25	25.75	25.75	25.75	25.75	27.00	25.75	25.75	25.75	25.75	24.50	24.50	23.25	25.75	27.00	27.00	27.00	28.25
L105	27.00	27.00	27.00	27.00	27.00	27.00	24.50	17.00	14.50	19.50	19.50	22.00	19.50	19.50	19.50	19.50	17.00	19.50	17.00	19.50	22.00	22.00	24.50	24.50
L106	28.25	29.50	29.50	29.50	29.50	28.25	27.00	24.50	24.50	24.50	25.75	25.75	25.75	24.50	24.50	24.50	24.50	24.50	23.25	25.75	25.75	27.00	27.00	28.25
L107	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	17.00	22.00	22.00	24.50	24.50	24.50
L108	27.00	27.00	27.00	27.00	27.00	27.00	27.00	22.00	19.50	24.50	24.50	24.50	24.50	24.50	24.50	22.00	22.00	22.00	22.00	22.00	24.50	24.50	24.50	27.00
L109	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	29.50	29.50	29.50	29.50	29.50
L110	29.14	30.00	30.00	30.00	30.00	29.14	29.14	27.71	27.71	27.71	27.71	29.14	27.71	27.71	27.71	27.71	27.71	27.71	26.29	27.71	29.14	29.14	29.14	29.14
L111	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	27.71	29.14	29.14	29.14	29.14	30.00
L112	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.33	39.33	39.67	39.67	39.33	39.33	39.33	39.33	39.00	38.67	38.00	39.00	39.33	39.67	39.67	40.00
L113	39.00	39.67	39.67	39.67	39.67	39.33	38.00	35.00	33.67	36.33	36.67	37.00	36.00	36.33	36.00	35.67	35.00	34.33	34.00	35.33	36.00	36.67	36.67	37.67
L114	29.50	30.00	30.00	30.00	30.00	29.50	28.25	26.38	26.38	27.00	27.63	27.63	27.00	27.63	27.00	27.00	26.38	25.75	25.13	27.00	27.00	27.63	27.63	28.88
L115	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L116	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L117	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	29.50	29.50	30.00	30.00	30.00	30.00
L118	27.00	28.25	28.25	28.25	28.25	28.25	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	23.25	22.00	20.75	20.75	23.25	23.25	24.50	24.50	25.75
L119	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50
L120	27.00	28.25	28.25	28.25	28.25	27.00	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	22.00	22.00	20.75	19.50	22.00	23.25	24.50	24.50	25.75
L121	24.50	27.00	27.00	24.50	27.00	24.50	22.00	14.50	14.50	17.00	19.50	19.50	17.00	19.50	19.50	17.00	17.00	14.50	14.50	17.00	19.50	19.50	19.50	22.00
L122	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	19.50	22.00	22.00	19.50	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50
L123	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	36.00	38.00	38.00	39.00	39.00	39.00
L124	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.00	39.00	39.00	40.00	40.00	40.00	40.00
L125	70.00	70.00	70.00	70.00	70.00	70.00	67.22	49.86	47.08	57.50	58.89	60.97	56.81	58.19	56.11	54.03	49.86	38.75	32.50	49.86	54.03	57.50	58.89	65.14
L126	70.00	70.00	70.00	70.00	70.00	70.00	70.00	65.14	61.67	69.31	70.00	70.00	69.31	70.00	68.61	67.92	65.14	60.97	60.97	64.44	67.92	70.00	70.00	70.00
L127	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	36.00	37.00	38.00	38.00	37.00	38.00	38.00	37.00	37.00	36.00	36.00	37.00	38.00	38.00	38.00	39.00
L128	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	29.50	29.50	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	29.50	29.50	29.50
L129	38.00	39.00	39.00	39.00	39.00	39.00	37.00	34.00	33.00	35.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	33.00	33.00	35.00	36.00	36.00	36.00	38.00
L130	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	22.00	20.33	20.33	20.33	18.67	18.67	17.00	15.33	18.67	20.33	20.33	22.00	23.67
L131	27.00	29.50	29.50	27.00	29.50	27.00	27.00	24.50	24.50	24.50	27.00	27.00	24.50	24.50	24.50	24.50	24.50	24.50	22.00	24.50	24.50	24.50	27.00	27.00
L132	27.00	27.00	27.00	27.00	27.00	27.00	24.50	22.00	19.50	22.00	24.50	24.50	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50
L133	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00
L152	28.67	29.50	29.50	29.50	29.50	28.67	27.83	25.33	24.50	27.00	27.00	27.00	26.17	27.00	26.17	26.17	25.33	24.50	23.67	25.33	26.17	27.00	27.00	27.83
L156	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	40.00	39.67	40.00	40.00	40.00	40.00
L157	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	39.00	40.00	40.00	40.00	40.00	40.00
L158	80.00	80.00	80.00	80.00	80.00	80.00	80.00	75.17	69.00	70.54	75.17	75.17	75.68	75.68	71.57	71.57	71.57	72.08	64.37	76.20	80.00	80.00	80.00	80.00
L159	80.00	80.00	80.00	80.00	80.00	80.00	78.77	64.88	50.10	58.71	65.40	65.40	65.40	65.40	59.74	59.74	60.26	60.26	55.11	66.94	73.11	73.11	79.28	79.28

TABLE D – HOURLY AVERAGE SPEED

YEAR 2048 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L001	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.25	37.50	39.00	39.25	39.25	38.75	39.00	38.75	38.50	38.25	37.75	37.50	38.50	39.00	39.25	39.25	39.75
L002	40.00	40.00	40.00	40.00	40.00	40.00	39.67	37.67	36.33	38.67	39.00	39.00	38.67	39.00	38.67	38.33	38.00	37.67	37.67	38.33	38.67	39.00	39.00	39.67
L003	39.67	40.00	40.00	40.00	40.00	40.00	39.33	36.67	36.00	38.00	38.00	38.33	38.00	38.00	37.67	37.33	36.67	35.67	35.00	37.00	37.33	37.67	38.00	39.00
L004	40.00	40.00	40.00	40.00	40.00	40.00	40.00	37.67	36.33	38.67	38.67	39.00	38.67	39.00	38.67	38.33	37.67	37.33	37.33	38.00	38.33	39.00	39.00	39.67
L005	39.33	39.67	39.67	39.67	39.67	39.33	38.67	35.67	34.33	37.00	37.00	37.33	36.67	37.00	36.67	36.33	35.67	34.33	34.00	35.67	36.67	37.00	37.33	38.33
L006	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.33	37.67	39.00	39.33	39.33	39.00	39.33	39.00	38.67	38.33	37.67	37.67	38.67	39.00	39.33	39.33	40.00
L007	39.00	40.00	39.50	39.50	40.00	39.50	39.00	36.00	35.00	37.00	37.00	37.50	37.00	37.00	37.00	36.50	35.50	34.50	34.00	36.00	36.50	37.00	37.50	38.50
L008	38.50	39.00	39.00	39.00	39.00	38.50	37.50	33.00	31.50	35.00	35.50	36.00	35.00	35.00	35.00	34.00	33.00	32.00	31.50	33.50	34.50	35.50	36.00	37.00
L009	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	34.00	37.00	37.00	37.00	37.00	37.00	37.00	36.00	35.00	33.00	34.00	35.00	36.00	37.00	37.00	38.00
L010	36.00	37.50	37.50	37.00	37.50	36.50	34.50	28.00	26.00	31.00	32.00	32.50	31.00	31.50	31.00	29.50	28.50	26.50	26.00	29.00	30.50	31.50	32.00	34.50
L011	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L012	39.33	39.67	39.67	39.67	40.00	39.33	39.00	35.67	35.00	37.00	37.33	37.67	37.00	37.33	37.00	36.33	35.67	34.33	34.00	36.00	36.67	37.33	37.33	38.33
L013	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	68.61	64.44	70.00	70.00	70.00	70.00	70.00
L014	37.33	38.33	38.00	38.00	38.33	37.67	36.00	30.67	29.00	33.00	33.67	34.33	33.00	33.33	33.00	31.67	30.67	28.67	28.67	31.33	32.33	33.67	33.67	35.67
L016	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L017	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L051	39.50	40.00	40.00	40.00	40.00	39.50	39.00	36.50	35.50	37.50	37.50	37.50	37.00	37.50	37.00	37.00	36.50	35.50	35.50	36.50	37.00	37.50	38.00	38.50
L052	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.14	37.44	38.84	38.84	39.19	38.84	38.84	38.84	38.49	38.14	37.79	37.79	38.14	38.84	39.19	39.19	39.54
L053	38.50	39.50	39.50	39.50	39.50	39.00	38.00	34.50	32.00	35.50	36.00	36.00	35.50	36.00	35.50	35.00	34.00	33.00	33.00	34.50	35.50	36.00	36.00	37.50
L054	40.00	40.00	40.00	40.00	40.00	40.00	39.67	38.00	37.67	38.67	39.00	39.00	38.67	38.67	38.67	38.33	38.00	37.00	37.00	38.00	38.67	39.00	39.00	39.67
L055	39.33	40.00	40.00	39.67	40.00	39.33	38.67	35.67	33.67	36.67	37.00	37.33	36.67	37.00	36.67	36.00	35.33	35.00	35.00	35.67	36.67	37.00	37.33	38.33
L056	40.00	40.00	40.00	40.00	40.00	40.00	40.00	38.49	38.49	39.19	39.19	39.54	39.19	39.19	39.19	38.84	38.49	38.14	37.79	38.84	39.19	39.19	39.54	39.89
L057	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L058	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.50	39.50	39.50	39.50	39.50	39.50	39.00	39.00	39.00	38.50	39.00	39.50	39.50	39.50	40.00
L059	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L060	40.00	40.00	40.00	40.00	40.00	40.00	39.89	38.32	38.84	38.84	39.37	39.37	38.84	38.84	38.84	38.84	38.32	38.32	37.79	38.84	38.84	39.37	39.37	39.89
L074	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	28.25	29.50	28.25	28.25	28.25	28.25	28.25	27.00	27.00	28.25	28.25	28.25	29.50	29.50
L075	29.50	29.50	29.50	29.50	29.50	29.50	29.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00
L076	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00
L077	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L078	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	24.50	24.50	22.00	24.50	22.00	22.00	22.00	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L079	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
L080	39.50	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	37.50	38.00	38.00	37.50	38.00	37.50	37.00	37.00	36.00	35.00	37.00	37.50	38.00	38.00	39.00
L081	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	38.00	38.00	39.00	39.00	39.00
L082	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
L083	70.00	70.00	70.00	70.00	70.00	70.00	68.61	53.33	50.56	54.03	56.81	58.19	61.67	65.14	60.28	58.89	60.28	45.00	42.50	56.81	58.19	60.97	62.36	70.00
L084	39.00	39.50	40.00	40.00	40.00	40.00	38.50	36.00	34.00	35.50	36.50	36.50	37.00	38.00	37.00	36.50	37.00	34.50	35.00	36.50	36.50	37.00	37.50	38.50
L085	70.00	70.00	70.00	70.00	70.00	70.00	70.00	69.55	66.58	68.81	70.00	70.00	70.00	70.00	70.00	70.00	70.00	64.35	64.35	70.00	70.00	70.00	70.00	70.00
L086	39.00	39.00	39.00	39.00	39.00	39.00	38.00	35.00	32.00	36.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	34.00	34.00	35.00	36.00	37.00	37.00	38.00
L087	39.75	40.00	40.00	40.00	40.00	40.00	39.25	37.00	36.50	38.00	38.00	38.25	37.75	38.00	37.75	37.50	37.00	35.75	35.50	37.00	37.75	38.00	38.25	39.00
L088	40.00	40.00	40.00	40.00	40.00	40.00	39.50	37.50	36.00	38.25	38.50	38.50	38.25	38.25	38.00	37.75	37.25	37.00	37.00	37.50	38.00	38.50	38.75	39.50
L089	29.50	30.00	30.00	30.00	30.00	29.50	28.67	25.33	24.50	27.00	27.00	27.00	27.00	27.00	27.00	26.17	25.33	25.33	25.33	26.17	27.00	27.00	27.83	28.67
L090	28.67	29.50	29.50	29.50	29.50	29.50	27.83	24.50	24.50	26.17	26.17	26.17	26.17	26.17	25.33	25.33	24.50	24.50	24.50	25.33	26.17	27.00	27.00	27.83
L091	40.00	40.00	40.00	40.00	40.00	40.00	39.75	38.00	38.25	38.75	39.00	39.25	38.75	39.00	38.75	38.50	38.00	37.50	37.00	38.25	38.75	39.00	39.25	39.75
L092	39.00	40.00	39.67	39.67	40.00	39.67	38.33	35.33	34.00	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.33	35.00	34.67	35.67	36.33	37.00	37.00	38.00
L093	28.25	28.25	28.25	28.25	28.25	28.25	27.00	23.25	20.75	24.50	24.50	24.50	24.50	24.50	24.50	23.25	23.25	22.00	22.00	23.25	24.50	24.50	24.50	27.00
L094	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	20.33	20.33	20.33	20.33	18.67	17.00	17.00	15.33	18.67	20.33	20.33	22.00	23.67
L095	28.67	28.67	28.67	28.67	28.67	28.67	28.67	25.33	22.00	25.33	25.33	27.00	25.33	25.33	25.33	25.33	23.67	25.33	23.67	25.33	25.33	27.00	27.00	28.67
L096	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	17.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50	24.50
L097	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50

TABLE D – HOURLY AVERAGE SPEED

YEAR 2048 TRAFFIC FORECAST

Job No.: J7167 Date: 08 四月 2022

Link ID	Average Speed (kph)																							
From	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
To	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
L098	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50	29.50
L099	39.33	40.00	40.00	40.00	40.00	40.00	39.00	36.67	35.33	37.67	37.67	38.00	37.33	37.67	37.33	37.00	36.67	36.33	36.33	36.67	37.33	37.67	38.00	38.67
L100	39.00	40.00	40.00	39.67	40.00	39.67	38.33	35.67	35.67	36.67	37.00	37.33	36.67	36.67	36.67	36.00	35.67	34.67	34.00	36.00	36.67	37.33	37.33	38.33
L101	30.00	30.00	30.00	30.00	30.00	30.00	29.50	27.63	27.63	28.25	28.88	28.88	28.25	28.25	28.25	28.25	27.63	27.00	27.00	27.63	28.25	28.88	28.88	29.50
L102	25.75	27.00	27.00	27.00	27.00	25.75	24.50	18.25	18.25	20.75	20.75	22.00	20.75	20.75	20.75	19.50	18.25	17.00	15.75	19.50	20.75	22.00	22.00	24.50
L103	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	23.25	22.00	22.00	20.75	20.75	19.50	18.25	17.00	20.75	22.00	23.25	23.25	24.50
L104	29.50	29.50	29.50	29.50	29.50	29.50	28.25	25.75	25.75	25.75	25.75	27.00	25.75	25.75	25.75	25.75	24.50	24.50	23.25	25.75	27.00	27.00	27.00	28.25
L105	27.00	27.00	27.00	27.00	27.00	27.00	24.50	17.00	14.50	19.50	19.50	22.00	19.50	19.50	19.50	19.50	17.00	19.50	17.00	19.50	22.00	22.00	24.50	24.50
L106	28.25	29.50	29.50	29.50	29.50	28.25	27.00	24.50	24.50	24.50	25.75	25.75	25.75	24.50	24.50	24.50	24.50	24.50	23.25	25.75	25.75	27.00	27.00	28.25
L107	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	19.50	19.50	17.00	22.00	22.00	24.50	24.50	24.50
L108	27.00	27.00	27.00	27.00	27.00	27.00	27.00	22.00	19.50	24.50	24.50	24.50	24.50	24.50	24.50	22.00	22.00	22.00	22.00	22.00	24.50	24.50	24.50	27.00
L109	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	29.50	29.50	29.50	29.50	29.50
L110	29.14	30.00	30.00	30.00	30.00	29.14	29.14	27.71	27.71	27.71	27.71	29.14	27.71	27.71	27.71	27.71	27.71	27.71	26.29	27.71	29.14	29.14	29.14	29.14
L111	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	29.14	27.71	29.14	29.14	29.14	29.14	30.00
L112	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.33	39.33	39.67	39.67	39.33	39.33	39.33	39.33	39.00	38.67	37.67	39.00	39.33	39.67	39.67	40.00
L113	39.00	39.67	39.67	39.67	39.67	39.33	38.00	35.00	33.67	36.00	36.67	37.00	36.00	36.33	36.00	35.67	35.00	34.33	34.00	35.33	36.00	36.67	36.67	37.67
L114	29.50	30.00	30.00	30.00	30.00	29.50	28.25	26.38	26.38	27.00	27.63	27.63	27.00	27.63	27.00	27.00	26.38	25.75	25.13	27.00	27.00	27.63	27.63	28.88
L115	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L116	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50	29.50
L117	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.50	29.50	29.50	29.50	30.00	30.00	30.00	30.00
L118	27.00	28.25	28.25	28.25	28.25	28.25	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	23.25	22.00	20.75	20.75	23.25	23.25	24.50	24.50	25.75
L119	29.50	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.50	29.50	29.50
L120	27.00	28.25	28.25	28.25	28.25	27.00	25.75	22.00	22.00	23.25	24.50	24.50	23.25	24.50	23.25	22.00	22.00	20.75	19.50	22.00	23.25	24.50	24.50	25.75
L121	24.50	27.00	27.00	24.50	27.00	24.50	22.00	14.50	14.50	17.00	19.50	19.50	17.00	19.50	19.50	17.00	17.00	14.50	14.50	17.00	19.50	19.50	19.50	22.00
L122	27.00	27.00	27.00	27.00	27.00	27.00	24.50	19.50	19.50	22.00	22.00	22.00	19.50	22.00	22.00	19.50	19.50	17.00	17.00	19.50	22.00	22.00	22.00	24.50
L123	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	37.00	37.00	37.00	36.00	38.00	38.00	39.00	39.00	39.00
L124	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	39.00	39.00	39.00	39.00	40.00	40.00	40.00	40.00
L125	70.00	70.00	70.00	70.00	70.00	70.00	67.22	49.86	47.08	57.50	58.89	60.97	56.11	58.19	56.11	53.33	49.17	38.75	32.50	49.17	54.03	57.50	58.89	65.14
L126	70.00	70.00	70.00	70.00	70.00	70.00	70.00	65.14	60.97	69.31	70.00	70.00	69.31	70.00	68.61	67.92	65.14	60.97	60.97	64.44	67.92	70.00	70.00	70.00
L127	40.00	40.00	40.00	40.00	40.00	40.00	39.00	37.00	36.00	37.00	38.00	38.00	37.00	38.00	38.00	37.00	37.00	36.00	36.00	37.00	38.00	38.00	38.00	39.00
L128	29.50	30.00	30.00	30.00	30.00	29.50	29.50	28.25	27.00	28.25	29.50	29.50	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	28.25	29.50	29.50	29.50
L129	38.00	39.00	39.00	39.00	39.00	39.00	37.00	34.00	33.00	35.00	36.00	36.00	35.00	36.00	35.00	35.00	34.00	33.00	33.00	35.00	36.00	36.00	36.00	38.00
L130	25.33	27.00	27.00	27.00	27.00	25.33	23.67	17.00	15.33	20.33	20.33	22.00	20.33	20.33	20.33	18.67	18.67	17.00	15.33	18.67	20.33	20.33	22.00	23.67
L131	27.00	29.50	29.50	27.00	29.50	27.00	27.00	24.50	24.50	24.50	27.00	27.00	24.50	24.50	24.50	24.50	24.50	24.50	22.00	24.50	24.50	24.50	27.00	27.00
L132	27.00	27.00	27.00	27.00	27.00	27.00	24.50	22.00	19.50	22.00	24.50	24.50	22.00	22.00	22.00	22.00	22.00	19.50	19.50	19.50	22.00	22.00	24.50	24.50
L133	29.50	29.50	29.50	29.50	29.50	29.50	27.00	27.00	24.50	27.00	27.00	27.00	27.00	27.00	27.00	27.00	24.50	24.50	24.50	27.00	27.00	27.00	27.00	27.00
L152	28.67	29.50	29.50	29.50	29.50	28.67	27.83	25.33	24.50	27.00	27.00	27.00	26.17	27.00	26.17	26.17	25.33	24.50	23.67	25.33	26.17	27.00	27.00	27.83
L156	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	40.00	39.67	40.00	40.00	40.00	40.00
L157	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	39.67	39.00	40.00	40.00	40.00	40.00	40.00
L158	80.00	80.00	80.00	80.00	80.00	80.00	80.00	75.17	69.00	70.54	75.17	75.17	75.68	75.68	71.57	71.57	71.57	71.57	64.37	76.20	80.00	80.00	80.00	80.00
L159	80.00	80.00	80.00	80.00	80.00	80.00	78.77	64.88	50.10	58.20	64.88	65.40	65.40	65.40	59.74	59.74	60.26	60.26	55.11	66.43	73.11	72.60	79.28	79.28

Appendix 4.10 EMFAC-HK Information (EMFAC-HK Information for Years 2033, 2040 and 2048 is provided in CD)

Calculation of Odour Emission

Company	Source Type	Odour Source ID	x-coordinate	y-coordinate	Release Height (mAG)	Exit Temperature (K)	Exit Velocity (m/s)	Internal Diameter (m)	Radius/Diameter of the circular (m)	Odour Emission Rate (ou/s or ou/m²/s)	Operation Hours
The Hong Kong and China Gas Company Limited	Point	OU1	837885	820139	6.8	Ambient	1.0	0.08	-	1.19E+01	24 hours (0000-2400)
	Point	OU2	837903	820129	6.8	Ambient	1.0	0.08	-	1.19E+01	
	Point	OU3	837918	820123	6.8	Ambient	1.0	0.08	-	1.19E+01	
	Area	OU4	837838	820116	17.0	Ambient	-	-	20.0/40.0	4.14E-03	
	Area	OU5	837861	820072	15.0	Ambient	-	-	15.0/30.0	5.66E-03	

Notes:
[1] Odour Source ID OU1-OU5 are based on SP License (No. L-8-004(5)) . For OU4, Odour Emission Rate = 5.2 OU/s ÷ ($\pi \times 20^2$) = 4.14E-03 OU/m^2/s. For OU5, Odour Emission Rate = 4.0 OU/s ÷ ($\pi \times 15^2$) = 5.66E-03 OU/m^2.
[2] "-" means "Not Applicable"

Appendix 4.11 Derivation of Emission Rate and Input Parameters of Odour Source in AERMOD

Appendix 4.12 Predicted Air Quality Impact Assessment Results

ASRs & Impact Summary(KC-018)

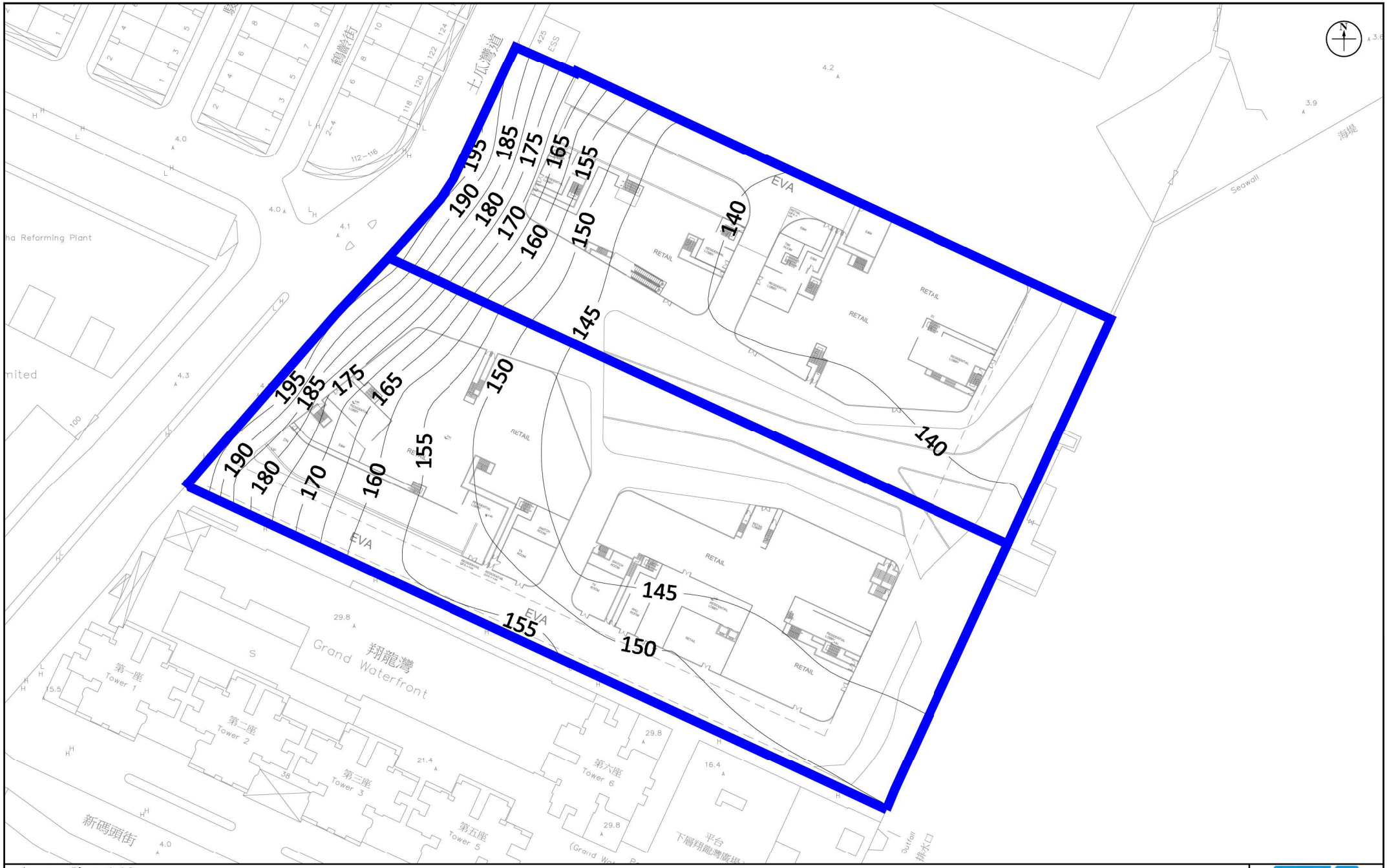
ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mPD	Flag Pole Receiver Height, mAG	Predicted Cumulative Impacts (μg/m^3) in Year 2033							
		x	y				NO_2		RSP		FSP		SO_2	
							1-h (AQO=200)	Annual (AQO=40)	24-h (AQO=100)	Annual (AQO=50)	24-h (AQO=50)	Annual (AQO=25)	10-min (AQO=500)	24-h (AQO=50)
		Easting	Northing				19th highest		10th highest		36th highest		4th highest	4th highest
A1-1	42,33	838116	820048	GF	3.60	1.50	142.5	30.9	62.3	27.0	23.2	14.6	48.0	9.8
A1-2	42,33	838116	820048	1F	8.60	5.00	141.8	30.4	62.3	27.0	23.2	14.6	48.0	9.8
A1-3	42,33	838116	820048	2F	13.60	10.00	137.9	29.4	62.3	26.9	23.2	14.5	48.0	9.8
A1-4	42,33	838116	820048	3F	21.10	17.50	133.5	27.8	62.2	26.9	23.1	14.5	48.0	9.8
A1-5	42,33	838116	820048	4F	24.25	20.65	132.9	27.3	62.2	26.9	23.1	14.5	48.0	9.8
A1-6	42,33	838116	820048	5F	27.40	23.80	129.3	26.8	62.2	26.9	23.1	14.5	48.0	9.8
A1-7	42,33	838116	820048	6F	30.55	26.95	128.1	26.4	62.2	26.9	23.1	14.5	48.0	9.8
A1-8	42,33	838116	820048	7F	33.70	30.10	127.7	26.1	62.2	26.8	23.1	14.4	48.0	9.8
A1-9	42,33	838116	820048	8F	36.85	33.25	127.7	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A1-10	42,33	838116	820048	9F	40.00	36.40	127.6	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A1-11	42,33	838116	820048	10F	43.15	39.55	127.7	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A1-12	42,33	838116	820048	12F	49.45	45.85	128.5	25.3	62.2	26.8	23.1	14.4	48.0	9.8
A1-13	42,33	838116	820048	14F	55.75	52.15	129.9	25.2	62.2	26.8	23.1	14.4	48.0	9.8
A1-14	42,33	838116	820048	16F	62.05	58.45	129.6	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A1-15	42,33	838116	820048	20F	74.65	71.05	128.3	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A1-16	42,33	838116	820048	23F	84.10	80.50	128.0	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A1-17	42,33	838116	820048	26F	93.55	89.95	128.0	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A1-18	42,33	838116	820048	RF	120.00	116.40	128.9	24.6	62.2	26.8	23.1	14.4	53.7	9.8
A2-1	42,33	838102	820016	GF	3.60	1.50	149.9	31.4	62.3	27.0	23.2	14.6	48.0	9.8
A2-2	42,33	838102	820016	1F	8.60	5.00	144.9	30.8	62.3	27.0	23.2	14.6	48.0	9.8
A2-3	42,33	838102	820016	2F	13.60	10.00	139.8	29.4	62.2	26.9	23.1	14.5	48.0	9.8
A2-4	42,33	838102	820016	3F	21.10	17.50	132.7	27.7	62.2	26.9	23.1	14.5	48.0	9.8
A2-5	42,33	838102	820016	4F	24.25	20.65	130.9	27.2	62.2	26.9	23.1	14.5	48.0	9.8
A2-6	42,33	838102	820016	5F	27.40	23.80	128.5	26.7	62.2	26.9	23.1	14.5	48.0	9.8
A2-7	42,33	838102	820016	6F	30.55	26.95	128.1	26.3	62.2	26.8	23.1	14.5	48.0	9.8
A2-8	42,33	838102	820016	7F	33.70	30.10	127.6	26.0	62.2	26.8	23.1	14.4	48.0	9.8
A2-9	42,33	838102	820016	8F	36.85	33.25	127.5	25.7	62.2	26.8	23.1	14.4	48.0	9.8
A2-10	42,33	838102	820016	9F	40.00	36.40	127.4	25.5	62.2	26.8	23.1	14.4	48.0	9.8
A2-11	42,33	838102	820016	10F	43.15	39.55	127.3	25.3	62.2	26.8	23.1	14.4	48.0	9.8
A2-12	42,33	838102	820016	12F	49.45	45.85	128.0	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A2-13	42,33	838102	820016	14F	55.75	52.15	129.8	25.0	62.2	26.8	23.1	14.4	48.0	9.8
A2-14	42,33	838102	820016	16F	62.05	58.45	129.5	25.0	62.2	26.8	23.1	14.4	48.0	9.8
A2-15	42,33	838102	820016	20F	74.65	71.05	127.8	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A2-16	42,33	838102	820016	23F	84.10	80.50	128.5	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A2-17	42,33	838102	820016	26F	93.55	89.95	129.0	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A2-18	42,33	838102	820016	RF	120.00	116.40	129.2	24.7	62.2	26.8	23.1	14.4	55.1	9.8
A3-1	42,33	838060	820034	GF	3.60	1.50	151.4	32.3	62.3	27.0	23.2	14.6	48.0	9.8
A3-2	42,33	838060	820034	1F	8.60	5.00	149.4	31.6	62.3	27.0	23.2	14.6	48.0	9.8
A3-3	42,33	838060	820034	2F	13.60	10.00	138.9	30.2	62.2	26.9	23.2	14.5	48.0	9.8
A3-4	42,33	838060	820034	3F	21.10	17.50	132.0	28.3	62.2	26.9	23.1	14.5	48.0	9.8
A3-5	42,33	838060	820034	4F	24.25	20.65	130.4	27.6	62.2	26.9	23.1	14.5	48.0	9.8
A3-6	42,33	838060	820034	5F	27.40	23.80	128.3	27.0	62.2	26.9	23.1	14.5	48.0	9.8
A3-7	42,33	838060	820034	6F	30.55	26.95	127.9	26.5	62.2	26.9	23.1	14.5	48.0	9.8
A3-8	42,33	838060	820034	7F	33.70	30.10	127.6	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A3-9	42,33	838060	820034	8F	36.85	33.25	127.3	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A3-10	42,33	838060	820034	9F	40.00	36.40	127.2	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A3-11	42,33	838060	820034	10F	43.15	39.55	127.1	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A3-12	42,33	838060	820034	12F	49.45	45.85	128.4	25.3	62.2	26.8	23.1	14.4	48.0	9.8
A3-13	42,33	838060	820034	14F	55.75	52.15	130.0	25.2	62.2	26.8	23.1	14.4	48.0	9.8
A3-14	42,33	838060	820034	16F	62.05	58.45	129.7	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A3-15	42,33	838060	820034	20F	74.65	71.05	129.3	24.8	62.2	26.8	23.1	14.4	48.0	9.8
A3-16	42,33	838060	820034	23F	84.10	80.50	127.8	24.6	62.2	26.8	23.1	14.4	48.0	9.8
A3-17	42,33	838060	820034	26F	93.55	89.95	128.5	24.6	62.2	26.8	23.1	14.4	48.0	9.8
A3-18	42,33	838060	820034	RF	120.00	116.40	130.6	24.7	62.2	26.8	23.1	14.4	53.5	9.8
A4-1	42,33	838019	820052	GF	3.60	1.50	157.7	33.6	62.3	27.0	23.2	14.6	48.0	9.8
A4-2	42,33	838019	820052	1F	8.60	5.00	153.2	32.9	62.3	27.0	23.2	14.6	48.0	9.8
A4-3	42,33	838019	820052	2F	13.60	10.00	140.5	31.4	62.3	27.0	23.2	14.6	48.0	9.8
A4-4	42,33	838019	820052	3F	21.10	17.50	133.6	28.9	62.2	26.9	23.1	14.5	48.0	9.8
A4-5	42,33	838019	820052	4F	24.25	20.65	130.3	28.1	62.2	26.9	23.1	14.5	48.0	9.8
A4-6	42,33	838019	820052	5F	27.40	23.80	128.4	27.4	62.2	26.9	23.1	14.5	48.0	9.8
A4-7	42,33	838019	820052	6F	30.55	26.95	127.7	26.8	62.2	26.9	23.1	14.5	48.0	9.8
A4-8	42,33	838019	820052	7F	33.70	30.10	127.6	26.4	62.2	26.8	23.1	14.4	48.0	9.8
A4-9	42,33	838019	820052	8F	36.85	33.25	127.6	26.1	62.2	26.8	23.1	14.4	48.0	9.8
A4-10	42,33	838019	820052	9F	40.00	36.40	127.6	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A4-11	42,33	838019	820052	10F	43.15	39.55	127.5	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A4-12	42,33	838019	820052	12F	49.45	45.85	129.4	25.5	62.2	26.8	23.1	14.4	48.0	9.8
A4-13	42,33	838019	820052	14F	55.75	52.15	130.8	25.5	62.2	26.8	23.1	14.4	48.0	9.8
A4-14	42,33	838019	820052	16F	62.05	58.45	129.8	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A4-15	42,33	838019	820052	20F	74.65	71.05	129.3	25.0	62.2	26.8	23.1	14.4	48.0	9.8
A4-16	42,33	838019	820052	23F	84.10	80.50	127.9	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A4-17	42,33	838019	820052	26F	93.55	89.95	128.0	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A4-18	42,33	838019	820052	RF	120.00	116.40	132.4	24.7	62.2	26.8	23.1	14.4	51.8	9.8
A5-1	42,33	837977	820072	GF	3.60	1.50	159.3	36.3	62.4	27.1	23.2	14.7	48.0	9.8
A5-2	42,33	837977	820072	1F	8.60	5.00	156.1	35.3	62.3	27.1	23.2	14.7	48.0	9.8
A5-3	42,33	837977	820072	2F	13.60	10.00	144.7	33.0	62.3	27.0	23.2	14.6	48.0	9.8
A5-4	42,33	837977	820072	3F	21.10	17.50	134.1	29.5	62.3	26.9	23.2	14.5	48.0	9.8
A5-5	42,33	837977	820072	4F	24.25	20.65	129.1	28.5	62.3	26.9	23.1	14.5	48.0	9.8
A5-6	42,33	837977	820072	5F	27.40	23.80	128.7	27.7	62.2	26.9	23.1	14.5	48.0	9.8
A5-7	42,33	837977	820072	6F	30.55	26.95	128.2	27.1	62.2	26.9	23.1	14.5	48.0	9.8
A5-8	42,33	837977	820072	7F	33.70	30.10	128.1	26.7	62.2	26.8	23.1	14.5	48.0	9.8
A5-9	42,33	837977	820072	8F	36.85	33.25	128.0	26.5	62.2	26.8	23.1	14.4	48.0	9.8
A5-10	42,33	837977	820072	9F	40.00	36.40	128.0	26.3	62.2	26.8	23.1	14.4	48.0	9.8
A5-11	42,33	837977	820072	10F	43.15	39.55	128.0	26.3	62.2	26.8	23.1	14.4	48.0	9.8
A5-12	42,33	837977	820072	12F	49.45	45.85	137.9	26.5	62.2	26.8	23.1	14.4	48.0	9.8
A5-13	42,33	837977	820072	14F	55.75	52.15	140.9	26.4	62.2	26.8	23.1	14.4	48.0	9.8
A5-14	42,33	837977	820072	16F	62.05	58.45	136.2	26.1	62.2	26.8	23.1	14.4	47.9	9.8
A5-15	42,33	837977	820072	20F	74.65	71.05	128.4	25.2	62.2	26.8	23.1	14.4	47.9	9.8
A5-16	42,33	837977	820072	23F	84.10	80.50	128.3	24.9	62.2	26.8	23.1	14.4	47.9	9.8
A5-17	42,33	837977	820072	26F	93.55	89.95	128.4	24.8	62.2	26.8	23.1	14.4	47.9	9.8
A5-18	42,33	837977	820072	RF	120.00	116.40	132.4	24.7	62.2	26.8	23.1	14.4	49.7	9.8
A6-1	42,33	837939	820089	GF	3.60	1.50	205.8	52.2	62.9	27.5	23.6	15.1	48.0	9.8
A6-2	42,33	837939	820089	1F	8.60	5.00	169.9	40.6	62.6	27.2	23.2	14.8	48.0	9.8
A6-3	42,33	837939	820089	2F	13.60	10.00	153.5	34.2	62.4	27.0	23.2	14.6	48.0	9.8
A6-4	42,33	837939	820089	3F	21.10	17.50	137.6	29.7	62.3	26.9	23.2	14.5	48.0	9.8
A6-5	42,33	837939	820089	4F	24.25	20.65	133.5	28.6	62.3	26.9	23.2	14.5	48.0	9.8
A6-6	42,33	837939	820089	5F	27.40	23.80	129.0	27.8	62.2	26.9	23.1	14.5	47.9	9.8
A6-7	42,33	837939	820089	6F	30.55	26.95	129.0	27.4	62.2	26.8	23.1	14.5	47.9	9.8
A6-8	42,33	837939	820089	7F	33.70	30.10	128.5	27.2	62.2	26.8	23.1	14.5	47.9	9.8
A6-9	42,33	837939	820089	8F	36.85	33.25	128.1	27.4	62.2	26.8	23.1	14.4	47.9	9.8
A6-10	42,33	837939	820089	9F	40.00	36.40	128.1	28.0	62.2	26.8	23.1	14.4	47.9	9.8
A6-11	42,33	837939	820089	10F	43.15	39.55	140.1	29.1	62.2	26.8	23.1	14.4	47.9	9.8
A6-12	42,33	837939	820089	12F	49.45	45.85	164.7	29.7	62.2	26.8	23.1	14.4	47.9	9.8
A6-13	42,33	837939	820089	14F	55.75	52.15	147.7	28.5	62.2	26.8	23.1	14.4	47.9	9.8
A6-14	42,33	837939	820089	16F	62.05	58.45	131.6	27.3	62.2	26.8	23.1	14.4	47.9	9.8
A6-15	42,33	837939	820089	20F	74.65	71.05	128.6	25.6	62.2	26.8	23.1	14.4	47.9	9.8
A6-16	42,33	837939	820089	23F	84.10	80.50	128.7	25.0	62.2	26.8	23.1	14.4	47.9	9.8
A6-17	42,33	837939	820089	26F	93.55	89.95	128.8	24.8	62.2	26.8	23.1	14.4	47.9	9.8
A6-18	42,33	837939	820089	RF	120.00	116.40	131.4	24.7	62.2	26.8	23.1	14.4	47.9	9.8

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mPD	Flag Pole Receiver Height, mAG	Predicted Cumulative Impacts (µg/m³) in Year 2033							
							NO_2		RSP		FSP		SO_2	
		x	y				1-h (AQO=200)	Annual (AQO=40)	24-h (AQO=100)	Annual (AQO=50)	24-h (AQO=50)	Annual (AQO=25)	10-min (AQO=500)	24-h (AQO=50)
		Easting	Northing				19th highest		10th highest		36th highest		4th highest	4th highest
A7-1	42,33	837962	820116	GF	3.60	1.50	205.0	49.4	62.8	27.5	23.5	15.0	48.0	9.8
A7-2	42,33	837962	820116	1F	8.60	5.00	166.2	39.0	62.5	27.2	23.2	14.7	48.0	9.8
A7-3	42,33	837962	820116	2F	13.60	10.00	148.6	33.3	62.4	27.0	23.2	14.6	48.0	9.8
A7-4	42,33	837962	820116	3F	21.10	17.50	137.3	29.5	62.3	26.9	23.2	14.5	48.0	9.8
A7-5	42,33	837962	820116	4F	24.25	20.65	135.2	28.5	62.3	26.9	23.2	14.5	48.0	9.8
A7-6	42,33	837962	820116	5F	27.40	23.80	130.5	27.9	62.2	26.9	23.1	14.5	47.9	9.8
A7-7	42,33	837962	820116	6F	30.55	26.95	129.9	27.5	62.2	26.9	23.1	14.5	47.9	9.8
A7-8	42,33	837962	820116	7F	33.70	30.10	128.0	27.5	62.2	26.9	23.1	14.5	47.9	9.8
A7-9	42,33	837962	820116	8F	36.85	33.25	127.1	28.0	62.2	26.8	23.1	14.4	47.9	9.7
A7-10	42,33	837962	820116	9F	40.00	36.40	130.5	29.0	62.2	26.8	23.1	14.4	47.9	9.7
A7-11	42,33	837962	820116	10F	43.15	39.55	149.1	30.4	62.2	26.8	23.1	14.4	47.9	9.7
A7-12	42,33	837962	820116	12F	49.45	45.85	176.6	31.1	62.2	26.8	23.1	14.4	47.9	9.7
A7-13	42,33	837962	820116	14F	55.75	52.15	156.3	29.3	62.2	26.8	23.1	14.4	47.9	9.7
A7-14	42,33	837962	820116	16F	62.05	58.45	131.7	27.5	62.2	26.8	23.1	14.4	47.9	9.7
A7-15	42,33	837962	820116	20F	74.65	71.05	127.3	25.6	62.2	26.8	23.1	14.4	47.9	9.7
A7-16	42,33	837962	820116	23F	84.10	80.50	127.0	24.9	62.2	26.8	23.1	14.4	47.9	9.7
A7-17	42,33	837962	820116	26F	93.55	89.95	127.1	24.7	62.2	26.8	23.1	14.4	47.9	9.7
A7-18	42,33	837962	820116	RF	120.00	116.40	128.8	24.5	62.2	26.8	23.1	14.4	50.6	9.7
A8-1	42,33	837986	820142	GF	3.60	1.50	200.1	50.1	62.9	27.4	23.3	15.0	48.0	9.8
A8-2	42,33	837986	820142	1F	8.60	5.00	168.5	38.5	62.6	27.1	23.2	14.7	48.0	9.8
A8-3	42,33	837986	820142	2F	13.60	10.00	147.5	33.0	62.4	27.0	23.2	14.6	48.0	9.8
A8-4	42,33	837986	820142	3F	21.10	17.50	139.1	29.7	62.3	26.9	23.2	14.5	48.0	9.8
A8-5	42,33	837986	820142	4F	24.25	20.65	136.3	28.9	62.3	26.9	23.2	14.5	48.0	9.8
A8-6	42,33	837986	820142	5F	27.40	23.80	132.0	28.4	62.3	26.9	23.2	14.5	48.0	9.8
A8-7	42,33	837986	820142	6F	30.55	26.95	130.9	28.3	62.2	26.9	23.1	14.5	48.0	9.7
A8-8	42,33	837986	820142	7F	33.70	30.10	128.9	28.4	62.2	26.9	23.1	14.5	48.0	9.7
A8-9	42,33	837986	820142	8F	36.85	33.25	127.5	28.8	62.2	26.8	23.1	14.4	48.0	9.7
A8-10	42,33	837986	820142	9F	40.00	36.40	128.0	29.5	62.2	26.8	23.1	14.4	48.0	9.7
A8-11	42,33	837986	820142	10F	43.15	39.55	137.1	30.6	62.2	26.8	23.1	14.4	48.0	9.7
A8-12	42,33	837986	820142	12F	49.45	45.85	178.6	32.2	62.2	26.8	23.1	14.4	47.9	9.7
A8-13	42,33	837986	820142	14F	55.75	52.15	177.1	31.3	62.2	26.8	23.1	14.4	47.9	9.7
A8-14	42,33	837986	820142	16F	62.05	58.45	148.9	29.0	62.2	26.8	23.1	14.4	47.9	9.7
A8-15	42,33	837986	820142	20F	74.65	71.05	129.3	26.0	62.2	26.8	23.1	14.4	47.9	9.7
A8-16	42,33	837986	820142	23F	84.10	80.50	127.8	25.2	62.2	26.8	23.1	14.4	47.9	9.7
A8-17	42,33	837986	820142	26F	93.55	89.95	127.4	24.8	62.2	26.8	23.1	14.4	47.9	9.8
A8-18	42,33	837986	820142	RF	120.00	116.40	127.4	24.5	62.2	26.8	23.1	14.4	50.5	9.8
A9-1	42,33	838033	820121	GF	3.60	1.50	143.2	33.4	62.3	27.0	23.2	14.6	48.0	9.8
A9-2	42,33	838033	820121	1F	8.60	5.00	141.3	32.9	62.3	27.0	23.2	14.6	48.0	9.8
A9-3	42,33	838033	820121	2F	13.60	10.00	139.4	31.7	62.3	27.0	23.2	14.6	48.0	9.8
A9-4	42,33	838033	820121	3F	21.10	17.50	134.0	29.4	62.3	26.9	23.2	14.5	48.0	9.8
A9-5	42,33	838033	820121	4F	24.25	20.65	129.4	28.6	62.3	26.9	23.2	14.5	48.0	9.8
A9-6	42,33	838033	820121	5F	27.40	23.80	128.8	27.9	62.2	26.9	23.2	14.5	48.0	9.8
A9-7	42,33	838033	820121	6F	30.55	26.95	128.3	27.4	62.2	26.9	23.1	14.5	48.0	9.8
A9-8	42,33	838033	820121	7F	33.70	30.10	127.9	27.0	62.2	26.8	23.1	14.5	48.0	9.8
A9-9	42,33	838033	820121	8F	36.85	33.25	127.6	26.8	62.2	26.8	23.1	14.4	48.0	9.8
A9-10	42,33	838033	820121	9F	40.00	36.40	127.5	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-11	42,33	838033	820121	10F	43.15	39.55	127.6	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-12	42,33	838033	820121	12F	49.45	45.85	136.2	27.0	62.2	26.8	23.1	14.4	48.0	9.8
A9-13	42,33	838033	820121	14F	55.75	52.15	143.3	27.2	62.2	26.8	23.1	14.4	48.0	9.8
A9-14	42,33	838033	820121	16F	62.05	58.45	142.8	26.9	62.2	26.8	23.1	14.4	48.0	9.8
A9-15	42,33	838033	820121	20F	74.65	71.05	129.3	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-16	42,33	838033	820121	23F	84.10	80.50	128.1	25.0	62.2	26.8	23.1	14.4	48.0	9.8
A9-17	42,33	838033	820121	26F	93.55	89.95	128.2	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A9-18	42,33	838033	820121	RF	120.00	116.40	127.9	24.6	62.2	26.8	23.1	14.4	50.8	9.8
A10-1	42,33	838081	820098	GF	3.60	1.50	141.8	31.5	62.3	27.0	23.2	14.6	48.0	9.8
A10-2	42,33	838081	820098	1F	8.60	5.00	141.7	31.2	62.3	27.0	23.2	14.6	48.0	9.8
A10-3	42,33	838081	820098	2F	13.60	10.00	138.8	30.4	62.3	27.0	23.2	14.5	48.0	9.8
A10-4	42,33	838081	820098	3F	21.10	17.50	131.7	28.6	62.3	26.9	23.2	14.5	48.0	9.8
A10-5	42,33	838081	820098	4F	24.25	20.65	129.7	28.0	62.2	26.9	23.2	14.5	48.0	9.8
A10-6	42,33	838081	820098	5F	27.40	23.80	128.6	27.4	62.2	26.9	23.1	14.5	48.0	9.8
A10-7	42,33	838081	820098	6F	30.55	26.95	128.3	26.9	62.2	26.9	23.1	14.5	48.0	9.8
A10-8	42,33	838081	820098	7F	33.70	30.10	128.1	26.5	62.2	26.8	23.1	14.5	48.0	9.8
A10-9	42,33	838081	820098	8F	36.85	33.25	127.8	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A10-10	42,33	838081	820098	9F	40.00	36.40	127.7	26.0	62.2	26.8	23.1	14.4	48.0	9.8
A10-11	42,33	838081	820098	10F	43.15	39.55	128.1	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-12	42,33	838081	820098	12F	49.45	45.85	128.3	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-13	42,33	838081	820098	14F	55.75	52.15	132.5	25.9	62.2	26.8	23.1	14.4	48.0	9.8
A10-14	42,33	838081	820098	16F	62.05	58.45	131.1	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-15	42,33	838081	820098	20F	74.65	71.05	129.4	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A10-16	42,33	838081	820098	23F	84.10	80.50	128.5	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A10-17	42,33	838081	820098	26F	93.55	89.95	128.6	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A10-18	42,33	838081	820098	RF	120.00	116.40	128.5	24.5	62.2	26.8	23.1	14.4	50.5	9.8
A11-1	42,33	838129	820076	GF	3.60	1.50	140.5	30.7	62.3	27.0	23.2	14.6	48.0	9.8
A11-2	42,33	838129	820076	1F	8.60	5.00	141.8	30.4	62.3	27.0	23.2	14.6	48.0	9.8
A11-3	42,33	838129	820076	2F	13.60	10.00	137.6	29.5	62.3	26.9	23.2	14.5	48.0	9.8
A11-4	42,33	838129	820076	3F	21.10	17.50	133.9	28.0	62.2	26.9	23.2	14.5	48.0	9.8
A11-5	42,33	838129	820076	4F	24.25	20.65	133.3	27.4	62.2	26.9	23.2	14.5	48.0	9.8
A11-6	42,33	838129	820076	5F	27.40	23.80	130.4	26.9	62.2	26.9	23.1	14.5	48.0	9.8
A11-7	42,33	838129	820076	6F	30.55	26.95	128.7	26.5	62.2	26.9	23.1	14.5	48.0	9.8
A11-8	42,33	838129	820076	7F	33.70	30.10	128.4	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A11-9	42,33	838129	820076	8F	36.85	33.25	128.1	25.9	62.2	26.8	23.1	14.4	48.0	9.8
A11-10	42,33	838129	820076	9F	40.00	36.40	128.0	25.7	62.2	26.8	23.1	14.4	48.0	9.8
A11-11	42,33	838129	820076	10F	43.15	39.55	128.7	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A11-12	42,33	838129	820076	12F	49.45	45.85	128.7	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-13	42,33	838129	820076	14F	55.75	52.15	129.7	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-14	42,33	838129	820076	16F	62.05	58.45	129.5	25.3	62.2	26.8	23.1	14.4	48.0	9.8
A11-15	42,33	838129	820076	20F	74.65	71.05	129.3	24.8	62.2	26.8	23.1	14.4	48.0	9.8
A11-16	42,33	838129	820076	23F	84.10	80.50	129.0	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A11-17	42,33	838129	820076	26F	93.55	89.95	129.1	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-18	42,33	838129	820076	RF	120.00	116.40	129.0	24.5	62.2	26.8	23.1	14.4	49.6	9.8

ASRs & Impact Summary(KC-019)															
ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mPD	Flag Pole Receiver Height, mAG	Predicted Cumulative Impacts (μg/m³) in Year 2033							
							NO_2		RSP		FSP		SO_2	
		x	y				1-h (AQO=200)	Annual (AQO=40)	24-h (AQO=100)	Annual (AQO=50)	24-h (AQO=50)	Annual (AQO=25)	10-min (AQO=500)	24-h (AQO=50)
		Easting	Northing				19th highest		10th highest		36th highest		4th highest	4th highest
A8-1	42,33	837986	820142	GF	3.60	1.50	200.1	50.1	62.9	27.4	23.3	15.0	48.0	9.8
A8-2	42,33	837986	820142	1F	8.60	5.00	168.5	38.5	62.6	27.1	23.2	14.7	48.0	9.8
A8-3	42,33	837986	820142	2F	13.60	10.00	147.5	33.0	62.4	27.0	23.2	14.6	48.0	9.8
A8-4	42,33	837986	820142	3F	21.10	17.50	139.1	29.7	62.3	26.9	23.2	14.5	48.0	9.8
A8-5	42,33	837986	820142	4F	24.25	20.65	136.3	28.9	62.3	26.9	23.2	14.5	48.0	9.8
A8-6	42,33	837986	820142	5F	27.40	23.80	132.0	28.4	62.3	26.9	23.2	14.5	48.0	9.8
A8-7	42,33	837986	820142	6F	30.55	26.95	130.9	28.3	62.2	26.9	23.1	14.5	48.0	9.7
A8-8	42,33	837986	820142	7F	33.70	30.10	128.9	28.4	62.2	26.9	23.1	14.5	48.0	9.7
A8-9	42,33	837986	820142	8F	36.85	33.25	127.5	28.8	62.2	26.8	23.1	14.4	48.0	9.7
A8-10	42,33	837986	820142	9F	40.00	36.40	128.0	29.5	62.2	26.8	23.1	14.4	48.0	9.7
A8-11	42,33	837986	820142	10F	43.15	39.55	137.1	30.6	62.2	26.8	23.1	14.4	48.0	9.7
A8-12	42,33	837986	820142	12F	49.45	45.85	178.6	32.2	62.2	26.8	23.1	14.4	47.9	9.7
A8-13	42,33	837986	820142	14F	55.75	52.15	177.1	31.3	62.2	26.8	23.1	14.4	47.9	9.7
A8-14	42,33	837986	820142	16F	62.05	58.45	148.9	29.0	62.2	26.8	23.1	14.4	47.9	9.7
A8-15	42,33	837986	820142	20F	74.65	71.05	129.3	26.0	62.2	26.8	23.1	14.4	47.9	9.7
A8-16	42,33	837986	820142	23F	84.10	80.50	127.8	25.2	62.2	26.8	23.1	14.4	47.9	9.7
A8-17	42,33	837986	820142	26F	93.55	89.95	127.4	24.8	62.2	26.8	23.1	14.4	47.9	9.8
A8-18	42,33	837986	820142	RF	120.00	116.40	127.4	24.5	62.2	26.8	23.1	14.4	50.5	9.8
A9-1	42,33	838033	820121	GF	3.60	1.50	143.2	33.4	62.3	27.0	23.2	14.6	48.0	9.8
A9-2	42,33	838033	820121	1F	8.60	5.00	141.3	32.9	62.3	27.0	23.2	14.6	48.0	9.8
A9-3	42,33	838033	820121	2F	13.60	10.00	139.4	31.7	62.3	27.0	23.2	14.6	48.0	9.8
A9-4	42,33	838033	820121	3F	21.10	17.50	134.0	29.4	62.3	26.9	23.2	14.5	48.0	9.8
A9-5	42,33	838033	820121	4F	24.25	20.65	129.4	28.6	62.3	26.9	23.2	14.5	48.0	9.8
A9-6	42,33	838033	820121	5F	27.40	23.80	128.8	27.9	62.2	26.9	23.2	14.5	48.0	9.8
A9-7	42,33	838033	820121	6F	30.55	26.95	128.3	27.4	62.2	26.9	23.1	14.5	48.0	9.8
A9-8	42,33	838033	820121	7F	33.70	30.10	127.9	27.0	62.2	26.8	23.1	14.5	48.0	9.8
A9-9	42,33	838033	820121	8F	36.85	33.25	127.6	26.8	62.2	26.8	23.1	14.4	48.0	9.8
A9-10	42,33	838033	820121	9F	40.00	36.40	127.5	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-11	42,33	838033	820121	10F	43.15	39.55	127.6	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-12	42,33	838033	820121	12F	49.45	45.85	136.2	27.0	62.2	26.8	23.1	14.4	48.0	9.8
A9-13	42,33	838033	820121	14F	55.75	52.15	143.3	27.2	62.2	26.8	23.1	14.4	48.0	9.8
A9-14	42,33	838033	820121	16F	62.05	58.45	142.8	26.9	62.2	26.8	23.1	14.4	48.0	9.8
A9-15	42,33	838033	820121	20F	74.65	71.05	129.3	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A9-16	42,33	838033	820121	23F	84.10	80.50	128.1	25.0	62.2	26.8	23.1	14.4	48.0	9.8
A9-17	42,33	838033	820121	26F	93.55	89.95	128.2	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A9-18	42,33	838033	820121	RF	120.00	116.40	127.9	24.6	62.2	26.8	23.1	14.4	50.8	9.8
A10-1	42,33	838081	820098	GF	3.60	1.50	141.8	31.5	62.3	27.0	23.2	14.6	48.0	9.8
A10-2	42,33	838081	820098	1F	8.60	5.00	141.7	31.2	62.3	27.0	23.2	14.6	48.0	9.8
A10-3	42,33	838081	820098	2F	13.60	10.00	138.8	30.4	62.3	27.0	23.2	14.5	48.0	9.8
A10-4	42,33	838081	820098	3F	21.10	17.50	131.7	28.6	62.3	26.9	23.2	14.5	48.0	9.8
A10-5	42,33	838081	820098	4F	24.25	20.65	129.7	28.0	62.2	26.9	23.2	14.5	48.0	9.8
A10-6	42,33	838081	820098	5F	27.40	23.80	128.6	27.4	62.2	26.9	23.1	14.5	48.0	9.8
A10-7	42,33	838081	820098	6F	30.55	26.95	128.3	26.9	62.2	26.9	23.1	14.5	48.0	9.8
A10-8	42,33	838081	820098	7F	33.70	30.10	128.1	26.5	62.2	26.8	23.1	14.5	48.0	9.8
A10-9	42,33	838081	820098	8F	36.85	33.25	127.8	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A10-10	42,33	838081	820098	9F	40.00	36.40	127.7	26.0	62.2	26.8	23.1	14.4	48.0	9.8
A10-11	42,33	838081	820098	10F	43.15	39.55	128.1	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-12	42,33	838081	820098	12F	49.45	45.85	128.3	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-13	42,33	838081	820098	14F	55.75	52.15	132.5	25.9	62.2	26.8	23.1	14.4	48.0	9.8
A10-14	42,33	838081	820098	16F	62.05	58.45	131.1	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A10-15	42,33	838081	820098	20F	74.65	71.05	129.4	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A10-16	42,33	838081	820098	23F	84.10	80.50	128.5	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A10-17	42,33	838081	820098	26F	93.55	89.95	128.6	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A10-18	42,33	838081	820098	RF	120.00	116.40	128.5	24.5	62.2	26.8	23.1	14.4	50.5	9.8
A11-1	42,33	838129	820076	GF	3.60	1.50	140.5	30.7	62.3	27.0	23.2	14.6	48.0	9.8
A11-2	42,33	838129	820076	1F	8.60	5.00	141.8	30.4	62.3	27.0	23.2	14.6	48.0	9.8
A11-3	42,33	838129	820076	2F	13.60	10.00	137.6	29.5	62.3	26.9	23.2	14.5	48.0	9.8
A11-4	42,33	838129	820076	3F	21.10	17.50	133.9	28.0	62.2	26.9	23.2	14.5	48.0	9.8
A11-5	42,33	838129	820076	4F	24.25	20.65	133.3	27.4	62.2	26.9	23.2	14.5	48.0	9.8
A11-6	42,33	838129	820076	5F	27.40	23.80	130.4	26.9	62.2	26.9	23.1	14.5	48.0	9.8
A11-7	42,33	838129	820076	6F	30.55	26.95	128.7	26.5	62.2	26.9	23.1	14.5	48.0	9.8
A11-8	42,33	838129	820076	7F	33.70	30.10	128.4	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A11-9	42,33	838129	820076	8F	36.85	33.25	128.1	25.9	62.2	26.8	23.1	14.4	48.0	9.8
A11-10	42,33	838129	820076	9F	40.00	36.40	128.0	25.7	62.2	26.8	23.1	14.4	48.0	9.8
A11-11	42,33	838129	820076	10F	43.15	39.55	128.7	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A11-12	42,33	838129	820076	12F	49.45	45.85	128.7	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-13	42,33	838129	820076	14F	55.75	52.15	129.7	25.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-14	42,33	838129	820076	16F	62.05	58.45	129.6	25.3	62.2	26.8	23.1	14.4	48.0	9.8
A11-15	42,33	838129	820076	20F	74.65	71.05	129.3	24.8	62.2	26.8	23.1	14.4	48.0	9.8
A11-16	42,33	838129	820076	23F	84.10	80.50	129.0	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A11-17	42,33	838129	820076	26F	93.55	89.95	129.1	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A11-18	42,33	838129	820076	RF	120.00	116.40	129.0	24.5	62.2	26.8	23.1	14.4	49.6	9.8
A12-1	42,33	838142	820103	GF	3.60	1.50	138.0	30.8	62.3	27.0	23.2	14.6	48.0	9.8
A12-2	42,33	838142	820103	1F	8.60	5.00	138.1	30.5	62.3	27.0	23.2	14.6	48.0	9.8
A12-3	42,33	838142	820103	2F	13.60	10.00	137.0	29.8	62.3	26.9	23.2	14.5	48.0	9.8
A12-4	42,33	838142	820103	3F	21.10	17.50	134.0	28.2	62.3	26.9	23.2	14.5	48.0	9.8
A12-5	42,33	838142	820103	4F	24.25	20.65	133.3	27.6	62.2	26.9	23.2	14.5	48.0	9.8
A12-6	42,33	838142	820103	5F	27.40	23.80	132.5	27.1	62.2	26.9	23.2	14.5	48.0	9.8
A12-7	42,33	838142	820103	6F	30.55	26.95	129.7	26.6	62.2	26.9	23.1	14.5	48.0	9.8
A12-8	42,33	838142	820103	7F	33.70	30.10	129.2	26.3	62.2	26.8	23.1	14.5	48.0	9.8
A12-9	42,33	838142	820103	8F	36.85	33.25	128.8	26.0	62.2	26.8	23.1	14.4	48.0	9.8
A12-10	42,33	838142	820103	9F	40.00	36.40	128.5	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A12-11	42,33	838142	820103	10F	43.15	39.55	129.8	25.7	62.2	26.8	23.1	14.4	48.0	9.8
A12-12	42,33	838142	820103	12F	49.45	45.85	129.9	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A12-13	42,33	838142	820103	14F	55.75	52.15	130.3	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A12-14	42,33	838142	820103	16F	62.05	58.45	129.9	25.5	62.2	26.8	23.1	14.4	48.0	9.8
A12-15	42,33	838142	820103	20F	74.65	71.05	129.3	24.8	62.2	26.8	23.1	14.4	48.0	9.8
A12-16	42,33	838142	820103	23F	84.10	80.50	128.7	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A12-17	42,33	838142	820103	26F	93.55	89.95	129.1	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A12-18	42,33	838142	820103	RF	120.00	116.40	129.0	24.4	62.2	26.8	23.1	14.4	48.0	9.8

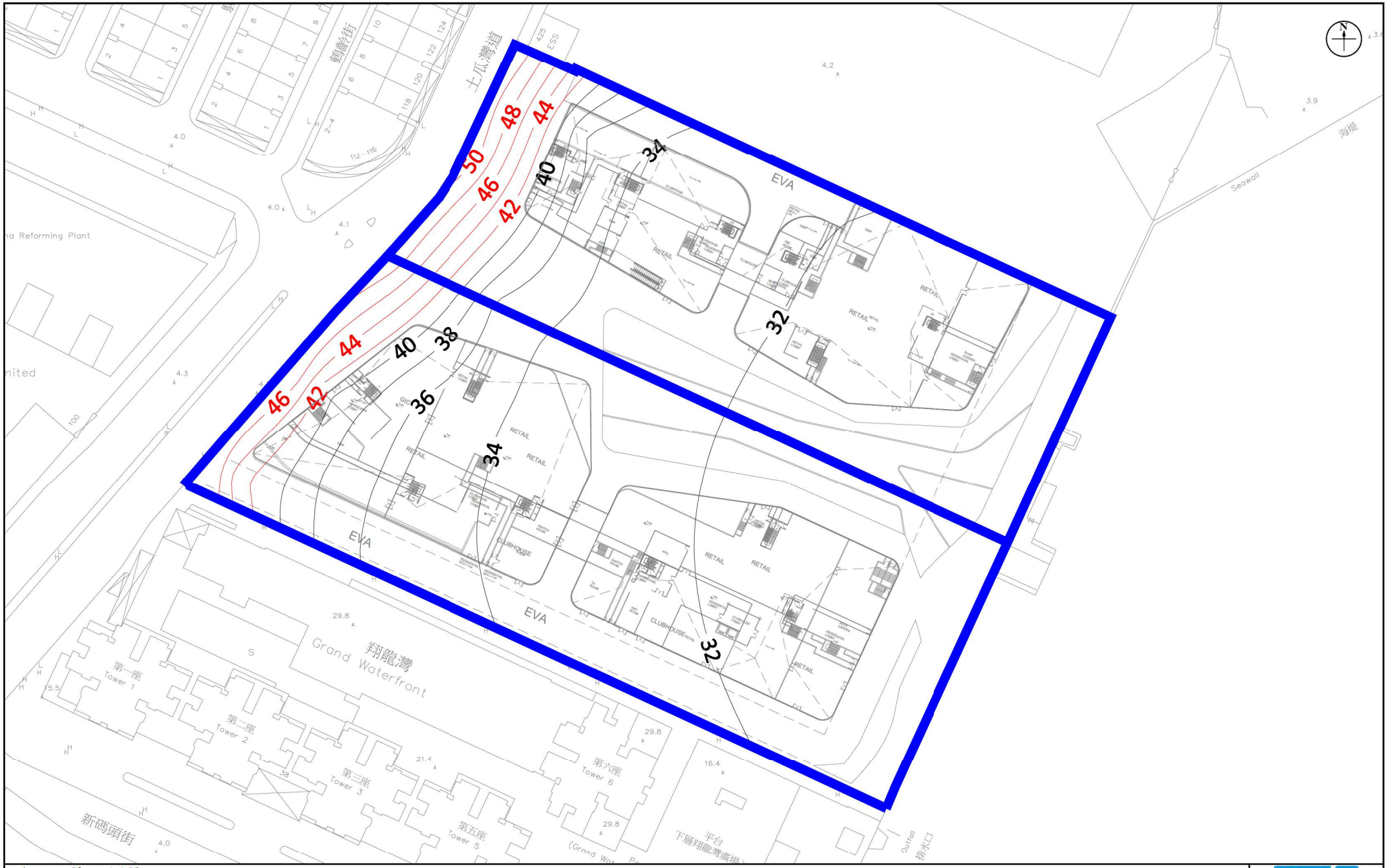
ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mPD	Flag Pole Receiver Height, mAG	Predicted Cumulative Impacts (μg/m³) in Year 2033							
							NO_2		RSP		FSP		SO_2	
		x	y				1-h (AQO=200)	Annual (AQO=40)	24-h (AQO=100)	Annual (AQO=50)	24-h (AQO=50)	Annual (AQO=25)	10-min (AQO=500)	24-h (AQO=50)
		Easting	Northing				19th highest		10th highest		36th highest		4th highest	4th highest
A13-1	42,33	838153	820128	GF	3.60	1.50	137.4	31.0	62.4	27.0	23.3	14.6	48.0	9.8
A13-2	42,33	838153	820128	1F	8.60	5.00	137.0	30.8	62.4	27.0	23.2	14.6	48.0	9.8
A13-3	42,33	838153	820128	2F	13.60	10.00	135.9	30.3	62.4	27.0	23.2	14.6	48.0	9.8
A13-4	42,33	838153	820128	3F	21.10	17.50	134.0	28.5	62.3	26.9	23.2	14.5	48.0	9.8
A13-5	42,33	838153	820128	4F	24.25	20.65	133.3	27.8	62.3	26.9	23.2	14.5	48.0	9.8
A13-6	42,33	838153	820128	5F	27.40	23.80	132.6	27.2	62.2	26.9	23.2	14.5	48.0	9.8
A13-7	42,33	838153	820128	6F	30.55	26.95	131.2	26.8	62.2	26.9	23.1	14.5	48.0	9.8
A13-8	42,33	838153	820128	7F	33.70	30.10	130.9	26.4	62.2	26.8	23.1	14.5	48.0	9.8
A13-9	42,33	838153	820128	8F	36.85	33.25	128.8	26.1	62.2	26.8	23.1	14.4	48.0	9.8
A13-10	42,33	838153	820128	9F	40.00	36.40	127.8	26.0	62.2	26.8	23.1	14.4	48.0	9.8
A13-11	42,33	838153	820128	10F	43.15	39.55	127.7	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A13-12	42,33	838153	820128	12F	49.45	45.85	129.9	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A13-13	42,33	838153	820128	14F	55.75	52.15	130.6	25.8	62.2	26.8	23.1	14.4	48.0	9.8
A13-14	42,33	838153	820128	16F	62.05	58.45	130.1	25.6	62.2	26.8	23.1	14.4	48.0	9.8
A13-15	42,33	838153	820128	20F	74.65	71.05	127.4	24.8	62.2	26.8	23.1	14.4	48.0	9.8
A13-16	42,33	838153	820128	23F	84.10	80.50	128.1	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A13-17	42,33	838153	820128	26F	93.55	89.95	128.8	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A13-18	42,33	838153	820128	RF	120.00	116.40	129.0	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A14-1	42,33	838109	820148	GF	3.60	1.50	138.0	31.7	62.4	27.0	23.2	14.6	48.0	9.8
A14-2	42,33	838109	820148	1F	8.60	5.00	138.0	31.4	62.3	27.0	23.2	14.6	48.0	9.8
A14-3	42,33	838109	820148	2F	13.60	10.00	137.6	30.9	62.4	27.0	23.2	14.6	48.0	9.8
A14-4	42,33	838109	820148	3F	21.10	17.50	135.0	29.0	62.3	26.9	23.2	14.5	48.0	9.8
A14-5	42,33	838109	820148	4F	24.25	20.65	134.1	28.3	62.3	26.9	23.2	14.5	48.0	9.8
A14-6	42,33	838109	820148	5F	27.40	23.80	130.4	27.6	62.2	26.9	23.2	14.5	48.0	9.8
A14-7	42,33	838109	820148	6F	30.55	26.95	130.3	27.1	62.2	26.9	23.1	14.5	48.0	9.8
A14-8	42,33	838109	820148	7F	33.70	30.10	130.0	26.7	62.2	26.9	23.1	14.5	48.0	9.8
A14-9	42,33	838109	820148	8F	36.85	33.25	127.8	26.4	62.2	26.8	23.1	14.4	48.0	9.8
A14-10	42,33	838109	820148	9F	40.00	36.40	127.6	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A14-11	42,33	838109	820148	10F	43.15	39.55	127.5	26.1	62.2	26.8	23.1	14.4	48.0	9.8
A14-12	42,33	838109	820148	12F	49.45	45.85	130.0	26.2	62.2	26.8	23.1	14.4	48.0	9.8
A14-13	42,33	838109	820148	14F	55.75	52.15	129.7	26.3	62.2	26.8	23.1	14.4	48.0	9.8
A14-14	42,33	838109	820148	16F	62.05	58.45	127.0	26.1	62.2	26.8	23.1	14.4	48.0	9.8
A14-15	42,33	838109	820148	20F	74.65	71.05	127.3	25.1	62.2	26.8	23.1	14.4	48.0	9.8
A14-16	42,33	838109	820148	23F	84.10	80.50	127.9	24.7	62.2	26.8	23.1	14.4	48.0	9.8
A14-17	42,33	838109	820148	26F	93.55	89.95	128.6	24.5	62.2	26.8	23.1	14.4	48.0	9.8
A14-18	42,33	838109	820148	RF	120.00	116.40	129.0	24.4	62.2	26.8	23.1	14.4	48.0	9.8
A15-1	42,33	838063	820170	GF	3.60	1.50	141.7	33.4	62.3	27.0	23.2	14.6	48.0	9.8
A15-2	42,33	838063	820170	1F	8.60	5.00	141.1	32.9	62.3	27.0	23.2	14.6	48.0	9.8
A15-3	42,33	838063	820170	2F	13.60	10.00	138.3	32.0	62.4	27.0	23.2	14.6	48.0	9.8
A15-4	42,33	838063	820170	3F	21.10	17.50	130.9	29.7	62.3	26.9	23.2	14.5	48.0	9.8
A15-5	42,33	838063	820170	4F	24.25	20.65	130.3	28.8	62.3	26.9	23.2	14.5	48.0	9.8
A15-6	42,33	838063	820170	5F	27.40	23.80	129.9	28.1	62.2	26.9	23.2	14.5	48.0	9.8
A15-7	42,33	838063	820170	6F	30.55	26.95	129.7	27.5	62.2	26.9	23.1	14.5	48.0	9.8
A15-8	42,33	838063	820170	7F	33.70	30.10	129.1	27.1	62.2	26.9	23.1	14.5	48.0	9.8
A15-9	42,33	838063	820170	8F	36.85	33.25	127.6	26.8	62.2	26.8	23.1	14.4	48.0	9.8
A15-10	42,33	838063	820170	9F	40.00	36.40	127.4	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A15-11	42,33	838063	820170	10F	43.15	39.55	127.3	26.6	62.2	26.8	23.1	14.4	48.0	9.8
A15-12	42,33	838063	820170	12F	49.45	45.85	129.6	26.9	62.2	26.8	23.1	14.4	48.0	9.8
A15-13	42,33	838063	820170	14F	55.75	52.15	136.2	27.1	62.2	26.8	23.1	14.4	48.0	9.8
A15-14	42,33	838063	820170	16F	62.05	58.45	138.7	26.8	62.2	26.8	23.1	14.4	48.0	9.8
A15-15	42,33	838063	820170	20F	74.65	71.05	128.7	25.5	62.2	26.8	23.1	14.4	48.0	9.8
A15-16	42,33	838063	820170	23F	84.10	80.50	127.7	24.9	62.2	26.8	23.1	14.4	48.0	9.8
A15-17	42,33	838063	820170	26F	93.55	89.95	128.3	24.7	62.2	26.8	23.1	14.4	47.9	9.8
A15-18	42,33	838063	820170	RF	120.00	116.40	128.9	24.4	62.2	26.8	23.1	14.4	47.9	9.8
A16-1	42,33	838015	820191	GF	3.60	1.50	189.5	52.2	62.8	27.5	23.4	15.0	48.0	9.8
A16-2	42,33	838015	820191	1F	8.60	5.00	163.7	37.5	62.5	27.1	23.2	14.7	48.0	9.8
A16-3	42,33	838015	820191	2F	13.60	10.00	141.0	32.9	62.4	27.0	23.2	14.6	48.0	9.8
A16-4	42,33	838015	820191	3F	21.10	17.50	137.2	29.9	62.3	26.9	23.2	14.5	48.0	9.8
A16-5	42,33	838015	820191	4F	24.25	20.65	134.3	29.1	62.3	26.9	23.2	14.5	48.0	9.8
A16-6	42,33	838015	820191	5F	27.40	23.80	133.6	28.4	62.2	26.9	23.2	14.5	48.0	9.8
A16-7	42,33	838015	820191	6F	30.55	26.95	131.0	27.9	62.2	26.9	23.1	14.5	48.0	9.8
A16-8	42,33	838015	820191	7F	33.70	30.10	130.4	27.6	62.2	26.9	23.1	14.5	48.0	9.8
A16-9	42,33	838015	820191	8F	36.85	33.25	127.9	27.4	62.2	26.8	23.1	14.4	48.0	9.8
A16-10	42,33	838015	820191	9F	40.00	36.40	127.3	27.3	62.2	26.8	23.1	14.4	47.9	9.8
A16-11	42,33	838015	820191	10F	43.15	39.55	127.2	27.3	62.2	26.8	23.1	14.4	47.9	9.7
A16-12	42,33	838015	820191	12F	49.45	45.85	127.0	27.9	62.2	26.8	23.1	14.4	47.9	9.7
A16-13	42,33	838015	820191	14F	55.75	52.15	133.8	28.1	62.2	26.8	23.1	14.4	47.9	9.7
A16-14	42,33	838015	820191	16F	62.05	58.45	137.1	27.6	62.2	26.8	23.1	14.4	47.9	9.7
A16-15	42,33	838015	820191	20F	74.65	71.05	126.8	25.8	62.2	26.8	23.1	14.4	47.9	9.7
A16-16	42,33	838015	820191	23F	84.10	80.50	127.5	25.1	62.2	26.8	23.1	14.4	47.9	9.7
A16-17	42,33	838015	820191	26F	93.55	89.95	128.0	24.8	62.2	26.8	23.1	14.4	47.9	9.7
A16-18	42,33	838015	820191	RF	120.00	116.40	128.9	24.4	62.2	26.8	23.1	14.4	47.9	9.7
A17-1	42,33	838004	820167	GF	3.60	1.50	200.4	52.1	62.8	27.5	23.3	15.0	48.0	9.8
A17-2	42,33	838004	820167	1F	8.60	5.00	165.4	37.7	62.5	27.1	23.2	14.7	48.0	9.8
A17-3	42,33	838004	820167	2F	13.60	10.00	144.5	33.0	62.5	27.0	23.2	14.6	48.0	9.8
A17-4	42,33	838004	820167	3F	21.10	17.50	138.3	29.9	62.3	26.9	23.2	14.5	48.0	9.8
A17-5	42,33	838004	820167	4F	24.25	20.65	137.4	29.1	62.3	26.9	23.2	14.5	48.0	9.8
A17-6	42,33	838004	820167	5F	27.40	23.80	133.4	28.5	62.3	26.9	23.2	14.5	48.0	9.8
A17-7	42,33	838004	820167	6F	30.55	26.95	130.8	28.2	62.2	26.9	23.1	14.5	48.0	9.8
A17-8	42,33	838004	820167	7F	33.70	30.10	129.3	28.0	62.2	26.9	23.1	14.5	48.0	9.8
A17-9	42,33	838004	820167	8F	36.85	33.25	128.2	28.0	62.2	26.8	23.1	14.4	48.0	9.8
A17-10	42,33	838004	820167	9F	40.00	36.40	127.9	28.1	62.2	26.8	23.1	14.4	48.0	9.7
A17-11	42,33	838004	820167	10F	43.15	39.55	128.1	28.5	62.2	26.8	23.1	14.4	48.0	9.7
A17-12	42,33	838004	820167	12F	49.45	45.85	137.5	29.5	62.2	26.8	23.1	14.4	47.9	9.7
A17-13	42,33	838004	820167	14F	55.75	52.15	145.9	29.5	62.2	26.8	23.1	14.4	47.9	9.7
A17-14	42,33	838004	820167	16F	62.05	58.45	144.6	28.4	62.2	26.8	23.1	14.4	47.9	9.7
A17-15	42,33	838004	820167	20F	74.65	71.05	127.2	26.1	62.2	26.8	23.1	14.4	47.9	9.7
A17-16	42,33	838004	820167	23F	84.10	80.50	127.8	25.3	62.2	26.8	23.1	14.4	47.9	9.7
A17-17	42,33	838004	820167	26F	93.55	89.95	128.2	24.8	62.2	26.8	23.1	14.4	47.9	9.7
A17-18	42,33	838004	820167	RF	120.00	116.40	128.3	24.5	62.2	26.8	23.1	14.4	47.9	9.7

Appendix 4.13 Contour Map of NO2, RSP, FSP and SO2



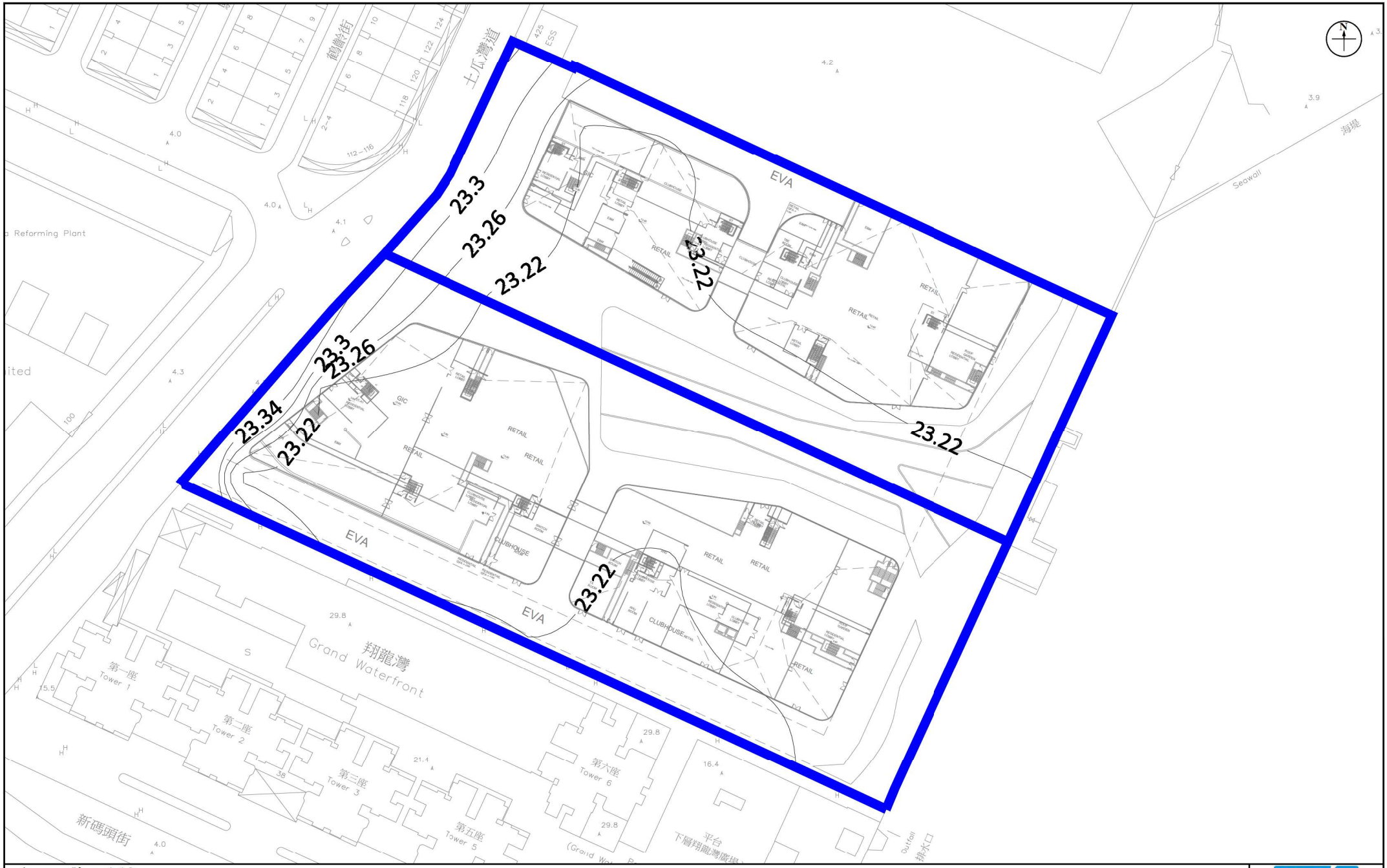
Appendix: 4.13a	RAMBOLL
Title: Contour Map of the 19th Highest Hourly Average Concentration of NO_2 in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: 200μgm^{-3})	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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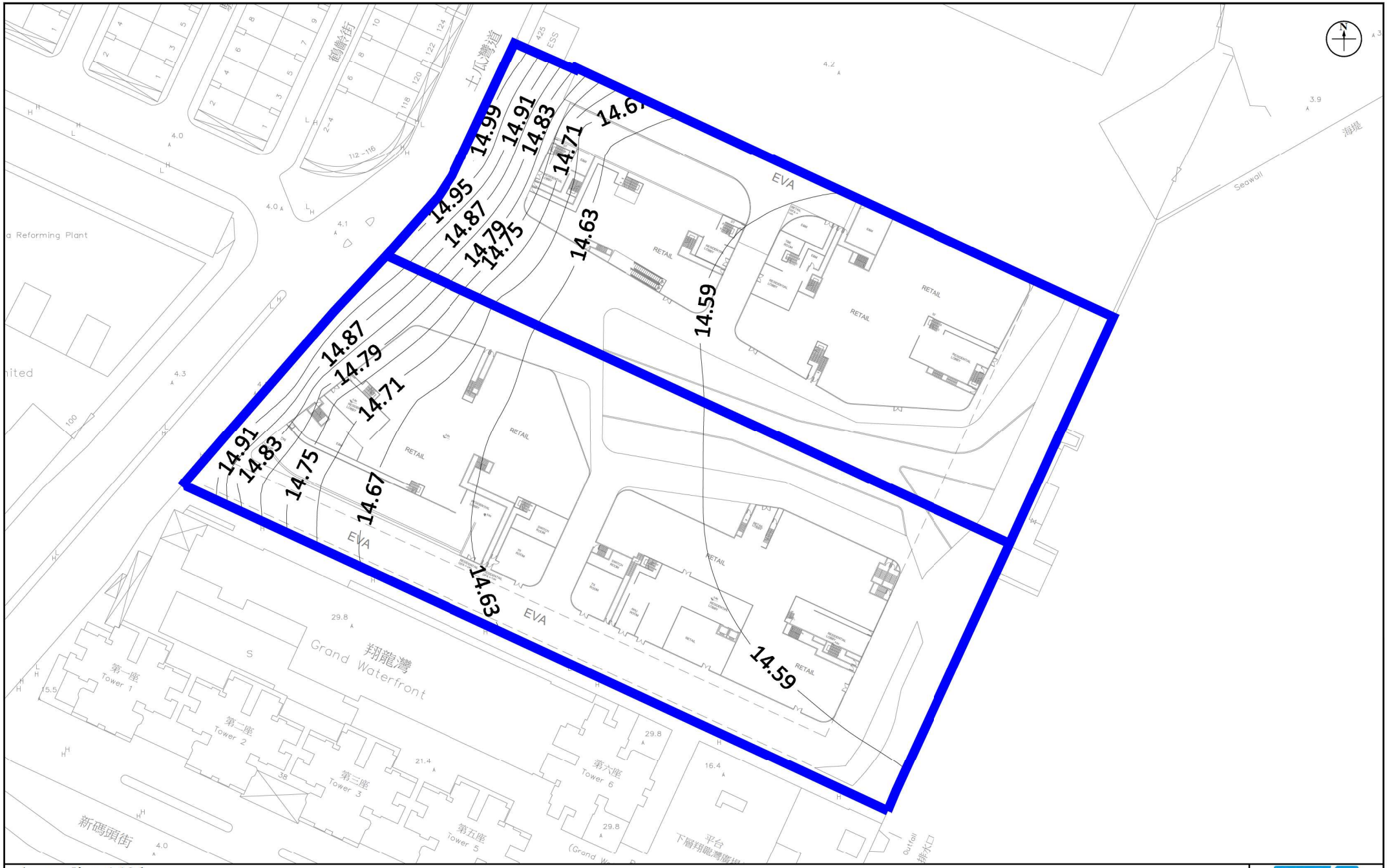
Appendix: 4.13b	RAMBOLL
Title: Contour Map of Annual Average Concentration of NO_2 in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $40\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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Appendix: 4.13c	RAMBOLL
Title: Contour Map of the 10th Highest Daily Average Concentration of FSP in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $50\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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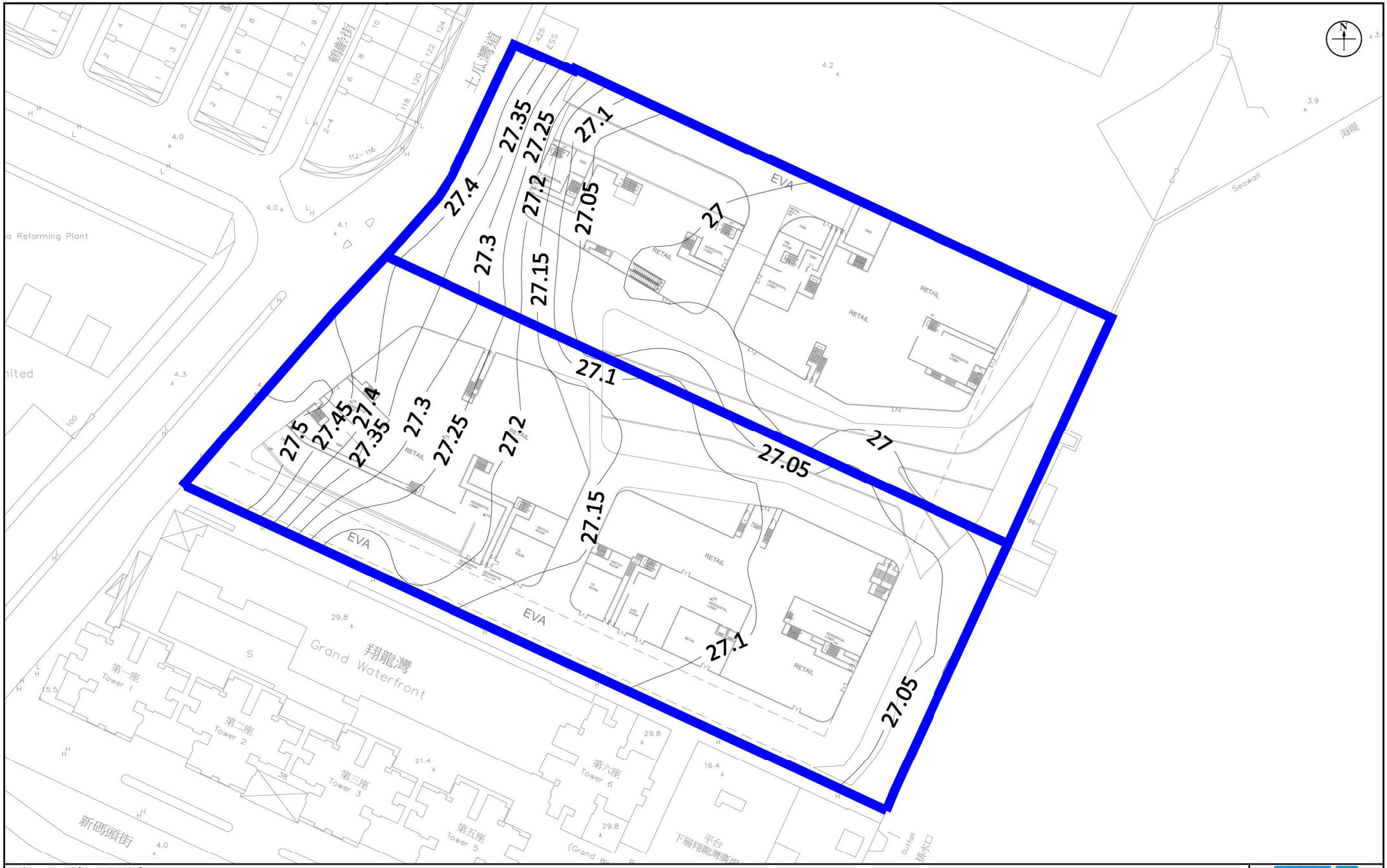
Appendix: 4.13d	RAMBOLL
Title: Contour Map of the Annual Average Concentration of FSP in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $25\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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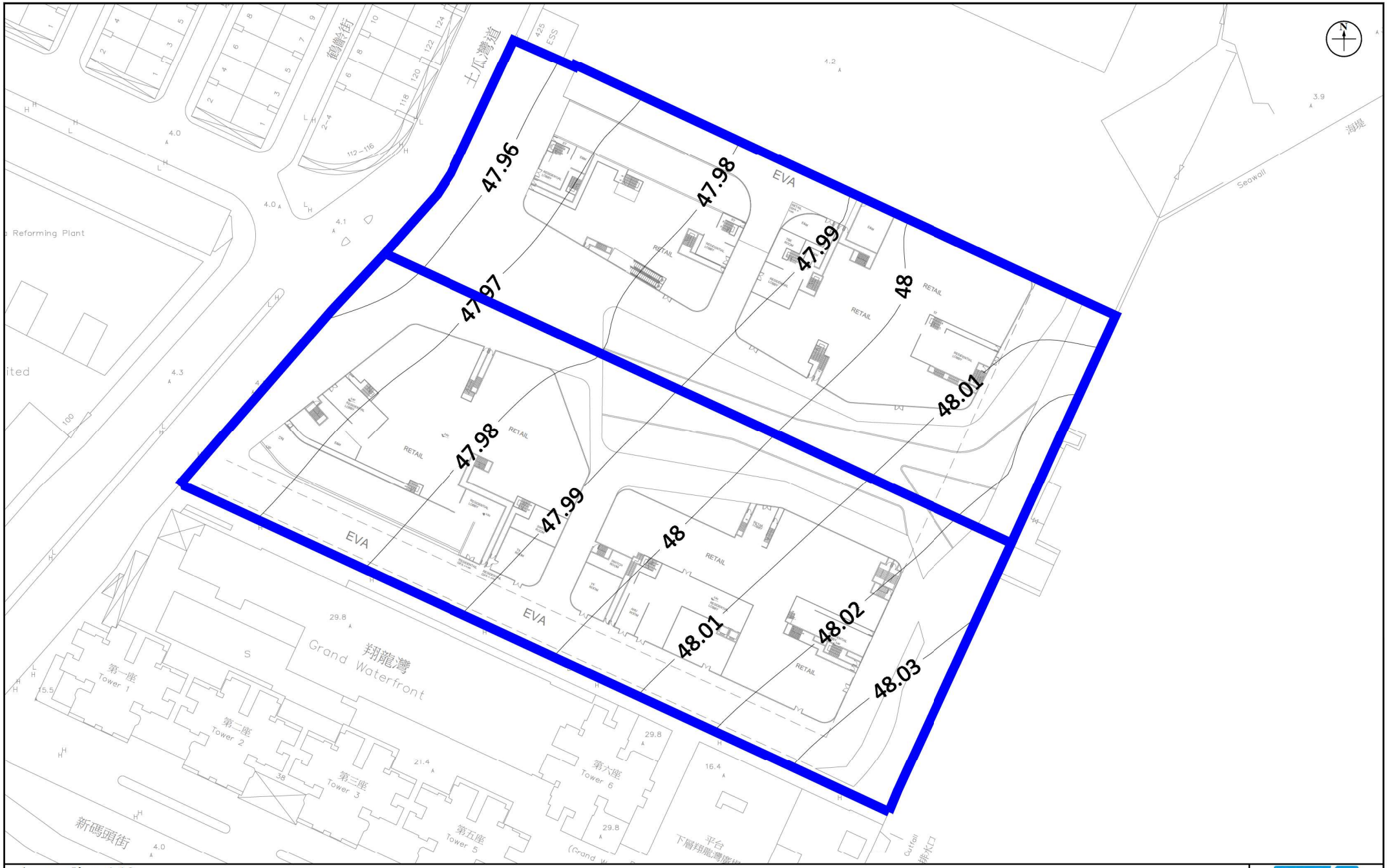
Appendix: 4.13e	RAMBOLL
Title: Contour Map of the 10th Highest Daily Average Concentration of RSP in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $50\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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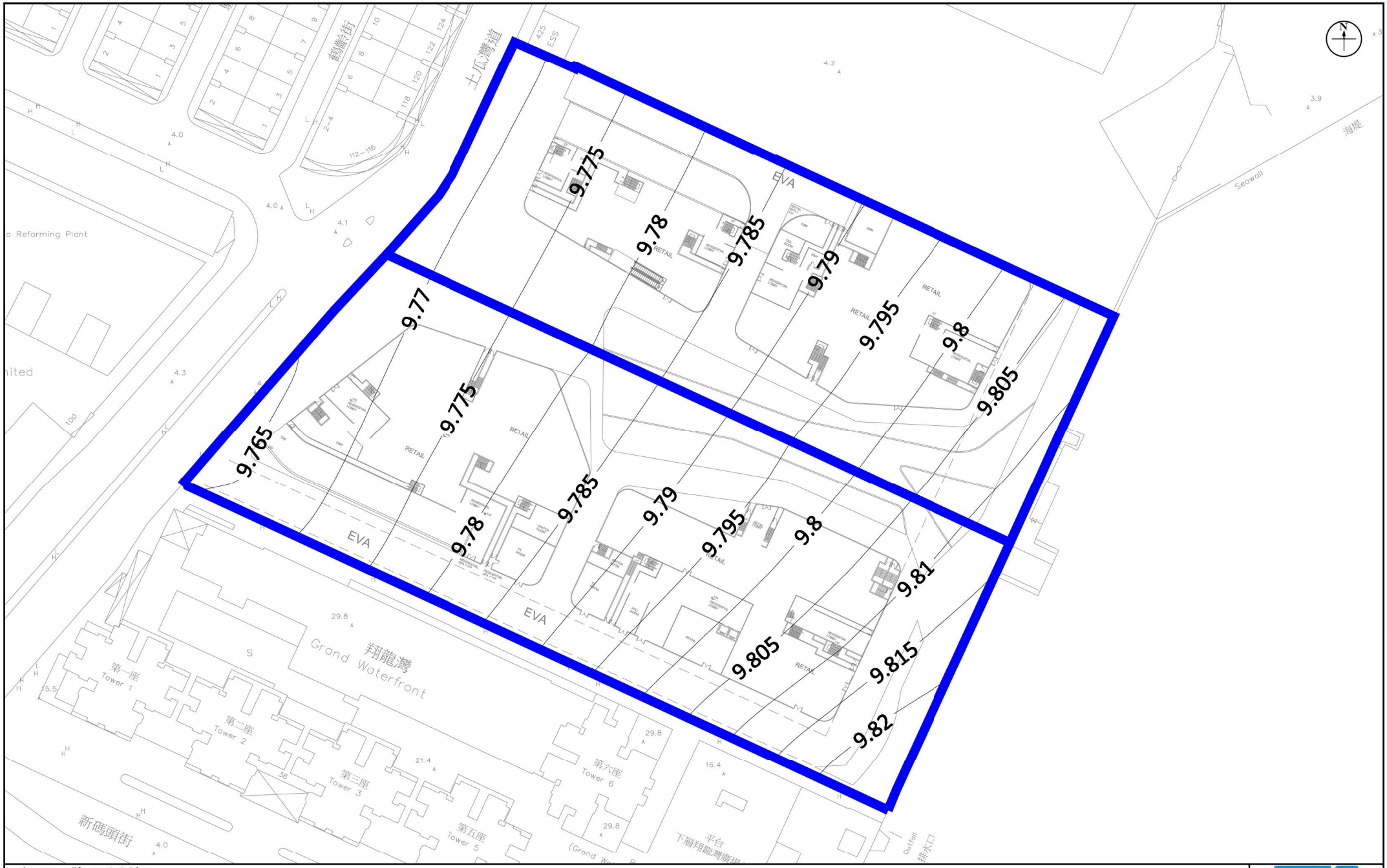
Appendix: 4.13f		RAMBOLL
Title:	Contour Map of the Annual Average Concentration of RSP in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $50\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project:	Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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Appendix: 4.13g	RAMBOLL
Title: Contour Map of the 4th Highest 10-minute Average Concentration of SO2 in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $500\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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Appendix: 4.13h	RAMBOLL
Title: Contour Map of the 4th Highest Daily Average Concentration of SO2 in μgm^{-3} (Assessment Level: 1.5m Above Ground) (AQO standard: $50\mu gm^{-3}$)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

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Appendix 4.14 Predicted Odour Impact Assessment Results

Odour_Impact Summary(KC-018)						
ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A1-1	42,33	838116	820048	GF	1.50	0.05
A1-2	42,33	838116	820048	1F	5.00	0.05
A1-3	42,33	838116	820048	2F	10.00	0.06
A1-4	42,33	838116	820048	3F	17.50	0.05
A1-5	42,33	838116	820048	4F	20.65	0.05
A1-6	42,33	838116	820048	5F	23.80	0.05
A1-7	42,33	838116	820048	6F	26.95	0.04
A1-8	42,33	838116	820048	7F	30.10	0.04
A1-9	42,33	838116	820048	8F	33.25	0.03
A1-10	42,33	838116	820048	9F	36.40	0.03
A1-11	42,33	838116	820048	10F	39.55	0.03
A1-12	42,33	838116	820048	12F	45.85	0.03
A1-13	42,33	838116	820048	14F	52.15	0.03
A1-14	42,33	838116	820048	16F	58.45	0.03
A1-15	42,33	838116	820048	20F	71.05	0.02
A1-16	42,33	838116	820048	23F	80.50	0.02
A1-17	42,33	838116	820048	26F	89.95	0.02
A1-18	42,33	838116	820048	RF	116.40	0.01
A2-1	42,33	838102	820016	GF	1.50	0.03
A2-2	42,33	838102	820016	1F	5.00	0.05
A2-3	42,33	838102	820016	2F	10.00	0.06
A2-4	42,33	838102	820016	3F	17.50	0.05
A2-5	42,33	838102	820016	4F	20.65	0.04
A2-6	42,33	838102	820016	5F	23.80	0.03
A2-7	42,33	838102	820016	6F	26.95	0.03
A2-8	42,33	838102	820016	7F	30.10	0.03
A2-9	42,33	838102	820016	8F	33.25	0.03
A2-10	42,33	838102	820016	9F	36.40	0.03
A2-11	42,33	838102	820016	10F	39.55	0.03
A2-12	42,33	838102	820016	12F	45.85	0.03
A2-13	42,33	838102	820016	14F	52.15	0.03
A2-14	42,33	838102	820016	16F	58.45	0.02
A2-15	42,33	838102	820016	20F	71.05	0.02
A2-16	42,33	838102	820016	23F	80.50	0.02
A2-17	42,33	838102	820016	26F	89.95	0.02
A2-18	42,33	838102	820016	RF	116.40	0.01
A3-1	42,33	838060	820034	GF	1.50	0.05
A3-2	42,33	838060	820034	1F	5.00	0.07
A3-3	42,33	838060	820034	2F	10.00	0.08
A3-4	42,33	838060	820034	3F	17.50	0.06
A3-5	42,33	838060	820034	4F	20.65	0.05
A3-6	42,33	838060	820034	5F	23.80	0.05
A3-7	42,33	838060	820034	6F	26.95	0.05
A3-8	42,33	838060	820034	7F	30.10	0.04
A3-9	42,33	838060	820034	8F	33.25	0.04
A3-10	42,33	838060	820034	9F	36.40	0.04
A3-11	42,33	838060	820034	10F	39.55	0.04
A3-12	42,33	838060	820034	12F	45.85	0.04
A3-13	42,33	838060	820034	14F	52.15	0.03
A3-14	42,33	838060	820034	16F	58.45	0.03
A3-15	42,33	838060	820034	20F	71.05	0.02
A3-16	42,33	838060	820034	23F	80.50	0.02
A3-17	42,33	838060	820034	26F	89.95	0.02
A3-18	42,33	838060	820034	RF	116.40	0.01

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A4-1	42,33	838019	820052	GF	1.50	0.08
A4-2	42,33	838019	820052	1F	5.00	0.09
A4-3	42,33	838019	820052	2F	10.00	0.10
A4-4	42,33	838019	820052	3F	17.50	0.09
A4-5	42,33	838019	820052	4F	20.65	0.08
A4-6	42,33	838019	820052	5F	23.80	0.07
A4-7	42,33	838019	820052	6F	26.95	0.07
A4-8	42,33	838019	820052	7F	30.10	0.06
A4-9	42,33	838019	820052	8F	33.25	0.06
A4-10	42,33	838019	820052	9F	36.40	0.05
A4-11	42,33	838019	820052	10F	39.55	0.05
A4-12	42,33	838019	820052	12F	45.85	0.04
A4-13	42,33	838019	820052	14F	52.15	0.04
A4-14	42,33	838019	820052	16F	58.45	0.03
A4-15	42,33	838019	820052	20F	71.05	0.02
A4-16	42,33	838019	820052	23F	80.50	0.02
A4-17	42,33	838019	820052	26F	89.95	0.01
A4-18	42,33	838019	820052	RF	116.40	0.01
A5-1	42,33	837977	820072	GF	1.50	0.14
A5-2	42,33	837977	820072	1F	5.00	0.19
A5-3	42,33	837977	820072	2F	10.00	0.20
A5-4	42,33	837977	820072	3F	17.50	0.15
A5-5	42,33	837977	820072	4F	20.65	0.12
A5-6	42,33	837977	820072	5F	23.80	0.10
A5-7	42,33	837977	820072	6F	26.95	0.09
A5-8	42,33	837977	820072	7F	30.10	0.08
A5-9	42,33	837977	820072	8F	33.25	0.07
A5-10	42,33	837977	820072	9F	36.40	0.06
A5-11	42,33	837977	820072	10F	39.55	0.06
A5-12	42,33	837977	820072	12F	45.85	0.05
A5-13	42,33	837977	820072	14F	52.15	0.03
A5-14	42,33	837977	820072	16F	58.45	0.03
A5-15	42,33	837977	820072	20F	71.05	0.02
A5-16	42,33	837977	820072	23F	80.50	0.01
A5-17	42,33	837977	820072	26F	89.95	0.01
A5-18	42,33	837977	820072	RF	116.40	0.01
A6-1	42,33	837939	820089	GF	1.50	0.32
A6-2	42,33	837939	820089	1F	5.00	0.44
A6-3	42,33	837939	820089	2F	10.00	0.43
A6-4	42,33	837939	820089	3F	17.50	0.24
A6-5	42,33	837939	820089	4F	20.65	0.14
A6-6	42,33	837939	820089	5F	23.80	0.11
A6-7	42,33	837939	820089	6F	26.95	0.09
A6-8	42,33	837939	820089	7F	30.10	0.08
A6-9	42,33	837939	820089	8F	33.25	0.06
A6-10	42,33	837939	820089	9F	36.40	0.05
A6-11	42,33	837939	820089	10F	39.55	0.04
A6-12	42,33	837939	820089	12F	45.85	0.03
A6-13	42,33	837939	820089	14F	52.15	0.02
A6-14	42,33	837939	820089	16F	58.45	0.02
A6-15	42,33	837939	820089	20F	71.05	0.01
A6-16	42,33	837939	820089	23F	80.50	0.01
A6-17	42,33	837939	820089	26F	89.95	0.00
A6-18	42,33	837939	820089	RF	116.40	0.00

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A7-1	42,33	837962	820116	GF	1.50	0.36
A7-2	42,33	837962	820116	1F	5.00	0.51
A7-3	42,33	837962	820116	2F	10.00	0.50
A7-4	42,33	837962	820116	3F	17.50	0.27
A7-5	42,33	837962	820116	4F	20.65	0.18
A7-6	42,33	837962	820116	5F	23.80	0.15
A7-7	42,33	837962	820116	6F	26.95	0.13
A7-8	42,33	837962	820116	7F	30.10	0.11
A7-9	42,33	837962	820116	8F	33.25	0.09
A7-10	42,33	837962	820116	9F	36.40	0.07
A7-11	42,33	837962	820116	10F	39.55	0.05
A7-12	42,33	837962	820116	12F	45.85	0.04
A7-13	42,33	837962	820116	14F	52.15	0.03
A7-14	42,33	837962	820116	16F	58.45	0.02
A7-15	42,33	837962	820116	20F	71.05	0.01
A7-16	42,33	837962	820116	23F	80.50	0.01
A7-17	42,33	837962	820116	26F	89.95	0.01
A7-18	42,33	837962	820116	RF	116.40	0.00
A8-1	42,33	837986	820142	GF	1.50	0.20
A8-2	42,33	837986	820142	1F	5.00	0.28
A8-3	42,33	837986	820142	2F	10.00	0.31
A8-4	42,33	837986	820142	3F	17.50	0.25
A8-5	42,33	837986	820142	4F	20.65	0.21
A8-6	42,33	837986	820142	5F	23.80	0.17
A8-7	42,33	837986	820142	6F	26.95	0.14
A8-8	42,33	837986	820142	7F	30.10	0.11
A8-9	42,33	837986	820142	8F	33.25	0.08
A8-10	42,33	837986	820142	9F	36.40	0.07
A8-11	42,33	837986	820142	10F	39.55	0.06
A8-12	42,33	837986	820142	12F	45.85	0.04
A8-13	42,33	837986	820142	14F	52.15	0.04
A8-14	42,33	837986	820142	16F	58.45	0.03
A8-15	42,33	837986	820142	20F	71.05	0.02
A8-16	42,33	837986	820142	23F	80.50	0.02
A8-17	42,33	837986	820142	26F	89.95	0.01
A8-18	42,33	837986	820142	RF	116.40	0.01
A9-1	42,33	838033	820121	GF	1.50	0.12
A9-2	42,33	838033	820121	1F	5.00	0.15
A9-3	42,33	838033	820121	2F	10.00	0.17
A9-4	42,33	838033	820121	3F	17.50	0.15
A9-5	42,33	838033	820121	4F	20.65	0.13
A9-6	42,33	838033	820121	5F	23.80	0.11
A9-7	42,33	838033	820121	6F	26.95	0.10
A9-8	42,33	838033	820121	7F	30.10	0.09
A9-9	42,33	838033	820121	8F	33.25	0.08
A9-10	42,33	838033	820121	9F	36.40	0.07
A9-11	42,33	838033	820121	10F	39.55	0.06
A9-12	42,33	838033	820121	12F	45.85	0.05
A9-13	42,33	838033	820121	14F	52.15	0.04
A9-14	42,33	838033	820121	16F	58.45	0.04
A9-15	42,33	838033	820121	20F	71.05	0.02
A9-16	42,33	838033	820121	23F	80.50	0.02
A9-17	42,33	838033	820121	26F	89.95	0.01
A9-18	42,33	838033	820121	RF	116.40	0.01

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A10-1	42,33	838081	820098	GF	1.50	0.08
A10-2	42,33	838081	820098	1F	5.00	0.09
A10-3	42,33	838081	820098	2F	10.00	0.11
A10-4	42,33	838081	820098	3F	17.50	0.10
A10-5	42,33	838081	820098	4F	20.65	0.10
A10-6	42,33	838081	820098	5F	23.80	0.09
A10-7	42,33	838081	820098	6F	26.95	0.08
A10-8	42,33	838081	820098	7F	30.10	0.07
A10-9	42,33	838081	820098	8F	33.25	0.06
A10-10	42,33	838081	820098	9F	36.40	0.05
A10-11	42,33	838081	820098	10F	39.55	0.04
A10-12	42,33	838081	820098	12F	45.85	0.04
A10-13	42,33	838081	820098	14F	52.15	0.03
A10-14	42,33	838081	820098	16F	58.45	0.03
A10-15	42,33	838081	820098	20F	71.05	0.03
A10-16	42,33	838081	820098	23F	80.50	0.02
A10-17	42,33	838081	820098	26F	89.95	0.02
A10-18	42,33	838081	820098	RF	116.40	0.01
A11-1	42,33	838129	820076	GF	1.50	0.05
A11-2	42,33	838129	820076	1F	5.00	0.06
A11-3	42,33	838129	820076	2F	10.00	0.07
A11-4	42,33	838129	820076	3F	17.50	0.07
A11-5	42,33	838129	820076	4F	20.65	0.07
A11-6	42,33	838129	820076	5F	23.80	0.06
A11-7	42,33	838129	820076	6F	26.95	0.06
A11-8	42,33	838129	820076	7F	30.10	0.06
A11-9	42,33	838129	820076	8F	33.25	0.05
A11-10	42,33	838129	820076	9F	36.40	0.05
A11-11	42,33	838129	820076	10F	39.55	0.04
A11-12	42,33	838129	820076	12F	45.85	0.03
A11-13	42,33	838129	820076	14F	52.15	0.03
A11-14	42,33	838129	820076	16F	58.45	0.02
A11-15	42,33	838129	820076	20F	71.05	0.02
A11-16	42,33	838129	820076	23F	80.50	0.02
A11-17	42,33	838129	820076	26F	89.95	0.02
A11-18	42,33	838129	820076	RF	116.40	0.01

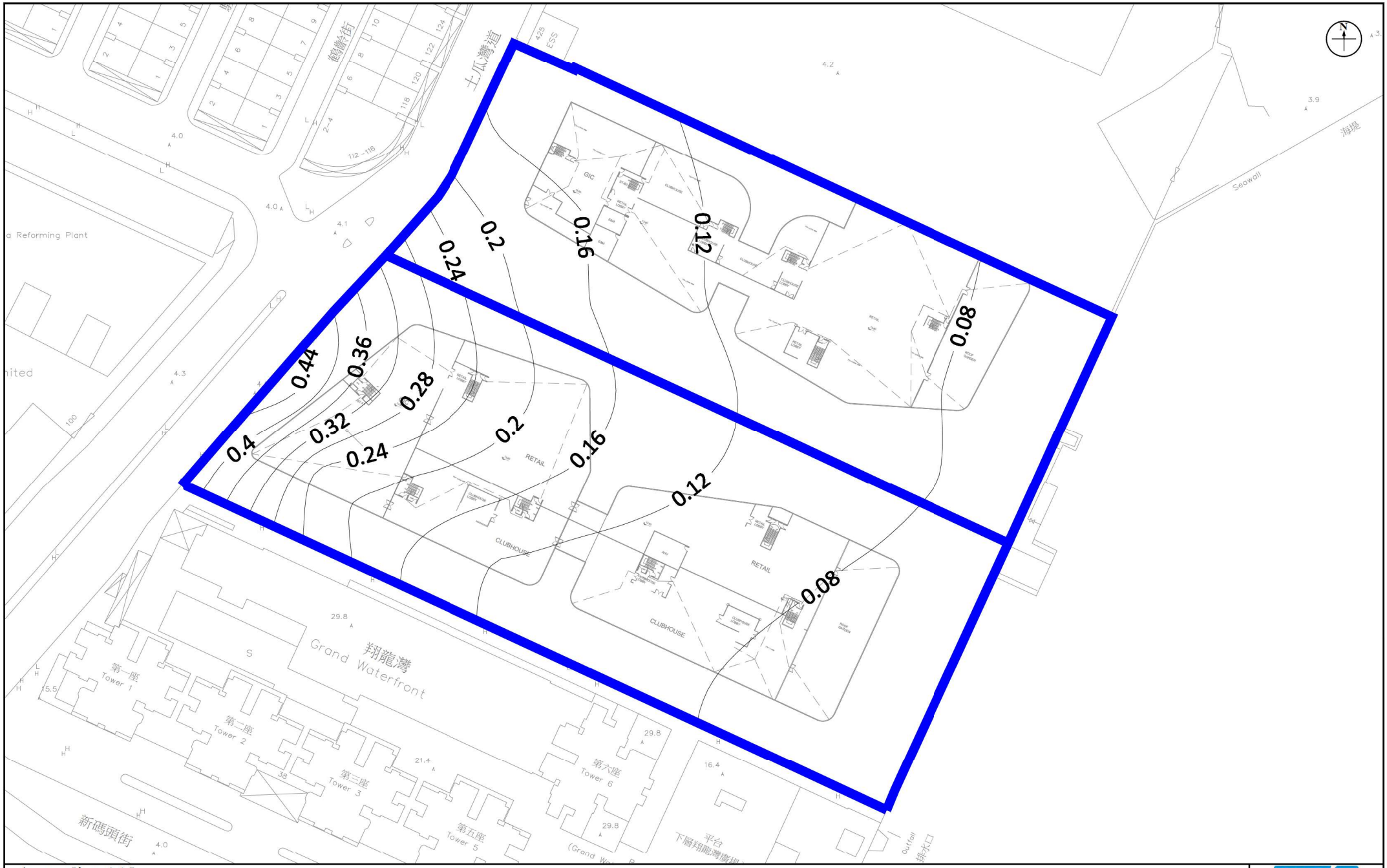
Odour_Impact Summary(KC-019)						
ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A8-1	42,33	837986	820142	GF	1.50	0.20
A8-2	42,33	837986	820142	1F	5.00	0.28
A8-3	42,33	837986	820142	2F	10.00	0.31
A8-4	42,33	837986	820142	3F	17.50	0.25
A8-5	42,33	837986	820142	4F	20.65	0.21
A8-6	42,33	837986	820142	5F	23.80	0.17
A8-7	42,33	837986	820142	6F	26.95	0.14
A8-8	42,33	837986	820142	7F	30.10	0.11
A8-9	42,33	837986	820142	8F	33.25	0.08
A8-10	42,33	837986	820142	9F	36.40	0.07
A8-11	42,33	837986	820142	10F	39.55	0.06
A8-12	42,33	837986	820142	12F	45.85	0.04
A8-13	42,33	837986	820142	14F	52.15	0.04
A8-14	42,33	837986	820142	16F	58.45	0.03
A8-15	42,33	837986	820142	20F	71.05	0.02
A8-16	42,33	837986	820142	23F	80.50	0.02
A8-17	42,33	837986	820142	26F	89.95	0.01
A8-18	42,33	837986	820142	RF	116.40	0.01
A9-1	42,33	838033	820121	GF	1.50	0.12
A9-2	42,33	838033	820121	1F	5.00	0.15
A9-3	42,33	838033	820121	2F	10.00	0.17
A9-4	42,33	838033	820121	3F	17.50	0.15
A9-5	42,33	838033	820121	4F	20.65	0.13
A9-6	42,33	838033	820121	5F	23.80	0.11
A9-7	42,33	838033	820121	6F	26.95	0.10
A9-8	42,33	838033	820121	7F	30.10	0.09
A9-9	42,33	838033	820121	8F	33.25	0.08
A9-10	42,33	838033	820121	9F	36.40	0.07
A9-11	42,33	838033	820121	10F	39.55	0.06
A9-12	42,33	838033	820121	12F	45.85	0.05
A9-13	42,33	838033	820121	14F	52.15	0.04
A9-14	42,33	838033	820121	16F	58.45	0.04
A9-15	42,33	838033	820121	20F	71.05	0.02
A9-16	42,33	838033	820121	23F	80.50	0.02
A9-17	42,33	838033	820121	26F	89.95	0.01
A9-18	42,33	838033	820121	RF	116.40	0.01
A10-1	42,33	838081	820098	GF	1.50	0.08
A10-2	42,33	838081	820098	1F	5.00	0.09
A10-3	42,33	838081	820098	2F	10.00	0.11
A10-4	42,33	838081	820098	3F	17.50	0.10
A10-5	42,33	838081	820098	4F	20.65	0.10
A10-6	42,33	838081	820098	5F	23.80	0.09
A10-7	42,33	838081	820098	6F	26.95	0.08
A10-8	42,33	838081	820098	7F	30.10	0.07
A10-9	42,33	838081	820098	8F	33.25	0.06
A10-10	42,33	838081	820098	9F	36.40	0.05
A10-11	42,33	838081	820098	10F	39.55	0.04
A10-12	42,33	838081	820098	12F	45.85	0.04
A10-13	42,33	838081	820098	14F	52.15	0.03
A10-14	42,33	838081	820098	16F	58.45	0.03
A10-15	42,33	838081	820098	20F	71.05	0.03
A10-16	42,33	838081	820098	23F	80.50	0.02
A10-17	42,33	838081	820098	26F	89.95	0.02
A10-18	42,33	838081	820098	RF	116.40	0.01

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A11-1	42,33	838129	820076	GF	1.50	0.05
A11-2	42,33	838129	820076	1F	5.00	0.06
A11-3	42,33	838129	820076	2F	10.00	0.07
A11-4	42,33	838129	820076	3F	17.50	0.07
A11-5	42,33	838129	820076	4F	20.65	0.07
A11-6	42,33	838129	820076	5F	23.80	0.06
A11-7	42,33	838129	820076	6F	26.95	0.06
A11-8	42,33	838129	820076	7F	30.10	0.06
A11-9	42,33	838129	820076	8F	33.25	0.05
A11-10	42,33	838129	820076	9F	36.40	0.05
A11-11	42,33	838129	820076	10F	39.55	0.04
A11-12	42,33	838129	820076	12F	45.85	0.03
A11-13	42,33	838129	820076	14F	52.15	0.03
A11-14	42,33	838129	820076	16F	58.45	0.02
A11-15	42,33	838129	820076	20F	71.05	0.02
A11-16	42,33	838129	820076	23F	80.50	0.02
A11-17	42,33	838129	820076	26F	89.95	0.02
A11-18	42,33	838129	820076	RF	116.40	0.01
A12-1	42,33	838142	820103	GF	1.50	0.05
A12-2	42,33	838142	820103	1F	5.00	0.06
A12-3	42,33	838142	820103	2F	10.00	0.07
A12-4	42,33	838142	820103	3F	17.50	0.07
A12-5	42,33	838142	820103	4F	20.65	0.07
A12-6	42,33	838142	820103	5F	23.80	0.06
A12-7	42,33	838142	820103	6F	26.95	0.06
A12-8	42,33	838142	820103	7F	30.10	0.06
A12-9	42,33	838142	820103	8F	33.25	0.05
A12-10	42,33	838142	820103	9F	36.40	0.05
A12-11	42,33	838142	820103	10F	39.55	0.04
A12-12	42,33	838142	820103	12F	45.85	0.03
A12-13	42,33	838142	820103	14F	52.15	0.03
A12-14	42,33	838142	820103	16F	58.45	0.02
A12-15	42,33	838142	820103	20F	71.05	0.02
A12-16	42,33	838142	820103	23F	80.50	0.02
A12-17	42,33	838142	820103	26F	89.95	0.02
A12-18	42,33	838142	820103	RF	116.40	0.01
A13-1	42,33	838153	820128	GF	1.50	0.04
A13-2	42,33	838153	820128	1F	5.00	0.05
A13-3	42,33	838153	820128	2F	10.00	0.07
A13-4	42,33	838153	820128	3F	17.50	0.06
A13-5	42,33	838153	820128	4F	20.65	0.05
A13-6	42,33	838153	820128	5F	23.80	0.05
A13-7	42,33	838153	820128	6F	26.95	0.05
A13-8	42,33	838153	820128	7F	30.10	0.05
A13-9	42,33	838153	820128	8F	33.25	0.05
A13-10	42,33	838153	820128	9F	36.40	0.04
A13-11	42,33	838153	820128	10F	39.55	0.04
A13-12	42,33	838153	820128	12F	45.85	0.04
A13-13	42,33	838153	820128	14F	52.15	0.03
A13-14	42,33	838153	820128	16F	58.45	0.03
A13-15	42,33	838153	820128	20F	71.05	0.02
A13-16	42,33	838153	820128	23F	80.50	0.02
A13-17	42,33	838153	820128	26F	89.95	0.02
A13-18	42,33	838153	820128	RF	116.40	0.01

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A14-1	42,33	838109	820148	GF	1.50	0.06
A14-2	42,33	838109	820148	1F	5.00	0.07
A14-3	42,33	838109	820148	2F	10.00	0.09
A14-4	42,33	838109	820148	3F	17.50	0.08
A14-5	42,33	838109	820148	4F	20.65	0.08
A14-6	42,33	838109	820148	5F	23.80	0.07
A14-7	42,33	838109	820148	6F	26.95	0.07
A14-8	42,33	838109	820148	7F	30.10	0.07
A14-9	42,33	838109	820148	8F	33.25	0.06
A14-10	42,33	838109	820148	9F	36.40	0.06
A14-11	42,33	838109	820148	10F	39.55	0.06
A14-12	42,33	838109	820148	12F	45.85	0.05
A14-13	42,33	838109	820148	14F	52.15	0.04
A14-14	42,33	838109	820148	16F	58.45	0.03
A14-15	42,33	838109	820148	20F	71.05	0.02
A14-16	42,33	838109	820148	23F	80.50	0.02
A14-17	42,33	838109	820148	26F	89.95	0.01
A14-18	42,33	838109	820148	RF	116.40	0.01
A15-1	42,33	838063	820170	GF	1.50	0.08
A15-2	42,33	838063	820170	1F	5.00	0.10
A15-3	42,33	838063	820170	2F	10.00	0.11
A15-4	42,33	838063	820170	3F	17.50	0.10
A15-5	42,33	838063	820170	4F	20.65	0.10
A15-6	42,33	838063	820170	5F	23.80	0.09
A15-7	42,33	838063	820170	6F	26.95	0.09
A15-8	42,33	838063	820170	7F	30.10	0.08
A15-9	42,33	838063	820170	8F	33.25	0.08
A15-10	42,33	838063	820170	9F	36.40	0.07
A15-11	42,33	838063	820170	10F	39.55	0.06
A15-12	42,33	838063	820170	12F	45.85	0.05
A15-13	42,33	838063	820170	14F	52.15	0.04
A15-14	42,33	838063	820170	16F	58.45	0.03
A15-15	42,33	838063	820170	20F	71.05	0.02
A15-16	42,33	838063	820170	23F	80.50	0.02
A15-17	42,33	838063	820170	26F	89.95	0.02
A15-18	42,33	838063	820170	RF	116.40	0.01

ASRs ID	PATH Grid	ASR Coordinates		Floor	Flag Pole Receiver Height, mAG	Odour Impact
		x	y			5-second
		Easting	Northing			(Criteria: 5 OU)
A16-1	42,33	838015	820191	GF	1.50	0.09
A16-2	42,33	838015	820191	1F	5.00	0.11
A16-3	42,33	838015	820191	2F	10.00	0.13
A16-4	42,33	838015	820191	3F	17.50	0.11
A16-5	42,33	838015	820191	4F	20.65	0.10
A16-6	42,33	838015	820191	5F	23.80	0.10
A16-7	42,33	838015	820191	6F	26.95	0.09
A16-8	42,33	838015	820191	7F	30.10	0.08
A16-9	42,33	838015	820191	8F	33.25	0.07
A16-10	42,33	838015	820191	9F	36.40	0.06
A16-11	42,33	838015	820191	10F	39.55	0.05
A16-12	42,33	838015	820191	12F	45.85	0.04
A16-13	42,33	838015	820191	14F	52.15	0.04
A16-14	42,33	838015	820191	16F	58.45	0.03
A16-15	42,33	838015	820191	20F	71.05	0.02
A16-16	42,33	838015	820191	23F	80.50	0.02
A16-17	42,33	838015	820191	26F	89.95	0.02
A16-18	42,33	838015	820191	RF	116.40	0.01
A17-1	42,33	838004	820167	GF	1.50	0.12
A17-2	42,33	838004	820167	1F	5.00	0.16
A17-3	42,33	838004	820167	2F	10.00	0.17
A17-4	42,33	838004	820167	3F	17.50	0.16
A17-5	42,33	838004	820167	4F	20.65	0.15
A17-6	42,33	838004	820167	5F	23.80	0.13
A17-7	42,33	838004	820167	6F	26.95	0.12
A17-8	42,33	838004	820167	7F	30.10	0.10
A17-9	42,33	838004	820167	8F	33.25	0.09
A17-10	42,33	838004	820167	9F	36.40	0.07
A17-11	42,33	838004	820167	10F	39.55	0.06
A17-12	42,33	838004	820167	12F	45.85	0.04
A17-13	42,33	838004	820167	14F	52.15	0.03
A17-14	42,33	838004	820167	16F	58.45	0.03
A17-15	42,33	838004	820167	20F	71.05	0.02
A17-16	42,33	838004	820167	23F	80.50	0.02
A17-17	42,33	838004	820167	26F	89.95	0.02
A17-18	42,33	838004	820167	RF	116.40	0.01

Appendix 4.15 Contour Map of Odour



Appendix: 4.15	RAMBOLL
Title: Contour Map of the Highest 5-second Average Concentration of Odour in OU (Assessment Level: 10.0m Above Ground, Worst Hit Level) (Standard: 5OU)	Drawn by: SC Checked by: BF
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Sep 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\01 Air\10 Contour\v1.1_3\Contour maps.dwg

Appendix 4.16 Calculation of Surface Roughness for CALINE4

Estimation of Area-weighted Surface Roughness		
Nature of Use	**Typical Surface Roughness (cm)**	**% of Area within Study Area**
Sea	0.1	20%
Medium/low-rise Development Area	100	0%
Urban Area	370	80%
Area-weighted surface roughness, z_0 (cm) =		296
Surface roughness factor		1.82

Appendix 4.17 Input parameters of vehicular sources in Caline4

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q1

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 1					Hour 2					Hour 3					Hour 4					Hour 5					Hour 6				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q1

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 7					Hour 8					Hour 9					Hour 10					Hour 11					Hour 12				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q1

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 13					Hour 14					Hour 15					Hour 16					Hour 17					Hour 18				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q1

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 19					Hour 20					Hour 21					Hour 22					Hour 23					Hour 24				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q2

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 1					Hour 2					Hour 3					Hour 4					Hour 5					Hour 6				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q2

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 7					Hour 8					Hour 9					Hour 10					Hour 11					Hour 12				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q2

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 13					Hour 14					Hour 15					Hour 16					Hour 17					Hour 18				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q2

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 19					Hour 20					Hour 21					Hour 22					Hour 23					Hour 24				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q3

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 1					Hour 2					Hour 3					Hour 4					Hour 5					Hour 6				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q3

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 7					Hour 8					Hour 9					Hour 10					Hour 11					Hour 12				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q3

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 13					Hour 14					Hour 15					Hour 16					Hour 17					Hour 18				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q3

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 19					Hour 20					Hour 21					Hour 22					Hour 23					Hour 24				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q4

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 1					Hour 2					Hour 3					Hour 4					Hour 5					Hour 6				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q4

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 7					Hour 8					Hour 9					Hour 10					Hour 11					Hour 12				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q4

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 13					Hour 14					Hour 15					Hour 16					Hour 17					Hour 18				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Project-related Emission Inventory in 2033 - Vehicle Fleet on Open Roads (Line Source)_Q4

Index	Link ID	Road Name	X1	Y1	Z1 (mPD)	X2	Y2	Z2 (mPD)	Highway Type	Segment Length (m)	Mean mPD	Actual Road Width (m)	Road Width + L/R Mixing Zone, W	Check Segment Width > Length	Speed limit (kph)	Hour 19					Hour 20					Hour 21					Hour 22					Hour 23					Hour 24				
																Traffic Flows (VPH)	Weighted NO2 EF (g/veh/mile)	Weighted NO EF (g/veh/mile)	Weighted RSP EF (g/veh/mile)	Weighted FSP EF (g/veh/mile)

Appendix 4.18 Summary of Total Pollutant Emission (from EMFAC-HK)

Summary of Total Pollutant Emissions (from EMFAC-HK)

Total Emission per day

Year 2033	NO2 (g)	NO (g)	NOx (g)	RSP (g)	FSP (g)
1st Quarter	12136.1	71115.2	83251.3	1615.3	1482.5
2nd Quarter	11631.8	64831.7	76463.5	1615.3	1482.5
3rd Quarter	11268.3	61609.6	72877.8	1615.3	1482.5
4th Quarter	12082.9	70307.1	82389.9	1615.3	1482.5

Year 2040	NO2 (g)	NO (g)	NOx (g)	RSP (g)	FSP (g)
1st Quarter	13353.0	54926.1	68279.1	1196.2	1101.6
2nd Quarter	12847.2	49256.7	62103.9	1196.2	1101.6
3rd Quarter	12481.5	46521.9	59003.4	1196.2	1101.6
4th Quarter	13280.5	54121.0	67401.5	1195.3	1100.7

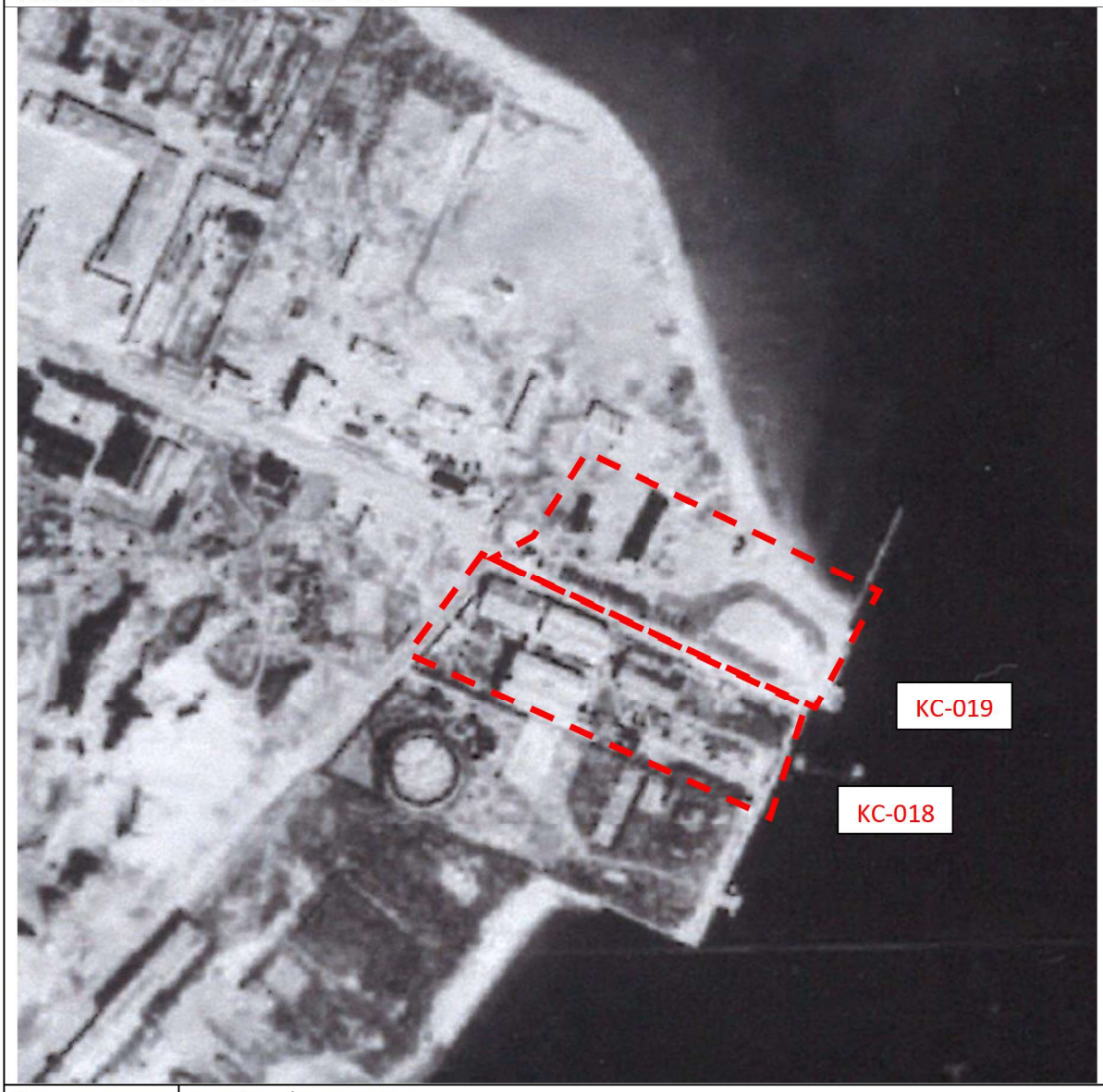
Year 2048	NO2 (g)	NO (g)	NOx (g)	RSP (g)	FSP (g)
1st Quarter	13558.2	55114.0	68672.2	1195.6	1102.4
2nd Quarter	13046.1	49470.1	62516.3	1195.6	1102.4
3rd Quarter	12673.2	46739.7	59412.9	1195.6	1102.4
4th Quarter	13504.1	54375.6	67879.7	1195.6	1102.4

Total Emission per year

	NO2 (g)	NO (g)	NOx (g)	RSP (g)	FSP (g)
Year 2033	4,299,046.16	24,436,382.45	28,735,428.60	589,579.21	541,107.59
Year 2040	4,740,967.59	18,684,854.44	23,425,822.03	436,538.19	402,011.55
Year 2048	4,815,750.99	18,764,651.70	23,580,402.69	436,392.96	402,383.21

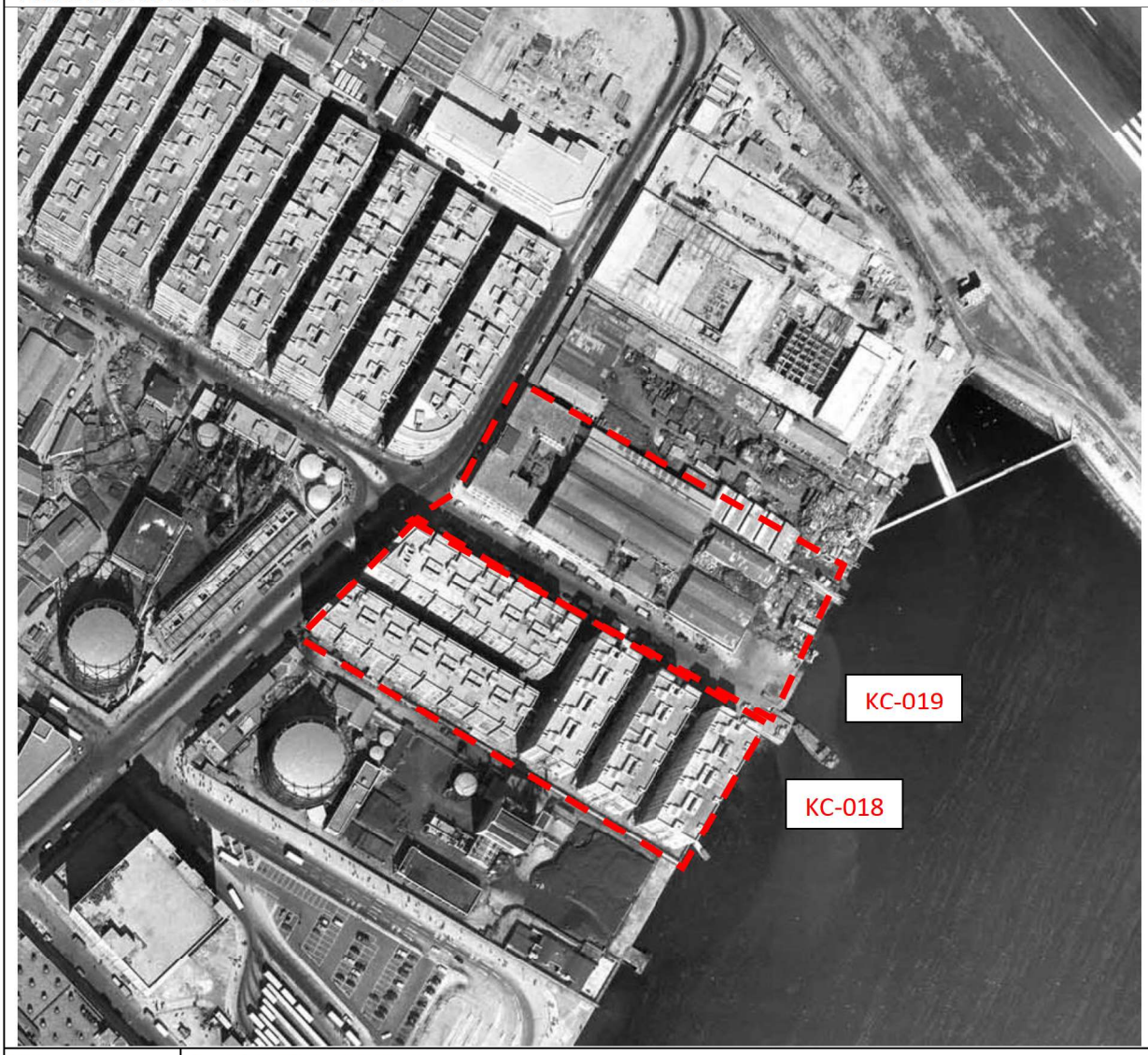
Appendix 5.1 Historical Aerial Photos

Historical Aerial Photo – Year 1945



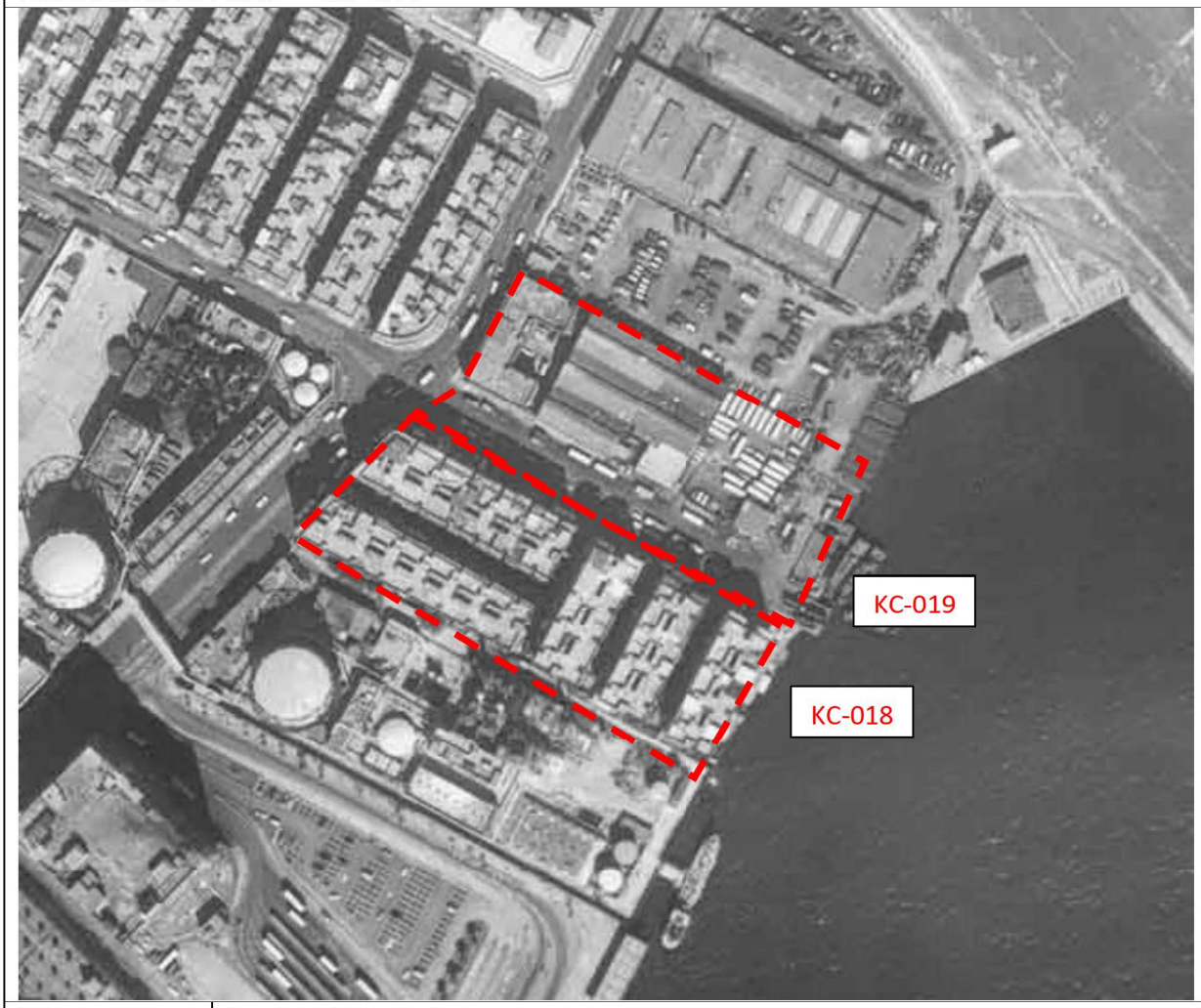
Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 1963



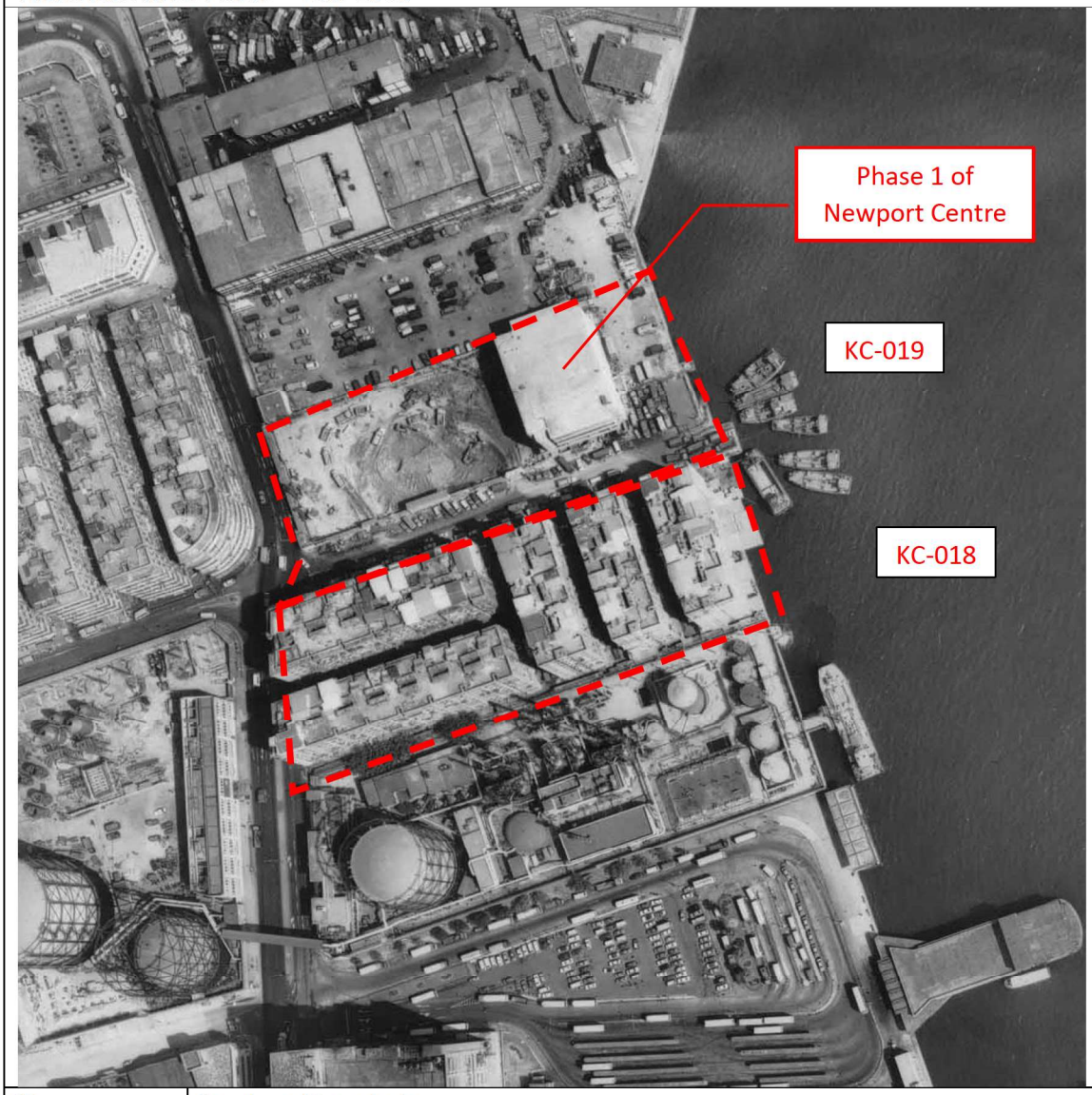
Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 1976



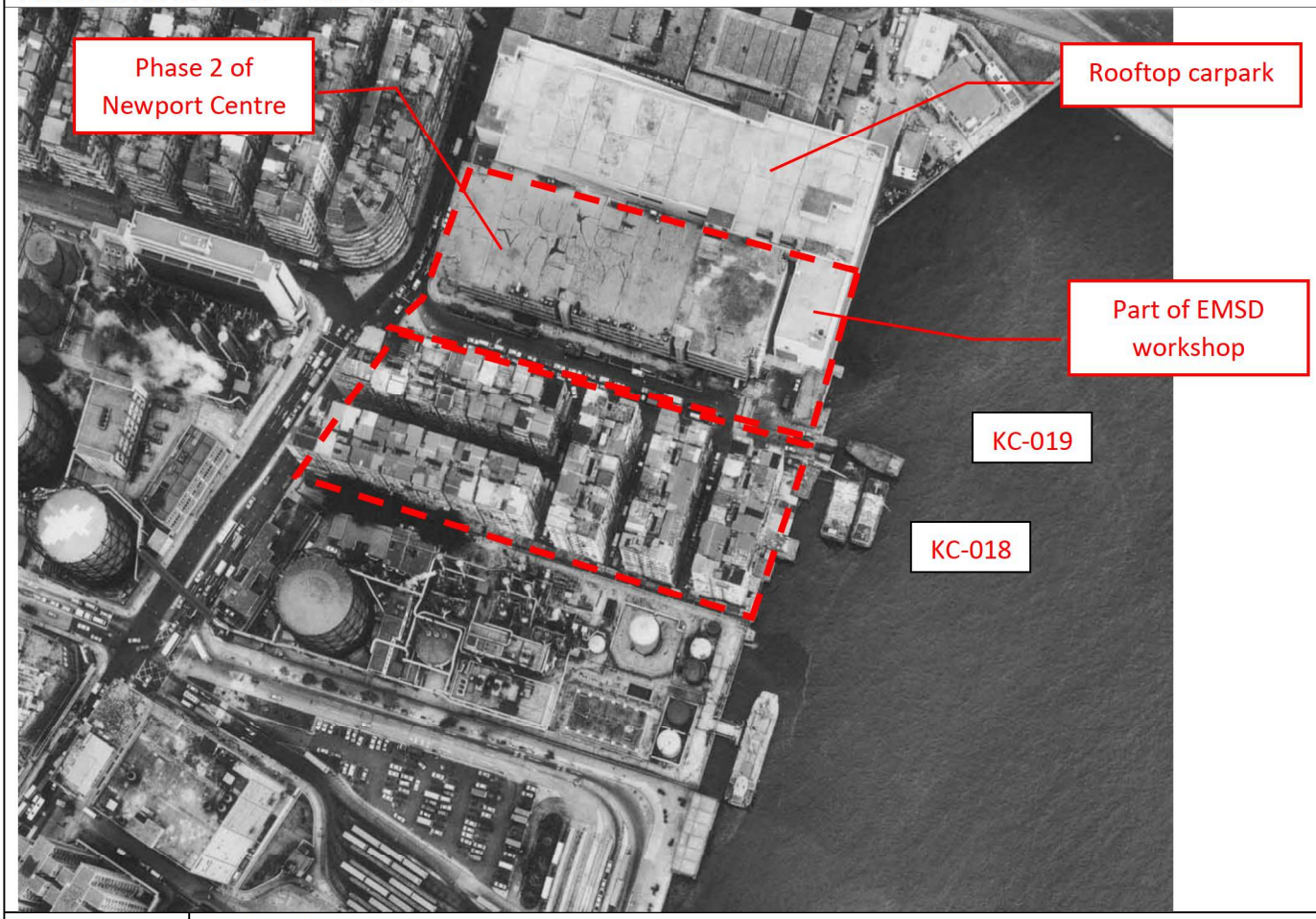
Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 1980



Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 1985



Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 2017



Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Historical Aerial Photo – Year 2020



Year	Landuse/Description
1945	KC-018: Occupied by low-rise buildings. A Gas Work was erected to its immediate south. KC-019: Reclamation in progress.
1963	KC-018: Compacted residential buildings were established. New portion of Gas Work was established to its immediate west. KC-019: Occupied by low-rise building, with loading/unloading facilities at shore
1976	No significant landuse change for both sites.
1980	KC-018: No change of landuse KC-019: Redevelopment of Newport Centre was undergoing. Phase 1 (i.e. east portion) was in place; Phase 2 (i.e. west portion) was under construction (N.B.: Phase 1 and demolition of previous building at Phase 2 were completed in 1979; Phase 2 was completed in 1981)
1985	KC-018: No change of landuse KC-019: EMSD workshop with rooftop carpark was established to KC-019's immediate north. Part of the workshop was inside KC-019 (i.e. east portion)
2017	No significant landuse change for both sites. The Gas Work to KC-018's immediate south was demolished in 1993 and a residential development (i.e. Grand Waterfront) was established since 2007.
2020	No significant landuse change for both sites. EMSD workshop (immediate north of KC-019) has been demolished.

Appendix 5.2 Copy of the Letters from Various Departments of the Government of the HKSAR

本署檔號 Our Ref: ( ) in EP650/G1/4
來函檔號 Your Ref: URAKCAA2EI00_0_0007L.20
查詢 Tel. No.: 2117 7527
傳真 Fax No.: 2756 8588
電子郵件 E-Mail: vivianatstong@epd.gov.hk
網址 Homepage: http://www.epd.gov.hk/

Environmental Protection Department
Environmental Compliance Division
Regional Office (East)
5th Floor, Nan Fung Commercial Centre,
19 Lam Lok Street, Kowloon Bay,
Kowloon, Hong Kong.

環境保護署
環保法規管理科
區域辦事處（東）
香港九龍九龍灣臨樂街
十九號南豐商業中心五樓

By Fax (3465 2899)

17 June 2020

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai,
Hong Kong
(Attn: Ms. Michelle CHAN (Environmental Consultant))

Dear Ms. CHAN,

Land Contamination Assessment Study for
Proposed Development in Ma Tau Kok
Enquiry for Land Contamination Information

I refer to your letter dated 10 June 2020 regarding the subject.

Under the Waste Disposal (Chemical Waste)(General) Regulation, the Director of Environmental Protection has maintained a register containing the name of producers of chemical waste, the location of the premises where the chemical waste is produced, and the description of the businesses or activities concerned. The register is open for inspection by public at the Territorial Control Office of this Department on 25/F., Southorn Centre, 130 Hennessey Road, Wan Chai, Hong Kong. Please contact Mr. Dennis LEUNG at 2835 1017 for making an appointment to view the records.

Please note that this office has no record of chemical spillage and also waste disposal within the Site as marked in your attached site map. As this information is not exhaustive, you may need to seek further advice from other relevant departments (including Fire Services Department) or parties and previous users of the buildings on such issue.

Please note that this office does not have the record of submission relating to land contamination assessment. Please seek advice from the Waste Assessment Section under the Environmental Assessment Division of our Department for information.

Yours faithfully,

(Viviana TONG)
Regional Office (East)
for Director of Environmental Protection

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

RECEIVED
13 JUL 2020
BY:

本處檔號 **OUR REF.** : (148) in FSD GR 6-5/4 R Pt. 27
來函檔號 **YOUR REF.** : URAKCAA2E100_0_0008L.20
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2739 5879
電 話 **TEL NO.** : 2733 7741

6 July 2020

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wanchai, Hong Kong.
(Attn: Ms. Michelle CHAN, Environmental Consultant)

Dear Ms. CHAN,

Land Contamination Assessment Study for Proposed Development in Ma Tau Kok – Enquiry for Land Contamination Information
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 10.6.2020 regarding the captioned request and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.

2. A total of four incident records was found at the subject location. Please refer to **Appendix A** for details.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(KONG Wai-chung)
for Director of Fire Services

Appendix A

Land Contamination Assessment Study for Proposed Development in Ma Tau Kok – Enquiry for Land Contamination Information
Request for Information of Dangerous Goods & Incident Records

No.	Date	Type of Incident	Address
1.	29.8.2017	Special Services (Leakage of flammable liquid / gas)	4/F, 5 Ming Lun Street
2.	15.10.2017		6/F, 19 Ming Lun Street
3.	15.10.2017		6/F, 5 Ming Lun Street
4.	15.4.2019	No.1 Alarm Fire	1/F, 18 Ming Lun Street

Our Ref: (37) in CP OPS EOD 6-20/1 Pt.4
Telefax No. : +852 2203 4273
Telephone No. : +852 2203 4294
Date : 2020-06-22

Explosive Ordnance Disposal Bureau
Hong Kong Police
EOD Depot,
150 Mount Butler Road,
Jardine's Lookout,
Hong Kong.

FACSIMILE TRANSMISSION

To : Ramboll Hong Kong Limited (Attn: Michelle CHAN)
Addressee's Telefax No.: +852 3465 2899

Thro' (SBDO)
Your Ref.: URAKCAA2EI00_0_0009L.20

Total Number of Pages Transmitted: 1 (including this page)
Dated: 2020-06-10

Please notify Ms. TSE, General Registry, EOD (2203 4325) if the message is incom

Dear Sir/Madam,

Re: Land Contamination Assessment Study for Proposed Development in Ma Tau Kok – Enqui for Land Contamination Information

Your letter dated 2020-06-10 refers.

Please be advised that we do not keep record of explosive storage location, nor explosive spillage incidents record for the mentioned site. You may wish to approach the Mines Division of the Civil Engineering and Development Department for further advice.

Should you require further information, please contact our headquarters Senior Inspector, Mr. Kelvin LAM at 2203 4324.

Yours faithfully,

Nestor Lai
Bomb Disposal Officer
Explosive Ordnance Disposal Bureau
Hong Kong Police Force

規劃署

香港北角渣華道三百三十三號
北角政府合署

Planning Department

North Point Government Offices
333 Java Road, North Point,
Hong Kong

本函檔號 Your Reference ( ) URAKCAA2EI00_0_0010L.20

本署檔號 Our Reference ( ) K-22/23

電話號碼 Tel. No. : 2231 4971

傳真機號碼 Fax No. : 2894 9502

By Fax (3465 2899) and Post

23 June 2020

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong Kong
(Attn.: Ms Michelle CHAN)

Dear Madam,

Land Contamination Assessment Study for Proposed Development in Ma Tau Kok
Enquiry for Land Contamination Information

I refer to your letter dated 10.6.2020 enquiring the current and historical site information and land use changes of the site as indicated on the site map attached to your letter for land contamination investigation purposes.

The subject site falls within an area zoned "Comprehensive Development Area" ("CDA") on the prevailing approved Kai Tak Outline Zoning Plan (OZP) No. S/K22/6, which is intended for a comprehensive development/redevelopment of the area for residential and/or commercial uses with the provision of waterfront promenade, open space and other supporting facilities. The current "CDA" zoning for the site was first designated on the draft Kai Tak OZP No. S/K22/1 exhibited in November 2006 and has remained unchanged since then.

Before that, the site had been subject to various land use zonings/designation on statutory town plan, including:

- "Residential or Light Industrial or a Mixture of Both" and 'Road' on the draft Ma Tau Kok Outline Development Plan No. LK/10/18/4 exhibited in April 1957;

- "Industrial" and 'Road' on the draft Ma Tau Kok OZP No. LK/10/28 exhibited in November 1967;

- "Residential (Group A)" and 'Road' on the draft Kai Tak (South) OZP No. S/K21/1 exhibited in September 1998; and

- "CDA(1)", "Open Space" and 'Road' on the draft Kai Tak (South) OZP No. S/K21/2 exhibited in August 2001.

According to our record, the existing tenement buildings in the five street blocks of the site were issued with Occupation Permits by the Building Authority by phases in July 1959 to December 1960. However, we have no information as regards the physical land use(s) of the site before the emergence of the existing tenement buildings. For details, you are advised to further check with the relevant aerial photos and land lease records.

Yours sincerely,

(Miss Joyce LEE)
for District Planning Officer/Kowloon
Planning Department

Internal
K-R/PUB/1A
Site Record

KKL/JL/jl

RECEIVED
10 JUN 2020
BY:

地 政 總 署
九 龍 西 區 地 政 處
DISTRICT LANDS OFFICE,
KOWLOON WEST
LANDS DEPARTMENT

13

電　　話　Tel:　3842 7513
圖文傳真　Fax:　2782 5061
電郵地址　Email:　eskwhh@landsd.gov.hk
本署檔號　Our Ref.:　(2) in DLO KW 309/KPT/KW
來函檔號　Your Ref.:　URAKCAA2EI00_0_0011L.20

我們矢志努力不懈，提供盡善盡美的土地行政服務。
We strive to achieve excellence in land administration.

九龍海庭道 11 號西九龍政府合署南座 4 樓
4/F, SOUTH TOWER, WEST KOWLOON GOVERNMENT OFFICES, 11 HOI TING ROAD, KOWLOON

網址 Web Site : www.landsd.gov.hk

來函請註明本署檔號
Please quote our reference in your reply

By Fax (3465 2899) and By Post

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre
56 Gloucester Road
Wan Chai
Hong Kong
(Attn.: Michelle Chan)

16 June 2020

Dear Sirs,

Land Contamination Assessment Study for
Proposed Development in Ma Tau Kok – Enquiry for Land Contamination Information

I refer to your letter dated 10 June 2020.

Please note that this office is not in a position to advise the information on spillage accidents, illegal/ contaminating land uses or uncontrolled dumping uses and historical use information for your captioned study.

Yours faithfully,

(Ms. Jenny YEUNG)
for District Lands Officer/Kowloon West

本信息及任何附件只供收件人使用，而其中可能載有機密及／或屬法律特權的資料。敬請注意，未獲許可，不得擅自披露或使用本信息。倘本信息誤傳給你，請立即通知本署，並刪除或銷毀本信息。本署絕不承擔因使用本信息而引致的任何法律責任。
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Appendix 5.3 Building Plans from BRAVO

Plan(s) of Building Record - BRAVO - Google Chrome

bravo.bd.gov.hk/viewPlanList?recId=55028

Related Plan(s) / Document(s) of Selected Building Record

+ Add to Shopping Cart | Shopping Cart | View Thumbnail

Address	93-113 MA TAU KOK ROAD	Building Name		Lot No.	K.M.L. 97 S.A SS.5,K.M.L. 97 S.A SS.4,K.M.L. 97 S.A SS.3,K.M.L. 97 S.A SS.2,K.M.L. 97 S.A SS.1,K.M.L
File Ref No.	2/4107/51	File Type	Building	Remarks	

Select All Certified | Select All Non-Certified

Preview	Inspect Full Image	Plan Type	Drawing No.	Drawing Title	Remarks	Approval / Receipt Date	Certified	Non-Certified
		Approved Plan	1	GROUND FLOOR PLAN,FIRST FLOOR PLAN,SOUTHWEST ELEVATION,BLOCK PLAN,SCHEDULE,NOTES		29/06/1951	☐	☐
		Approved Plan	1	FIRST FLOOR PLAN,CEILING PLAN,SECTION A-A,BLOCK PLAN		11/08/1951	☐	☐
		Approved Plan	1	GROUND FLOOR PLAN,FIRST FLOOR PLAN,SECTION A-A,BLOCK PLAN,NOTES		10/09/1951	☐	☐
		Approved Plan	2	ROOF PLAN,NORTHEAST ELEVATION,SOUTHEAST ELEVATION,SECTION A-A		29/06/1951	☐	☐
		Approved Plan	2	ROOF PLAN,SOUTHWEST ELEVATION,NORTHEAST ELEVATION,SECTION B-B		10/09/1951	☐	☐

1 - 5 of 5 items 25 | 50 | 100 | All 1

Customize

No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

Inspection of Plan(s) - BRAVO - Google Chrome
bravo.bd.gov.hk/inspectionPlan?imageId=418c58890750a2a0030a54ab20694f04&timestamp=1594183583891
BRAVO Inspection of Plan(s)
⚠ WARNING! UNAUTHORIZED COPYING IS PROHIBITED

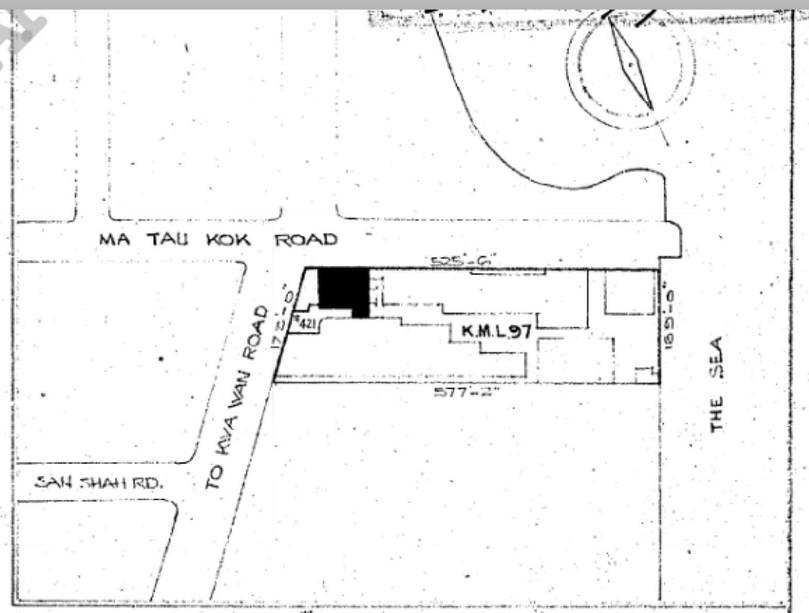
NOTES:

1. EXISTING WORK TO BE WELL BOUNDED INTO OLD WORKS IN CEMENT MORTAR.
2. ALL WALLS TO BE BUILT IN CEMENT MORTAR 1 : 3 MIX.
3. R.C.C. TO BE OF 1 : 2 : 4 MIX.
4. NO WORK TO START UNTIL R.C.C. DETAILS AND CALCULATIONS HAVE BEEN SUBMITTED.
5. THREAD OF STAIRCASE NOT LESS THAN 9" AND RISERS NOT MORE THAN 7".
6. CEMENT CONCRETE TO BE OF 1 : 3 : 6 MIX.
7. ALL EXIT DOORS TO BE FITTED WITH PANIC BOLTS AND ILLUMINATED EXIT SIGNS IN CHINESE AND ENGLISH.
8. FIRE FIGHTING APPLIANCES TO BE INSTALLED TO THE SATISFACTION OF THE CHIEF OFFICER OF THE FIRE BRIGADE.
9. 6 FEMAL AND 10 MALE WORKERS WILL BE EMPLOYED IN THE PREMISES.
10. ALL SASHES TO BE OPENED AT 50%.
11. ALL ~~HARDWOOD~~ DOORS TO BE 2" IN THICKNESS MADE OF HARDWOOD. /-
12. WINDOWS TO BE WIRED GLAZED.
13. EXIT SIGNS TO BE FITTED TO BOTH EXITS.

INDICATION

- EXISTING WORK
- EXISTING WORK TO BE REMOVED
- R.C.C. WORK
- CEMENT CONCRETE
- HARD CORE
- NEW BRICK WALL
- GRANITE STONE WILL

TYPE	WIDTH X HEIGHT	SEC.	PC.	
1	12'-0" x 4'-0"	1¼	5	STEEL SASHES WITH OPERATOR
2	12'-0" x 6'-0"	1¼	12	" " " "
2A	6'-0" x 6'-0"	"	1	" " " "
3	6'-0" x 11'-0"	1½	1	STEEL WIRED GLASS DOOR WITH PANIC BOLTS
4	12'-0" x 2'-0"		2	STEEL WINDOWS
A	6'-0" x 7'-0" EXIT DOOR	2"	1	SOLID HARD WOOD DOOR WITH PANIC BOLTS
B	4'-0" x 7'-0"	"	1	" " " "
B1	5'-0" x 7'-0" EXIT DOOR	2"	1	SOLID H.W. DOOR WITH PANIC BOLTS



BLOCK PLAN

SCALE 1/200

REVISED PLAN

K.M.L. 97

Job No. 5106	EAST SUN TEXTILE CO. LTD. 421 TO KWA WAN ROAD	Drawing No. 1
ALTERNATIONS & ADDITIONS		
Designed by	師錦建 GIN-DJIH SU HSIN YIEH ARCHITECTS HONG KONG	Scale 1/8" = 1'-0"
Traced by L.		Date 7 APR 1961
Checked by		Revised 25 APR 1961
Approved by		Date 21 JUN 1961

BEAR THIS WATERMARK WILL NOT BE COPY 此水印不得複印

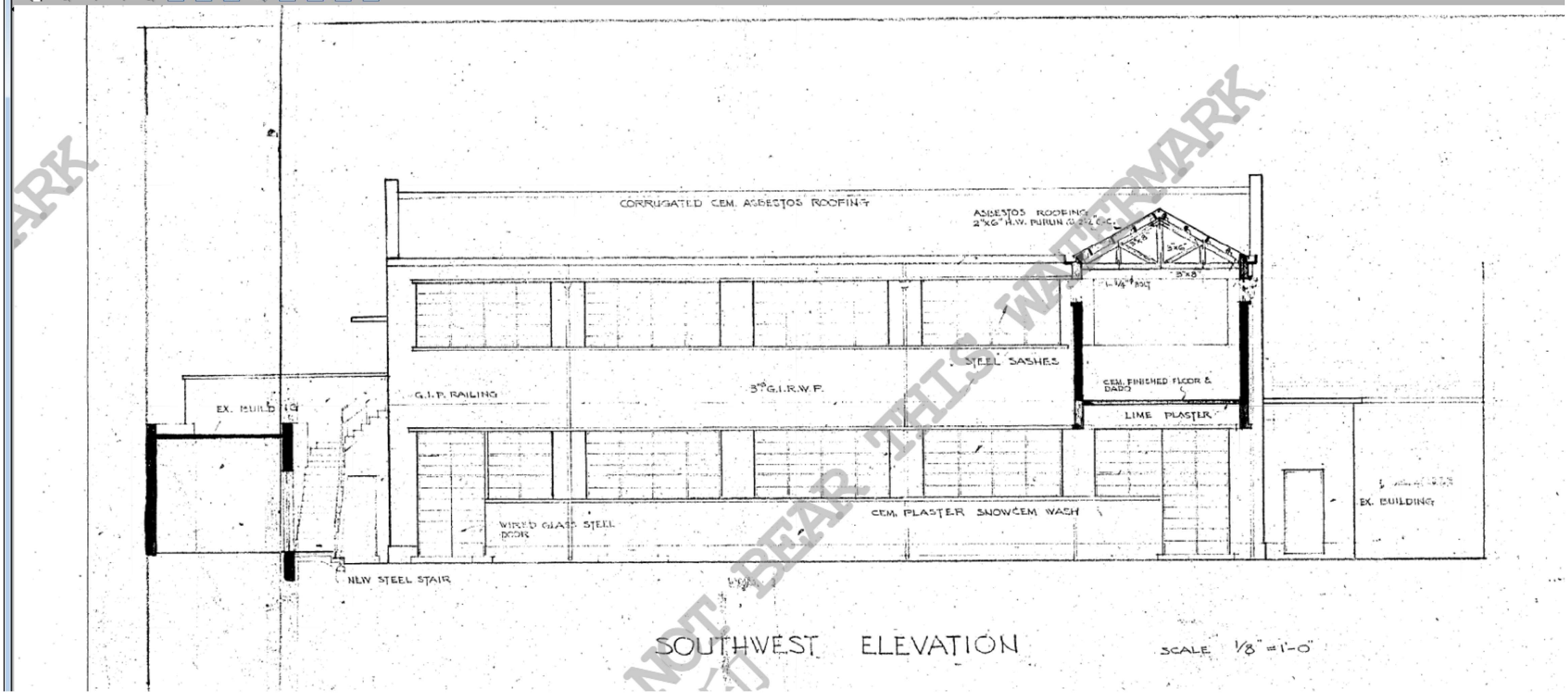
No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

Inspection of Plan(s) - BRAVO - Google Chrome

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BRAVO **Inspection of Plan(s)**

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WATERMARK
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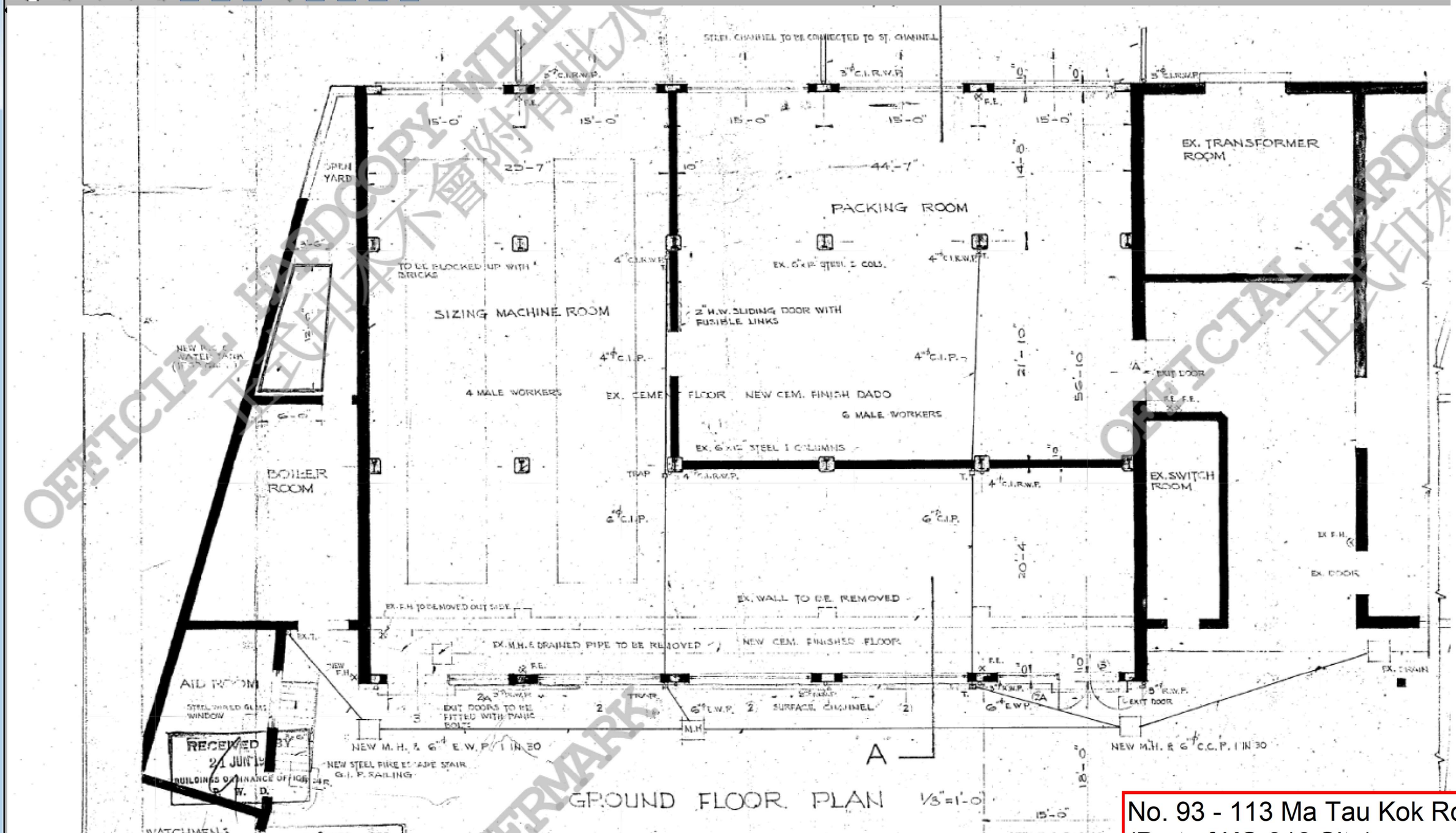
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(Part of KC-018 Site)

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Inspection of Plan(s)

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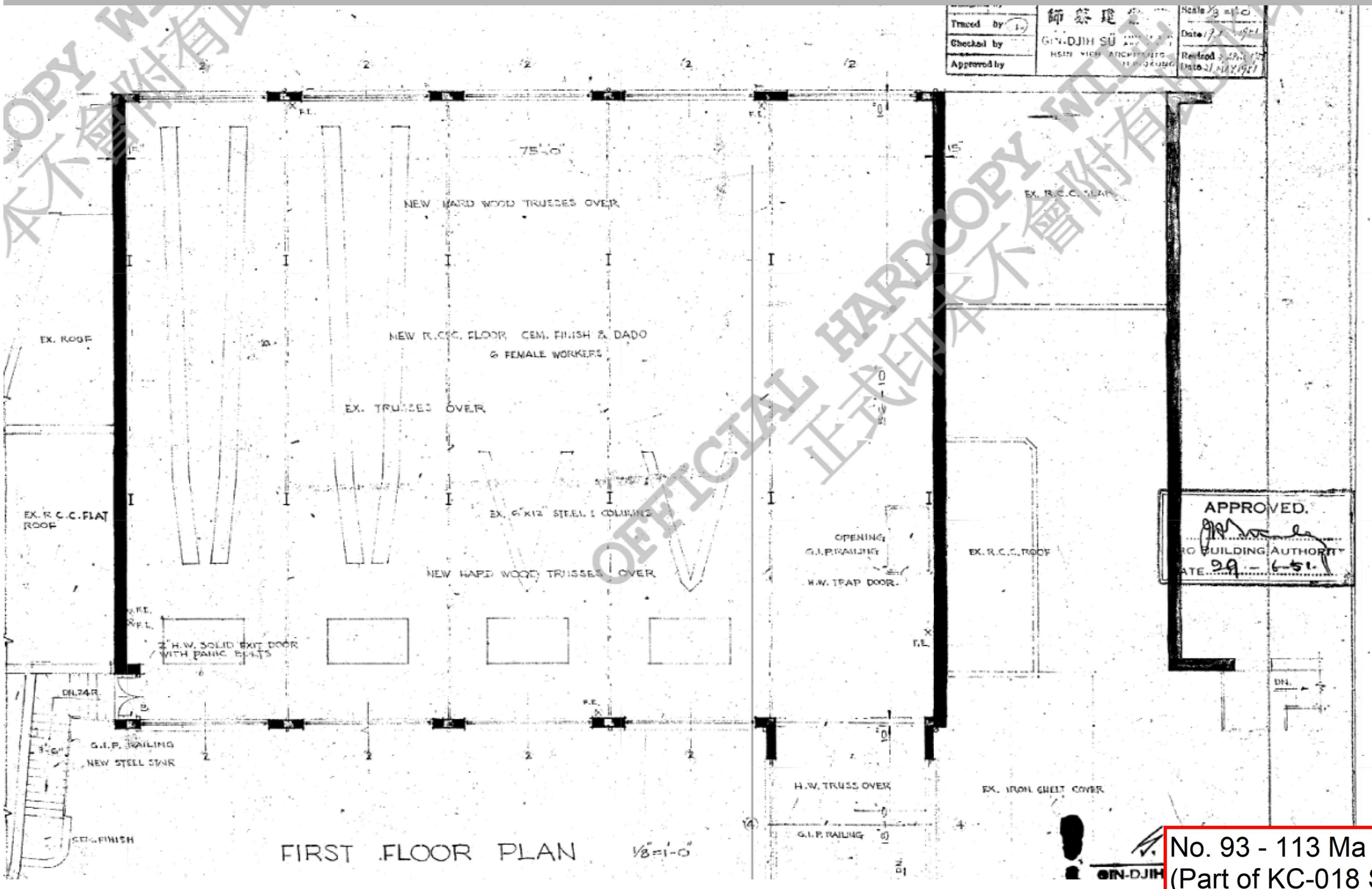


OFFICIAL HARDCOPY WITH WATERMARK 正式印本不會附有此水印

No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

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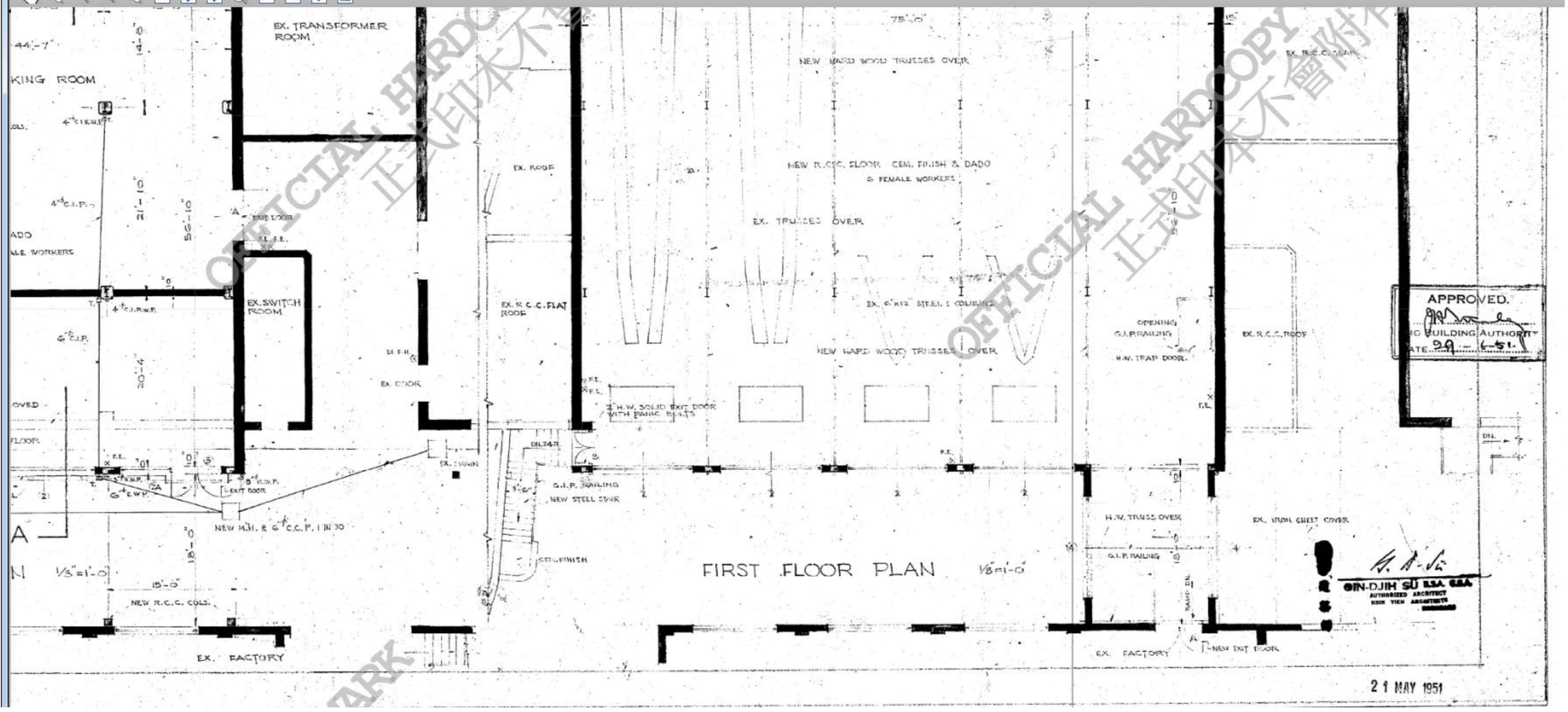
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(Part of KC-018 Site)

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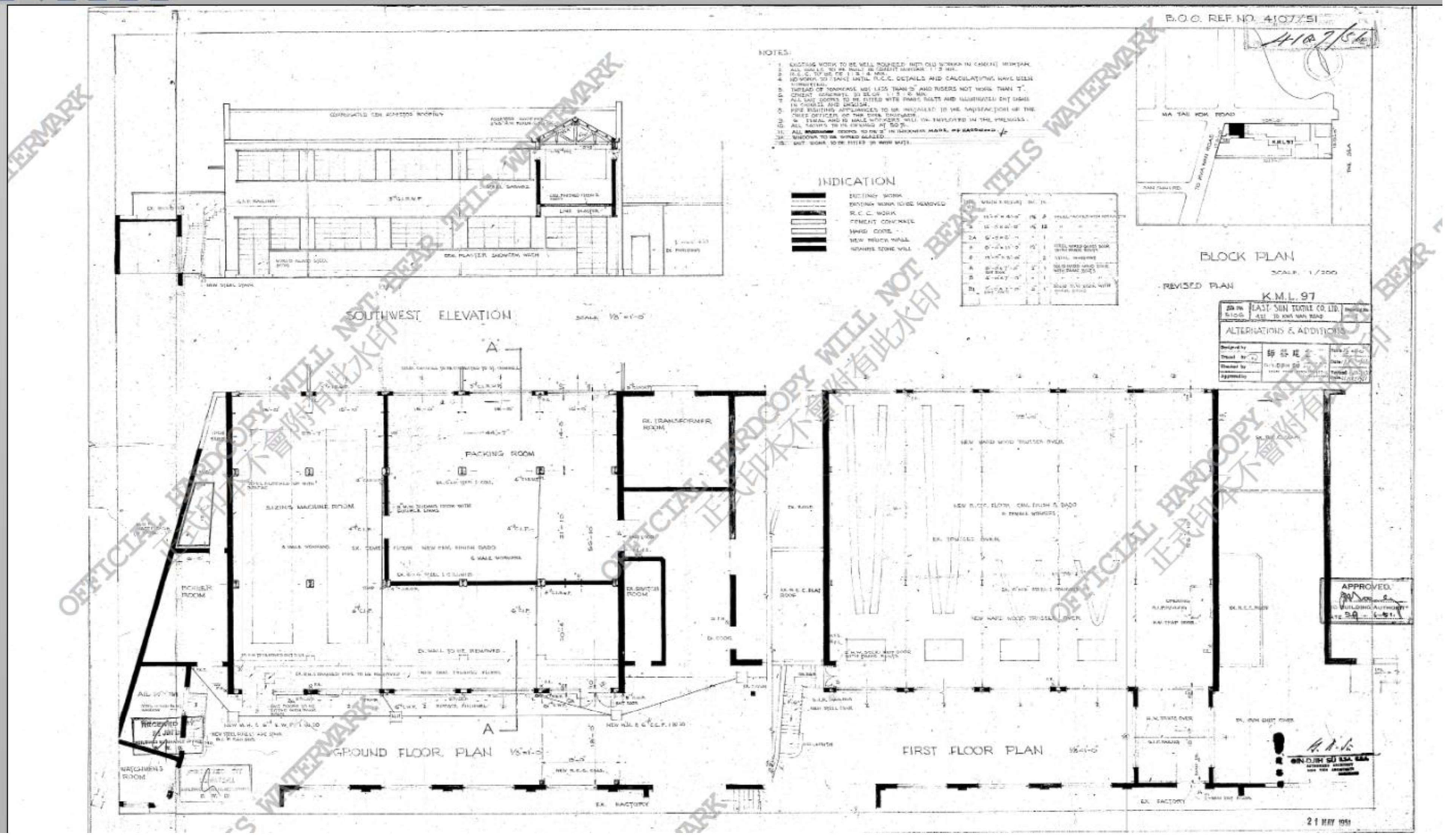
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(Part of KC-018 Site)

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BRAVO **Inspection of Plan(s)**

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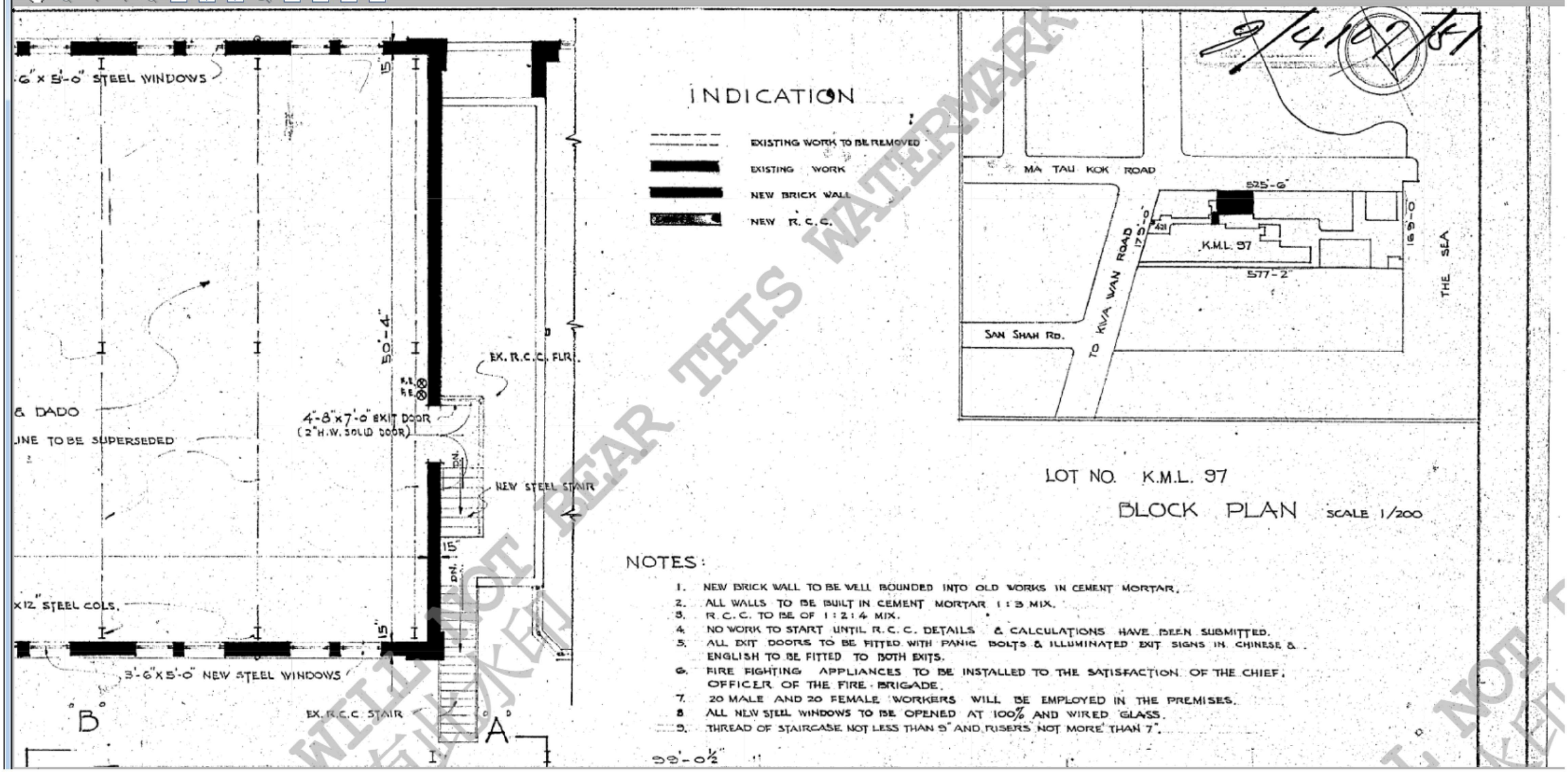
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(Part of KC-018 Site)

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BRAVO Inspection of Plan(s)

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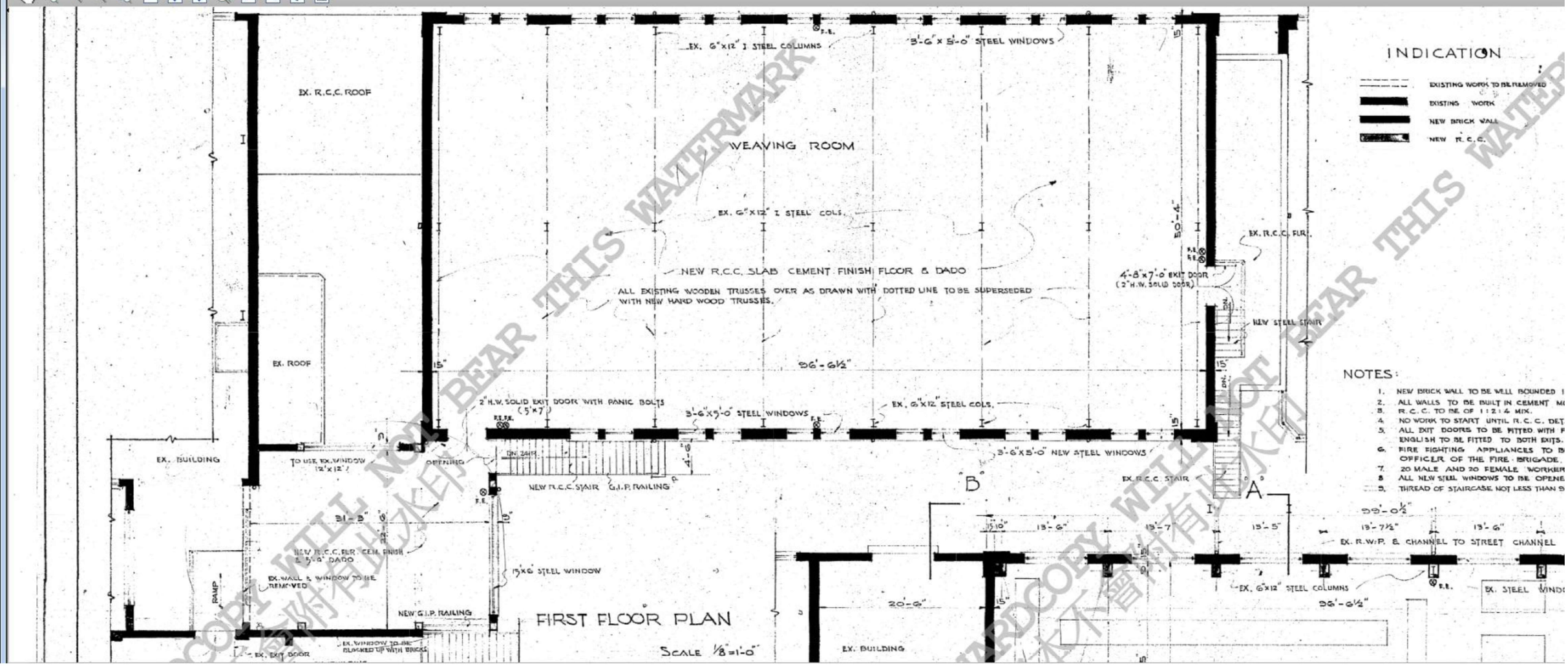
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(Part of KC-018 Site)

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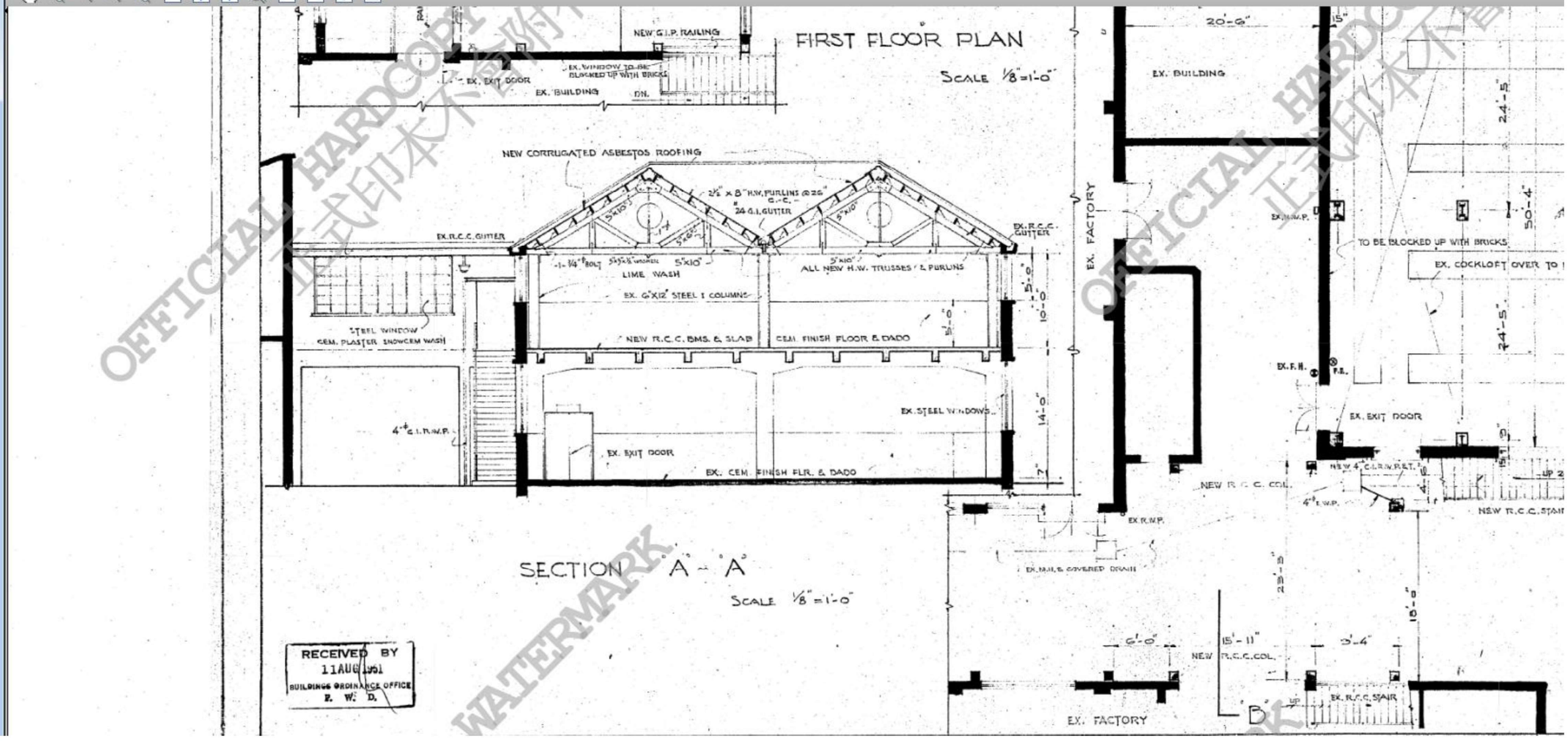
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(Part of KC-018 Site)

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BRAVO **Inspection of Plan(s)**

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OFFICIAL HARDCOPY 正式印本不會附加水印
WATERMARK

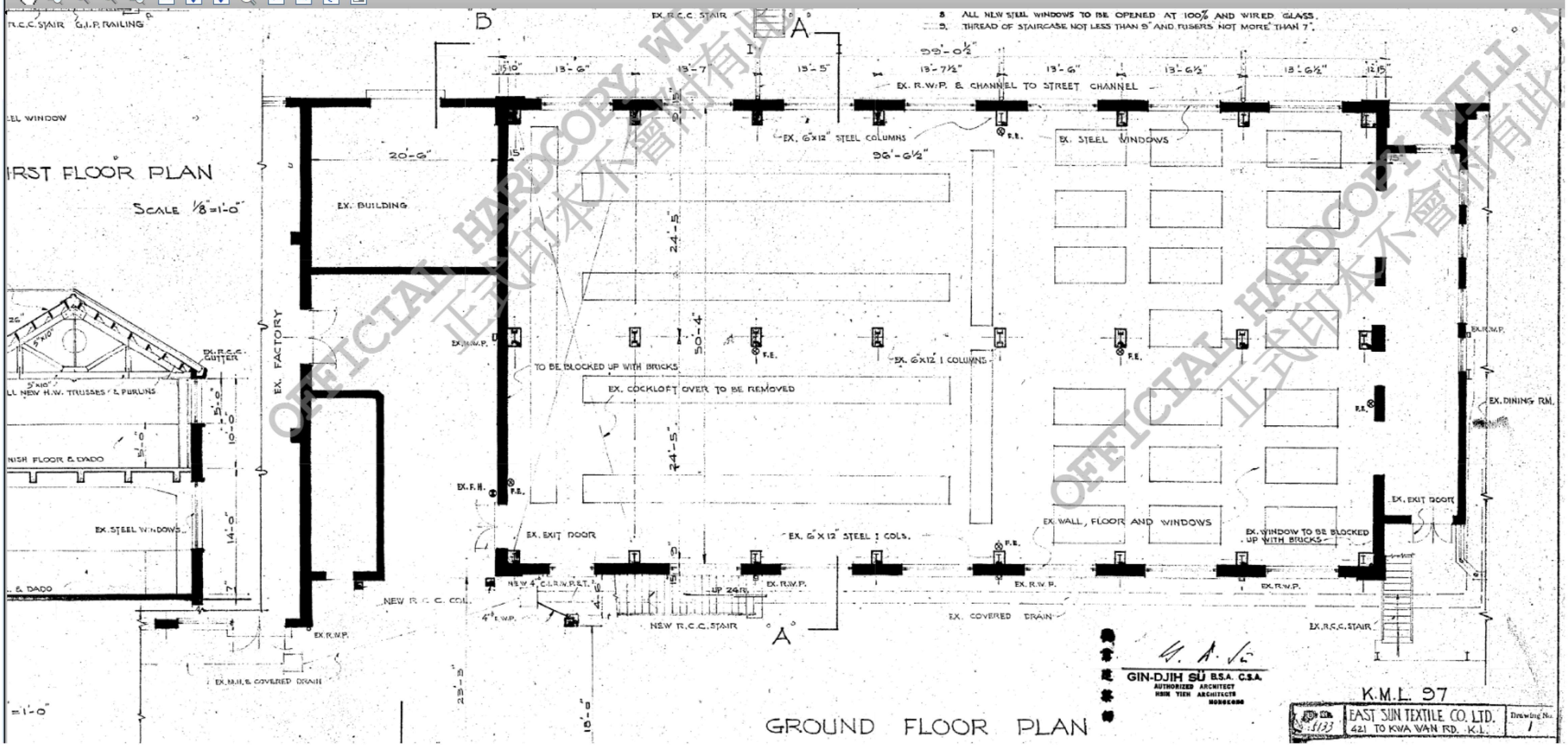
No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

Inspection of Plan(s) - BRAVO - Google Chrome

bravo.bd.gov.hk/inspectionPlan?imageId=d0de15b263108aa9c44a252dd3ecd26e&timestamp=1594189538939

Inspection of Plan(s)

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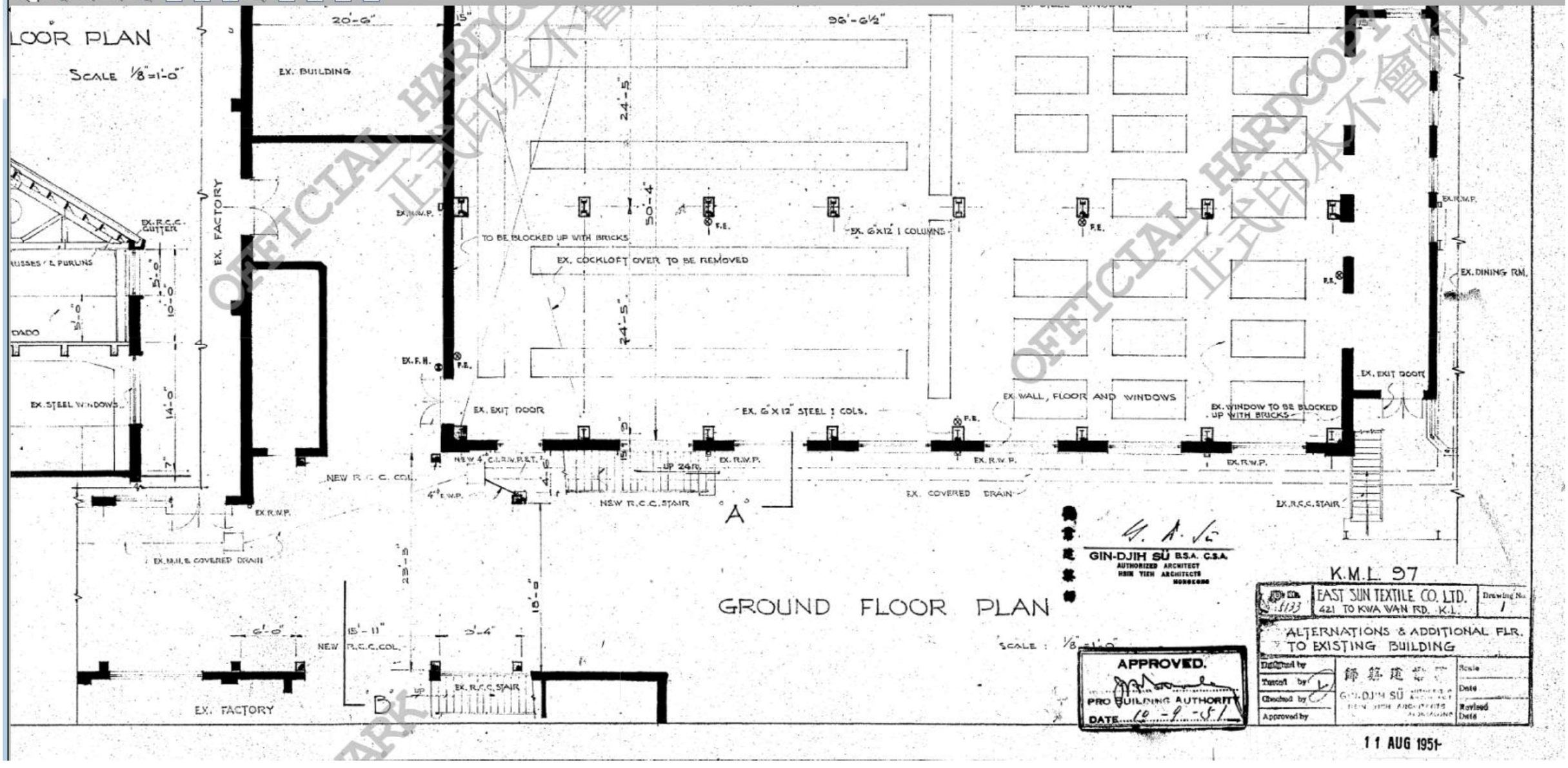
No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

Inspection of Plan(s) - BRAVO - Google Chrome

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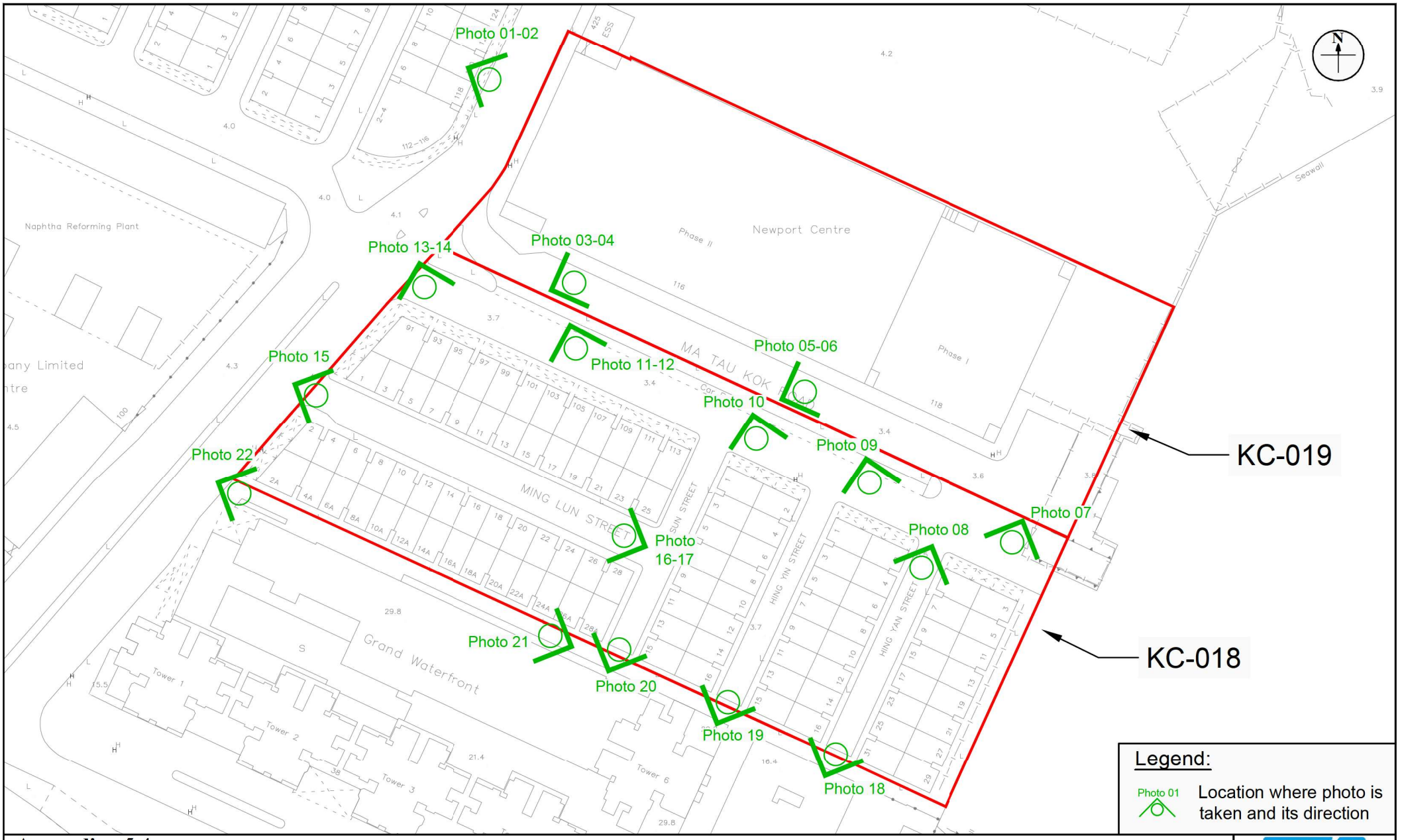
Inspection of Plan(s)

⚠ WARNING! UNAUTHORIZED COPYING IS PROHIBITED



No. 93 - 113 Ma Tau Kok Road
(Part of KC-018 Site)

Appendix 5.4 Site Survey Records



Appendix: 5.4	RAMBOLL
Title: Site Survey Records	Drawn by: PL
	Checked by: CC
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.0
	Date: Sep 2022

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Photo Records



Photo 01: KC-019 (To Kwa Wan Road)
Retail shop was spotted



Photo 02: KC-019 (To Kwa Wan Road)
Heating system factory was spotted

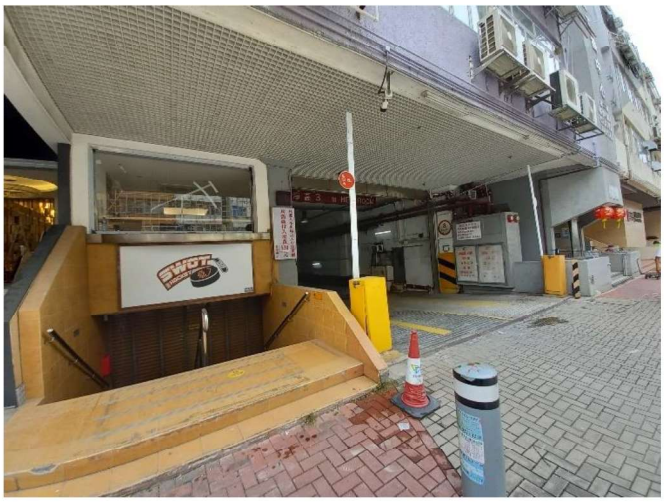


Photo 03: KC-019 (To Kwa Wan Road)
Hockey court and carpark were spotted

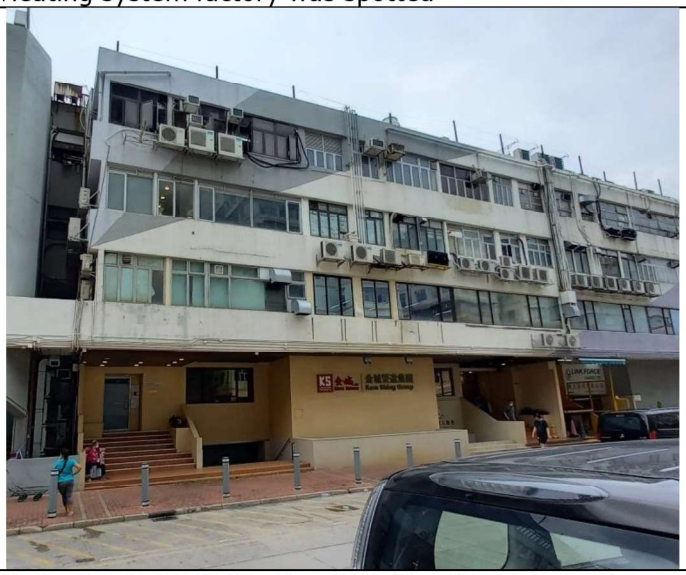


Photo 04: KC-019 (To Kwa Wan Road)
Office was spotted



Photo 05: KC-019 (To Kwa Wan Road)
Logistic warehouse was spotted

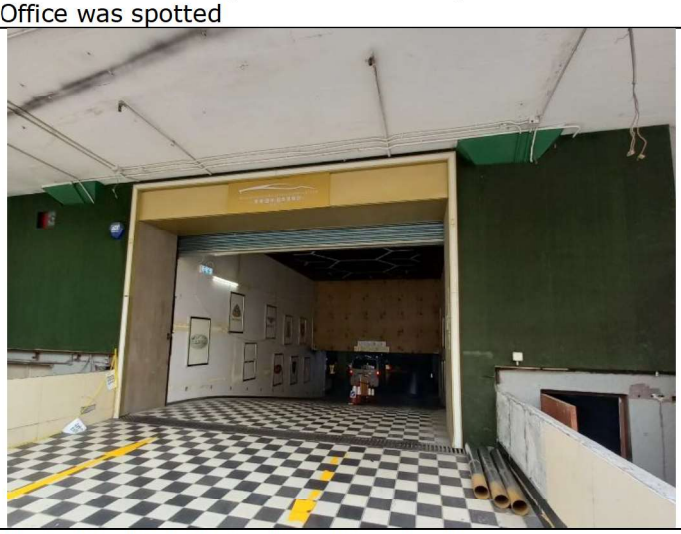


Photo 06: KC-019 (To Kwa Wan Road)
Carpark was spotted

Photo Records

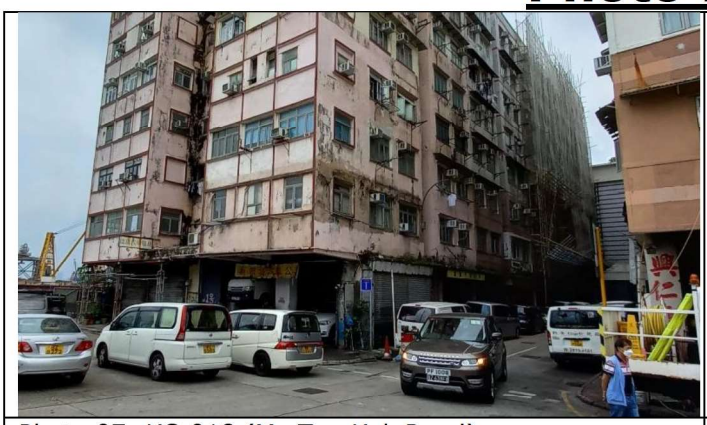


Photo 07: KC-018 (Ma Tau Kok Road)
Car repairing workshops and carpark were spotted



Photo 08: KC-018 (Hing Yan Street)
Car repairing workshops were spotted



Photo 09: KC-018 (Ma Tau Kok Road)
Car repairing workshop was spotted



Photo 10: KC-018 (Ma Tau Kok Road)
Car repairing workshop was spotted



Photo 11: KC-018 (Ma Tau Kok Road)
Logistic warehouse and printing shop were spotted



Photo 12: KC-018 (Ma Tau Kok Road)
Retail shops were spotted

Photo Records



Photo 13: KC-018 (Ma Tau Kok Road)
Car repairing workshops and massage shop were spotted



Photo 14: KC-018 (Ma Tau Kok Road)
Car repairing workshops were spotted

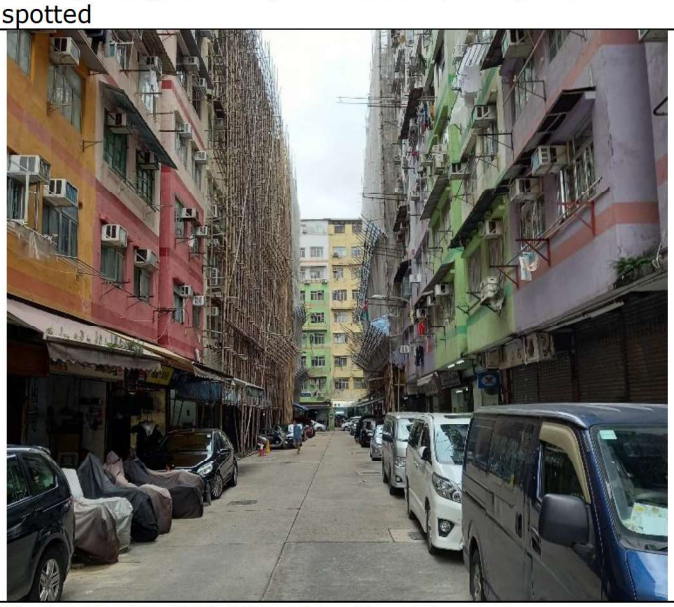


Photo 15: KC-018 (Ming Lun Street)
Car repairing workshops were spotted



Photo 16: KC-018 (Ming Lun Street)
Car repairing workshops were spotted



Photo 17: KC-018 (Ming Lun Street)
Car repairing workshops were spotted



Photo 18: KC-018 (Hing Yan Street)
Car repairing workshop was spotted

Photo Records

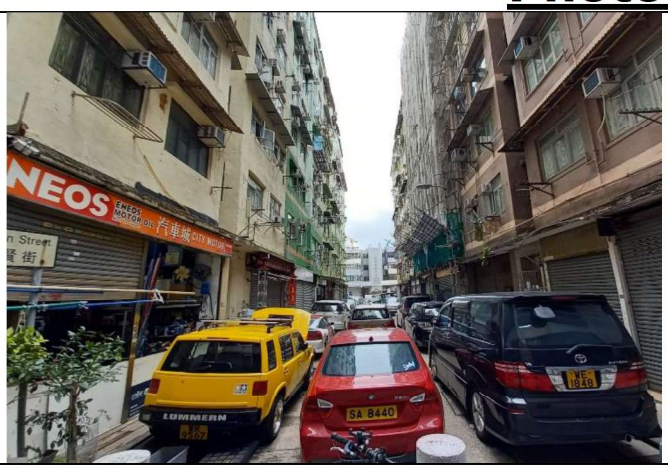


Photo 19: KC-018 (Hing Yin Street)
Car repairing workshops were spotted



Photo 20: KC-018 (Chung Sun Street)
Car repairing workshops were spotted

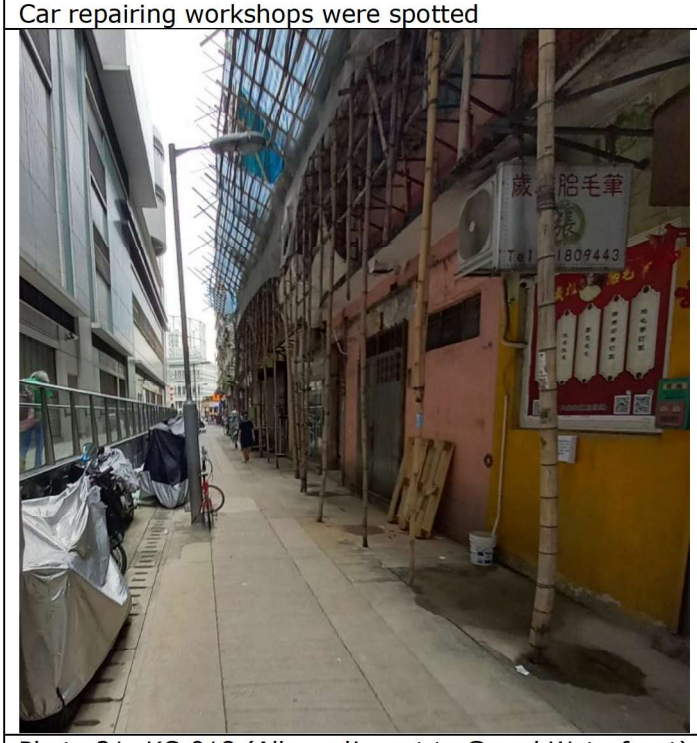


Photo 21: KC-018 (Alley adjacent to Grand Waterfront)
Retail shop was spotted



Photo 22: KC-018 (Alley adjacent to Grand Waterfront)
Real estate, pet shop, laundry were spotted

Appendix 6

Air Ventilation Assessment

(AVA) Expert Evaluation Report

Prepared for

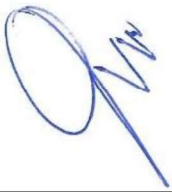
Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

AIR VENTILATION ASSESSMENT (EXPERT EVALUATION)

Date	**21 September 2022**
Prepared by	**Casey Chan** **Environmental Consultant**
Signed	
Approved by	**Calvin Chiu** **Senior Manager**
Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8529_v1.2**

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APPENDICES

Appendix 1 Master Layout Plan of the OZP Conforming Baseline Scheme

Appendix 2 Master Layout Plan of the Proposed Scheme

Appendix 3 Proposed Air Ventilation Design Measures of the Proposed Scheme

1. INTRODUCTION

1.1 Project Background

1.2 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.2.1 This Air Ventilation Assessment (AVA) Study report – Expert Evaluation is prepared to support the two draft Development Scheme Plans (DSPs) submission to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance. This Report covers and supports both Schemes as one comprehensive redevelopment.

1.2.2 Ramboll Hong Kong Limited is commissioned by the Applicant to prepare an Air Ventilation Assessment (AVA) Study report – Expert Evaluation (EE) to support the DSP submission for KC-018 and KC-019 sites. Architectural drawings and technical information are provided by the project architect.

1.3 Objectives

1.3.1 This AVA-EE report has been prepared to evaluate if the proposed redevelopment would have any significant impact on the overall air ventilation performance of the assessment area by comparing the Proposed Scheme and OZP Conforming Baseline Scheme.

1.4 Application Site and its Environs

1.4.1 The Application Site (i.e. KC-018 site & KC-019 site) has a total gross site area of 20,189m^2 (with net site areas of 11,430 m^2 and 8,759 m^2 respectively). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1** shows the location of the Application Site and its environs.

1.4.2 The Application Site currently is composed of ageing residential buildings (more than 60 years old) of 8 storeys with ground level shops within KC-018 site, and Newport Centre within KC-019 site.

1.4.3 Ma Tau Kok Gas Work North Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artiest Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building, New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.5 The OZP Conforming Baseline Scheme

1.5.1 The KC-018 consists of 2 residential towers above podium level (+13.6 mPD) and has a maximum plot ratio of 6 (as recommended in DURF) and a maximum building height of 28 storeys (which is approximately +110 mPD for the main roof) under the OZP Conforming Baseline Scheme. A low-rise building (which is approximately +8.6 mPD) for the use of retails is located at the southeast of T2. The two residential towers within KC-018 (i.e. T1 and T2) are located with a 43m of separation. A 10m wide non-building area (NBA) is reserved between the Application Site and Grand Waterfront.

1.5.2 The KC-019 Site consists of 2 residential towers erected at grade and has a maximum plot ratio of 5 and a maximum building height of 19 storeys (which is approximately +65 mPD for the main roof) under the OZP Conforming Baseline Scheme. A low-rise

building (which is approximately +8.0 mPD) for the use of retails is located at the southeast of T2. The two residential towers within KC-019 (i.e. T1 and T2) has an L-shaped layout, with a low-rise building (which is approximately +8.0 mPD) for the use of retail development located at the southeast of T2. A 20m building setback of the residential towers from the southeast boundary of KC-019 site is proposed. A 10m wide of NBA is reserved within the Schemes.

1.5.3 An indicative MLP of the OZP Conforming Baseline Scheme as shown in **Appendix 1**.

1.6 Proposed Scheme

1.6.1 The Proposed Development at the Schemes consists of 4 residential towers (5AT1, 5AT2, 5BT1 and 5BT2) with the lowest 3 floors for retail/clubhouse/GIC (+18.6 mPD) and 31 domestic storeys above. There is a maximum BH (measured at the main roof of the tower) of +120 mPD.

1.6.2 The design of the Proposed Scheme has due consideration of the waterfront site nature and prevailing wind directions (to be discussed in subsequent chapter). Under the Proposed Development, the layout has provided building setbacks ranging from 2 to 20m from the northeast, southeast, southwest and northwest boundaries of the Schemes. The building towers are disposited and oriented to minimise wind blockage impact with respect to sea breeze from east to southeast direction which are prevailing annually. The towers of 5AT1 and 5AT2 are shifted closer to the southern boundary in order to create a wind corridor with better connection to Ma Tau Kok Road on the west to northwest side. A 20m building setback of the residential towers from the southeast boundaries of KC-018 and KC-019 are retained to serve as waterfront promenade.

1.6.3 Referring to the OZP, two 10m wide of NBAs within the "CDA' site, one abutting the existing "R(A)1" site to the south and another near the middle aligning with Ma Tau Kok Road, are maintained to enhance visual and physical permeability at the waterfront area, as well as to enhance ventilation. Both 10m wide NBA are reserved within the Schemes. In addition, the 2-storey retail belt along the eastern site boundaries as stated in the OZP will be retained.

1.6.4 The Master Layout Plan (MLP) and section of the Proposed Development are shown in **Appendix 2**.

2. SITE WIND AVAILABILITY

2.1 Site Wind Availability Data

RAMS

2.1.1 According to the Planning Department's website, a meso-scale Regional Atmospheric Modeling System (RAMS) was used to produce a simulated 10-year wind climate at the horizontal resolution of 0.5 km x 0.5 km covering the whole territory of Hong Kong. The simulated wind data represents the annual, winter and summer wind condition at various levels, i.e. 200 m, 300 m, and 500 m above terrain.

2.1.2 The RAMS data of the grid (X: 084, Y: 042) has been extracted from the Site Wind Availability Data of Planning Department's website.

2.1.3 Based on the wind roses with different heights (200, 300 or 500m) available, the 200m site wind availability data represents wind data that takes into account the topographical effect around the Application Site. Therefore, a lower level of wind roses at 200 m height is selected to study the prevailing wind condition as it represents the incoming wind to the Application Site and considers the influence on the prevailing winds by the surrounding topography.

2.1.4 According to the wind roses at 200m altitude, the annual prevailing wind directions for the Application Site are ENE, E and ESE; whereas the summer prevailing wind directions are E, SSW and SW.

2.1.5 **Figure 2a** shows the relevant wind roses diagrams representing the frequency and wind speed distribution at 200m height in annual and summer conditions. The wind frequency data is provided in **Table 2.1** below.

Table 2.1 Summary of RAMS Data and Wind Direction at 200m

Wind Direction	Probability for Annual Condition (%)	Probability for Summer Condition (%)
N	3.5%	1.2%
NNE	9.1%	1.4%
NE	6.1%	1.3%
ENE	**12.2%**	3.7%
E	**28.4%**	**11.6%**
ESE	**9.7%**	10.3%
SE	4.3%	7.9%
SSE	2.9%	6.4%
S	3.2%	7.4%
SSW	5.5%	**12.7%**
SW	5.4%	**14.6%**
WSW	3.7%	10.2%
W	2.7%	6.2%
WNW	1.3%	2.5%
NW	0.8%	1.3%
NNW	1.2%	1.2%

Note: Bolded characters highlighted in grey represent the selected prevailing wind directions for evaluation.

Simulated Site Wind Availability Data from Term Consultancy for Expert Evaluation on Ma Tau Kok Area

2.1.6 According to the wind availability data from the Term Consultancy for Provision of Advisory Services on Air Ventilation Assessment Submissions - Expert Evaluation on Ma Tau Kok Area", published by the Planning Department in March 2008 (referred as

Ma Tau Kok -EE), it stated that the annual wind of the study area is mainly from the NNE, E and ENE directions. The Summer wind is mainly coming from the E, ESE and SE directions. The relevant Site Wind Availability Data (SWAD) from Ma Tau Kok-EE is presented in **Figure 2b.**

2.1.7 Based on both sets of wind data, it is considered that the annual prevailing winds come from **NNE, ENE, E, and ESE directions**. While in summer condition, the prevailing winds mainly come from **E, ESE, SE, SW and SSW directions**.

2.2 Topography and Building Morphology

Topography

2.2.1 The Schemes is located at and adjacent to the waterfront and the topography is generally flat. Ho Man Tin Hill with the hill-top around +100mPD is located around 800m to the southwest of the Schemes.

2.2.2 In general, the Application Site is a waterfront site. The ground level at the waterfront area is about +3.6mPD. It is expected that east to southeast prevailing winds towards the Application Site is the least obstructed and wind availability from these directions are considered to be optimal.

Building Morphology

2.2.3 Based on checking by site visit for existing developments and the published information in Statutory Planning Portal under the Town Planning Board regarding planned / committed developments, the Schemes is surrounded by high- to medium-rise developments, e.g. the Committed Government, Institution or Community (G/IC) Site, and proposed building blocks in Dedicated Rehousing Estate at Ma Tau Kok to the northeast, Grand Waterfront to the south, and planned developments at Residential (Group (A) (R(A)) Site (max. building height +100mPD[1]) & G/IC Site (proposed building height +67.75mPD[2]) to the further northwest. **Figure 1** shows the planned/committed developments adjacent the Schemes. It is confirmed that all major noise barriers, elevated structure, planned and committed development in the surrounding, if any, have been taken into account.

2.2.4 The building height information of identified existing developments was extracted from Geo-Reference Database (BG1000) provided by Survey and Mapping Office/ Lands Department, and as shown in **Table 2.2** below. As higher building masses are concentrated to the south, southwest and northwest of the site, it is likely that annual prevailing wind availability will be lowered due to the existing building morphology.

2.2.5 There are some existing open areas or relatively low-rise buildings in the surrounding, i.e. Cattle Deport Artists Village and To Kwa Wan Recreation Ground to the southwest of the Schemes. In addition, to the further north-east and east of the Schemes across Sung Wong Toi Road, a large open space is planned in the Kai Tak Development Area.

Table 2.2 Building Height of Surrounding Developments

Name of Development	Maximum Building Height mPD	Location from Application Site
Dedicated Rehousing Estate at Ma Tau Kok	~100	Northeast
Grand Waterfront	~175	Southeast

[1] The maximum building height of the Proposed Redevelopment at the R(A) Site, which is partly vacant and partly occupied by the Kowloon Animal Management Centre was made reference to the building height restriction stated in MPC Paper No. 2/15.

[2] The proposed building height of the Proposed Redevelopment at the G/IC Site, which is currently occupied by the Hong Kong Society of the Blind Workshop and Hostel was made reference to the indicative layout & development parameters stated in MPC Paper No. 2/15.

Name of Development	Maximum Building Height mPD	Location from Application Site
Proposed Commercial Building Application no. A/K22/3	~100	Southeast
Planned Development at G/IC Site [2]	~67.75	Northwest
Planned Development at R(A) Site [1]	~100	Northwest
Ma Tau Kok Gas Work North Plant	~14 to 36	West
Proposed Comprehensive Residential and Commercial Development "CDA(2)" Application no. A/K10/256 & A/K10/259	~100	Further Northwest
Proposed Comprehensive Residential and Commercial Development "CDA(3)" Application no. A/K10/265	~100	Further Northwest

2.3 Findings in Relevant Air Ventilation Studies

2.3.1 There are two relevant air ventilation studies completed in nearby area, i.e.

- "Term Consultancy for Provision of Advisory Services on Air Ventilation Assessment Submissions - Expert Evaluation on Ma Tau Kok Area", published by the Planning Department in March 2008; and
- Agreement No. CE 35/2006 (CE) Kai Tak Development Engineering Study Cum Design and Construction of Advance Works – Investigation, Design and Construction, Additional Services for Technical Study on Increasing the Development Density in Kai Tak, Air Ventilation Assessment – Initial Study" published by Civil Engineering Development Department in November 2014.

2.3.2 The following findings, which are relevant to the Application Site and its surrounding areas, are extracted below:

- Kowloon City Road (over 300m from the Schemes) is considered as main wind corridor in the Ma Tau Kok area under annual condition, where Sung Wong Toi Road, Mok Cheong Street, San Shan Road and Ma Tau Kok Road (adjacent to the Schemes) are considered as air paths in the area under summer condition;
- The street pattern of Ma Tau Kok Area is irregular and therefore result in relatively poor wind performance;
- The relatively taller buildings (e.g. Grand Waterfront) would induce wake area on the downwind sides; and
- Apart from east and south-easterly wind directions, other wind directions are sheltered by the surrounding existing building clusters.

2.4 Summary of Existing Site Wind Availability

2.4.1 According to the wind availability data, the annual wind directions of the area are easterlies.

2.4.2 From **Figure 2 (a & b)**, the wind probability from the E & ENE directions are dominant under both references and considered to be the dominant wind directions for the area under annual condition, particularly E wind. In addition, NNE and ESE wind are also dominant other than the E and ENE winds.

2.4.3 There is no high topography in the upwind surrounding area under ENE, E and ESE wind, thus it is considered that the potential blocking effect by the topography will not be significant.

2.4.4 For the NNE annual prevailing wind direction, there are some low- to mid-rise building structures and planned Dedicated Rehousing Estate at northeast side of the Schemes and therefore the wind blockage is considered as medium to high. To Kwa Wan Road

is considered as an air path in the area under the annual NNE condition. The presence of the future Kai Tak Development at the further upwind direction would slightly obstruct wind along To Kwa Wan Road to reach the Schemes and downwind areas including Grand Waterfront, San Ma Tau Street.

2.4.5 In summer condition, E wind is also prevailing under both references. In addition, ESE, SE, SSW and SW wind are also important. There is no high topography in the upwind surrounding area under E, ESE and SE wind, thus it is considered that the potential blocking effect by the topography will not be significant.

2.4.6 On the other hand, the building cluster near to the southwest of the Application Site and high-rise Grand Waterfront along San Ma Tau Street would obstruct the wind coming from the southwest quarter reaching the Application Site (i.e. under SSW and SW wind). Therefore, To Kwa Wan Road would serve as important air path under these summer prevailing wind directions.

2.4.7 As the Application Site is a waterfront site, the E, ESE and SE (annual and/or summer) prevailing winds towards the Application Site is least obstructed. Ma Tau Kok Road is considered an air path allowing sea breeze from these directions to inland area.

3. EXPERT EVALUATION OF AIR VENTIALTION PERFORMACE OF THE PROPOSED DEVELOPMENT

3.1 Important Pedestrian Areas

3.1.1 Important surrounding areas that the public would often access have been identified as the following:

- To Kwa Wan Recreation Ground;
- Ma Tau Kok Road;
- Mok Cheong Street;
- Cattle Depot Artist Village;
- Future Kai Tak Development;
- To Kwa Wan Road;
- Ferry Pier and Public Transport Terminus; and
- San Ma Tau Street.

3.2 Evaluation of Merit/Demerit of Design Features of the Proposed Scheme

Air corridors/ Air paths

3.2.1 **Figure 3** and **Figure 4** illustrate the prevailing wind from annual and summer wind directions for the OZP Conforming Baseline Scheme. The prevailing wind from annual and summer wind directions are illustrated in **Figure 5** and **Figure 6** for the Proposed Scheme respectively.

3.2.2 Under both Schemes, NE-SW oriented To Kwa Wan Road and SE-NW oriented Ma Tau Kok Road and San Shan Road (together with San Ma Tau Street) are major wind corridors nearby the Schemes. San Shan Road is separated from the Subject Site so that it is least affected by the proposed development. The building separation from To Kwa Wan Road is similar for both schemes. However, the proposed widened To Kwa Wan Road under the Proposed Scheme should further enhance the ventilation in the area. Regarding Ma Tau Kok Road, both schemes provide a 10m non-building area.

3.2.3 Under the OZP Conforming Baseline Scheme, while there are setback distances (around 5m to 20m) from the southeast and northwest sides of site boundaries. In addition, there are two 10m building setbacks located along the southwest side of the boundary and within the Site. It will act as air paths to allow wind penetration.

3.2.4 Under the Proposed Scheme, two high-rise towers (5AT1 and 5AT2) at KC-018 are located close to the southern boundary. Moreover, 5AT2 is of narrow frontage facing waterfront to vacate more area on the northern side with good connection to Ma Tau Kok Road, which facilitate more E, ESE and SE wind flow through the Site and towards the downward areas (e.g. the section of Ma Tau Kok Road to the west of To Kwa Wan Road).

3.2.5 For KC-019 Site, two high-rise towers (5BT1 and 5BT2) are designed, elongated and in parallel to the sea breeze direction (from ESE) under the Proposed Scheme. They are located relatively close to the northeastern boundary to vacate more area on the southwestern side with good connection to Ma Tau Kok Road, which also facilitate more E, ESE and SE wind flow through the Site and towards the downward areas (e.g. the section of Ma Tau Kok Road on the opposite side of To Kwa Wan Road).

3.2.6 Moreover, large building separation (not less than 25m) at 5AT1/5BT1 and 5AT2/5BT2 of the Schemes will be provided when compared to the OZP Conforming Baseline

Scheme, it would further improve wind connection between the area at the waterfront, the Schemes and downwind areas.

3.2.7 In addition, a 20m building setback along southeast boundary of the Application Site is provided under both schemes. This waterfront promenade also serves as an air path for improving pedestrian ventilation performance.

Building Disposition

3.2.8 Under the OZP Conforming Baseline Scheme, the building disposition of two T2 of the KC-018 and KC-019 are perpendicular to the sea breeze and would block more portion of E/ESE/SE wind flow to the Application Site and its surrounding areas. It is anticipated that there will be slightly lower wind availability to the downstream areas of the Site, including Ma Tau Kok Gas Works North Plant.

3.2.9 However, building separations (about 24m at KC-019 and 43m at KC-018) between residential blocks are proposed to be incorporated into the building design under the OZP Conforming Baseline Scheme to allow annual prevailing NNE wind penetration in principle. However, it is noted that another planned development (Dedicated Housing Estate at Ma Tau Kok elevated up to 100mPD) to the immediate north of the Application Site is of narrower gap (11m gap above 21.4mPD). The gap is also slightly block by another tower of the same development on northern side. It will restricting wind flow and reduce the effectiveness of the 24m and 43m gap.

3.2.10 Under the Proposed Scheme, the building disposition of high-rise 5AT1 and 5AT2 located close to the southern boundary and 5BT1 and 5BT2 located close to the northeast boundary, resulting in more open spaces within the Application Site. It would facilitate more E/ESE/SE wind flow through the proposed development and further penetrates surrounding areas when compared to the OZP Conforming Baseline Scheme. In addition, there are provision of building setback (not less than 5m) along the northeast side of the boundary, more portion of E/ESE/SE will flow through the Site and towards downwards areas. Moreover, building separation is provided between residential blocks with respect to NNE wind direction. As NNE wind is mostly blocked by planned development on upwind direction, the increased blockage impact due to smaller building gap may not be significant.

Building Height

3.2.11 Under the Proposed Scheme, the building heights for KC- 18 and KC-019 under the OZP Conforming Baseline Scheme should be 110mPD and 65mPD respectively and hence, the maximum building height under proposed scheme would be similar to that of KC-018 under the OZP Conforming Baseline Scheme and considerably higher when for KC-019. However, as for typical urbanised area, air ventilation usually relies on availability of open space and air corridor at pedestrian level as well as low-podium design. The possible impact due to higher building height at KC-019 can be offset by other good design features.

3.3 Directional Analysis of the development

3.3.1 As discussed in Section 2.1 & 2.2, winds from NNE, ENE, E, and ESE direction are prevailing annually whereas winds from E, ESE, SE, SSW and SW are dominant in summer.

E, ESE and SE Winds

3.3.2 Under E, ESE & SE winds, the proposed development of the Schemes would obstruct winds from reaching the downstream areas such as Ma Tau Kok Road to the west of To Kwa Wan Road, Ma Tau Kok Gas Work North Plant and Cattle Depot Art Park and Artiest Village. The decline of wind environment at the downstream areas would be expected at immediate downwind location. However, the optimised Proposed Scheme

and the OZP Conforming Baseline Scheme already minimised potential blockage under these wind directions with narrow frontage perpendicular to these directions.

3.3.3 An approximately 5m to 10m building setbacks along the northeast and southwest site boundary are proposed within the Schemes in order to alleviate any possible air ventilation impacts from the Development on the surrounding areas by increasing the wind penetration of the Schemes. In addition, another 10m of non-building area is reserved within the Schemes in connection with Ma Tau Kok Road. It would facilitate E, ESE and SE wind flow along this building separation and reach the Schemes and its surroundings. In other words, wind can come from and flow around both sides of the development to inland area so that the effective wake area will be minimised.

3.3.4 As shown **Figure 6**, building setbacks is provided along northeast side of the boundary under Proposed Scheme and could enhance E, ESE and SE flow through this building setback distance and reach the Schemes and its surrounding when compared to the OZP Conforming Baseline Scheme. In addition, there are provisions of building separation (not less than 25m) at 5AT1/5BT1 and 5AT2/5BT2, more wind from E/ESE/SE directions can flow through the Site and towards its surrounding areas. Hence the wind blockage effect with respect to sea breeze could be significantly reduced when compared to the OZP Conforming Baseline Scheme.

ENE Wind

3.3.5 Similar to E/ESE/SE wind, ENE wind will more likely come and reach the Application Site from sea side. However, roads like Ma Tau Kok Road and San Shan Road are not oriented with ENE wind so that less wind is expected to be able to penetrate through these roads. All in all, the widened building separation within the Site under the Proposed Scheme can welcome more ENE wind.

NNE Wind

3.3.6 Under NNE prevailing winds, the Dedicated Housing Estate at Ma Tau Kok (+100mPD) and future Kai Tak Development are expected to impose wind blockage impacts on the Application Site and its surrounding areas under both Schemes. It is anticipated that there will be lower wind availability in the Proposed Development.

3.3.7 The Dedicated Housing Estate at Ma Tau Kok provides a gap of 11m width above +21.4mPD but also shielded by another block of the same development. In the Proposed Scheme for KC-019 site, building separations between two residential towers is provided. These gaps are orienting with NNE wind. Some portion of NNE wind may flow through Dedicated Housing Estate at Ma Tau Kok, then KC-019 site and eventually to the KC-018 site. With the already limited NNE wind flow to the Application Site, the impact of the proposed development would further block the NNE/ENE wind from reaching its downwind area (Grand Waterfront). Slight reduction of wind availability at the downstream areas would be expected.

SW and SSW Winds

3.3.8 Under SW and SSW wind directions, the wind environment to the Schemes will be limited due to the presence of existing medium to high- rise development to the southwest of the Schemes. To Kwa Wan Road acts as SW and SSW wind corridor. The existing high-rise Grand Waterfront obstruct wind flow to the Schemes and its downstream areas. With the already limited SSW and SW wind flow to the Schemes and further downwind area, there will not be any significant difference among both schemes.

3.4 Summary of Relative Air Ventilation Performance

3.4.1 The air ventilation performance of the OZP Conforming Baseline Scheme and the Proposed Scheme has been assessed. Both Schemes consist of two building blocks at

podium level. The Proposed Scheme has been provided additional building setbacks along southeast side of the Schemes.

3.4.2 Under the Proposed Scheme, there are optimised regarding disposition and orientation, and provided additional building setbacks from the identified air corridors for prevailing wind penetration and create additional air corridor between the Schemes and Grand Waterfront which can allow more sea breeze (prevailing E/ESE/SE wind) penetrating to inland area.

3.4.3 To conclude, with good design measures to minimise frontage, etc, the Proposed Scheme is considered unlikely to impose adverse impacts on the surrounding areas in air ventilation perspective when compared to the OZP Conforming Baseline Scheme. Building dispositions and building/podium setbacks and separations incorporated into proposed development should also be regarded as good design measures.

4. CONCLUSION

4.1.1 A qualitative assessment of the wind performance of the proposed residential development at KC-018 and KC-019 sites has been carried out.

4.1.2 According to the findings of this AVA-EE, the annual prevailing wind comes from NNE, ENE, E and ESE directions while the summer prevailing wind comes from E, ESE, SE, SSW and SW directions.

4.1.3 After considering the potential air ventilation impacts of the Schemes, the layout of the Proposed Development has incorporated design measures to enhance its air ventilation performance. It is considered that the Proposed Development would not have any significant adverse impact on the surrounding environment.

4.1.4 The Proposed Scheme has incorporated effective mitigation measures such as reduced frontage towards the waterfront, additional setbacks along the northeast/southwest side and from waterfront. Building dispositions and building/podium setbacks and separations incorporated into proposed development should also be regarded as good design measures. Therefore, the Proposed Scheme would unlikely impose adverse impacts on the surrounding sites from air ventilation perspective as compared with the OZP Conforming Baseline Scheme.

Figures

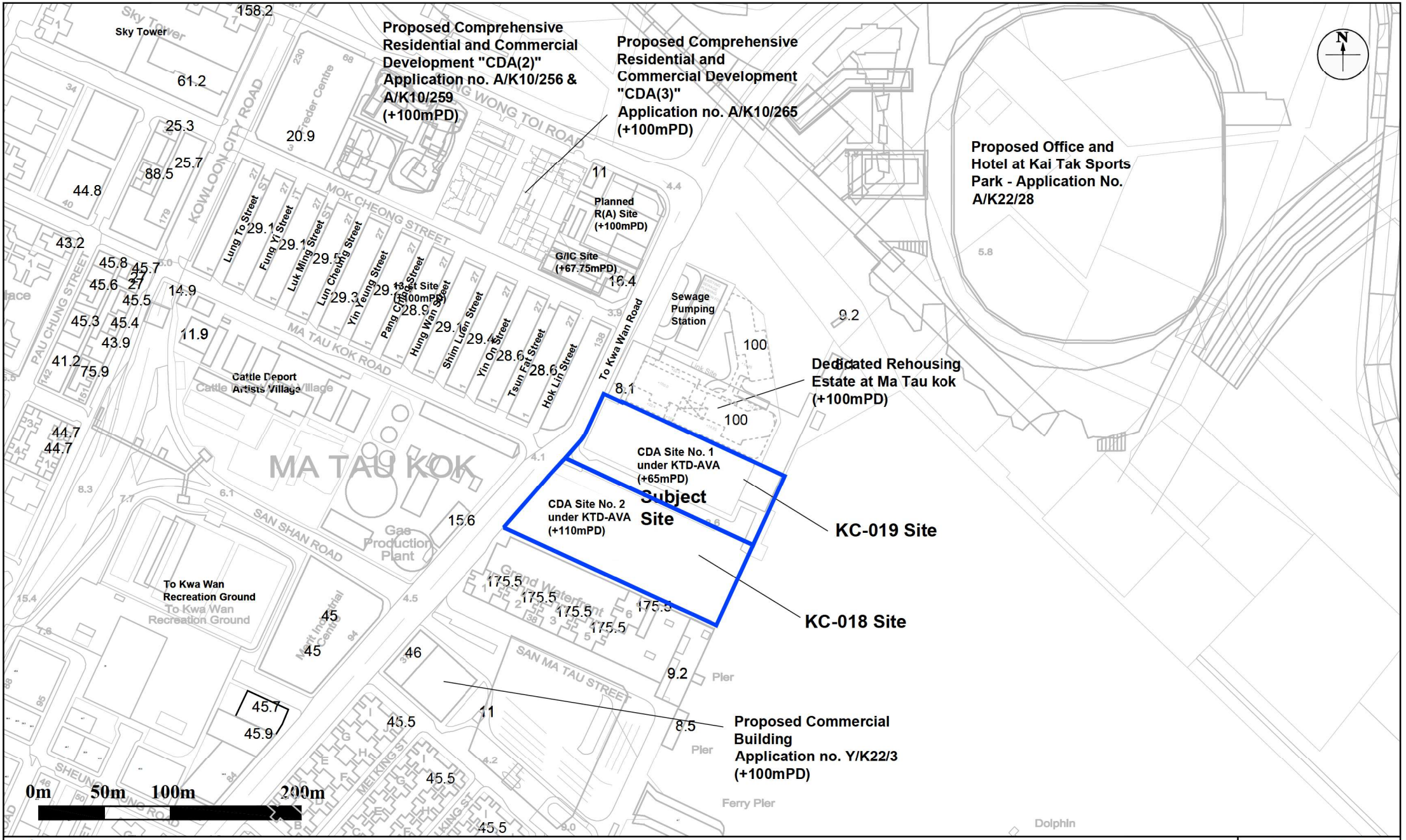
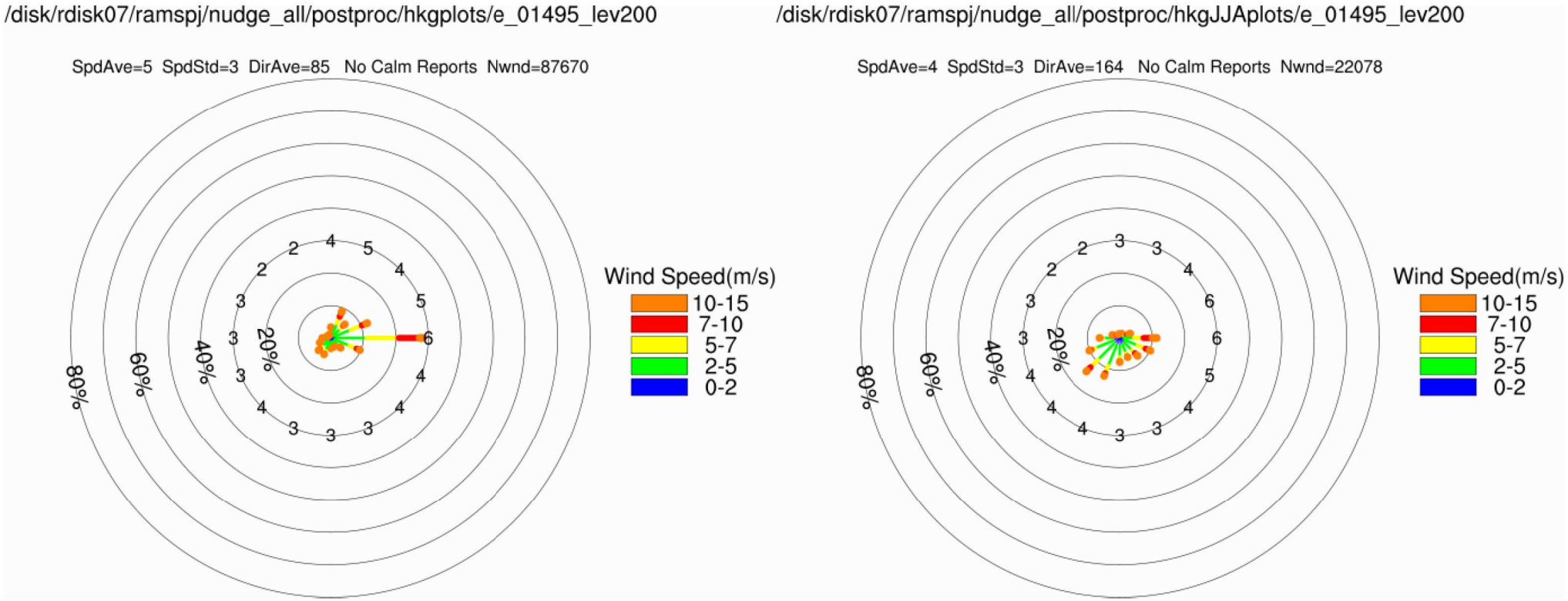


Figure: 1	RAMBOLL
Title: Location of Subject Site and Its Environs	Drawn by: CC Checked by: CC
Project: Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Jul 2022

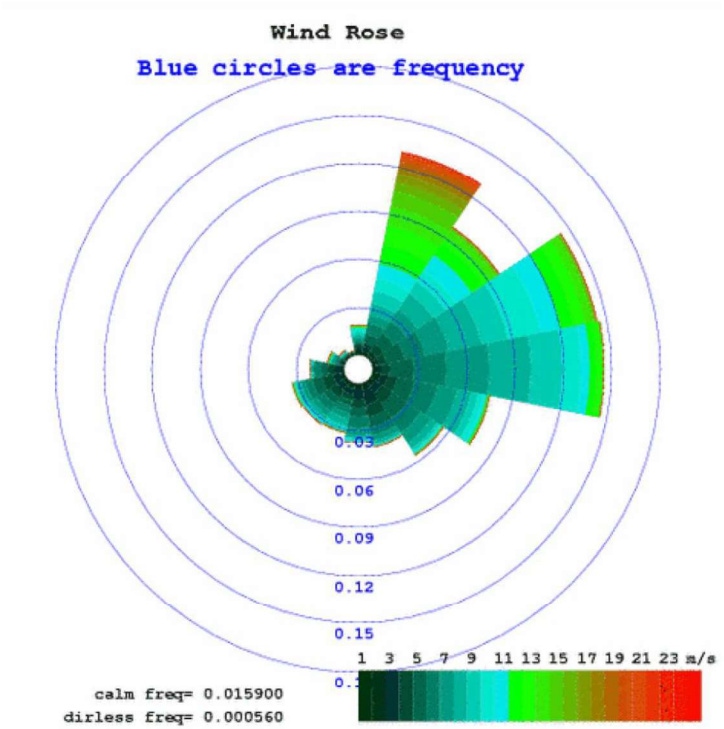
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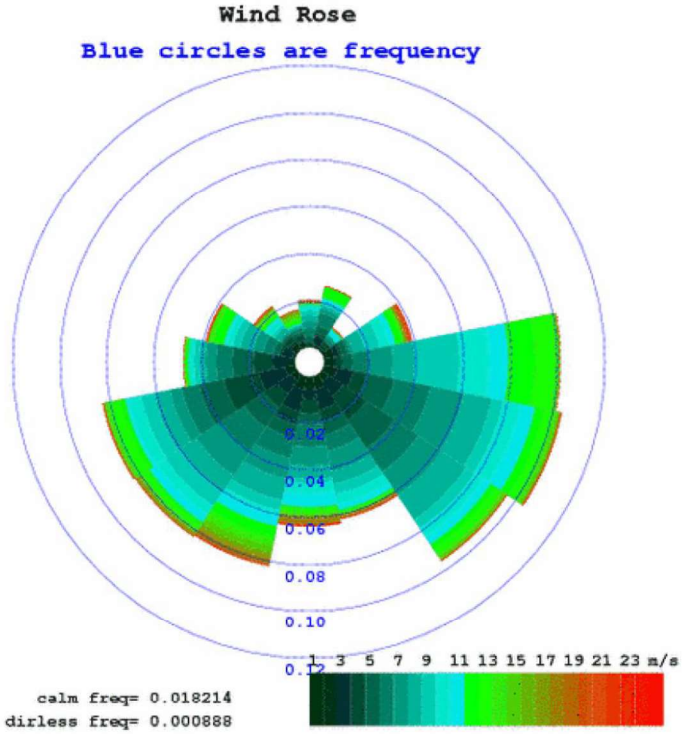
Annual Wind

Summer Wind

Figure:	2a	RAMBOLL
Title:	Windrose Diagram representing V∞ of the Area under Concern at 200m above ground (X:084, Y:042)	Drawn by: CC Checked by: CC
Project:	Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Jul 2022



Annual Windrose: 230m



Summer Windrose: 230m

Figure:	2b	RAMBOLL
Title:	Term Consultancy for Provision of Advisory Services on Air Ventilation Assessment Submissions - Expert Evaluation on Ma Tau Kok Area at 230m	Drawn by: CC Checked by: CC
Project:	Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Jul 2022

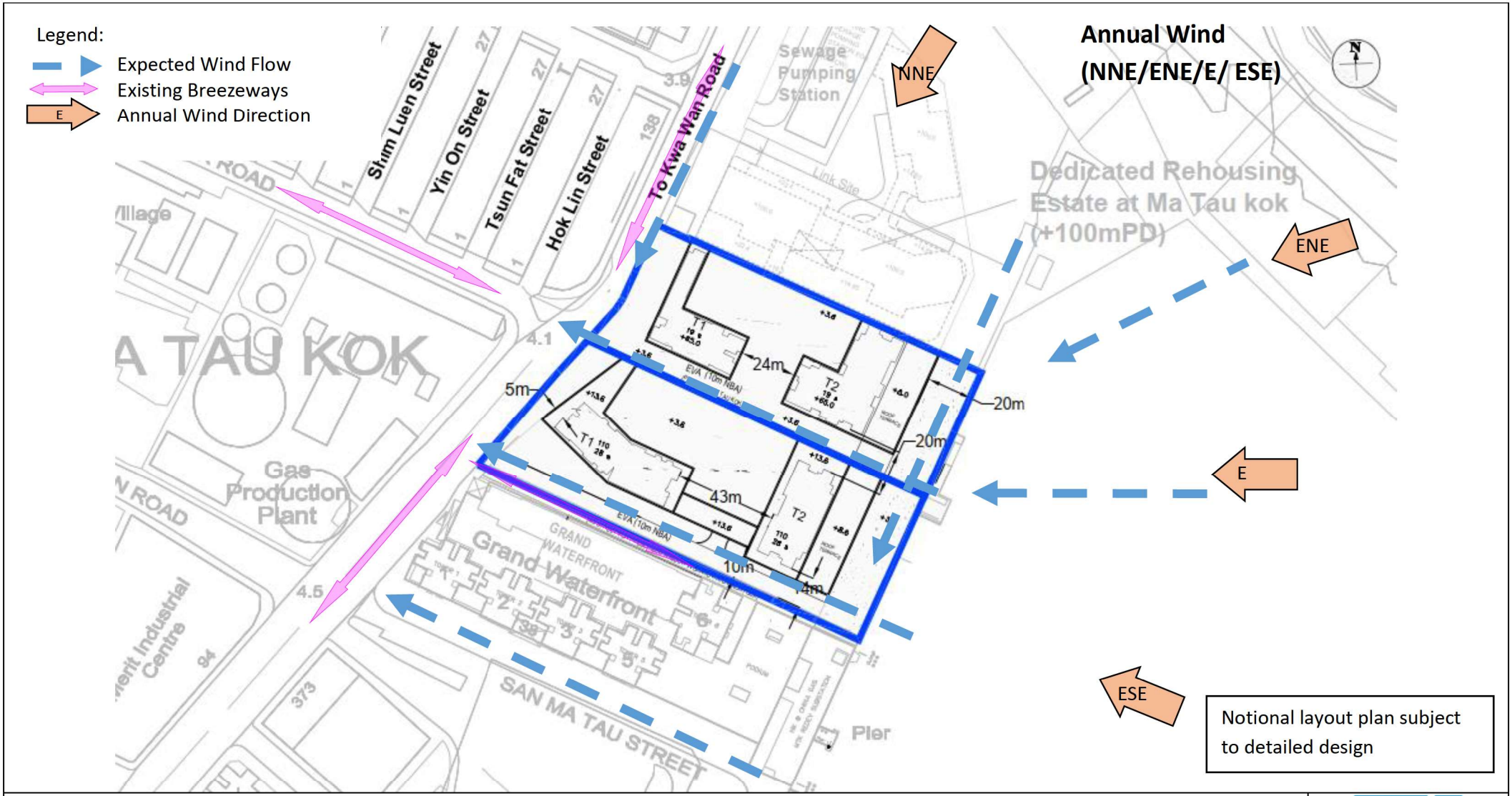


Figure: 3	RAMBOLL
Title: Illustration of Wind Flow from Annual Wind Directions for OZP Conforming Baseline Scheme	Drawn by: CC Checked by: CC
Project: Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Jul 2022

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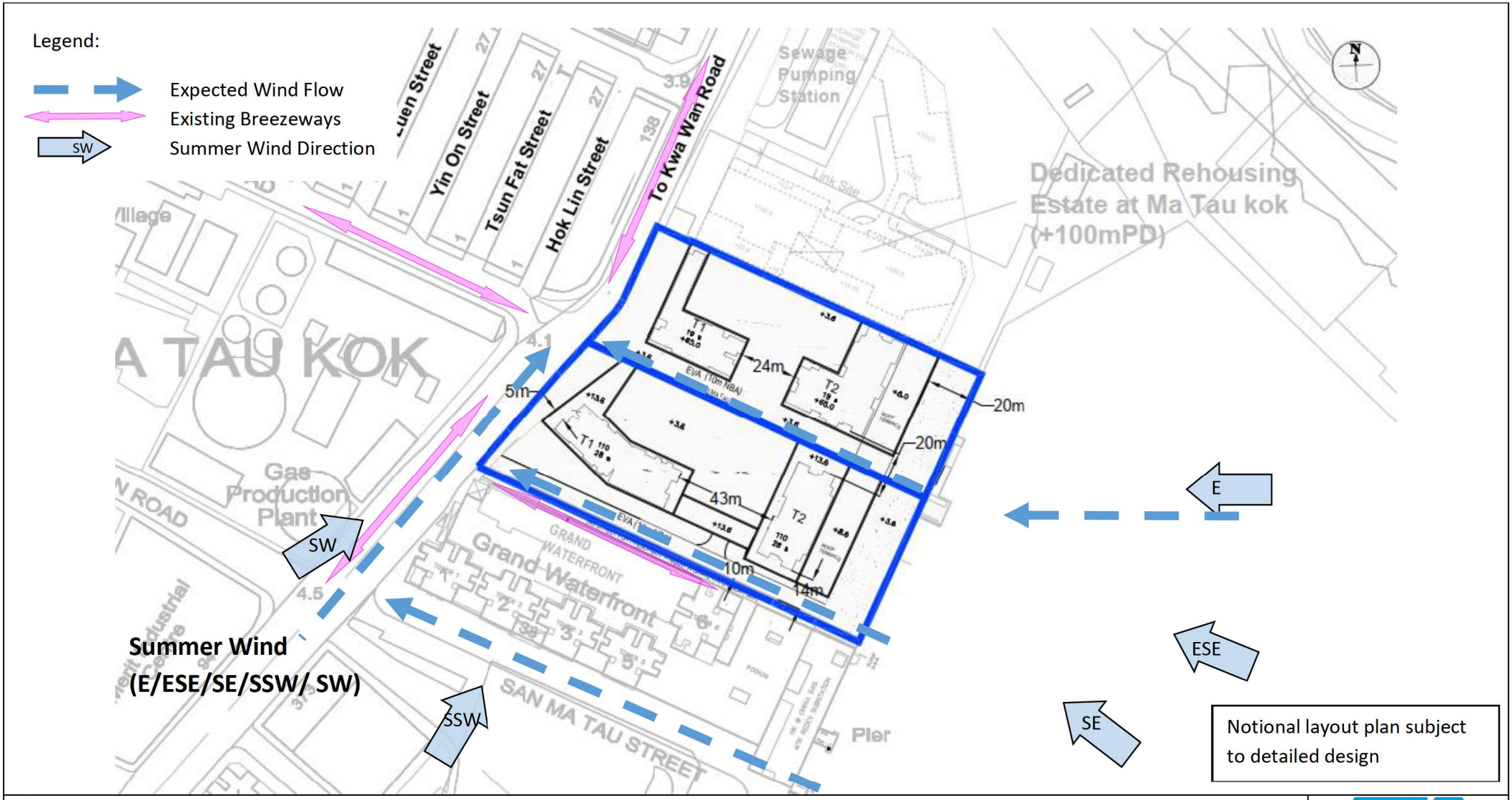


Figure: 4	RAMBOLL
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Project: Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Jul 2022

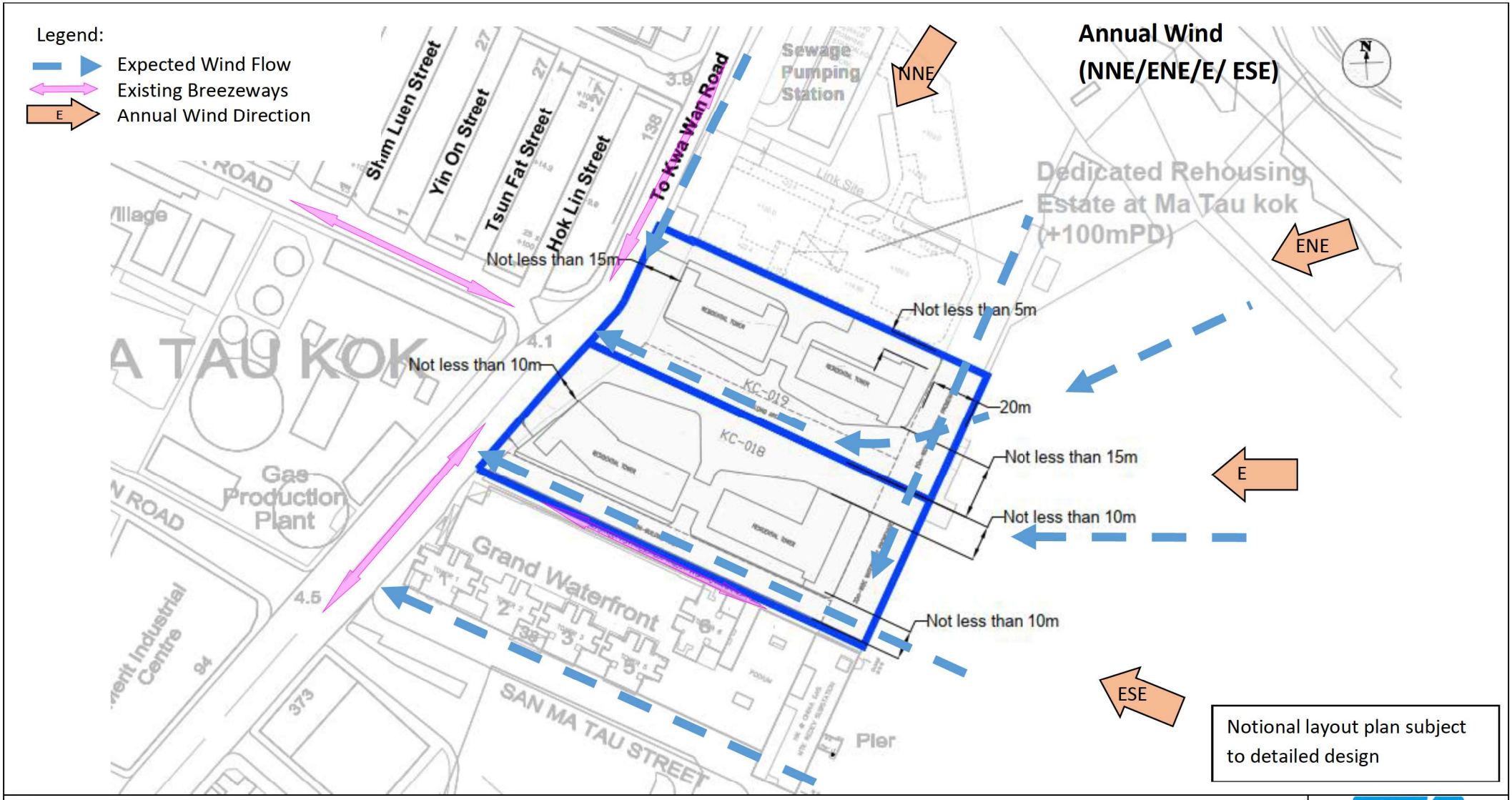


Figure: 5	RAMBOLL
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Project: Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Aug 2022

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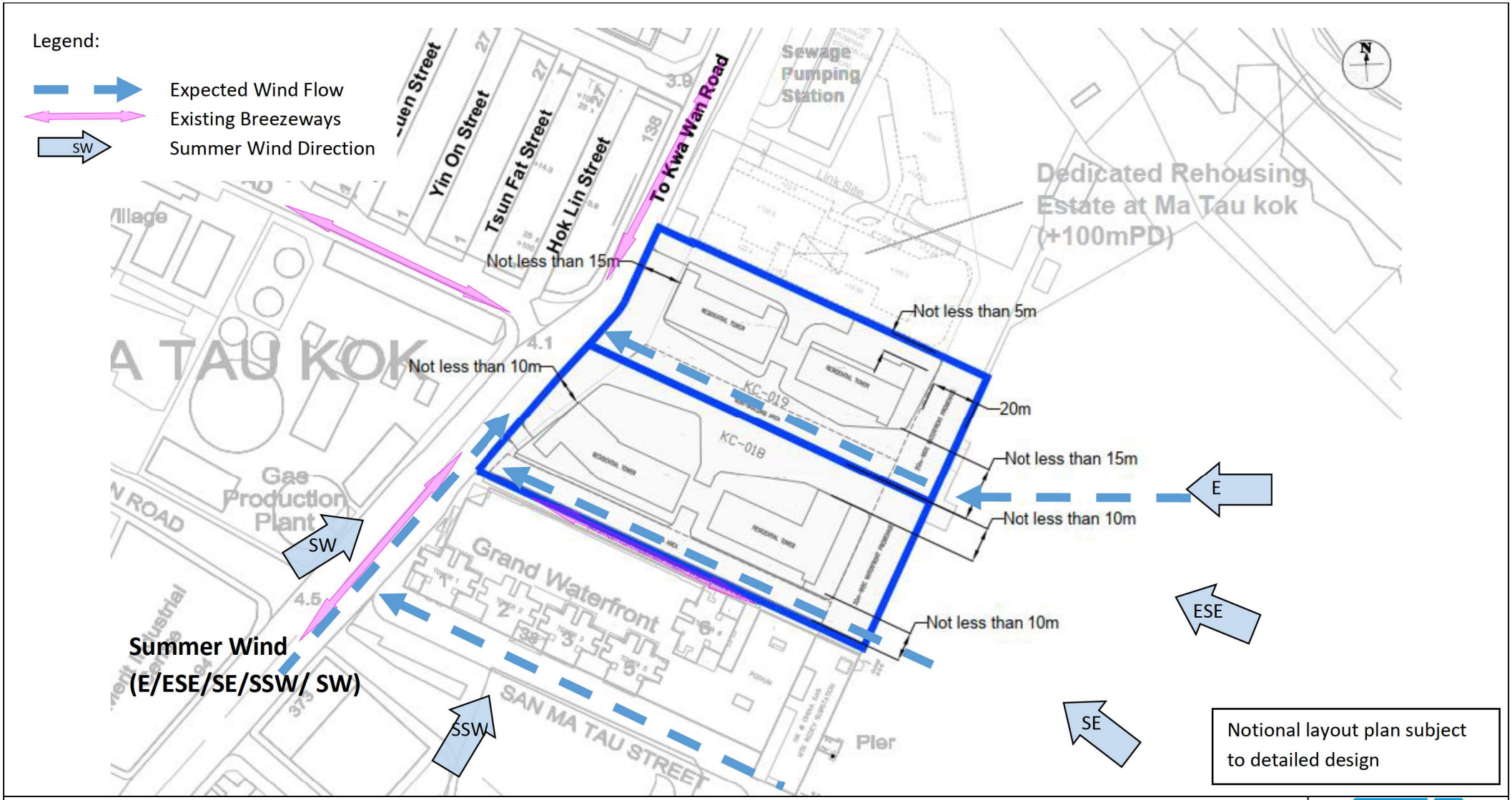
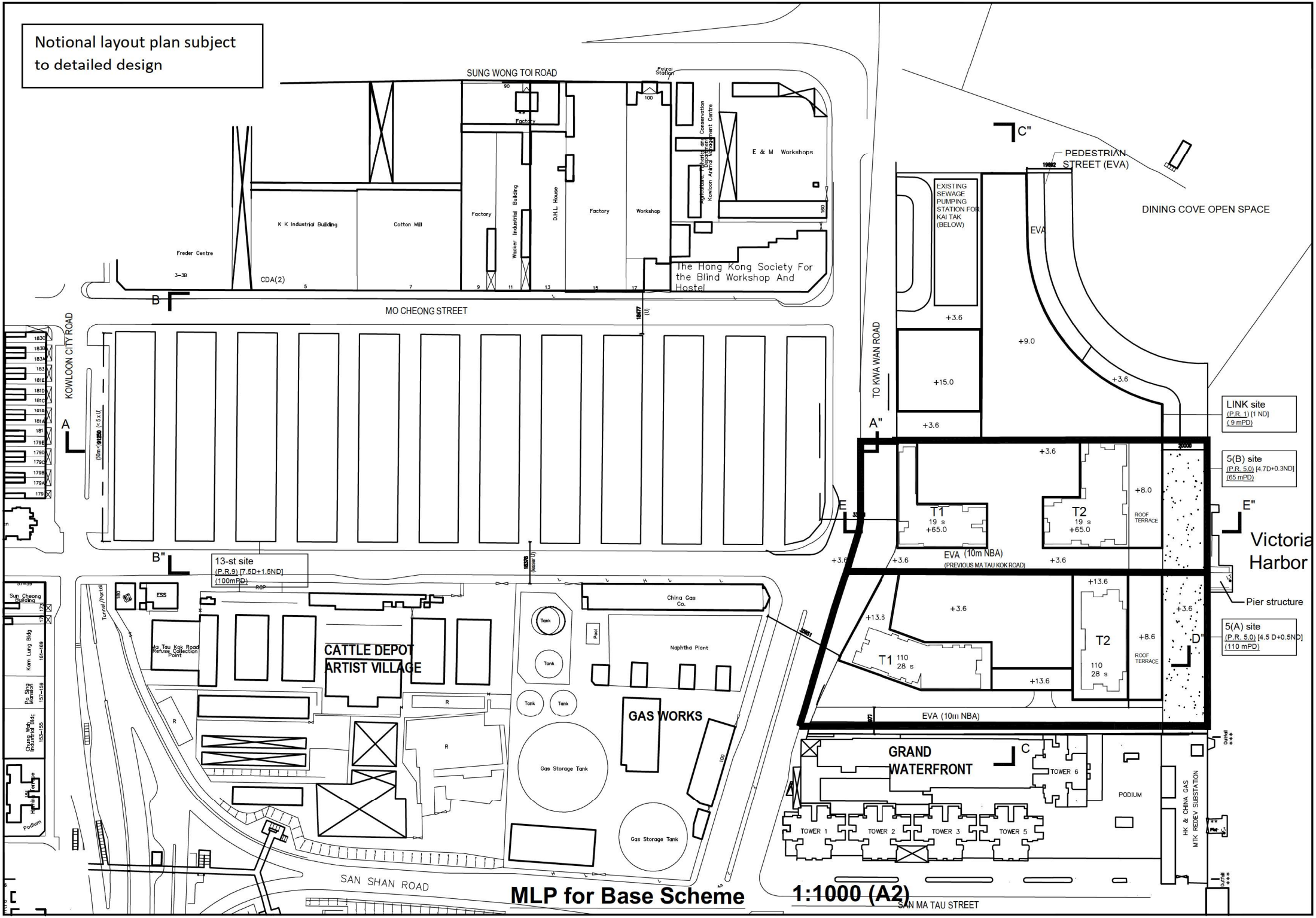


Figure: 6	RAMBOLL
Title: Illustration of Wind Flow from Summer Wind Directions for Proposed Scheme	Drawn by: CC Checked by: CC
Project: Two Development Schemes - Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019)	Rev.: 1.0 Date: Aug 2022

Appendix 1

Master Layout Plan of the OZP Conforming Baseline Scheme

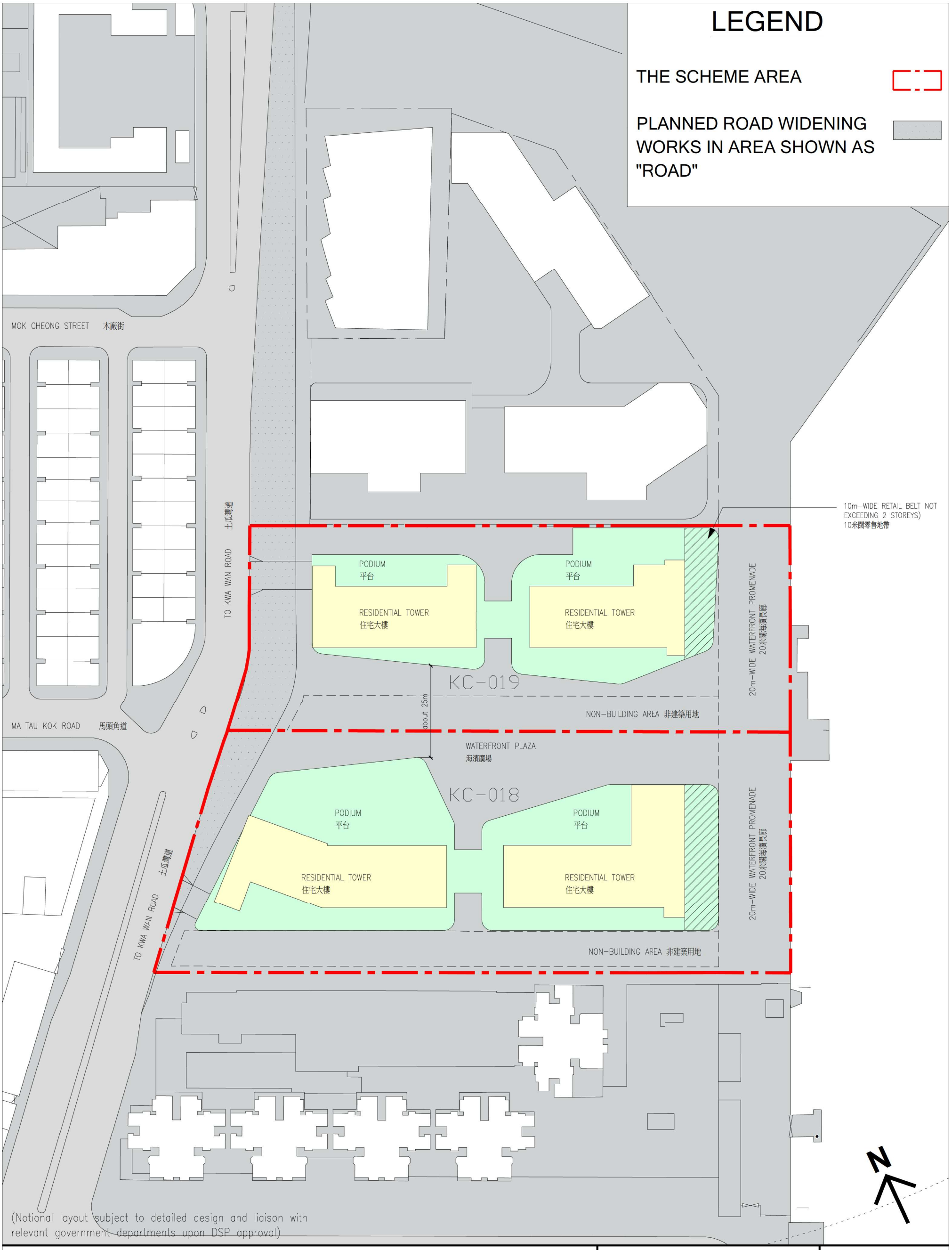
Notional layout plan subject to detailed design



MLP for Base Scheme

1:1000 (A2)

Appendix 2 Master Layout Plan of the Proposed Scheme

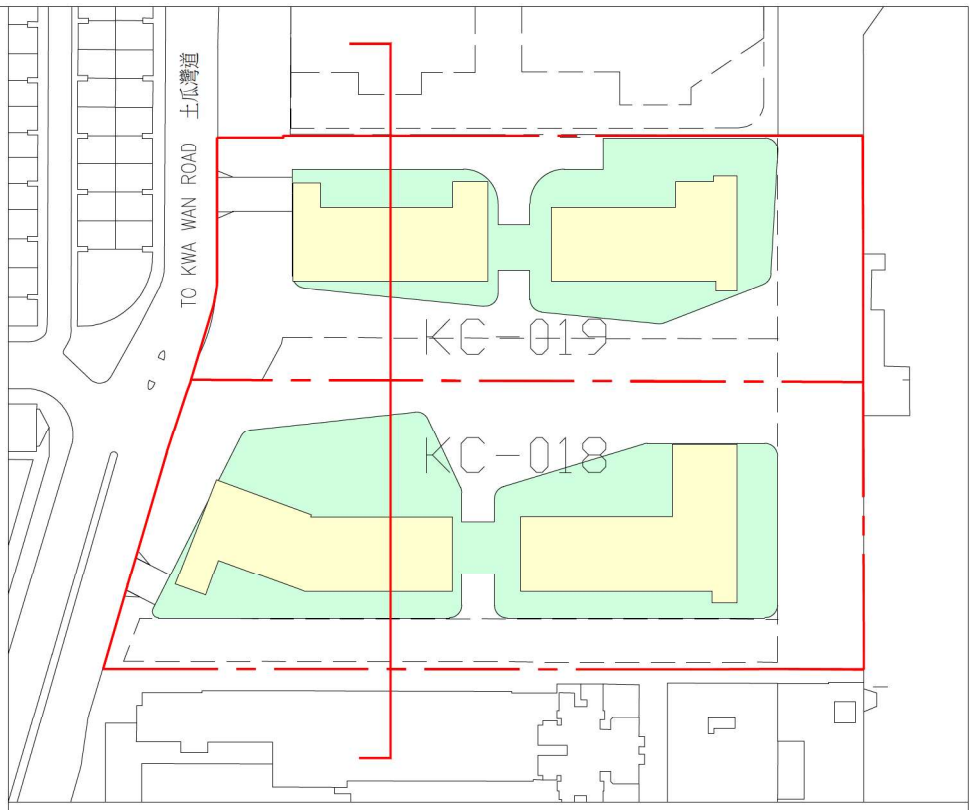


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

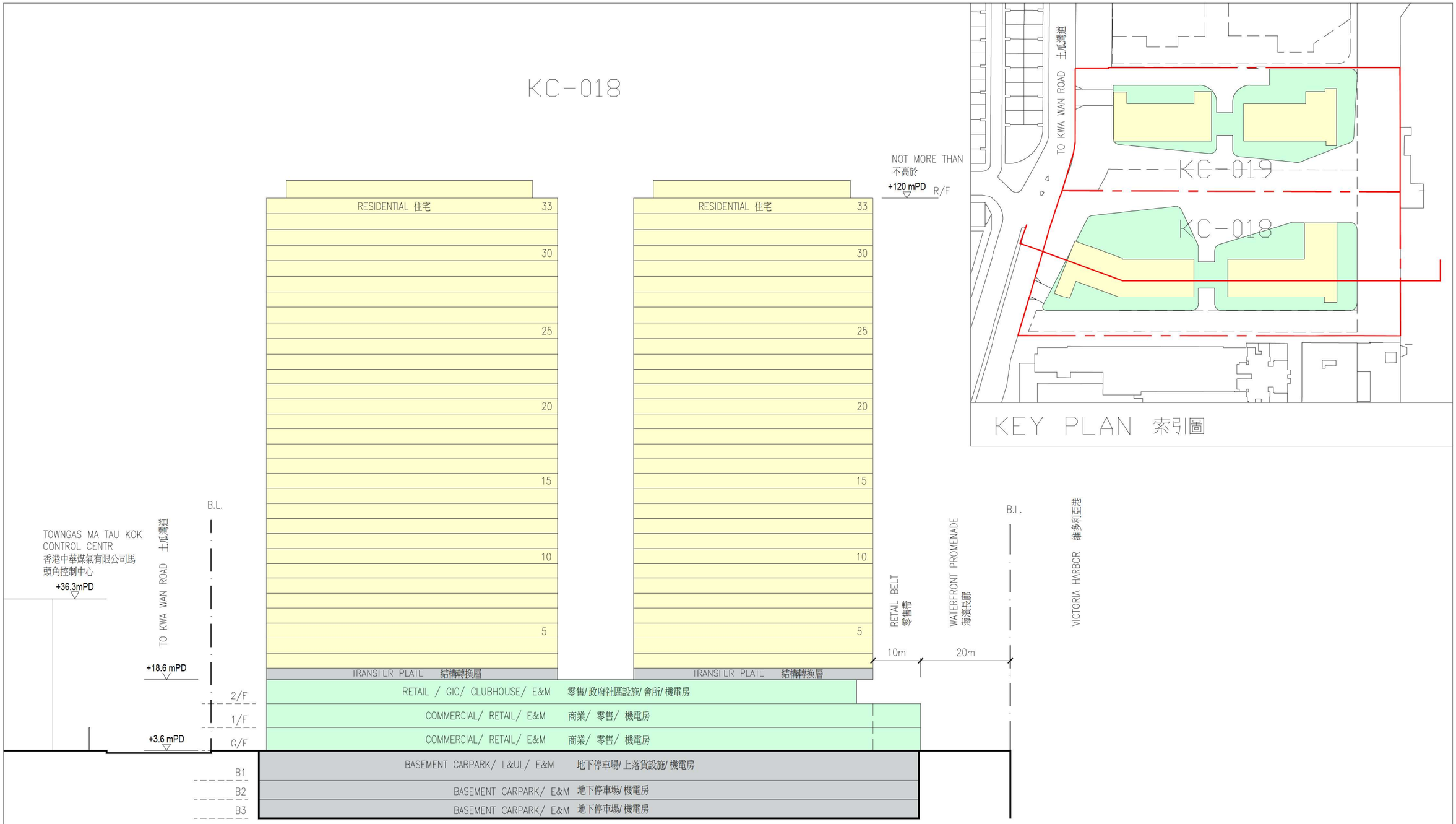
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

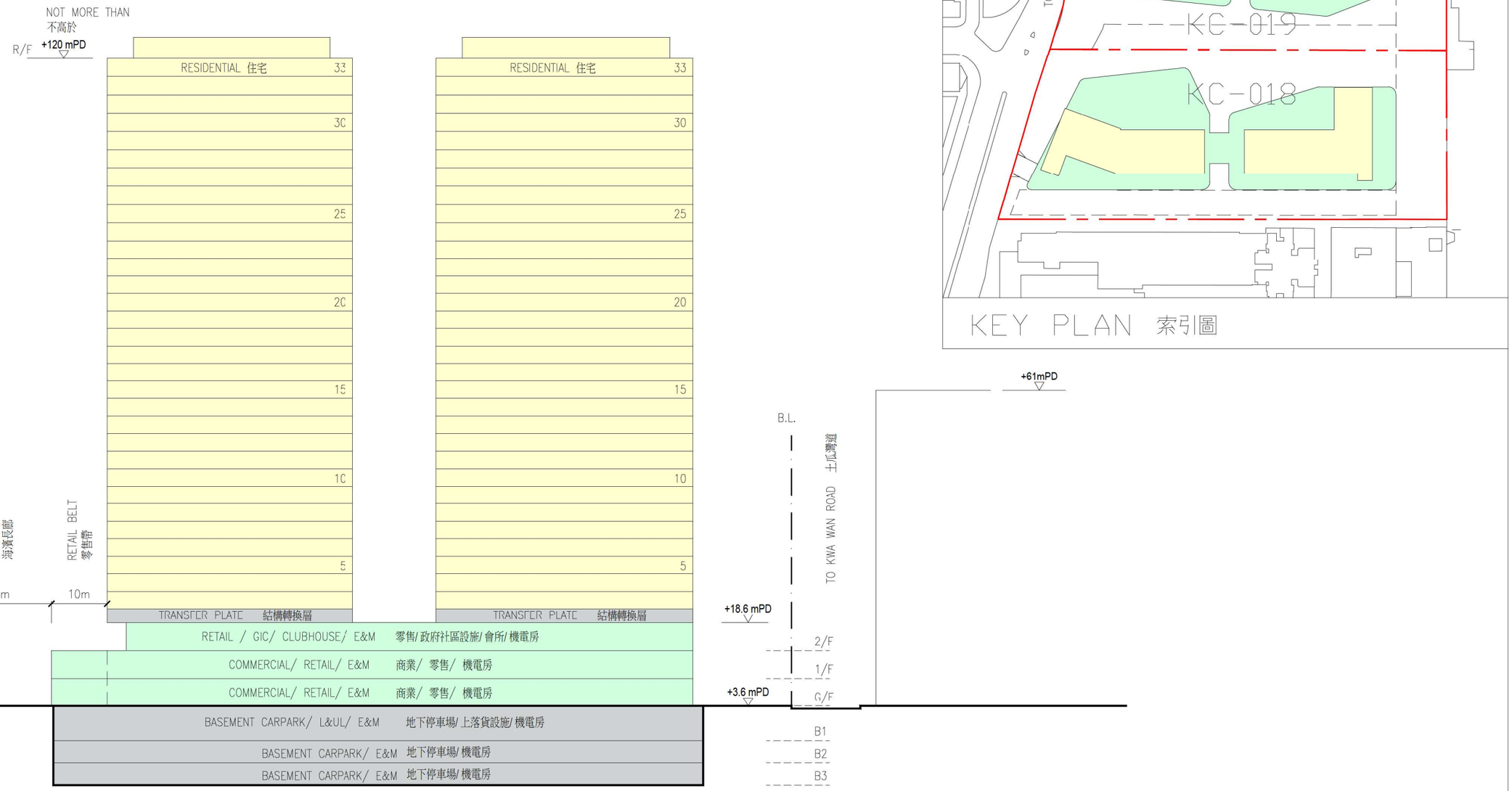
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

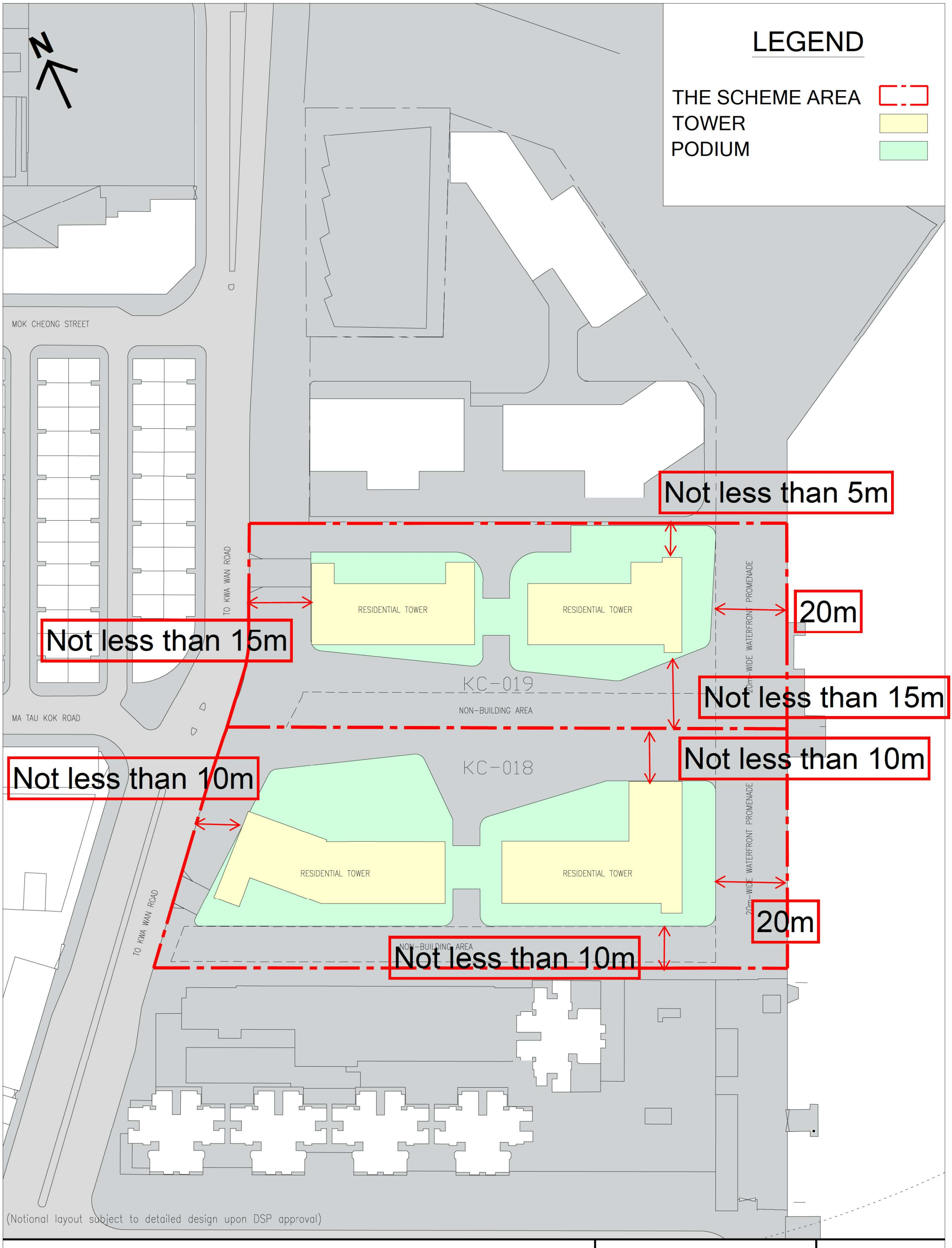
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE

Appendix 3 Proposed Air Ventilation Design Measures of the Proposed Scheme



URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE

Appendix 7

Drainage and Sewerage Impact Assessment (DSIA) Report

Prepared for

Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

DRIANAGE IMPACT ASSESSMENT

Date	**September 2022**
Prepared by	**Miko Wan** **Assistant Environmental Consultant**
Signed	
Approved by	**Calvin CHIU** **Senior Manager**
Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8702_V1.1**

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CHAPTERS

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Appendix 1 Tentative Layout Plan
Appendix 2 Detailed Drainage Impact Assessment Calculations
Appendix 3 Agreement of No. CE 42/2018 (DS) obtained from Drainage Services Department

1. INTRODUCTION

1.1 Background

1.1.1 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.1.2 This Drainage Impact Assessment is prepared to support the two draft Development Scheme Plans (DSPs) submission to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance. This Report covers and supports both Schemes as one comprehensive redevelopment.

1.1.3 Ramboll Hong Kong Limited has been appointed by URA to conduct this Drainage Impact Assessment which would evaluate any overall potential drainage impact arising from the proposed development and other planned development.

1.1.4 Architectural drawings and technical information of the redevelopment are provided by the project architect (Ho & Partners Architects Engineers & Development Consultants Limited (HPA)).

1.2 The Schemes and its Environs

1.2.1 The Schemes has a total gross site area of 20,189m^2 (11,430m^2 for KC-018 site and 8,759m^2 for KC-019 site). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1** shows the location of the Schemes.

1.2.2 Existing roads including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road fall within the Schemes. In addition, the Schemes is occupied by ageing residential buildings (more than 60 years) of 7 to 8 storeys with street shops and Newport Centre (industrial building). The street shops include restaurants, retail shop, garage, shops for auto parts, auto cleaning service, hardware store, etc. Newport Centre (Phase 1 & 2) is currently occupied for offices, storage, workshops, showrooms and retail services use.

1.2.3 "13-Street" to the northwest is currently occupied by ageing residential buildings (about 60 years) of 6 to 7 storeys with street shops. The "13-Street" area falls within a "Proposed Redevelopment Priority Area" under DURF. The site is currently zoned as "CDA" under the approved Ma Tau Kok OZP No. S/K10/28 gazetted on 25 March 2022. According to the OZP, the planning intention of this "CDA" zone is for comprehensive re-/development of the area for residential and/or commercial uses with the provision of open space and other supporting facilities.

1.2.4 Grand Waterfront with 5 residential towers erected on top of a retail podium building is situated to the immediate south. Ma Tau Kok Gas Work North Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artiest Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building, New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.2.5 According to the latest update from DSD, there is a drainage upgrading work proposed under Agreement No. CE 42/2018 (DS) of "Drainage Improvement Works in Wong Tai

Sin and Kowloon City – Investigation" along Kowloon City Road and Ma Tau Kok Road which would also go through the Schemes. The upgrading work includes construction of drainage pipe along Kowloon City Road and box culvert along Ma Tau Kok Road. That is, existing box culvert and pipeline along Ma Tau Kok Road including the section within the Schemes will be upgraded to box culvert and it is anticipated that the overall capacity will increase after proposed upgrading work tentatively completed by 2029.

1.3 Proposed Redevelopment

1.3.1 The Proposed Redevelopment at the Schemes consists of 4 residential towers with 3 lowest floors for retail/GIC/clubhouse purpose and 31 domestic storeys above. Greenery area will be provided which covers a minimum of about 20% of the site area as required in PNAP APP-152.

1.3.2 The tentative completion dates of the proposed redevelopment at both KC-018 site and KC-019 site are 2033.

1.3.3 The Master Layout Plan (MLP), typical floor plan and section of the Proposed Development are shown in **Appendix 1.**

2. DRAINAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this DIA is to assess whether the capacity of the existing drainage network serving the Subject Site is sufficient to cope with the stormwater runoff from the proposed development.

2.1.2 Drainage Record Plans from GeoInfo Map were obtained for the purposes of this DIA.

2.2 Assessment Criteria and Methodology

2.2.1 The assessment standard complies with Drainage Services Department (DSD) Stormwater Drainage Manual (SDM) (2018 Edition).

2.2.2 The catchment runoff has been calculated using the "Rational Method", as outlined in the DSD SDM:

$$Q = 0.278\ C\ i\ A$$

Where	Q	=	peak runoff in m^3/s
	C	=	runoff coefficient (dimensionless)
	i	=	rainfall intensity in mm/hr
	A	=	catchment area in km

2.2.3 The existing Subject Site comprises of fully paved area and the Scheme comprised at least 20% greenery area. The runoff coefficients of 0.35 and 0.95 are adopted, respectively.

2.3 Existing Drainage System

2.3.1 There exists underground drainage system comprising box culvert and pipeline along Ma Tau Kok Road and through the Schemes to convey surface runoff eastward to the marine environment then (see **Figure 2**). Existing surface runoff generated onsite is collected and discharged to the aforementioned drainage system within the Schemes.

2.4 Proposed Drainage System

2.4.1 According to the proposal from Agreement No. CE 42/2018 (DS) of "Drainage Improvement Works in Wong Tai Sin and Kowloon City – Investigation", drainage pipe along Kowloon City Road and Ma Tau Kok Road will be upgraded. The works include the provision of upgraded drainage pipe and box culvert along Kowloon City Road and Ma Tau Kok Road. The upgraded proposal from DSD is shown in **Appendix 3**. The upgrading proposal from DSD could only be implemented if the two Schemes are implemented under separate development programmes.

2.4.2 It is URA's intention to implement the two sites as one inclusive redevelopment. Should the two Schemes to be implemented under the same development programme in-one-go, due to the fact that the upgrading works will also pass though the Schemes at the middle and will significantly limit the design flexibility in future, an alternative proposal of upgraded works is proposed by diverting the section of proposed box culvert along Ma Tau Kok Road at the middle of the Schemes to go south along To Kwa Wan Road first and then go east along the south side within KC-018 Site. Details of the diversion are shown in **Figure 3**. Surface runoff from the nearby catchments will be conveyed by this new pipeline through a new outfall (OF3) to the marine environment.

2.4.3 Two terminal manholes, DT-1A and DT-1B, are proposed to collect the surface runoff from the Site KC-018 and KC-019 as shown in **Figure 3.**

2.4.4 Surface runoff from Site KC-018 will be discharged from DT-1A and connected to the new box culvert at proposed manhole D6. That from Site KC-019 will be discharged from DT-1B and then connected to the existing manhole SMH4030621 (D13) and discharged to through the existing outfall SOF4003742(OF2).

2.5 Discussion

2.5.1 Under the current condition, the site is fully paved. In the Schemes, open landscape areas (unpaved area with a minimum of about 20% of the Application Site as required in PNAP APP-152) will be provided. As there will be less runoff generated from vegetated area, there would be reduction in stormwater runoff when compared to the existing condition.

2.5.2 The capacity of proposed drainage box culvert based on design under Agreement No. CE 42/2018 (DS) is estimated in **Table 2.1** below. The minimum capacity is 2.71m^3/s. Detailed calculation can be referred to **Appendix 2**.

Table 2.1 Hydraulic Capacities for Box Culvert Agreement No. CE 42/2018 (DS)

Manhole		Width mm	Height mm	Capacity (m^3/s)
From	To			
Proposed Box Culvert				
SMH4030512	SMH4030513	2200	2300	5.25
SMH4030513	SMH4030514	2200	2300	17.06
SMH4030514	SMH4030490	2200	2300	4.33
SMH4030490	SKH4067540	2200	2300	25.46
SKH4067540	SKH4067541	3600	1600	4.63
SKH4067541	SMH4030491	3600	1600	6.58
SMH4030491	SMH4067721	3600	1600	5.92
SMH4067721	SMH4003980	3600	1600	5.30
SMH4003980	SMH4030493	3600	1600	**2.71**
SMH4030493	SMH4067722	3000	1600	24.47

2.5.3 The capacity of the proposed box culvert based on the counter proposal is shown in **Table 2.2** below. The minimum capacity is 6.88m^3/s, which is more than the minimum capacity of Agreement No. CE 42/2018 (DS). In other words, it is apparently practical to have an alternative alignment of drainage upgrading work which can achieve same or even higher capacity. Detailed calculation is included in **Appendix 2**.

Table 2.2 Hydraulic Capacities for Proposed Box Culvert

Manhole		Width mm	Height mm	Capacity (m^3/s)
From	To			
Proposed Box Culvert				
D1	D2	2200	2300	9.38
D2	D3	2200	2300	**6.88**
D3	D4	2200	2300	9.43
D4	D5	3600	1600	10.50
D5	D6	3600	1600	7.16
D6	D7	3000	1600	20.18

2.5.4 A new outfall will be constructed for the alternative alignment in the counter-proposal. Similar to the originally proposed upgrading work, flap valve will be installed at the new outfall to avoid backflow. The feasibility will be further investigated in later stage.

2.5.5 A Non-Building Area (NBA) as stipulated in the Outline Zoning Plan (OZP) with an area of 10m width is located on the on southern side of KC-018 Site, which could cater the alternative alignment of the drainage upgrading work will not have any aboveground structure constructed to facilitate future maintenance of the drainage system by DSD. As the tentative completion year of the drainage upgrading work is before that of the Schemes, the applicant will liaise closely with DSD on this matter and have necessary demolition work accelerated to cope with the programme of the drainage upgrading work in detailed design and construction stage.

3. OVERALL CONCLUSION

3.1.1 With at least 20% of the Scheme designated will be allocated for landscaped area (unpaved area), there would be reduction in stormwater runoff compared with the existing condition. Adverse drainage impact due to the proposed development is not likely.

3.1.2 Besides, according to the counter proposal to divert the section of box culvert based on design in the Agreement of CE 42/2018 (DS), there will be no reduction of the upgraded capacity of the drainage system.

3.1.3 To conclude, there would be no adverse drainage impacts as a result of the proposed development and the counter proposal of drainage upgrading work.

3.1.4 This DIA confirms the feasibility of the Proposed Development in terms of impacts to the public drainage system.

Figures

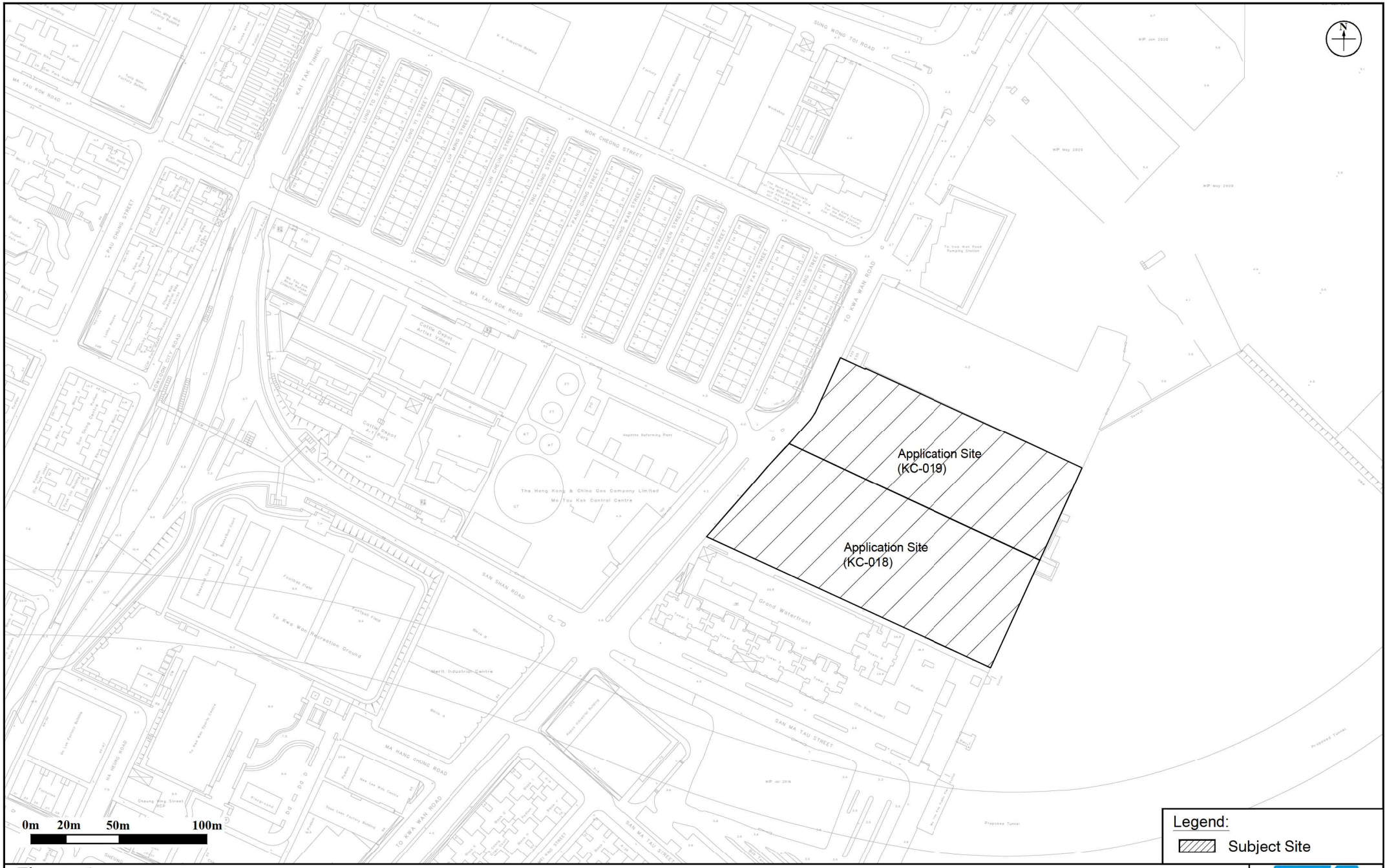


Figure: 1

Title: Location of Subject Site and Its Environs

Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

RAMBOLL

Drawn by:	AL
Checked by:	CC
Rev.:	1.1
Date:	Jul 2022

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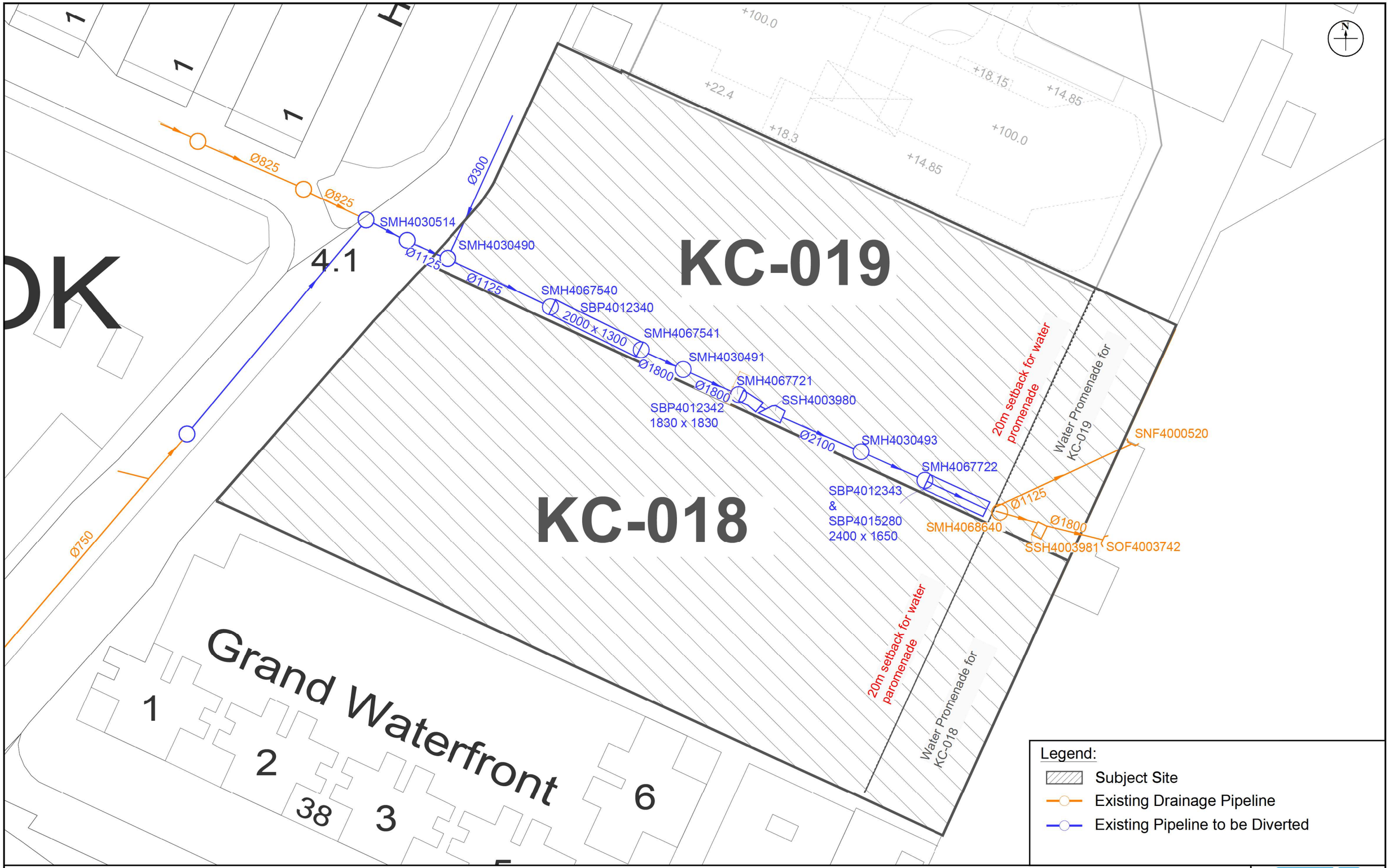


Figure: 2	RAMBOLL
Title: Existing Drainage System in the Vicinity of the Application Site	Drawn by: MW Checked by: CC
Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)	Rev.: 1.1 Date: Sep 2022

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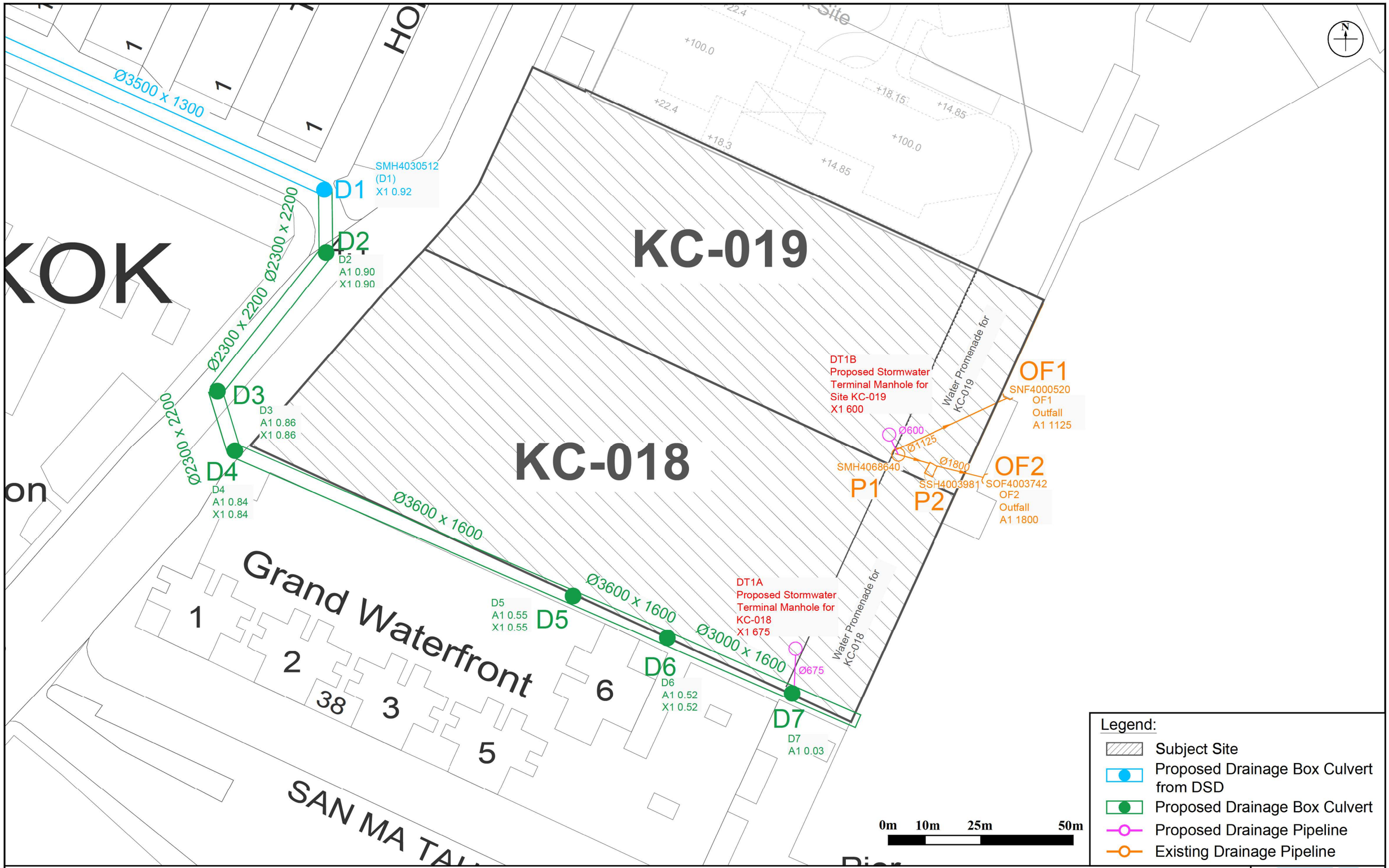
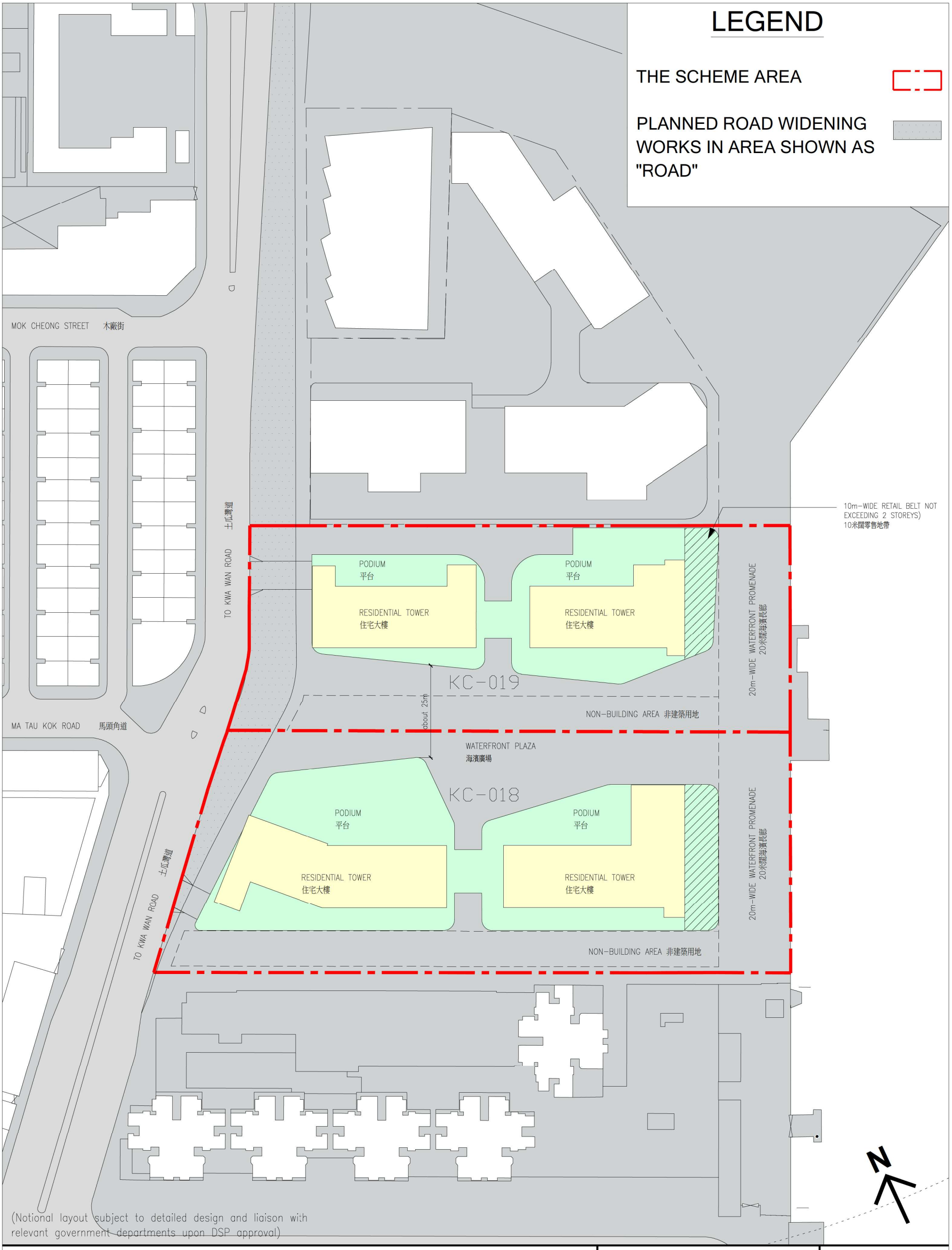


Figure:	3	RAMBOLL
Title:	Proposed Drainage System and Diversion Works in the Vicinity of the Application Site	Drawn by: MW Checked by: CC
Project:	TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)	Rev.: 1.1 Date: Sep 2022

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Appendix 1 Tentative Layout Plan

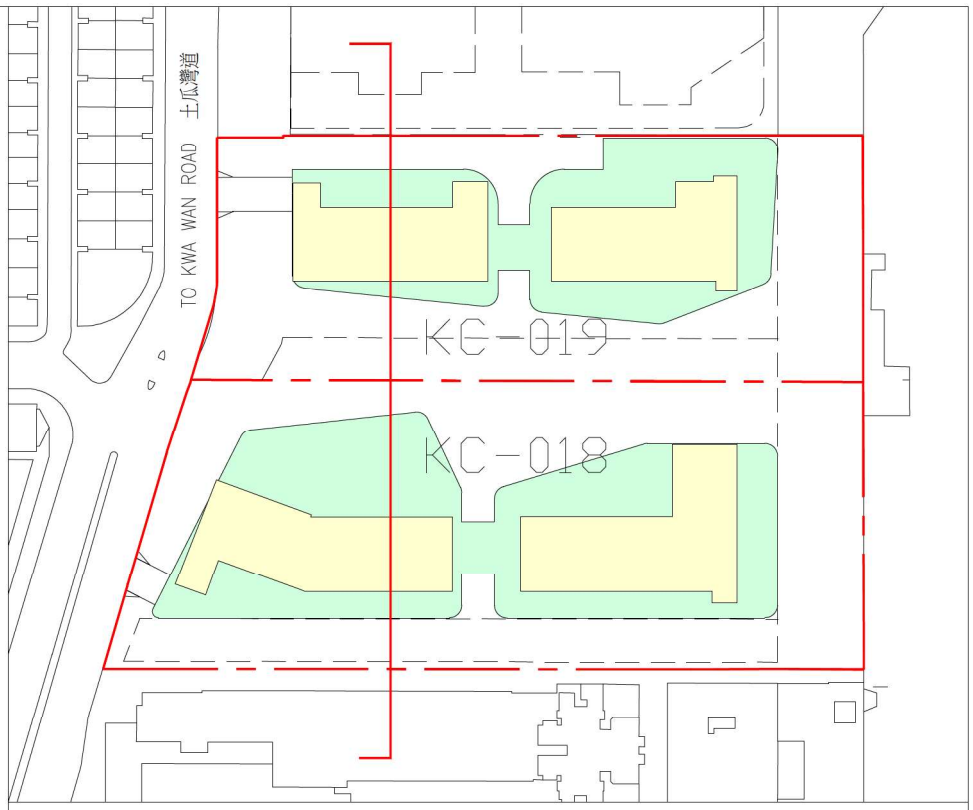


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

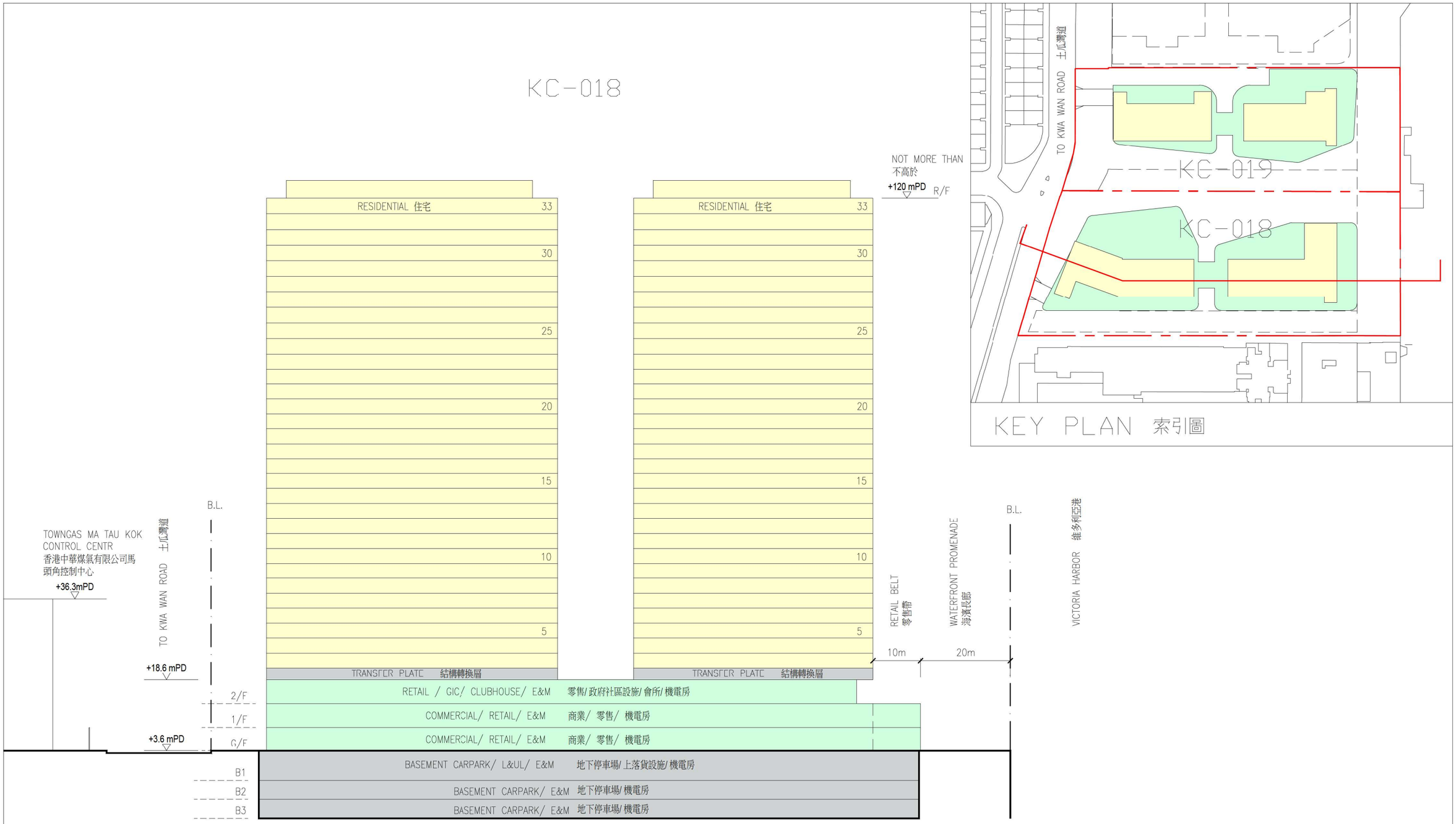
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

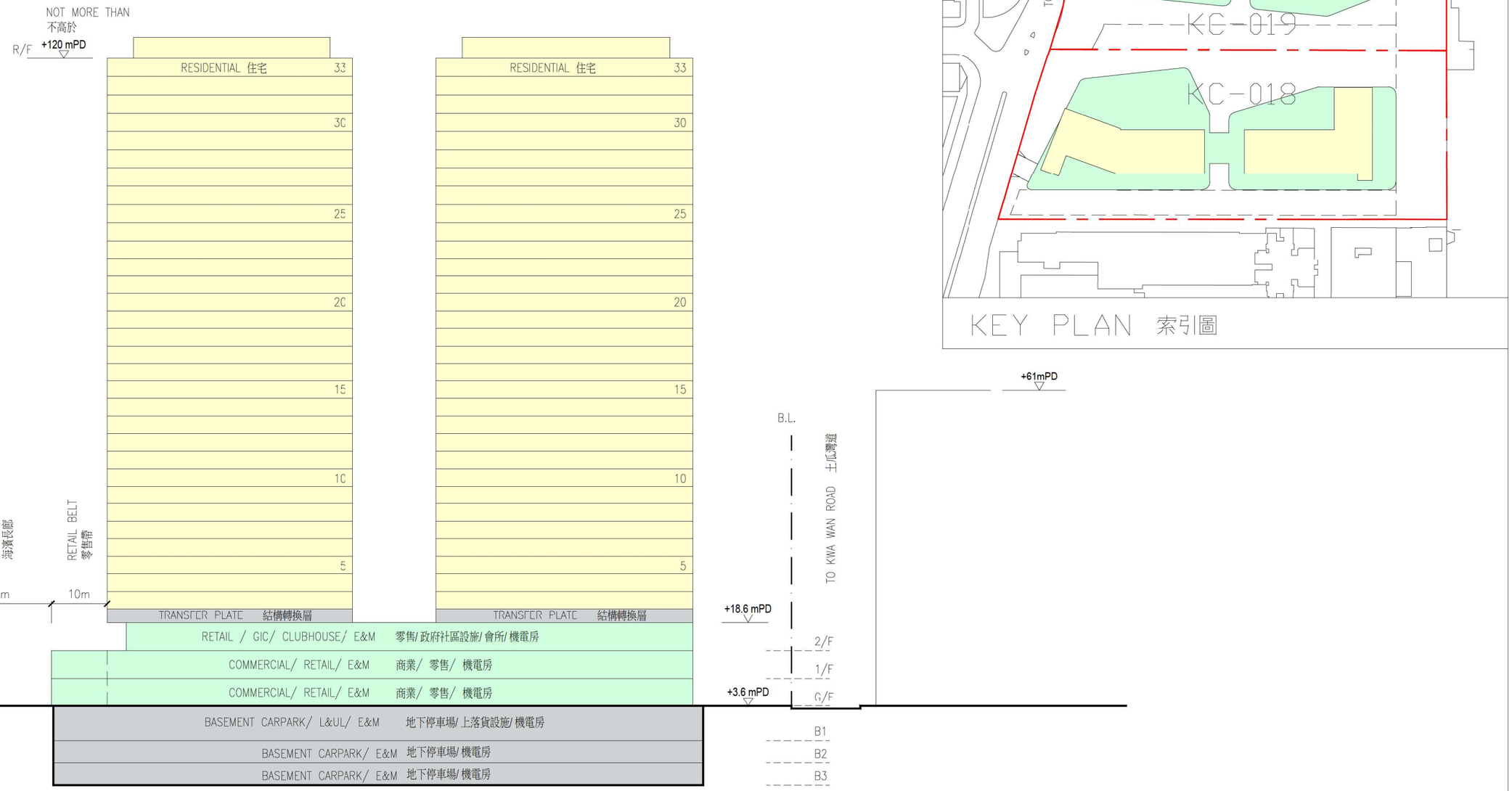
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE

Appendix 2 Detailed Drainage Impact Assessment Calculations

KC018 & KC019
Table 1 - Proposed Catchment Areas and Run-off (1 in 200 year)

$$Q_p = 0.278\ C\ i\ A$$

where Q_p = peak runoff in m^3/s
C = runoff coefficient (dimensionless)
i = rainfall intensity in mm/hr
A = catchment area in km^2

Surface Characteristics	*Runoff coefficient, C**
Asphalt	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Grassland (heavy soil**)	
Flat	0.13 - 0.25
Steep	0.25 - 0.35
Grassland (sandy soil)	
Flat	0.05 - 0.15
Steep	0.15 - 0.20

Notes:
Site Area (KC-018) 11,430 m^2
Site Area (KC-019) 8,759 m^2

Catchments are small, so Rational Method is appropriate

1 in 200-year (according to Table 3 of DSD Manual)
a= 429.5
b= 2.05
c= 0.295

	Catchment	Discharge Manhole	Paved	Unpaved	Run-off at	Area	Levels (mPD)		Fall	Overland, L	Fall, H	Overland t_c	t_0	Total t_f[1]	Total t_c[2]	Intensity	Weighted Runoff Coefficient	Run-off
						(m^2)	Upstream	Downstream	(m)	(m)	(m/100m)	(min)	(min)	(min)	(min)	(mm/h)		(m^3/s)
Existing	KC-018	-	100%	0%	-	11,430				138.4	0.3	10.4	10.4	0.00	10.37	204	0.95	0.617
	KC-019	-	100%	0%	-	8,759				124.4	0.3	9.6	9.6	0.00	9.58	208	0.95	0.482
					Overall	**20,189**												**1.098**
Future	**Proposed Site**																	
	KC-018	DT1A	80%	20%	D7	11,430				138.4	0.3	10.4	10.4	0.00	10.37	204	0.79	0.513
	KC-019	DT1B	80%	20%	P1	8,759				124.4	0.3	9.6	9.6	0.00	9.58	208	0.79	0.401
					Overall	**20,189**												**0.913**

Remarks:
1. Assumed Time of Concentration through stream flow
2. Assumed Time of Concentration
3. GA-2 is included in MFR-9
4. GA-4a is included in MFR-5
5. GA-4b is included in MFR-4

KC018 & KC019
Hydraulic Calculations of Existing and Proposed Drainage System

Table 2 - 1 in 200 year Runoff of Future Catchments (m^3/s)

Runoff at	KC-018	KC-019	Total
D7	0.513		**0.51**
P1		0.401	**0.40**

Table 3a - Hydraulic Capacities for Existing Drainage System

Segment	Manhole Reference	Manhole Reference	Type of Channel	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	Gradient	v	V	Area	Q	Q_{silt} [1]
				mm	m	mPD	mPD	m/s^2	m		1 in	m^2/s	m/s	m^2	m^3/s	m^3/s
P1 - OF1	SMH4068640	SNF4000520	Circular	1125	35.3	0.87	0.09	9.81	0.0003	0.022	45	0.000001	5.76	0.99	5.72	5.15

Table 3b - Hydraulic Capacities for Proposed Box Culvert from DSD

Segment		Shape	Width (W)	Height (H)	Pipe Length (L)	Invert Level 1	Invert Level 2	Slope/s	Manning's roughness coefficient	Cross Section Area	Wetted Perimeter	Hydraulic Radius (R)	V	Q	Q_{silt} [1]
			m	m	m	mPD	mPD			m^2	m	m	m/s	m^3/s	m^3/s
SMH4030512	SMH4030513	Box Culvert	2.30	2.20	13.7	0.920	0.910	0.001	0.016	5.06	9.00	0.562	1.15	5.83	5.25
SMH4030513	SMH4030514	Box Culvert	2.30	2.20	9.7	0.910	0.835	0.008	0.016	5.06	9.00	0.562	3.75	18.95	17.06
SMH4030514	SMH4030490	Box Culvert	2.30	2.20	10.0	0.835	0.830	0.000	0.016	5.06	9.00	0.562	0.95	4.81	4.33
SMH4030490	SKH4067540	Box Culvert	2.30	2.20	25.5	0.830	0.390	0.017	0.016	5.06	9.00	0.562	5.59	28.29	25.46
SKH4067540	SKH4067541	Box Culvert	3.60	1.60	22.2	0.390	0.380	0.000	0.016	5.76	10.40	0.554	0.89	5.15	4.63
SKH4067541	SMH4030491	Box Culvert	3.60	1.60	11.0	0.380	0.370	0.001	0.016	5.76	10.40	0.554	1.27	7.31	6.58
SMH4030491	SMH4067721	Box Culvert	3.60	1.60	13.6	0.370	0.360	0.001	0.016	5.76	10.40	0.554	1.14	6.58	5.92
SMH4067721	SMH4003980	Box Culvert	3.60	1.60	8.5	0.360	0.355	0.001	0.016	5.76	10.40	0.554	1.02	5.89	5.30
SMH4003980	SMH4030493	Box Culvert	3.00	1.60	20.8	0.355	0.350	0.000	0.016	4.80	9.20	0.522	0.63	3.02	**2.71**
SMH4030493	SMH4067722	Box Culvert	3.00	1.60	16.4	0.350	0.030	0.020	0.016	4.80	9.20	0.522	5.66	27.18	24.47

Table 3c - Hydraulic Capacities for Proposed Box Culvert

Segment		Shape	Width (W)	Height (H)	Pipe Length (L)	Invert Level 1	Invert Level 2	Slope/s	Manning's roughness coefficient	Cross Section Area	Wetted Perimeter	Hydraulic Radius (R)	V	Q	Q_{silt} [1]
			m	m	m	mPD	mPD			m^2	m	m	m/s	m^3/s	m^3/s
D1	D2	Box Culvert	2.30	2.20	17.1	0.92	0.88	0.002	0.016	5.06	9.00	0.562	2.06	10.42	9.38
D2	D3	Box Culvert	2.30	2.20	47.7	0.88	0.82	0.001	0.016	5.06	9.00	0.562	1.51	7.64	**6.88**
D3	D4	Box Culvert	2.30	2.20	16.9	0.82	0.78	0.002	0.016	5.06	9.00	0.562	2.07	10.48	9.43
D4	D5	Box Culvert	3.60	1.60	99.7	0.78	0.55	0.002	0.016	5.76	10.40	0.554	2.02	11.66	10.50
D5	D6	Box Culvert	3.60	1.60	27.9	0.55	0.52	0.001	0.016	5.76	10.40	0.554	1.38	7.96	7.16
D6	D7	Box Culvert	3.00	1.60	36.9	0.52	0.03	0.013	0.016	4.80	9.20	0.522	4.67	22.40	20.16

Table 3d - Hydraulic Capacities for Proposed Drains from the Terminal Manhole of the Proposed Development

Segment	Manhole Reference	Manhole Reference	Type of Channel	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	Gradient	v	V	Area	Q	Q_{silt} [1]
				mm	m	mPD	mPD	m/s^2	m		1 in	m^2/s	m/s	m^2	m^3/s	m^3/s
DT1A - D7	-	-	Circular	675	-	-	-	9.81	0.0003	0.007	150	0.000001	2.30	0.36	0.82	0.74
DT1B - P1	-	-	Circular	600	-	-	-	9.81	0.0003	0.007	150	0.000001	2.14	0.28	0.61	0.55

Table 4a - Comparison of Runoff from Proposed Catchments and Hydraulic Capacities of Existing Drainage System

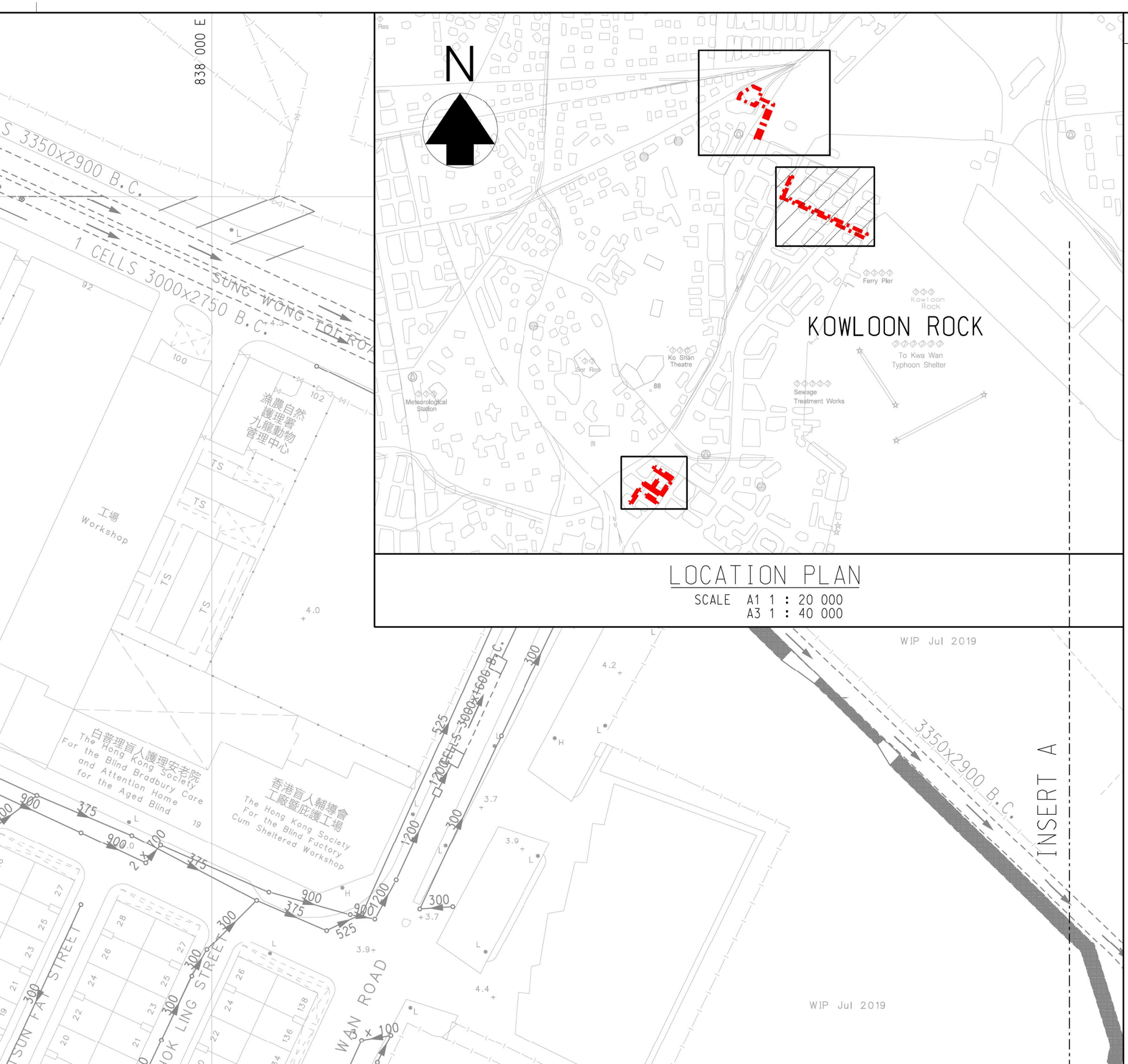
Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Q_{silt} [1]	Catchment Involved	Runoff	Occupancy	Sufficient Capacity?	Runoff [2]	Occupancy	Sufficient Capacity?	Runoff [3]	Occupancy	Sufficient Capacity?
			mm	m^3/s		m^3/s			m^3/s			m^3/s		
P1 - OF1	SMH4068640	SNF4000520	1125	5.15	KC-019	0.40	7.8%	YES	0.44	8.6%	YES	0.45	8.8%	YES

Table 4b - Comparison of Runoff from Proposed Development and Hydraulic Capcities of Proposed Drains

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Q_{silt} [1]	Catchment Involved	Runoff	Occupancy	Sufficient Capacity?	Runoff [2]	Occupancy	Sufficient Capacity?	Runoff [3]	Occupancy	Sufficient Capacity?
			mm	m^3/s		m^3/s			m^3/s			m^3/s		
DT1A - D7	-	-	675	0.74	KC018	0.51	69.1%	YES	0.57	76.3%	YES	0.58	78.3%	YES
DT1B - P1	-	-	600	0.55	KC019	0.40	73.5%	YES	0.44	81.1%	YES	0.45	83.3%	YES

Remarks:
1. Qsilt: 10% reduction in flow for gradient is not greater than 1 in 25, 5% reduction in flow for gradient greater than 1 in 25.
2. Cross Section Area of Circular Pipe: D^2 × PI / 4
3. Perimeter of Circular Pipe: (D × 2 × PI) / 2

Appendix 3 Agreement of No. CE 42/2018 (DS) obtained from Drainage Services Department



LOCATION PLAN

SCALE A1 1 : 20 000
A3 1 : 40 000

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NOTES:

1. ALL GRIDS ARE HONG KONG METRIC GRID 1980.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (P.D.) OF HONG KONG UNLESS SHOWN OTHERWISE.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

LEGEND:

	PROJECT BOUNDARY
	EXISTING BOX CULVERT
225	EXISTING STORMWATER DRAIN AND MANHOLE
600 (300)	EXISTING 300mm DIAMETER STORMWATER DRAIN TO BE UPGRADED TO 600mm DIAMETER DRAIN
SMH4045331 ⊗	EXISTING STORMWATER MANHOLE TO BE MODIFIED OR UPGRADED
600	PROPOSED STORMWATER DRAIN FOR SIZE SMALLER THAN OR EQUAL TO 900mm DIAMETER
1500	PROPOSED STORMWATER DRAIN FOR SIZE GREATER THAN 900mm DIAMETER
3000x1600 B.C. (2400x1650 B.C.)	EXISTING 1 CELL 2400mm x 1650mm STORMWATER BOX CULVERT TO BE UPGRADED TO 1 CELL 3000mm x 1650mm STORMWATER BOX CULVERT

Prepared for

Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

SEWERAGE IMPACT ASSESSMENT

Date	**September 2022**
Prepared by	**Miko Wan** **Assistant Environmental Consultant**
Signed	
Approved by	**Calvin CHIU** **Senior Manager**
Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8568_V1.2**

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Figure 3 Catchment Areas in the Vicinity of the Schemes

APPENDICES

Appendix 1 Tentative Layout Plan
Appendix 2 Detailed Sewerage Impact Assessment Calculations

1. INTRODUCTION

1.1 Background

1.1.1 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.1.2 This Sewerage Impact Assessment is prepared to support the two draft Development Scheme Plans (DSPs) submission to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance. This Report covers and supports both Schemes as one comprehensive redevelopment.

1.1.3 Ramboll Hong Kong Limited has been appointed by URA to conduct this Sewerage Impact Assessment which would evaluate any overall potential impact on sewerage arising from the proposed development and other planned development.

1.1.4 Architectural drawings and technical information of the redevelopment are provided by the project architect (Ho & Partners Architects Engineers & Development Consultants Limited (HPA)).

1.2 The Schemes and its Environs

1.2.1 The Schemes has a total gross site area of 20,189m^2 (11,430m^2 for KC-018 site and 8,759m^2 for KC-019 site). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1** shows the location of the Schemes.

1.2.2 Existing roads including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road fall within the Schemes. In addition, the Schemes is occupied by ageing residential buildings (more than 60 years) of 7 to 8 storeys with street shops and Newport Centre (industrial building). The street shops include restaurants, retail shop, garage, shops for auto parts, auto cleaning service, hardware store, etc. Newport Centre (Phase 1 & 2) currently occupied for offices, storage, workshops, showrooms and retail services use.

1.2.3 "13-Street" to the northwest is currently occupied by ageing residential buildings (about 60 years) of 6 to 7 storeys with street shops. The "13-Street" area falls within a "*Proposed Redevelopment Priority Area*" under DURF. The site is currently zoned as "CDA" under the approved Ma Tau Kok OZP No. S/K10/28 gazetted on 25 March 2022. According to the OZP, the planning intention of this "CDA" zone is for comprehensive re-/development of the area for residential and/or commercial uses with the provision of open space and other supporting facilities. In order to account the possible scenarios where the surrounding site would undergo similar redevelopment in future, a sensitivity study is also conducted (Section 2.7 refers).

1.2.4 Grand Waterfront with 5 residential towers erected on top of a retail podium building is situated to the immediate south. Ma Tau Kok Gas Work North Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artiest Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building, New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.3 Proposed Redevelopment

1.3.1 The Proposed Redevelopment at the Schemes consists of 4 residential towers with 3 lowest floors for retail/GIC/clubhouse purpose and 31 domestic storeys above. There will be a total of 1,276 flat units provided at KC-018 site and 950 flat units provided at KC-019 site after development. Total number of units is 2,226.

1.3.2 The tentative completion dates of the proposed redevelopment at both KC-018 site and KC-019 site are 2033.

1.3.3 The Master Layout Plan (MLP), typical floor plan and section of the Proposed Development are shown in **Appendix 1.**

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this Sewerage Impact Assessment (SIA) is to assess whether the capacity of the existing sewerage network serving the Schemes is sufficient to cope with the sewage flow from the proposed redevelopment.

2.2 Assessment Criteria and Methodology

2.2.1 Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) has been referred to for the purposes of estimating the quantity of the sewage generated from the proposed development and the existing catchment area. Sewage flow parameters and global peaking factors in this document have been adopted for this SIA.

2.2.2 Based on the building types in the area, the following unit flow factors are used in the SIA calculation:

- Residents: 0.27 m^3/person/day (Private R2)
- Clubhouse & G/IC Staff: 0.28 m^3/employee/day (J11 - Community, Social & Personal Services)
- Commercial Employee (Retail): 0.28 m^3/employee/day (J4 - Wholesale & Retail)
- Commercial Employee (F&B): 1.58 m^3/employee/day (J10 – Restaurants & Hotels)

2.2.3 The catchment inflow factor, PCIF of 1.00 (Central Kowloon), is adopted in catchment calculations.

2.3 Existing and Future Sewerage System

2.3.1 According to the Drainage Record Plans obtained from DSD, there is an existing Ø1500mm sewer along To Kwa Wan Road. The sewage of existing developments at KC-018 Site and KC-019 Site is currently discharged to this sewer. It is then connected to a Ø1650mm sewer, and then to To Kwa Wan Preliminary Treatment Works (TKWPTW) over 800m to the south. According to the latest update from DSD, it is understood that the existing Ø1500mm sewer is already overloaded. The existing sewer nearby the Schemes is shown in **Figure 2**.

2.3.2 Besides, a recently built To Kwa Wan Road Pumping Station (TKWRPS) is located on northern side of the Schemes. TKWRPS is designed for the planned Kai Tak Development. As clarified with EPD, it is understood that TKWRPS does not have spare capacity to cater flow from the Scheme.

2.3.3 As discussed above, the existing Ø1500mm sewer is already overloaded. Therefore, despite that existing sewage is discharged to this sewer, it is proposed to construct a new Ø600mm sewer and connect from the site to further downstream manhole of this Ø1500mm sewer about 370m apart. In addition to future developments at KC-018 Site and KC-019 Site, the new sewer may also serve other redevelopment site nearby in future given that the existing Ø1500mm sewer is of no or limited spare capacity. The connection is shown in **Figure 2**. It is URA's intention to implement the two sites as one inclusive redevelopment. In any case that the whole redevelopment cannot be implemented in-one-go owing to land acquisition or other issues, the two Schemes may follow separate development programmes, and the new sewer can still serve either KC-018 Site or KC-019 Site separately. The alignment of the proposed new sewer will subject to detailed design and liaison with relevant government departments.

2.3.4 The proposed sewer works would be implemented by the applicant.

2.4 Wastewater Generated by the Proposed Development

2.4.1 Wastewater arising from the proposed development will be primarily contributed by the residents, clubhouse staff and commercial employees.

2.4.2 Detailed calculation for the proposed development is given in **Table 2.1** below.

Table 2.1 Estimated Peak Flow

Site	Development Parameters	Usage				
		Residential Units	Clubhouse	G/IC	Commercial Area (Retail)	Commercial Area (F&B)
KC-018	Area (m^3)	-	2,729	1,000	5,248	5,248
	Number of Residential Units	1,276	-	-	-	-
	Average Household Size	2.7(1)	-	-	-	-
	Assumed Population	2935	90	33	183	268
	Design Flow (m^3/person/day)	0.27(2)	0.28(3)	0.28(3)	0.28(5)	1.58(6)
	Flow Rate (m^3/day)	**792.4**	**25.2**	**9.2**	**51.2**	**423.4**
KC-019	Area (m^3)	-	2,032	500	3,908	3,908
	Number of Residential Units	950	-	-	-	-
	Average Household Size	2.9(1)	-	-	-	-
	Assumed Population	2185	67	17	137	199
	Design Flow (m^3/person/day)	0.27(2)	0.28(3)	0.28(3)	0.28(5)	1.58(6)
	Flow Rate (m^3/day)	**590.0**	**18.8**	**4.6**	**38.4**	**314.4**
	Total Flow Rate (m^3/day)	**2267.9**				
	Peak Flow (L/s)	**55.9**				

Remarks:

(1) Assumption of population per flat (PPF) of 2.3 is adopted from HKPSG Chapter 2. The anticipated residential population of 2,935 in KC-018 and 2,185 in KC-019 are assumed based on the assumption of population per flat (PPF) of 2.3, which is in reference to HKPSG Ch.2. A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

(2) Refer to Table T-1 of GESF – Public Rental

(3) Refer to Table T-2 of GESF - J11

(4) Refer to Table T-1 of GESF – Private R2

(5) Refer to Table T-2 of GESF – J4

(6) Refer to Table T-2 of GESF – J10

2.5 Assessment of Sewerage Impact

2.5.1 **Appendix 2** shows the detailed calculation on the estimated hydraulic capacity of the existing sewer sections and the calculation of the amount of the sewage entering each segment of the said sewer network.

2.6 Discussion

2.6.1 The potential sewerage impact due to the proposed development has been quantitatively addressed. Sewage generation rate from the proposed development is estimated to be 2267.9 m^3/day (i.e. peak flow 55.9 litre/sec).

2.6.2 According to Table 4 of **Appendix 2** showing the sewage generation rate from the proposed development and surrounding catchment areas, it is found that 3 number of existing Ø 1500mm pipe segments (i.e. Segment S1-S4) along Kwei Chow Street are found with inadequate capacity.

2.6.3 The proposed upgrading works are summarized in below.

Table 2.2 Proposed Upgrading Works

Segment	Length (m)	Original Size (Ø) (mm)	Upgraded Size (Ø) (mm)
S1-S2	15.6	1500	1650
S2-S3	42.3	1500	1650
S3-S4	65.0	1500	1650

2.6.4 The proposed sewer upgrading works between Segment S1-S4 (i.e. between FMH4025360 and FMH4025760) would be implemented by the applicant. With the proposed upgrading works in place, the sewerage system will have adequate capacity to cater for the proposed development and the nearby catchments.

2.6.5 It is worth noted that with sewage from KC-018 Site and KC-019 Site diverted from the existing Ø 1500mm sewer and further upgrading of the segment along Kwei Chow Street upgraded, the overloading situated can be relieved in certain extent which is considered a benefit to the district area as well.

2.7 Further Sensitivity Study

2.7.1 In order to account the possible scenarios where the surrounding sites would undergo similar redevelopments in future, a sensitivity study is conducted.

2.7.2 The study takes into account the planned development at 13-street site and further assume increase of 15% GFA of residential portion. The two scenarios are described as below:

- Scenario 1

Residential	4,408 flats
Non - domestic	48,990 sq.m GFA (assume +15% of existing OZP permitted Non-domestic GFA)

- Scenario 2

Residential	5,070 flats (assume no. of flats: 4,408+15%)

Non - domestic	48,990 sq.m GFA (same with scenario 1)

2.7.3 Detailed calculation for sewerage generation rates of both Scenario 1 and Scenario 2 can be found in Table 3c and 3d of **Appendix 2**. As shown in the calculation, the newly proposed Ø 600mm sewer and downstream pipes with proposed upgrading works are of adequate capacity to cater for future development at 13-street site even with further increase of residential GFA.

3. OVERALL CONCLUSION

3.1 Conclusion

3.1.1 A residential development is proposed to be redeveloped for the Schemes (comprising KC-018 site and KC-019 site) in Kowloon City.

3.1.2 Based on the sewerage impact assessment results, it is found that the capacity of the existing sewerage system serving the area would not be sufficient to cater for the sewerage generation from the Schemes and nearby catchment areas. Construction of a new sewer of about 370m length along To Kwa Wan Road and upgrading works of a total of 4 numbers of sewers further downstream along Kwei Chow Street will be required.

3.1.3 Under the assumed scenario where the GFA of 13-street site would be adopted and with increase of 15% of residential GFA, the proposed new sewer and upgrading work would be sufficient to cater for the sewage generation in future.

3.1.4 With the proposed new sewer construction and upgrading works, this study confirms the feasibility of the proposed redevelopment in terms of impacts to the public drainage and sewerage system.

Figures

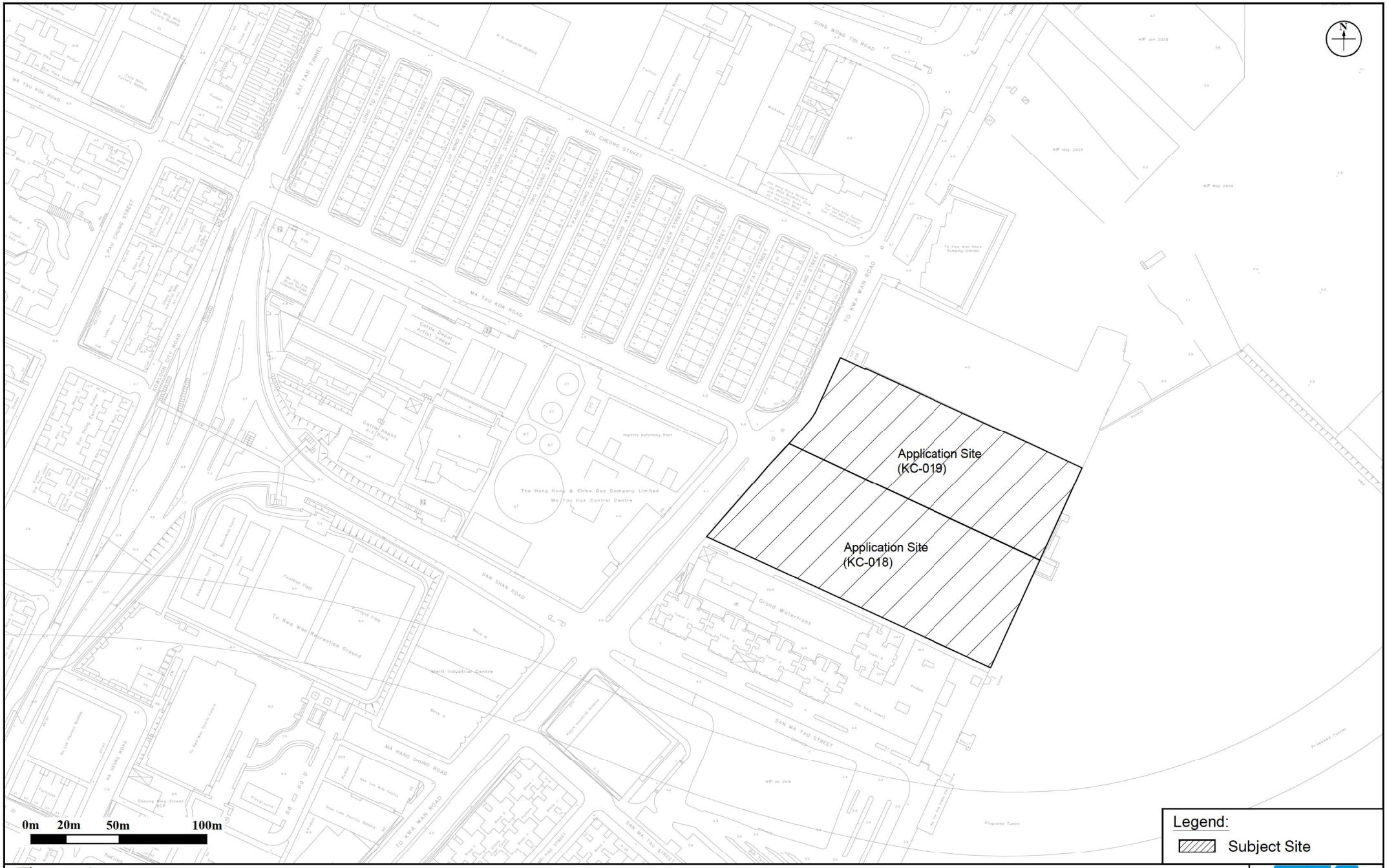


Figure: 1

Title: Location of Subject Site and Its Environs

Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

RAMBOLL

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Checked by:	CC
Rev.:	1.1
Date:	Jul 2022

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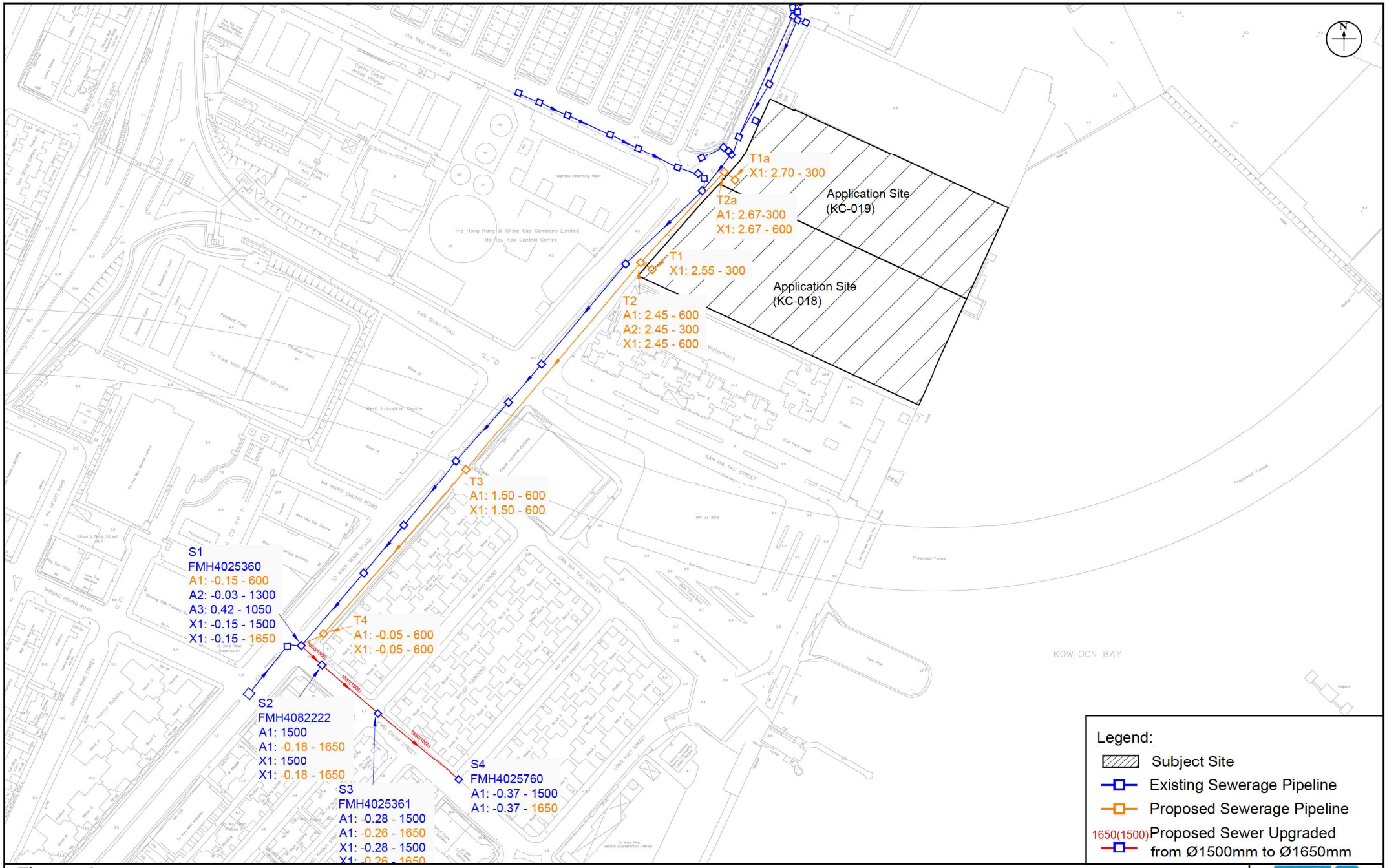


Figure: 2

Title: Existing and Proposed Sewerage System in the Vicinity of the Application Site

Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

RAMBOLL

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Checked by:	CC
Rev.:	1.2
Date:	Sep 2022

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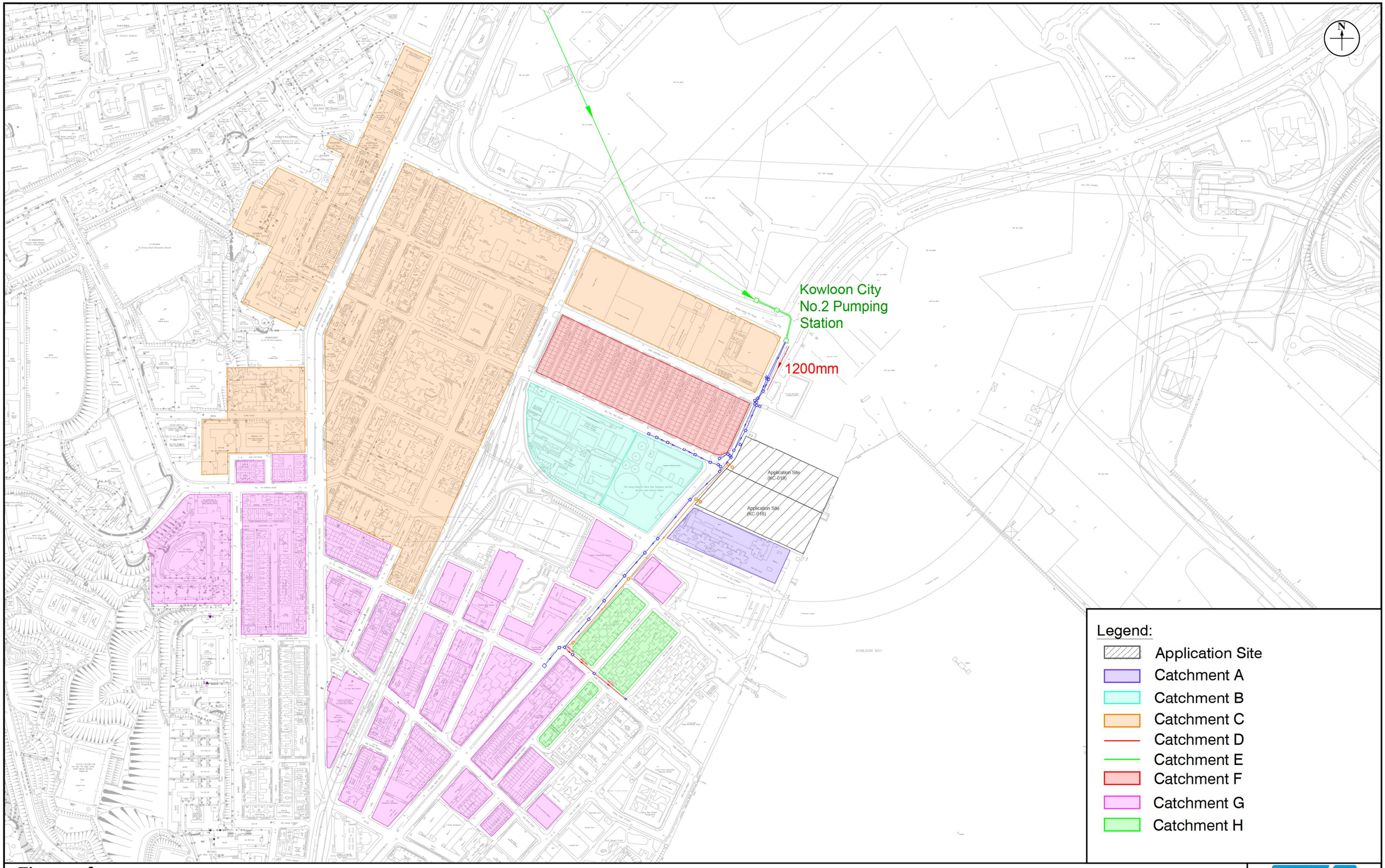


Figure: 3

Title: Catchment Areas in the Vicinity of the Application Site

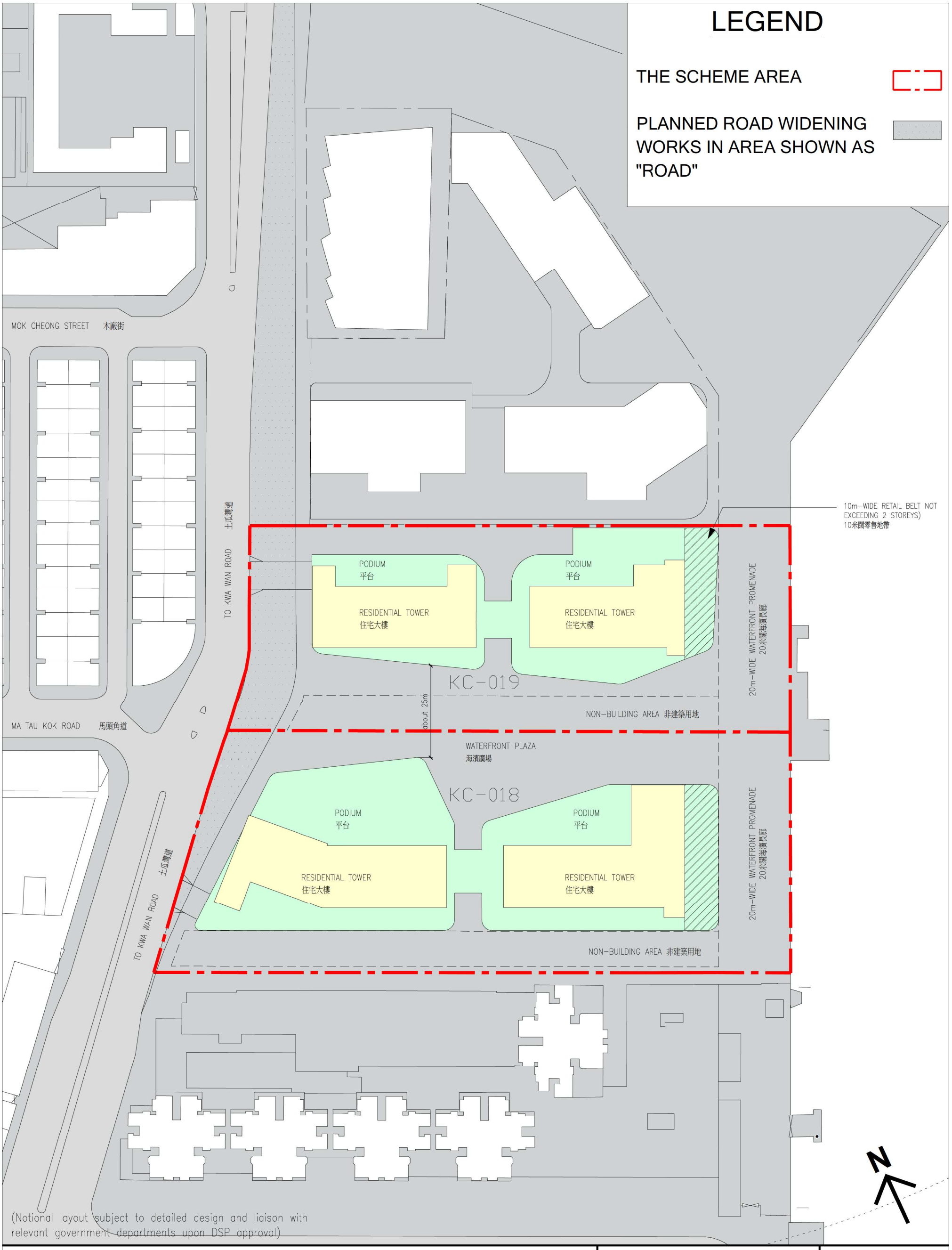
Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

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Rev.:	1.2
Date:	Sep 2022

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Appendix 1 Tentative Layout Plan

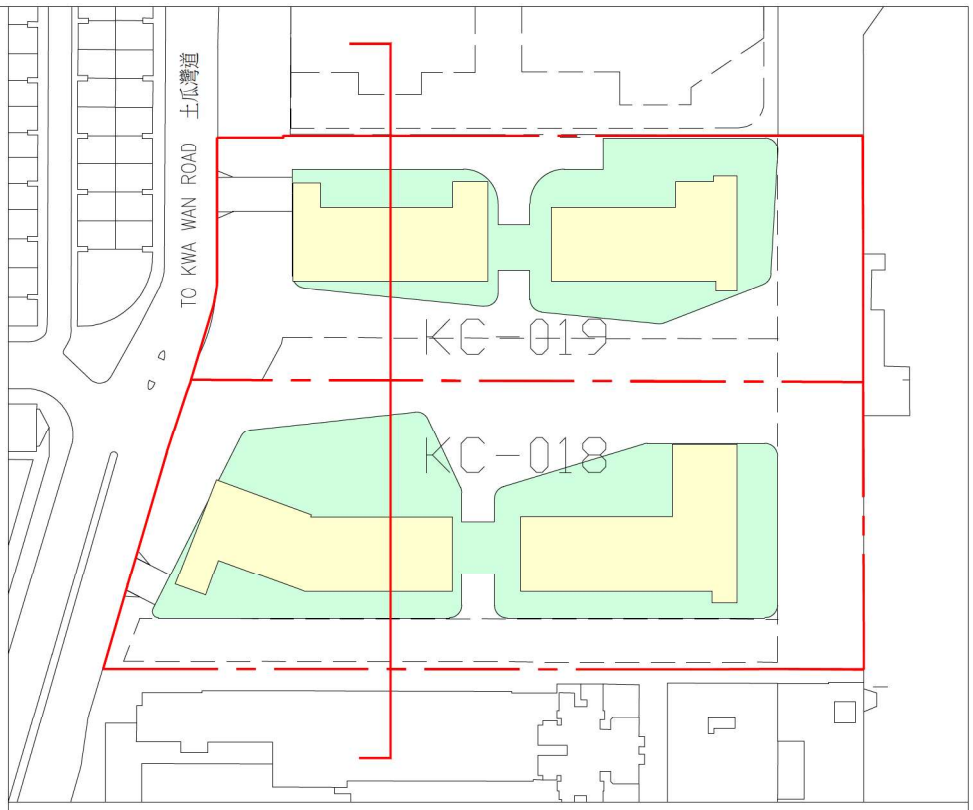


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

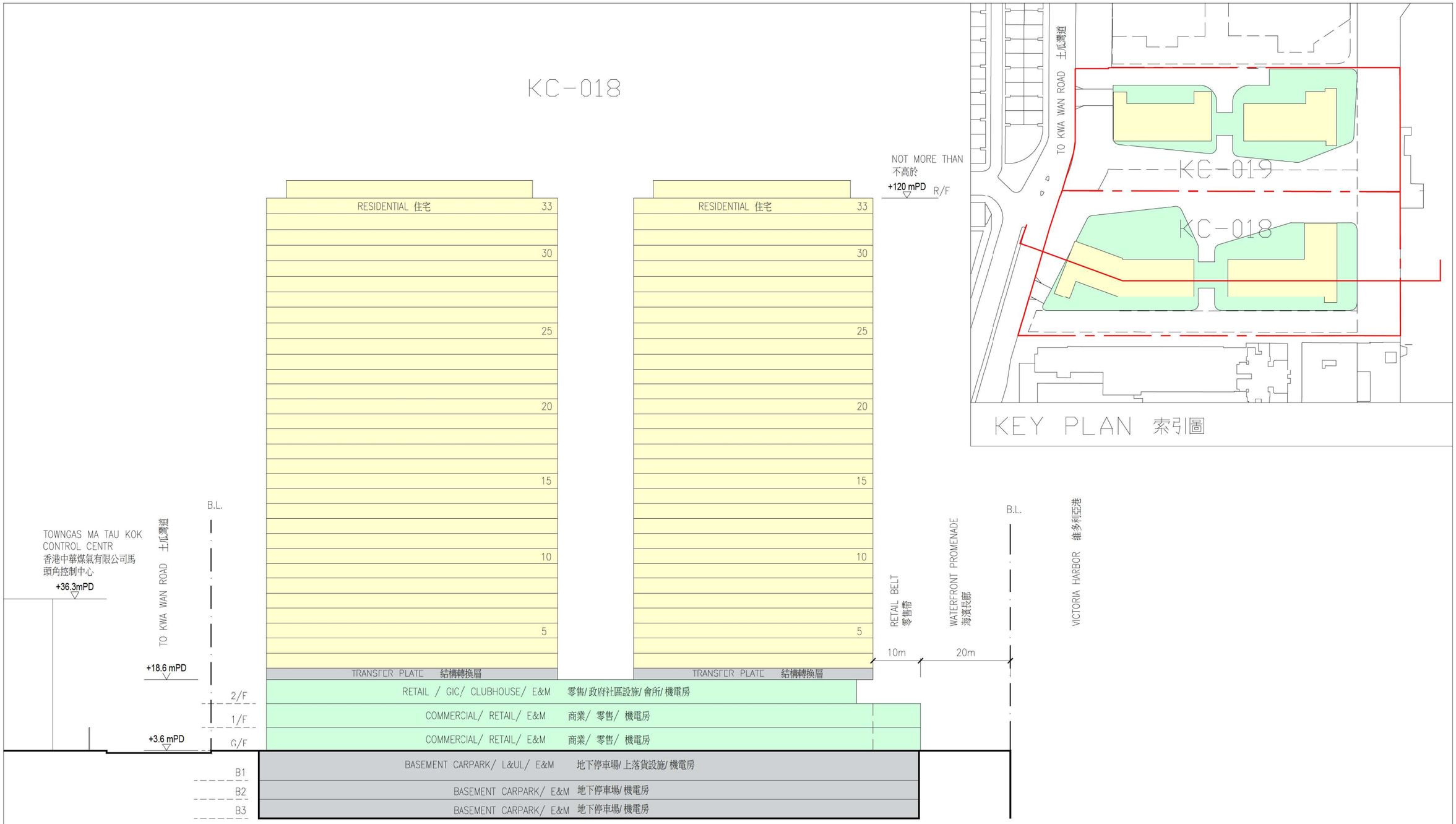
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

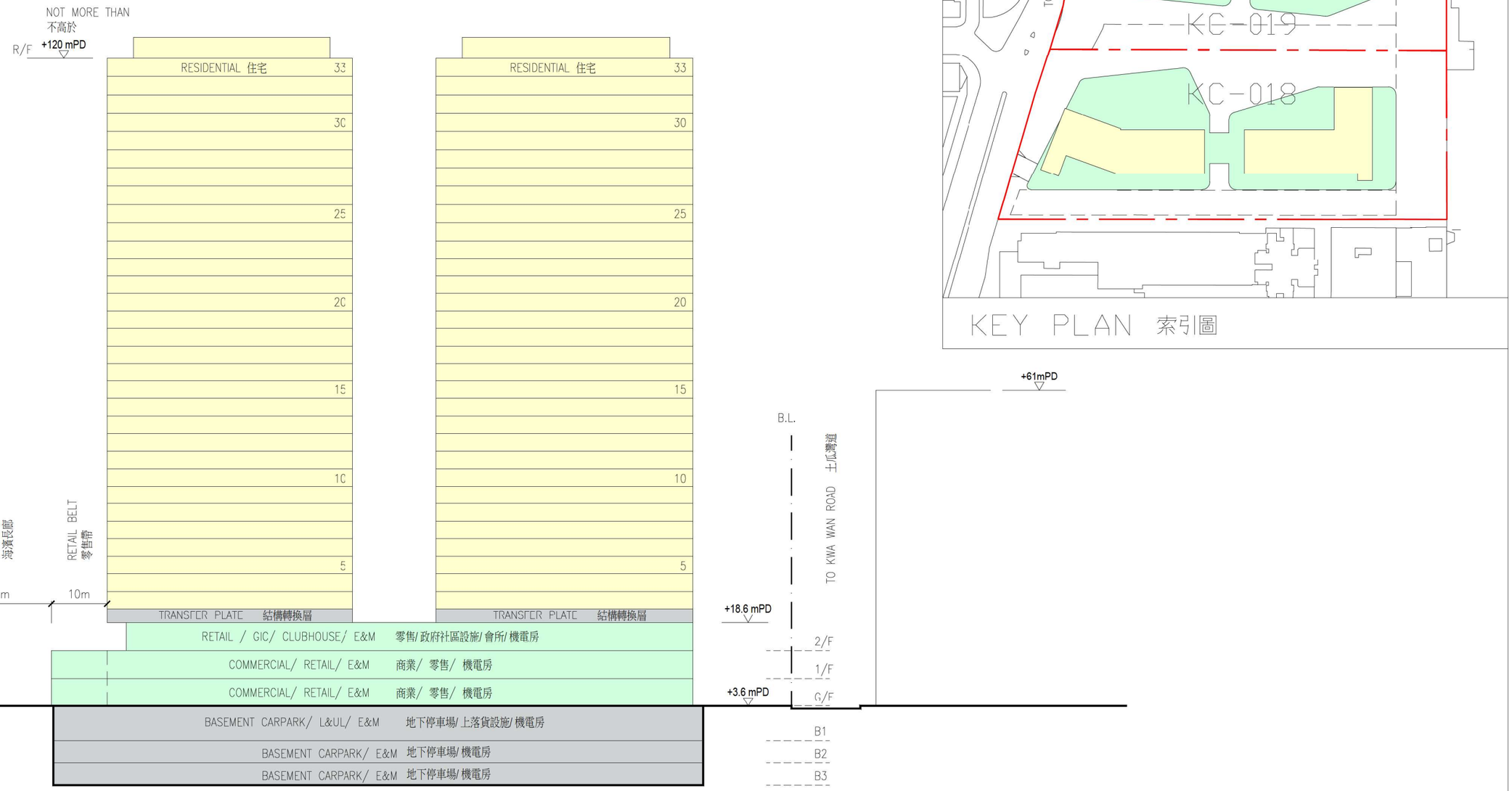
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE

Appendix 2 Detailed Sewerage Impact Assessment Calculations

Table 1a Calculation for Sewage Generation Rate of the Proposed Development at the Subject Site

KC-018

1. Residential Tower

1a. Total number of residential units	=	1276	units
1b. Total number of residents	=	2935	people -- (2021 Population Census: Average Household Size of 2.7 in Kowloon City(1))
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**792.4**	m^3/day

2. Clubhouse

2a. Assumed Area	=	2729	m^2
2b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
2c. Total number of employees	=	90	employees
2d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
2e. Sewage Generation rate	=	**25.2**	m^3/day

3. Commercial Area (Retail)

3a. Assumed Area	=	5248	m^2
3b. Assumed floor area per employee	=	28.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
3c. Total number of employees	=	183	employees
3d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF J4 - Wholesale & Retail)
3e. Sewage Generation rate	=	**51.4**	m^3/day

4. Commercial Area (F&B)

4a. Assumed Area	=	5248	m^2
4b. Assumed floor area per employee	=	19.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
4c. Total number of employees	=	268	employees
4d. Design flow for commercial activities	=	1.58	m3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
4e. Sewage Generation rate	=	**423.1**	m^3/day

4. Commercial Area (GIC)

4a. Assumed Area	=	1000	m^2
4b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community & Social Services)
4c. Total number of employees	=	33	employees
4d. Design flow for commercial activities	=	0.28	m3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
4e. Sewage Generation rate	=	**9.2**	m^3/day

Total Flow from Proposed Development

Flow Rate	=	1301.3	m^3/day
Flow Rate with PCIF	=	1301.3	m^3/day
Contributing Population	=	4820	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population 1,000-5,000 incl. stormwater allowance
Peak Flow	=	**60.2**	litre/sec

KC-019

1. Residential Tower

1a. Total number of residential units	=	950	units
1b. Total number of residents	=	2185	people -- (2021 Population Census: Average Household Size of 2.7 in Kowloon City(1))
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**590.0**	m^3/day

2. Clubhouse

2a. Assumed Area	=	2032	m^2
2b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
2c. Total number of employees	=	67	employees
2d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
2e. Sewage Generation rate	=	**18.8**	m^3/day

3. Commercial Area (Retail)

3a. Assumed Area	=	3908	m^2
3b. Assumed floor area per employee	=	28.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
3c. Total number of employees	=	137	employees
3d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF J4 - Wholesale & Retail)
3e. Sewage Generation rate	=	**38.3**	m^3/day

4. Commercial Area (F&B)

4a. Assumed Area	=	3908	m^2
4b. Assumed floor area per employee	=	19.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
4c. Total number of employees	=	199	employees
4d. Design flow for commercial activities	=	1.58	m3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
4e. Sewage Generation rate	=	**315.0**	m^3/day

4. Commercial Area (GIC)

4a. Assumed Area	=	500	m^2
4b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community & Social Services)
4c. Total number of employees	=	17	employees
4d. Design flow for commercial activities	=	0.28	m3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
4e. Sewage Generation rate	=	**4.6**	m^3/day

Total Flow from Proposed Development

Flow Rate	=	966.6	m^3/day
Flow Rate with PCIF	=	966.6	m^3/day
Contributing Population	=	3580	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 1,000-5,000 incl. stormwater allowance
Peak Flow	=	**55.9**	litre/sec

Remark:

(1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

Table 2a Hydraulic Capacity of Existing Sewers at To Kwa Wan Road, Ma Tau Kok

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
S1-S2	FMH4025360	FMH4082222	1500	15.6	-0.15	-0.18	9.81	0.00300	0.002	0.000001	1.44	1.77	2.55	2546
S2-S3	FMH4082222	FMH4025361	1500	42.3	-0.18	-0.27	9.81	0.00300	0.002	0.000001	1.67	1.77	2.95	2948
S3-S4	FMH4025361	FMH4025760	1500	65.0	-0.28	-0.37	9.81	0.00300	0.001	0.000001	1.32	1.77	2.33	2326

Table 2a Hydraulic Capacity of Existing Sewers at To Kwa Wan Road, Ma Tau Kok (Upgrade)

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
S1-S2	FMH4025360	FMH4082222	1650	15.6	-0.15	-0.18	9.81	0.00030	0.0019	0.000001	2.12	2.14	4.54	4539
S2-S3	FMH4082222	FMH4025361	1650	42.3	-0.18	-0.26	9.81	0.00030	0.0018	0.000001	2.04	2.14	4.36	4358
S3-S4	FMH4025361	FMH4025760	1650	65.0	-0.26	-0.37	9.81	0.00030	0.0018	0.000001	2.04	2.14	4.35	4355

Table 2a Hydraulic Capacity of Existing Sewers at To Kwa Wan Road, Ma Tau Kok

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
T1a-T2a	-	-	300	4.4	2.70	2.67	9.81	0.00030	0.0068	0.000001	1.41	0.07	0.10	100
T2a-T2	-	-	600	68.2	2.67	2.45	9.81	0.00030	0.0032	0.000001	1.48	0.28	0.42	419
T1-T2	-	-	300	3.9	2.55	2.45	9.81	0.00030	0.0256	0.000001	2.75	0.07	0.19	194
T2-T3	-	-	600	153.6	2.45	1.50	9.81	0.00030	0.0062	0.000001	2.06	0.28	0.58	583
T3-T4	-	-	600	121.3	1.50	-0.05	9.81	0.00030	0.0128	0.000001	2.98	0.28	0.84	841
T4-S1	-	FMH4025360	600	9.3	-0.05	-0.15	9.81	0.00030	0.0108	0.000001	2.73	0.28	0.77	772

Notes: (1) T1 is the proposed manhole as shown in Figure 2 of the SIA report. The exact invert level of the proposed manhole is subject to change during detailed design stage.
(2) According to DSD Drainage Records, invert level 2 of S3-S4 is not avaliable. Therefore, it is estimated by assuming the slope of S3-S4 equals to slope of S2-S3.

Remarks: (1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity
(2) Table 2a: The value of k_s = 0.6mm and k_s = 2.47mm is used for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)
(3) Table 2b: The value of k_s = 0.3mm is used for the calculation of slimed polyethelyene for the proposed sewers, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)
(4) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)
(5) Equation used: $V = -\sqrt{(8gDs)}\log\left(\frac{k_s}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$

Table 3a Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A-F)

Catchment A

1. Grand Waterfront

1a. Total number of residential units	=	1782	units
1b. Total number of residents	=	4990	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**1347.2**	m^3/day

2. Grand Waterfront Plaza (Retail)

2a. Assumed Area	=	1568	m^2
2b. Assumed floor area per employee	=	28.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
2c. Total number of employees	=	55	employees
2d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF J4 - Wholesale & Retail)
2e. Sewage Generation rate	=	**15.3**	m^3/day

3. Grand Waterfront Plaza (F&B)

2a. Assumed Area	=	941	m^2
2b. Assumed floor area per employee	=	19.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
2c. Total number of employees	=	48	employees
2d. Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
2e. Sewage Generation rate	=	**75.8**	m^3/day

Total Flow Rate in Catchment A	=	**1438.4**	m^3/day
Total Flow Rate in Catchment A with PCIF	=	**1438.4**	m^3/day
Contributing Population	=	**5328**	people
Peaking Factor	=	**5**	
Peak Flow	=	**83.2**	litre/sec

Catchment B

1. The Hong Kong & China Gas Cimmpany Ltd.

2a. Assumed Area	=	861	m^2
2b. Assumed floor area per employee	=	18.2	m^2 per employee -- (refer to Table 8 of CIFSUS - Business Services)
2c. Total number of employees	=	47	employees
2d. Design flow for commercial employee	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
2e. Sewage Generation rate	=	**3.8**	m^3/day

2a. Assumed Area	=	1812	m^2
2b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
2c. Total number of employees	=	42	employees
2d. Design flow for commercial employee	=	0.33	m^3/employee/day -- (refer to Table T-2 of GESF - J2)
2e. Sewage Generation rate	=	**13.8**	m^3/day

2. Cattle Depot Artist Village

13a. Assumed Area	=	2214	m^2
13b. Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community & Social Services)
13c. Total number of employees	=	73	employees
13d. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
13e. Sewage Generation rate	=	**20.5**	m^3/day

Total Flow Rate in Catchment B	=	**38.0**	m^3/day
Total Flow Rate in Catchment B with PCIF	=	**38.0**	m^3/day
Contributing Population	=	**141**	people
Peaking Factor	=	**6**	
Peak Flow	=	**2.6**	litre/sec

Table 3a Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A-F)

Catchment C (FMH4025382) (upstream from To Kwa Wan) (IAL9MCSTEI00)

1a. Existing Residential Population (Private)	=	22466	residents
1b. Downtown 38, 38 Pak Tai Street	=	448	residents
1c. 喜築, 93 Pau Chung Street	=	585	residents
1d. The Zutten, 50 Ma Tau Kok Road	=	840	residents
1e. Tak Shing Mansion, 50 Tam Kung Road	=	140	residents
1f. Kingsgate, 178 Pau Chung Street	=	123	residents
1g. Metropolitan Rise, 28 Ma Tau Kok Road	=	806	residents
1h. Lucky Building, 142-144B Pau Chung Street	=	339	residents
1i. Homing Terrace, 151 Kowloon City Road	=	218	residents
1j. Fok On Court/Building, 90-108 Ma Tau Chung Road	=	585	residents
1k. Sun Cheong Building, 171-173 Kowloon City Road	=	101	residents
1l. 60-66 Ma Tau Chung Road (Work in Progress)	=	482	residents
1m. Horae Place, 209 Ma Tau Wai Road	=	470	residents
1n. Rich Court, 71-73 Pak Tai Street	=	95	residents
1o. Fortune Building, 111 Pak Tai Street	=	109	residents
1p. Lucky Court, 38 Mok Cheong Street	=	76	residents
1q. My Place, 123 Pak Tai Street	=	470	residents
1r. Siu Fung Court, 92-100 Tam Kung Road	=	218	residents
1s. 179-183c Kowloon City Road	=	238	residents
1t. View Court, 82 Pau Chung Street	=	109	residents
1u. Harmony Garden, 55-61 Kowloon City Road	=	314	residents
1v. One Elegance, 189 Ma Tau Wai Road	=	106	residents
1w. 191-199 Ma Tau Wai Road	=	81	residents
1x. Kam Wah Building, 111-127 Ma Tau Wai Road	=	314	residents
1y.Wai Tak House, 129-131 Ma Tau Wai Road	=	56	residents
1z. Design Flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1aa. Existing Residential Population (Public - Ma Tau Wai Estate)	=	5367	residents
1ab. Design Flow		0.19	m^3/person/day -- (refer to Table T-1 of GESF - Public rental)
1ac. Sewage Generation Rate	=	**9063.2**	m^3/day

2. Warehouse/Storage: Chung Wah Industrial Building (153-155 Kowloon City Road) & Tung Nam Factory Building (40 Ma Tau Kok Road)

2a. Assumed Gross Floor Area	=	16370	m^2
2b. Assumed floor area per employee	=	250	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
2c. Assumed number of employees	=	65	employees
2d. Design Flow	=	0.18	m^3/employee/day -- (refer to Table T-2 of GESF - J3)
2e. Sewage Generation Rate	=	**11.8**	m^3/day

3. Manufacturing/Workshop: Luen Ming Hing Factory Building (36 Mok Cheong Street)

3a. Assumed Gross Floor Area	=	5642	m^2
3b. Assumed floor area per employee	=	43	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
3c. Assumed number of employees	=	130	employees
3d. Design Flow	=	0.63	m^3/person/day -- (refer to Table T-3 of GESF - Manufacturing)
3e. Sewage Generation Rate	=	**81.8**	m^3/day

4. Cruise Hotel, 188 Pau Chung Street

4a. Numer of hotel rooms	=	161	rooms
4b. Assumed number of employees	=	48	employees -- (assume 3 workers per 10 rooms)
4c. Design Flow	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
4d. Sewage Generation Rate	=	**76.3**	m^3/day

5. Harbour Plaza 8 Degrees Hotel, 199 Kowloon City Road

5a. Numer of hotel rooms	=	704	rooms
5b. Assumed number of employees	=	211	employees -- (assume 3 workers per 10 rooms)
5c. Design Flow	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
5d. Sewage Generation Rate	=	**333.7**	m^3/day

6. Le Hoteru, 103 Tam Kung Road

6a. Numer of hotel rooms	=	10	rooms
6b. Assumed number of employees	=	3	employees -- (assume 3 workers per 10 rooms)
6c. Design Flow	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF J10 - Restaurants & Hotels)
6d. Sewage Generation Rate	=	**4.7**	m^3/day

7. Emmanuel Primary School, 36-38 Shing Tak Street

7a. Total number of teachers & staff	=	70	teachers & staff (from the website)
7c. Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
7b. Total number of students	=	311	students (from the website)
7d. Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
7e. Sewage Generation rate	=	**32.0**	m^3/day

8. Farm Road Government Primary School, 8 Farm Road

8a. Total number of teachers & staff	=	51	teachers & staff (from the website)
8c. Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
8b. Total number of students	=	600	students (from the website)
8d. Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
8e. Sewage Generation rate	=	**38.3**	m^3/day

9. New Asia Middle School, 6 Farm Road

9a. Total number of teachers & staff	=	70	teachers & staff (from the website)
9c. Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
9b. Total number of students	=	792	students (from the website)
9d. Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
9e. Sewage Generation rate	=	**51.3**	m^3/day

Table 3a Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A-F)

10. Kowloon Women's Welfare Club Nursery School, 42 Shing Tak Street

10a. Total number of teachers & staff	=	8	teachers & staff (from the website)
10c. Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
10b. Total number of students	=	101	students (from the website)
10d. Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
10e. Sewage Generation rate	=	**6.3**	m^3/day

12. The Hong Kong Federation of Trade Unions Worker's Club, 42-50 Ma Tau Chung Road

12a. Assumed Gross Floor Area	=	4832	m^2
12b. Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community)
12c. Assumed number of employees	=	159	employees
12d. Design Flow	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 Community, Socia & Personal Services)
12e. Sewage Generation Rate	=	**44.6**	m^3/day

18a. Ma Tau Kok Government Office / Immigration Detention Centre, 1 Ma Tau Kok Road

18b. Number of detainees	=	87	detainees
18c. Assumed number of staff	=	100	employees
18d. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 Community, Socia & Personal Services)
18e. Sewage Generation rate	=	**52.4**	m^3/day

19. Ma Tau Chung Fire Station, 109 Ma Tau Wai Chung Road

19a. Total number of employees	=	20	employees
19b. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 Community, Socia & Personal Services)
19c. Sewage Generation rate	=	**5.6**	m^3/day

20. Ma Tau Chung Ambulance Depot and Quarters, 53 Shing Tak Street

20a. Total number of employees	=	20	employees
20b. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 Community, Socia & Personal Services)
20c. Total no. of residents	=	78	residents
20d. Design Flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
20c. Sewage Generation rate	=	**26.8**	m^3/day

21. The Hong Kong Society for the Blind Factory

RCHE

22a. Total number of beds / population	=	304	people
22b. Design flow	=	0.37	m^3/person/day -- (refer to Table T-1 of GESF - Private R3)
22c. Sewage Generation rate	=	**112.5**	m^3/day
22d. Assumed number of employees	=	28	employees
22e. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to the information provided by the applicant)
22f. Sewage Generation rate	=	**7.8**	m^3/day

Total Flow Rate in Catchment C	=	10041.7	m^3/day
Total Flow Rate in Catchment C with P_{CIF}	=	**10041.7**	m^3/day
Contributing Population	=	37192	people
Peaking factor	=	4	
Peak Flow	=	**464.9**	litre/sec

Table 3a Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A-F)

Catchment D (FWD4026622)(upstream from Kowloon City)			
1a. Assumed Pipe Capacity	=	100	%
1b. Pipe Diameter	=	1200	mm
1c. Pipe Length	=	99.8	m
1d. Invert Level 1	=	1.23	mPD
1e. Invert Level 2	=	1.13	mPD
1g. Gravitational Acceleration	=	9.81	ms^{-2}
1h. Equivalent Sand Roughness	=	0.00600	m
1i. Gradient	=	0.0010	
1j. Kinematic Viscosity of Water	=	0.000001	m^2/s
1k. Mean Velocity	=	0.88	m/s
1l. Cross Sectional Area of the Pipe	=	1.13	m^2
1m. Velocity of the Concerned Pipe	=	1.00	m^3/s
1n. Estimated Capacity	=	1094.7	litre/sec
Sub-total Catchment D			
Peak Flow	=	1094.7	litre/sec
Peaking factor	=	3.70	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Contributing Population	=	94681	people
Equivalent Flow Rate	=	25563.7	m^3/day
Equivalent Flow Rate with PCIF	=	**25563.7**	m^3/day
Catchment E (FWD4026622) (upstream from Kowloon City)			
Kowloon City No.2 Sewage Pumping Station			
ADWF	=	**50976.0**	m^3/day
Peak	=	**1.77**	m^3/s

Table 3a Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A-F)

Catchment F

1. 13 Street

1a. Total number of residential units	=	2660	units
1b. Total number of residents	=	9075	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**2450.3**	m^3/day

Retail

2a. Assumed Area	=	19314.3	m^2
2b. Assumed floor area per employee	=	45.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
2c. Total number of employees	=	425.0	employees
2d. Design flow for commercial employee	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF - Manufacturing)
2e. Sewage Generation rate	=	**267.8**	m^3/day

Total Flow Rate	=	**2718.0**	m^3/day
Total Flow Ratr wuth PCIF	=	**2718.0**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Catchment G1

Merit Industrial Centre

Assumed Area	=	56310	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	2253	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage Generation rate	=	**1419.4**	m^3/day

New Lee Wah Centre (Commercial)

Assumed Area	=	14033	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	561	employees
Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - Commercial Employee)
Sewage Generation rate	=	**157.2**	m^3/day

Shun Luen Factory Building

Assumed Area	=	10783	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	431	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage Generation rate	=	**271.7**	m^3/day

Kapok Industrial Building

Assumed Area	=	7263	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	291	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage Generation rate	=	**183.0**	m^3/day

Lucky House

Assumed Area	=	18117	m^2
Assumed floor area per employee	=	18.2	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Busines
Total number of employees	=	996	employees
Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - Commercial Employee)
Sewage Generation rate	=	**279.0**	m^3/day

Total Flow Rate in Catchment G1	=	**2310.3**	m^3/day
Total Flow Rate in Catchment G1 with PCIF	=	**2310.3**	m^3/day
Contributing Population	=	**8557**	people
Peaking Factor	=	**6**	
Peak Flow	=	**160.4**	litre/sec

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Catchment G2

To Kwa Wan Sport Centre

Total number of employees	=	20	employees
Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 - Community, Social & Personal Se
Sewage Generation rate	=	**5.6**	m^3/day

Kiu Shing Building

Total number of residential units	=	107	units
Total number of residents	=	300	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**80.9**	m^3/day

Kiu Shing Building

Total number of residential units	=	134	units
Total number of residents	=	375	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**101.3**	m^3/day

Cheung Wan Building

Total number of residential units	=	80	units
Total number of residents	=	224	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**60.5**	m^3/day

Full Moon (Ming Yuet) Building

Total number of residential units	=	42	units
Total number of residents	=	118	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**31.8**	m^3/day

Wah Fat Building

Total number of residential units	=	134	units
Total number of residents	=	375	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**101.3**	m^3/day

Wah Fat Building Plaza

Assumed Area	=	1010	m^2
Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
Total number of employees	=	35	employees
Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J4 - Wholeasle & Retail)
Sewage Generation rate	=	**9.9**	m^3/day

Po Kwong Building

Total number of residential units	=	162	units
Total number of residents	=	454	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**122.5**	m^3/day

Pak Tai Mansion

Total number of residential units	=	108	units
Total number of residents	=	302	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**81.6**	m^3/day

One Elegance

Total number of residential units	=	38	units
Total number of residents	=	106	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**28.7**	m^3/day

Yuet Fai House

Total number of residential units	=	20	units
Total number of residents	=	56	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**15.1**	m^3/day

Tak Sun Building

Total number of residential units	=	47	units
Total number of residents	=	132	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**35.5**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Ma Tau Wai Road			
440 Ma Tau Wai Road	=	4	units
438 Ma Tau Wai Road	=	5	units
434 Ma Tau Wai Road	=	4	units
432 Ma Tau Wai Road	=	4	units
410 Ma Tau Wau Road	=	4	units
408 Ma Tau Wai Road	=	4	units
406 Ma Tau Wai Road	=	4	units
404 Ma Tau Wai Road	=	4	units
378 Ma Tau Wai Road	=	4	units
368 Ma Tau Wai Road	=	3	units
366 Ma Tau Wai Road	=	3	units
356 Ma Tau Wai Road	=	5	units
452 Ma Tau Wai Road	=	6	units
454 Ma Tau Wai Road	=	6	units
456 Ma Tau Wai Road	=	6	units
458 Ma Tau Wai Road	=	6	units
460 Ma Tau Wai Road	=	6	units
462 Ma Tau Wai Road	=	6	units
Total number of residential units	=	84	units
Total number of residents	=	235	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**63.5**	m^3/day
Kam Wah Mansion			
Total number of residential units	=	8	units
Total number of residents	=	22	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**6.0**	m^3/day
Maid Shine Court			
Total number of residential units	=	39	units
Total number of residents	=	109	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**29.5**	m^3/day
Goldtone Court			
Total number of residential units	=	24	units
Total number of residents	=	67	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**18.1**	m^3/day
Dlight Court			
Total number of residential units	=	40	units
Total number of residents	=	112	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**30.2**	m^3/day
Ocean Mansion			
Total number of residential units	=	40	units
Total number of residents	=	112	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**30.2**	m^3/day
Lucky Mansion			
Total number of residential units	=	56	units
Total number of residents	=	157	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**42.3**	m^3/day
Lok Shan Road			
1A Lok Shan Road	=	4	units
1B Lok Shan Road	=	4	units
72-76 Lok Shan Road	=	21	units
70 Lok Shan Road	=	10	units
68 Lok Shan Road	=	7	units
66 Lok Shan Road	=	7	units
64 Lok Shan Road	=	7	units
62 Lok Shan Road	=	7	units
60 Lok Shan Road	=	7	units
58 Lok Shan Road	=	7	units
1K - 1N Lok Shan Road	=	21	units
1P Lok Shan Road	=	7	units
1S Lok Shan Road	=	7	units
1R Lok Shan Road	=	7	units
1T Lok Shan Road	=	11	units
9A Lok Shan Road	=	13	units
9 Lok Shan Road	=	8	units
Total number of residential units	=	155	units
Total number of residents	=	434	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**117.2**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Maidstone Apartments

Total number of residential units	=	110	units
Total number of residents	=	308	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**83.2**	m^3/day

Mega Building

Total number of residential units	=	72	units
Total number of residents	=	202	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**54.4**	m^3/day

Maxim Mansion

Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Maidstone Road

44 Maidstone Road	=	5	units
42Maidstone Road	=	5	units
40 Maidstone Road	=	5	units
38 Maidstone Road	=	5	units
32 Maidstone Road	=	6	units
30 Maidstone Road	=	6	units
28 Maidstone Road	=	6	units
26 Maidstoen Road	=	6	units
24 Maidstone Road	=	5	units
22 Maidstone Road	=	5	units
20 Maidstone Road	=	5	units
18 Maidstone Road	=	5	units
16 Maidstone Road	=	6	units
14 Maidstone Road	=	6	units
21-25 Maidstone Road	=	15	units
Total number of residential units	=	91	units
Total number of residents	=	255	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**68.8**	m^3/day

Maisy Building

Total number of residential units	=	24	units
Total number of residents	=	67	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**18.1**	m^3/day

Kau Pui Lung Road

85 Kau Pui Lung Road	=	5	units
87 Kau Pui Lung Road	=	5	units
89 Kau Pui Lung Road	=	5	units
91 Kau Pui Lung Road	=	5	units
93 Kau Pui Lung Road	=	6	units
95 Kau Pui Lung Road	=	6	units
97 Kau Pui Lung Road	=	6	units
99 Kau Pui Lung Road	=	6	units
107 Kau Pui Lung Road	=	6	units
109 Kau Pui Lung Road	=	5	units
111 Kau Pui Lung Road	=	5	units
113 Kau Pui Lung Road	=	5	units
115 - 115A Kau Pui Lung Road	=	12	units
117 Kau Pui Lung Road	=	6	units
119 Kau Pui Lung Road	=	6	units
83 Kau Pui Lung Road	=	5	units
85 Kau Pui Lung Road	=	5	units
Total number of residential units	=	99	units
Total number of residents	=	277	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**74.8**	m^3/day

Grand New Court

Total number of residential units	=	10	units
Total number of residents	=	28	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**7.6**	m^3/day

Fu Yu Court

Total number of residential units	=	36	units
Total number of residents	=	101	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**27.2**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Hillville Terrace

Total number of residential units	=	86	units
Total number of residents	=	241	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**65.0**	m^3/day

Tin Kwing Building

Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Joy Take Court

Total number of residential units	=	26	units
Total number of residents	=	73	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**19.7**	m^3/day

Shung Wah Court

Total number of residential units	=	32	units
Total number of residents	=	90	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**24.2**	m^3/day

Maidstine Lane

15 Maidstone Lane	=	3	units
13 Maidstine Lane	=	3	units
7 Maidstone Lane	=	3	units
5 Maidstone Lane	=	3	units
3 Maidstone Lane	=	3	units
1 Maidstone Lane	=	3	units
Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Wallsend House

Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Tin kwong Road

46 Tin Kwong Road	=	6	units
43 Tin Kwong Road	=	6	units
41 Tin Kwong Road	=	6	units
39 Tin Kwong Road	=	6	units
4 - 12 Tin Kwong Road	=	14	units
Total number of residential units	=	38	units
Total number of residents	=	106	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**28.7**	m^3/day

Hop Yat Road

5 Hop Yat Road	=	6	units
3 Hop Yat Road	=	6	units
1 Hop Yat Road	=	6	units
Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Comfort

Total number of residential units	=	20	units
Total number of residents	=	56	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**15.1**	m^3/day

Amity Home

Total number of residential units	=	20	units
Total number of residents	=	56	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**15.1**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Prosperity Court

Total number of residential units	=	20	units
Total number of residents	=	56	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**15.1**	m^3/day

Celestrial Heights

Total number of residential units	=	939	units
Total number of residents	=	2629	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**709.9**	m^3/day

St. EugeneDe Mazened Oblate Primary School

Total number of teachers & staff	=	45	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	476	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**31.6**	m^3/day

Tang King Po School

Total number of teachers & staff	=	71	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	784	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**51.2**	m^3/day

The Amoy College

Total number of teachers & staff	=	5	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	25	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**2.4**	m^3/day

Tang King Po School

Total number of teachers & staff	=	71	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	784	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**51.2**	m^3/day

Heep Yunn Primary School

Total number of teachers & staff	=	39	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	573	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**33.8**	m^3/day

Heep Yunn School

Total number of teachers & staff	=	92	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	1032	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**67.0**	m^3/day

The Chinese Christian Church of AMOY

Assumed Area	=	401	m^2
Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community & Social Services)
Total number of employees	=	13	employees
Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
Sewage Generation rate	=	**3.7**	m^3/day

Sunview Garden

Total number of residential units	=	42	units
Total number of residents	=	118	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**31.8**	m^3/day

Tip Top Mansion

Total number of residential units	=	38	units
Total number of residents	=	106	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**28.7**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Arch Court

Total number of residential units	=	36	units
Total number of residents	=	101	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**27.2**	m^3/day

Sheung Shing Court

Total number of residential units	=	24	units
Total number of residents	=	67	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**18.1**	m^3/day

Everwell Garden

Total number of residential units	=	161	units
Total number of residents	=	451	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**121.7**	m^3/day

Total Flow Rate in Catchment	=	**2700.7**	m^3/day
Total Flow Rate in Catchment with PCIF	=	**2700.7**	m^3/day
Contributing Population	=	**10003**	people
Peaking Factor	=	**6**	
Peak Flow	=	**187.6**	litre/sec

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Catchment G3

Yik Yin Building

Total number of residential units	=	72	units
Total number of residents	=	202	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**54.4**	m^3/day

Chiap Thong Building

Total number of residential units	=	72	units
Total number of residents	=	202	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**54.4**	m^3/day

In House

Total number of residential units	=	96	units
Total number of residents	=	269	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**72.6**	m^3/day

To Kwa Wan Building

Total number of residential units	=	189	units
Total number of residents	=	529	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**142.9**	m^3/day

244 - 279 To Kwa Wan Road

Total number of residential units	=	119	units
Total number of residents	=	333	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**90.0**	m^3/day

Tung Hing Building

Total number of residential units	=	106	units
Total number of residents	=	297	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**80.1**	m^3/day

Mei King Street

9 Mei King Street	=	11	units
11 - 31 Mei King Street	=	77	units
Total number of residential units	=	88	units
Total number of residents	=	246	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**66.5**	m^3/day

Kiu Yu Mansion

Total number of residential units	=	281	units
Total number of residents	=	787	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**212.4**	m^3/day

Mei King Mansion Phase 2

Total number of residential units	=	345	units
Total number of residents	=	966	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**260.8**	m^3/day

Mei King Mansion Phase 1

Total number of residential units	=	701	units
Total number of residents	=	1963	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**530.0**	m^3/day

Merit Industrial Centre

Assumed Area	=	15554	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	623	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Manufacturing)
Sewage Generation rate	=	**392.5**	m^3/day

Kiu Fat Mansion

Total number of residential units	=	364	units
Total number of residents	=	1019	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**275.2**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

68A- 76B To Kwa Wan Road

68A To Kwa Wan Road	=	16	units
68B To Kwa Wan Road	=	16	units
68C To Kwa Wan Road	=	16	units
70 To Kwa Wan Road	=	19	units
70A To Kwa Wan Road	=	16	units
70B To Kwa Wan Road	=	16	units
70C To Kwa Wan Road	=	16	units
72 To Kwa Wan Road	=	16	units
72A To Kwa Wan Road	=	16	units
72B To Kwa Wan Road	=	16	units
72C To Kwa Wan Road	=	16	units
74 To Kwa Wan Road	=	16	units
74A To Kwa Wan Road	=	16	units
74B To Kwa Wan Road	=	16	units
76 To Kwa Wan Road	=	16	units
76A To Kwa Wan Road	=	16	units
76B To Kwa Wan Road	=	16	units
Total number of residents	=	275	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**74.3**	m^3/day

Lok Shan Road

72-76 Lok Shan Road	=	21	units
70 Lok Shan Road	=	10	units
68 Lok Shan Road	=	7	units
66 Lok Shan Road	=	7	units
64 Lok Shan Road	=	7	units
62 Lok Shan Road	=	7	units
60 Lok Shan Road	=	7	units
58 Lok Shan Road	=	7	units
Total number of residents	=	73	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**19.7**	m^3/day

Ha Heung Road

20 Ha Heung Road	=	7	units
18 Ha Heung Road	=	7	units
29 Ha Heung Road	=	8	units
31 Ha Heung Road	=	16	units
33 Ha Heung Road	=	8	units
33A Ha Heung Road	=	8	units
Total number of residents	=	54	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**14.6**	m^3/day

Mei Wa Street

1 Mei Wa Street	=	7	units
3 Mei Wa Street	=	7	units
5 Mei Wa Street	=	7	units
7 Mei Wa Street	=	7	units
9 Mei Wa Street	=	7	units
Total number of residents	=	35	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**9.5**	m^3/day

iclub Ma Tau Wai Hotel

No. of Hotel Room	=	340	Rooms
Assumed floor area per employee	=	3.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Hotels and Boarding Houses)
Totla number of employee	=	102	employees
Design flow for commercial employee	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10 - Restaurants & Hotels)
Sewage Generation rate	=	**161.2**	m^3/day

Wearbest Building

Assumed Area	=	25423	m^2
Assumed floor area per employee	=	43	m^2 per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	585	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Manufacturing)
Sewage Generation rate	=	**368.6**	m^3/day

City Hub

Total number of residential units	=	175	units
Total number of residents	=	490	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**132.3**	m^3/day

Yick Man Building

Total number of residential units	=	72	units
Total number of residents	=	202	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**54.4**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

On Hing Mansion

Total number of residential units	=	61	units
Total number of residents	=	171	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**46.1**	m^3/day

Sze Chuen Street

3 Sze Chuen Street	=	9	units
2 Sze Chuen Street	=	8	units
4 Sze Cheun Street	=	8	units
8 Sze Chuen Street	=	8	units
Total number of residential units	=	33	units
Total number of residents	=	92	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**24.9**	m^3/day

Kowloon City Road

32A Kowloon City Road	=	8	units
32B Kowloon City Road	=	8	units
32 Kowloon City Road	=	8	units
30 Kowloon City Road	=	8	units
28 Kowloon City Road	=	8	units
26 Kowloon City Road	=	8	units
24 Kowloon City Road	=	8	units
22 Kowloon City Road	=	8	units
20 Kowloon City Road	=	8	units
18 Kowloon City Road	=	9	units
5 Kowloon City Road	=	33	units
11 Kowloon City Road	=	10	units
13 Kowloon City Road	=	8	units
15 Kowloon City Road	=	8	units
17 Kowloon City Road	=	8	units
19 Kowloon City Road	=	8	units
21 Kowloon City Road	=	9	units
25 Kowloon City Road	=	17	units
33 Kowloon City Road	=	3	units
39 Kowloon City Road	=	8	units
41 Kowloon City Road	=	5	units
Total number of residential units	=	198	units
Total number of residents	=	554	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**149.7**	m^3/day

Luen Yip Building

Total number of residential units	=	60	units
Total number of residents	=	168	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**45.4**	m^3/day

Hung Ying House

Total number of residential units	=	52	units
Total number of residents	=	146	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**39.3**	m^3/day

O' Hotel

No. of Hotel Room	=	151	Rooms
Assumed floor area per employee	=	3.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Hotels and Boarding Houses)
Totla number of employee	=	45	employees
Design flow for commercial employee	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10 - Restaurants & Hotels)
Sewage Generation rate	=	**71.6**	m^3/day

Kam Wo Building

Total number of residential units	=	70	units
Total number of residents	=	196	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**52.9**	m^3/day

Hill Main Massion

Total number of residential units	=	96	units
Total number of residents	=	269	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**72.6**	m^3/day

Goldfall Centre

Assumed Area	=	1289	m^2
Assumed floor area per employee	=	43	m^2 per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	30	employees
Design flow for commercial activities	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Manufacturing)
Sewage Generation rate	=	**18.9**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

BMW House

Assumed Area	=	13043	m^2
Assumed floor area per employee	=	18.2	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Busines
Total number of employees	=	717	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF J6 - Financial, Insurance, Real Estate & B
Sewage Generation rate	=	**57.4**	m^3/day

Tokwawan Market and Government Office
土瓜灣街市熟食中心

Assumed Area	=	1133	m^2
Assumed floor area per employee	=	19.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	=	58	employees
Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	=	**91.3**	m^3/day

Governmnet Office

Assumed Area	=	9715	m^2
Assumed floor area per employee	=	18.2	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Busines
Total number of employees	=	534	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF J6 - Financial, Insurance, Real Estate & B
Sewage Generation rate	=	**42.7**	m^3/day

SKH Good Shepherd Primary School

Total number of teachers & staff	=	31	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	336	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**22.1**	m^3/day

ELCHK Hung Hom Lutheran Primary School

Total number of teachers & staff	=	36	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	256	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**20.3**	m^3/day

Po Leung Kuk Madam Chan Wai Chow Memorial School

Total number of teachers & staff	=	31	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	200	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**16.7**	m^3/day

Northcote College of Education Past Students' Association School

Total number of teachers & staff	=	31	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	200	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**16.7**	m^3/day

Po Leung Kuk Lam Man Chan English Primary School

Total number of teachers & staff	=	96	teachers & staff (from the website)
Design flow for teachers & staff	=	0.28	m^3/person/day (refer to Table T-2, Commercial Employee)
Total number of students	=	788	students (from the website)
Design flow for students	=	0.04	m^3/person/day (refer to Table T-2, School Student)
Sewage Generation rate	=	**58.4**	m^3/day

May Court

Total number of residential units	=	54	units
Total number of residents	=	151	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**40.8**	m^3/day

Shing Yip Building

Total number of residential units	=	15	units
Total number of residents	=	42	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**11.3**	m^3/day

Wing Kin Building

Total number of residential units	=	15	units
Total number of residents	=	42	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**11.3**	m^3/day

Fortune Views

Total number of residential units	=	18	units
Total number of residents	=	50	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**13.6**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Pau Chung Street			
32 Pau Chung Street	=	2	units
20 Pau Chung Street	=	2	units
18 Pau Chung Street	=	8	units
14-16 Pau Chung Street	=	12	units
12 Pau Chung Street	=	5	units
10 Pau Chung Street	=	5	units
8 Pau Chung Street	=	5	units
6 Pau Chung Street	=	7	units
Total number of residential units	=	46	units
Total number of residents	=	129	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**34.8**	m^3/day
ATC2006 Ascendancy Tutorial Centre			
Assumed Area	=	81	m^2
Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community & Social Services)
Total number of employees	=	3	employees
Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
Sewage Generation rate	=	**0.7**	m^3/day
Yen Cheong Building			
Total number of residential units	=	17	units
Total number of residents	=	48	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**12.9**	m^3/day
Yen Che Building			
Total number of residential units	=	36	units
Total number of residents	=	101	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**27.2**	m^3/day
Granada Building			
Total number of residential units	=	22	units
Total number of residents	=	62	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**16.6**	m^3/day
30 Sheung Heung Road			
Total number of residential units	=	5	units
Total number of residents	=	14	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**3.8**	m^3/day
Riches Court			
Total number of residential units	=	40	units
Total number of residents	=	112	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**30.2**	m^3/day
Cheong Hing Building			
Total number of residential units	=	40	units
Total number of residents	=	112	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**30.2**	m^3/day
Hong Fu Mansion			
Total number of residential units	=	39	units
Total number of residents	=	109	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**29.5**	m^3/day
Wah Keung Building			
Total number of residential units	=	91	units
Total number of residents	=	255	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**68.8**	m^3/day
Wah King Mansion			
Total number of residential units	=	115	units
Total number of residents	=	322	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**86.9**	m^3/day
Merry Mansion			
Total number of residential units	=	110	units
Total number of residents	=	308	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**83.2**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Cheung Ning Street			
35A Cheung Ning Street	=	4	units
35B Cheung Ning Street	=	4	units
29 Cheung Ning Street	=	8	units
27 Cheung Ning Street	=	8	units
17 Cheung Ning Street	=	5	units
15 Cheung Ning Street	=	5	units
13 Cheung Ning Street	=	10	units
11 Cheung Ning Street	=	7	units
Total number of residential units	=	51	units
Total number of residents	=	143	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**38.6**	m^3/day
Besthing Garden			
Total number of residential units	=	57	units
Total number of residents	=	160	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**43.1**	m^3/day
Lai Ming Court			
Total number of residential units	=	40	units
Total number of residents	=	112	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**30.2**	m^3/day
Ling Nam Building			
Total number of residential units	=	73	units
Total number of residents	=	204	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**55.2**	m^3/day
Honour Building			
Total number of residential units	=	863	units
Total number of residents	=	2416	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**652.4**	m^3/day
Total Flow Rate in Catchment	=	**5218.4**	m^3/day
Total Flow Rate in Catchment with PCIF	=	**5218.4**	m^3/day
Contributing Population	=	**19328**	people
Peaking Factor	=	**6**	
Peak Flow	=	**362.4**	litre/sec

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Catchment G4

Commercial (Cheong Wan Factory Building)

Assumed used Area for commercial	=	7571	m^2
Assumed floor area per employee	=	25.0	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	303	employees
Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - Commercial Employee)
Sewage generation rate (Commercial)	=	**84.8**	m^3/day
Assumed used Area for industrial uses	=	1440	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	58	employees
Design flow for industrial employee	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage generation rate (Industrial)	=	**36.5**	m^3/day

Office Building (Brill Plaza)

Assumed used Area	=	11880	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	475	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF J12 - Public Administration)
Sewage generation rate (Commercial)	=	**38.0**	m^3/day

Industrial Building (Luen Fat Mansion)

Assumed used area for industrial uses	=	2214	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	89	employees
Design flow for industrial employee	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage generation rate (Industrial)	=	**56.1**	m^3/day

Industrial Buildings (Factories at 21 - 31 Sheung Heung Road)

Assumed used area for industrial uses	=	1341	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	54	employees
Design flow for industrial employee	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage generation rate (Industrial)	=	34.0	m^3/day
Assumed used area for warehouse	=	12067	m^2
Assumed floor area per employee	=	250	m^2 per employee (worker densities refer to Table 8 of CIFSUS - Storage)
Total number of employees	=	48	employees
Design flow for warehouse employee	=	0.18	m^3/employee/day -- (refer to Table T-2 of GESF J3 - Transport, Storage & Communication
Sewage generation rate (Warehouse)	=	8.7	m^3/day
Sewage generation rate (this industrial building)		**42.7**	m^3/day

Residential (1 - 17A Sheung Heung Road, 2 - 29 Wing Yiu Street, 1 - 35 Hung Kwong Street)

Total number of units	=	611	units
Total number of residents	=	1711	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	190	litre/person/day -- (Private R1 in Table T-1 of GESF)
Sewage Generation rate	=	**325.1**	m^3/day

Residential (Ka Wai Court & Fung Yue Mansion, 46-48 & 54-56 Pau Chung Street, 43-45 Kowloon City Road)

Total number of units	=	105	units
Total number of residents	=	294	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	190	litre/person/day -- (Private R1 in Table T-1 of GESF)
Sewage Generation rate	=	**55.9**	m^3/day

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Industrial Building (On Lok Factory Building)			
Assumed used area for warehouse (34 Units)	=	11397	m^2
Assumed floor area per employee	=	250	m^2 per employee (worker densities refer to Table 8 of CIFSUS - Storage)
Total number of employees	=	46	employees
Design flow for warehouse employee	=	0.18	m^3/employee/day -- (refer to Table T-2 of GESF J3 - Transport, Storage & Communication
Sewage generation rate for warehouse	=	8.2	m^3/day
Assumed used area for commercial (6 Units)	=	2011	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	80	employees
Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF J3 - General Territorial Average)
Sewage generation rate for commercial	=	22.5	m^3/day
Assumed used area for industrial (4 Units)	=	1341	m^2
Assumed floor area per employee	=	25	m^2 per employee (worker densities refer to Table 2 in Chapter 5 of HKPSG)
Total number of employees	=	54	employees
Design flow for industrial employee	=	0.63	m^3/employee/day -- (refer to Table T-3 of GESF J1 - Cental Kowloon)
Sewage generation rate for industrial	=	33.8	m^3/day
Total from On Lok Factory Building	=	**64**	m^3/day
Artisan Garden			
Total number of units	=	294	units
Total number of residents	=	823	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	190	litre/person/day -- (Private R1 in Table T-1 of GESF)
Sewage Generation rate (residential)	=	156.4	m^3/day
Sewage generation rate of this Development	=	**156.4**	m^3/day
Yick Fu Building & Full Yuet Court			
Total number of units	=	116	units
Total number of residents	=	325	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	190	litre/person/day -- (Private R1 in Table T-1 of GESF)
Sewage Generation rate	=	**61.7**	m^3/day
Wah King Mansion & Merry Mansion			
Total number of units	=	225	units
Total number of residents	=	630	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	190	litre/person/day -- (Private R1 in Table T-1 of GESF)
Sewage Generation rate	=	**119.7**	m^3/day
Total Flow Rate in Catchment	=	**1041.4**	m^3/day
Total Flow Rate in Catchment with PCIF	=	**1041.4**	m^3/day
Contributing Population	=	**3857**	people
Peaking Factor	=	**6**	
Peak Flow	=	**72.3**	litre/sec

Table 3b Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G-H)

Catchment H

Wyler Gardens - Chong Chien Court			
Total number of units	=	780	units
Total number of residents	=	2184	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**589.7**	m^3/day
Wyler Gardens - Chong Chien Court			
Total number of units	=	520	units
Total number of residents	=	1456	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**393.1**	m^3/day
On Ping Building			
Total number of residential units	=	126	units
Total number of residents	=	353	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**95.3**	m^3/day
On Hong Building			
Total number of residential units	=	104	units
Total number of residents	=	291	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**78.6**	m^3/day
On Lung Building			
Total number of residential units	=	104	units
Total number of residents	=	291	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**78.6**	m^3/day
On Tai Building			
Total number of residential units	=	104	units
Total number of residents	=	291	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**78.6**	m^3/day
On Shun Building			
Total number of residential units	=	104	units
Total number of residents	=	291	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**78.6**	m^3/day
On Fook Building			
Total number of residential units	=	104	units
Total number of residents	=	291	people -- (2019 Population Census: Average Household Size of 2.8 in Kowloon City)
Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
Sewage Generation rate	=	**78.6**	m^3/day
Total Flow Rate in Catchment	=	**1471.2**	m^3/day
Total Flow Rate in Catchment with PCIF	=	**1471.2**	m^3/day
Contributing Population	=	**5449**	people
Peaking Factor	=	***6***	
Peak Flow	=	**102.2**	litre/sec

Table 3c Calculation for Sewage Generation Rate - Scenario 1

1. 13 Street (Future) (Scenario 1)

1a. Total number of residential units	=	4408	units
1b. Total number of residents	=	11902	people -- (2021 Population Census: Average Household Size of 2.7 in Kowloon City[(1)])
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**3213.4**	m^3/day

Rctail

2a. Assumed Area	=	24495.0	m^2
2b. Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
2c. Total number of employees	=	858.0	employees
2d. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J2)
2e. Sewage Generation rate	=	**240.2**	m^3/day

F&B

3a. Assumed Area	=	24495.0	m^2
3b. Assumed floor area per employee	=	19.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Restaurants)
3c. Total number of employees	=	1250	employees
2d. Design flow for commercial employee	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J2)
2e. Sewage Generation rate	=	**1975.0**	m^3/day

Total Flow Rate	=	**5428.7**	m^3/day
Total Flow Ratr wuth PCIF	=	**5428.7**	m^3/day

Remark:

(1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

Table 3d Calculation for Sewage Generation Rate - Scenario 2

1. 13 Street (Future) (Scenario 2)

1a. Total number of residential units	=	5070	units
1b. Total number of residents	=	13689	people -- (2021 Population Census: Average Household Size of 2.7 in Kowloon City[(1)])
1c. Design flow	=	0.27	m^3/person/day -- (refer to Table T-1 of GESF - Private R2)
1d. Sewage Generation rate	=	**3696.0**	m^3/day

Retail

2a. Assumed Area	=	24495.0	m^2
2b. Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
2c. Total number of employees	=	858.0	employees
2d. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J2)
2e. Sewage Generation rate	=	**240.2**	m^3/day

F&B

3a. Assumed Area	=	24495.0	m^2
3b. Assumed floor area per employee	=	19.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Restaurants)
3c. Total number of employees	=	1250	employees
2d. Design flow for commercial employee	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J2)
2e. Sewage Generation rate	=	**1975.0**	m^3/day

GIC

2a. Assumed Area	=	17237	m^2
2b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community & Social Services)
2c. Total number of employees	=	568.9	employees
2d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11 Community, Social & Personal Services)
2e. Sewage Generation rate	=	**159.3**	m^3/day

Total Flow Rate	=	**5911.3**	m^3/day
Total Flow Ratr wuth PCIF	=	**5911.3**	m^3/day

Remark:

(1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

Table 4a Comparision of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1500	15.6	0.002	2546	103350.2	382779	3	0.0	3576.6	140.5%	Spill
S2-S3	1500	42.3	0.002	2948	104821.4	388227	3	0.0	3627.5	123.0%	Spill
S3-S4	1500	65.0	0.001	2326	104821.4	388227	3	0.0	3627.5	156.0%	Spill

Table 4b Comparision of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas (13st. Scenario 1)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1500	15.6	0.002	2546	107025.3	396390	3	0.0	3691.4	145.0%	Spill
S2-S3	1500	42.3	0.002	2948	108496.4	401839	3	1.0	3730.6	126.5%	Spill
S3-S4	1500	65.0	0.001	2326	108496.4	401839	3	0.0	3729.6	160.4%	Spill

Table 4c Comparision of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas (13st. Scenario 2)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1500	15.6	0.002	2546	107507.9	398177	3	0.0	3695.6	145.2%	Spill
S2-S3	1500	42.3	0.002	2948	108979.0	403626	3	0.0	3746.2	127.1%	Spill
S3-S4	1500	65.0	0.001	2326	108979.0	403626	3	0.0	3746.2	161.1%	Spill

Table 4d Comparision of the Hydraulic Capacity of Upgraded Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1650	15.6	0.002	4539	103350.2	382779	3	0.0	3576.6	78.8%	OK
S2-S3	1650	42.3	0.002	4358	104821.4	388227	3	0.0	3627.5	83.2%	OK
S3-S4	1650	65.0	0.002	4355	104821.4	388227	3	0.0	3627.5	83.3%	OK

Table 4e Comparision of the Hydraulic Capacity of Upgraded Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas (13st. Scenario 1)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1650	15.6	0.002	4539	107025.3	396390	3	0.0	3691.4	81.3%	OK
S2-S3	1650	42.3	0.002	4358	108496.4	401839	3	0.0	3729.6	85.6%	OK
S3-S4	1650	65.0	0.002	4355	108496.4	401839	3	0.0	3729.6	85.6%	OK

Table 4f Comparision of the Hydraulic Capacity of Upgraded Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas (13st. Scenario 2)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	1650	15.6	0.002	4539	107507.9	398177	3	0.0	3695.6	81.4%	OK
S2-S3	1650	42.3	0.002	4358	108979.0	403626	3	0.0	3746.2	86.0%	OK
S3-S4	1650	65.0	0.002	4355	108979.0	403626	3	0.0	3746.2	86.0%	OK

Table 4g Comparision of the Hydraulic Capacity of Proposed Sewers from the Terminal Manhole of the Proposed Development for Sewage generated from the Proposed Development (13st. Scenario 1)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1a-T2a	300	4.4	0.007	100	966.6	3580	6	0.0	67.1	67.5%	OK
T2a-T2	600	68.2	0.003	419	6395.3	23686	4	1.0	297.1	70.9%	OK
T1-T2	300	3.9	0.026	194	1301.3	4820	6	0.0	90.4	46.5%	OK
T2-T3	600	153.6	0.006	583	7696.6	28506	4	0.0	356.3	61.1%	OK
T3-T4	600	121.3	0.013	841	7696.6	28506	4	0.0	356.3	42.4%	OK
T4-S1	600	9.3	0.011	772	7696.6	28506	4	0.0	356.3	46.1%	OK

Table 4h Comparision of the Hydraulic Capacity of Proposed Sewers from the Terminal Manhole of the Proposed Development for Sewage generated from the Proposed Development (13st. Scenario 2)

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1a-T2a	300	4.4	0.007	100	966.6	3580	6	0.0	67.1	67.5%	OK
T2a-T2	600	68.2	0.003	419	6877.9	25474	4	0.0	318.4	75.9%	OK
T1-T2	300	3.9	0.026	194	1301.3	4820	6	0.0	90.4	46.5%	OK
T2-T3	600	153.6	0.006	583	8179.2	30293	4	0.0	378.7	64.9%	OK
T3-T4	600	121.3	0.013	841	8179.2	30293	4	0.0	378.7	45.0%	OK
T4-S1	600	9.3	0.011	772	8179.2	30293	4	0.0	378.7	49.0%	OK

Remarks: (1) The value of peaking factor = 6 is used for population 1,000-5,000 incl. stormwater allowance (refers to Table T-5 of GESF)
(2) The value of peaking factor = 4 is used for population 10,000-50,000 incl. stormwater allowance (refers to Table T-5 of GESF)
(3) The value of peaking factor = 3 is used for population 120,080 incl. stormwater allowance (refers to Table T-5 of GESF)

Appendix 8

Water Supply Impact Assessment (WSIA) Report

Prepared for

Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

WATER SUPPLY IMPACT ASSESSMENT

Date	**September 2022**
Prepared by	**Miko Wan** **Assistant Environmental Consultant**
Signed	
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Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8571_V1.2**

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1. INTRODUCTION

1.1 Background

1.1.1 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.1.2 This Water Supply Impact Assessment is prepared to support the two draft Development Scheme Plans (DSPs) submission to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance. This Report covers and supports both Schemes as one comprehensive redevelopment.

1.1.3 Ramboll Hong Kong Limited has been appointed by URA to conduct this Water Supply Impact Assessment which would evaluate any overall potential impact on water supply arising from the proposed development and other planned development.

1.1.4 Architectural drawings and technical information of the redevelopment are provided by the project architect (Ho & Partners Architects Engineers & Development Consultants Limited (HPA)).

1.2 The Schemes and its Environs

1.2.1 The Schemes has a total gross site area of 20,189m^2 (11,430m^2 for KC-018 site and 8,759m^2 for KC-019 site). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1.1** shows the location of the Schemes.

1.2.2 Existing roads including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road fall within the Schemes. In addition, the Schemes is occupied by ageing residential buildings (more than 60 years) of 7 to 8 storeys with street shops and Newport Centre (industrial building). The street shops include restaurants, retail shop, garage, shops for auto parts, auto cleaning service, hardware store, etc. Newport Centre (Phase 1 & 2) is currently occupied for offices, storage, workshops, showrooms and retail services use.

1.2.3 "13-Street" to the northwest is currently occupied by ageing residential buildings (about 60 years) of 6 to 7 storeys with street shops. The "13-Street" area falls within a "Proposed Redevelopment Priority Area" under DURF. The site is currently zoned as "CDA" under the approved Ma Tau Kok OZP No. S/K10/28 gazetted on 25 March 2022. According to the OZP, the planning intention of this "CDA" zone is for comprehensive re-/development of the area for residential and/or commercial uses with the provision of open space and other supporting facilities. In order to account the possible scenarios where the surrounding site would undergo similar redevelopment in future, a sensitivity study is also conducted to consider the impact on water supply should the nearby "13-Street" will also be redeveloped.

1.2.4 Grand Waterfront with 5 residential towers erected on top of a retail podium building is situated to the immediate south. Ma Tau Kok Gas Work North Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artiest Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building,

New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.3 Proposed Redevelopment

1.3.1 The Proposed Redevelopment at the Schemes consists of 4 residential towers with 3 lowest floors for retail/GIC/clubhouse purpose and 31 domestic storeys above. There will be a total of 1,276 flat units provided at KC-018 site and 950 flat units provided at KC-019 site after development. Total number of units is 2,226.

1.3.2 The tentative completion dates of the proposed redevelopment at both KC-018 site and KC-019 site are 2033.

1.3.3 The Master Layout Plan (MLP), typical floor plan and section of the Proposed Development are shown in **Appendix 1.1.**

2. WATER SUPPLY IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this WSIA study is to assess the capacity of the existing water supply facilities serving the Schemes, and to project the water demands generated from the Proposed Scheme. Data and record plans from Water Supplies Department (WSD) were obtained to facilitate the WSIA.

2.2 Information Available for the Study

2.2.1 Reference has been made to the WSD's Departmental Instruction 1308 (where available), as well as Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF). In addition, Planning Department's (PlanD) Commercial and Industrial Floor Space Utilization Survey (CIFSUS) have also been used.

2.3 Assessment Criteria and Methodology

2.3.1 The Schemes is currently served by the Ma Tau Wai Fresh Water Service Reservoir (FWSR) and Lok Fu Salt Water Service Reservoir (SWSR).

2.3.2 The FWSR has a capacity of 24,140m^3 and with daily consumption of 36,000 m^3/day.

2.3.3 Flushing water (saltwater) is supplied via Tai Wan Salt Water Pumping Station with daily delivery of 85000 m^3/day and Lok Fu Salt Water Service Reservoir with capacity of 8597m^3.

2.3.4 The KC-018 site is occupied by dilapidated buildings (over 60 years of age) with residential cum commercial uses, while KC-019 site is occupied by Newport Centre which is of industrial use. The original uses of the Schemes will be used as a baseline from which to assess the potential impacts of the Proposed Scheme. This report assesses the overall impact due to development at the Schemes (comprising KC-018 & KC-019 site) and also takes into account the possible future 13-Street redevelopment as a sensitivity study in accordance with the Kowloon City DURF Study and as shown on the current OZP. Therefore, the original uses of 13-Street Area is also considered as part of the baseline case.

2.3.5 WSD Departmental Instruction 1309 sets out the design criteria for water supplies in Hong Kong and includes unit water demands for various classes of consumer, including different types of residential density zones and commercial consumers. Apart from the above, EPD's GESF includes unit sewage flow factors for various commercial activities.

2.3.6 For this WSIA, WSD's data from DI 1309 has been referenced to provide unit water demands for the various population categories, with the relevant EPD GESF unit sewage flow factors to determine overall unit water demand factors. PlanD's CIFSUS has also been referenced for calculation of the population density where necessary.

2.3.7 These unit water demands have been combined with the relevant Site and development parameters to assess baseline and future water demands, from which the potential impacts have been assessed. Calculations for the water demands of the Indicative Scheme are included in **Appendix 2.2**.

2.4 Assessment of Water Supply Impact

2.4.1 An overall summary is tabulated below to show the freshwater and salt water demand before and after development.

Table 2-1 Summary of Fresh and Salt Water Demand

	Fresh Water demand (m^3/day)		Salt Water Demand (m^3/day)	
	Before Development	After Development	Before Development	After Development
KC-018	892.7	1199.7	149.6	251.1
KC-019	3971.1	933.0	1851.1	187.1
Total	4863.8	2132.7	2000.8	438.2

2.4.2 As shown in **Appendix 2.2**, the freshwater demand at KC-018 Site is expected to be 1199.7 m^3/day whereas 251.1 m^3/day for saltwater demand after development. For the baseline scenario (existing demand), the freshwater demand at the Site is 892.7 m^3/day whereas the saltwater demand is 149.6 m^3/day. The future daily freshwater demand is equivalent to about 5% of the capacity of the freshwater service reservoir (MTWFWSR) whereas future daily saltwater demand is equivalent to about 3% of saltwater service reservoir (LFSWSR).

2.4.3 The freshwater demand at KC-019 Site is expected to be 933.0 m^3/day whereas 187.1 m^3/day for saltwater demand after development. For the baseline scenario (existing demand), the freshwater demand at the Site is 3971.1 m^3/day whereas the saltwater demand is 1851.1 m^3/day. The future daily freshwater demand is equivalent to about 4% of the capacity of the freshwater service reservoir (MTWFWSR) whereas future daily saltwater demand is equivalent to about 2.2% of saltwater service reservoir (LFSWSR).

2.4.4 Overall speaking, there would be reduction of freshwater and salt water demand after development.

2.4.5 There are existing water mains running along the northeast and southwest of KC-018 site and southwest of KC-019 site which would have adequate capacity to cater for the future water demand. No impact is expected for the Proposed Redevelopment with decreased demand. No adverse water supply impact is anticipated. Connections will be made to the existing watermains. The existing connection points will be used where feasible.

Sensitivity Study: The Schemes and 13-Street Area (neighbouring future redevelopment site)

2.4.6 With respect to the Schemes (KC-018 & KC-019 site) and 13-Street area, as shown in **Appendix 2.2**, the overall freshwater demand is expected to be 6425.9 m^3/day whereas 1295.2 m^3/day for saltwater demand after development.

2.4.7 For the baseline scenario (existing demand), the freshwater demand at the Site is 7624.7 m^3/day whereas the saltwater demand is 2512.4 m^3/day.

2.4.8 Overall speaking, with consideration of 13-Street area, there would be reduction of freshwater and salt water demand after development.

2.4.9 A sensitivity testing for the future 13-Street area with an increase of about 15% in development intensity has also been included to assess the likely impacts. This sensitivity testing scenario and its impact in water supply is included in **Appendix 2.3**. It is concluded that no adverse water supply impact is anticipated for the sensitivity testing scenario.

3. OVERALL CONCLUSION

3.1.1 The existing dilapidated buildings and industrial building at the Schemes comprising KC-018 site and KC-019 site will be redeveloped into modern housing to help address the housing demand in Hong Kong. The proposed redevelopment at the Schemes will include 4 residential towers above commercial podium. The potential water supply impacts have been quantitatively addressed.

3.1.2 By considering the overall impact due to development of the Schemes and taking into account the sensitivity study of "13-Street" area, there will be decrease in fresh water and salt water demand. No adverse water supply impact is anticipated.

Figures

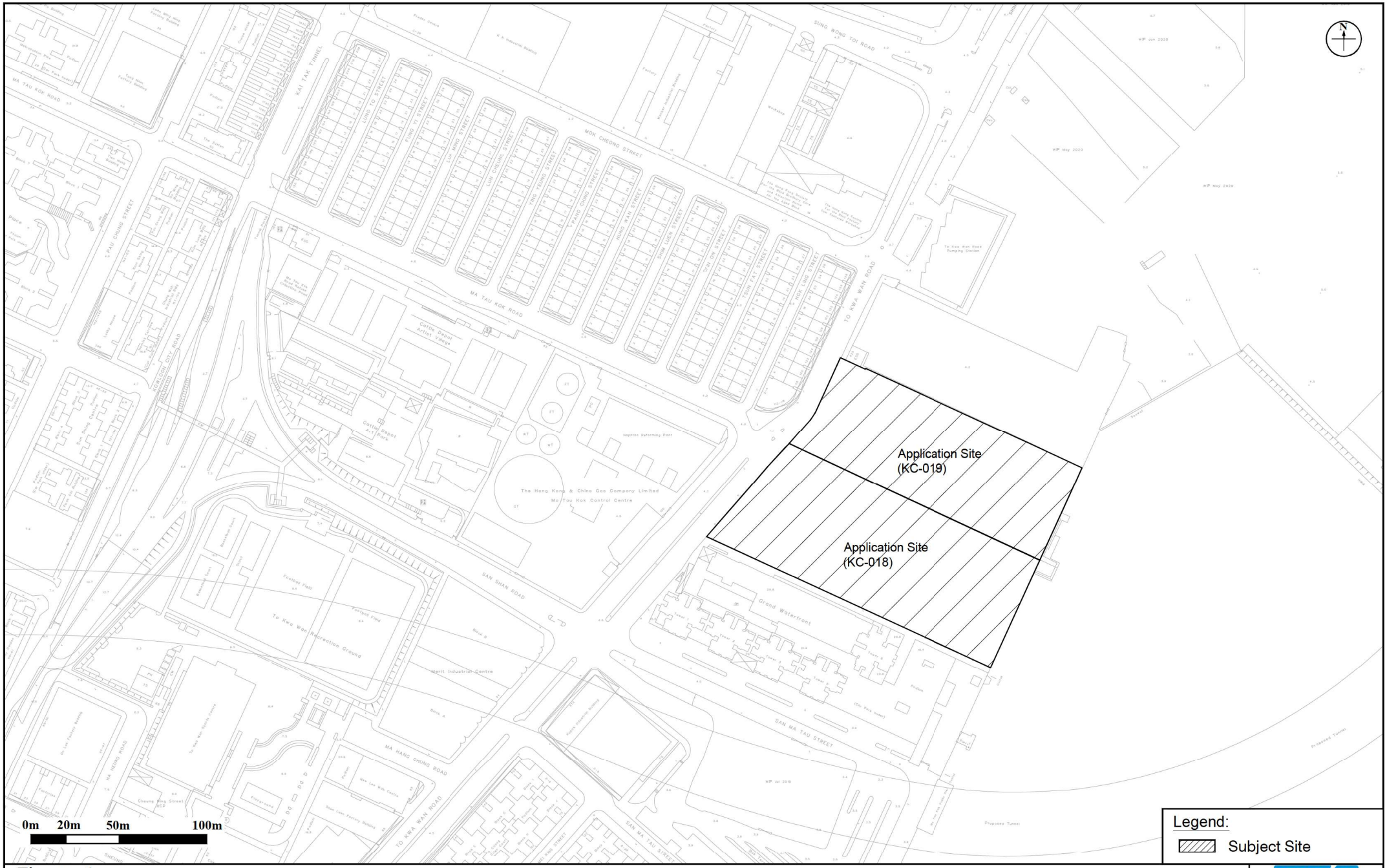


Figure: 1

Title: Location of Subject Site and Its Environs

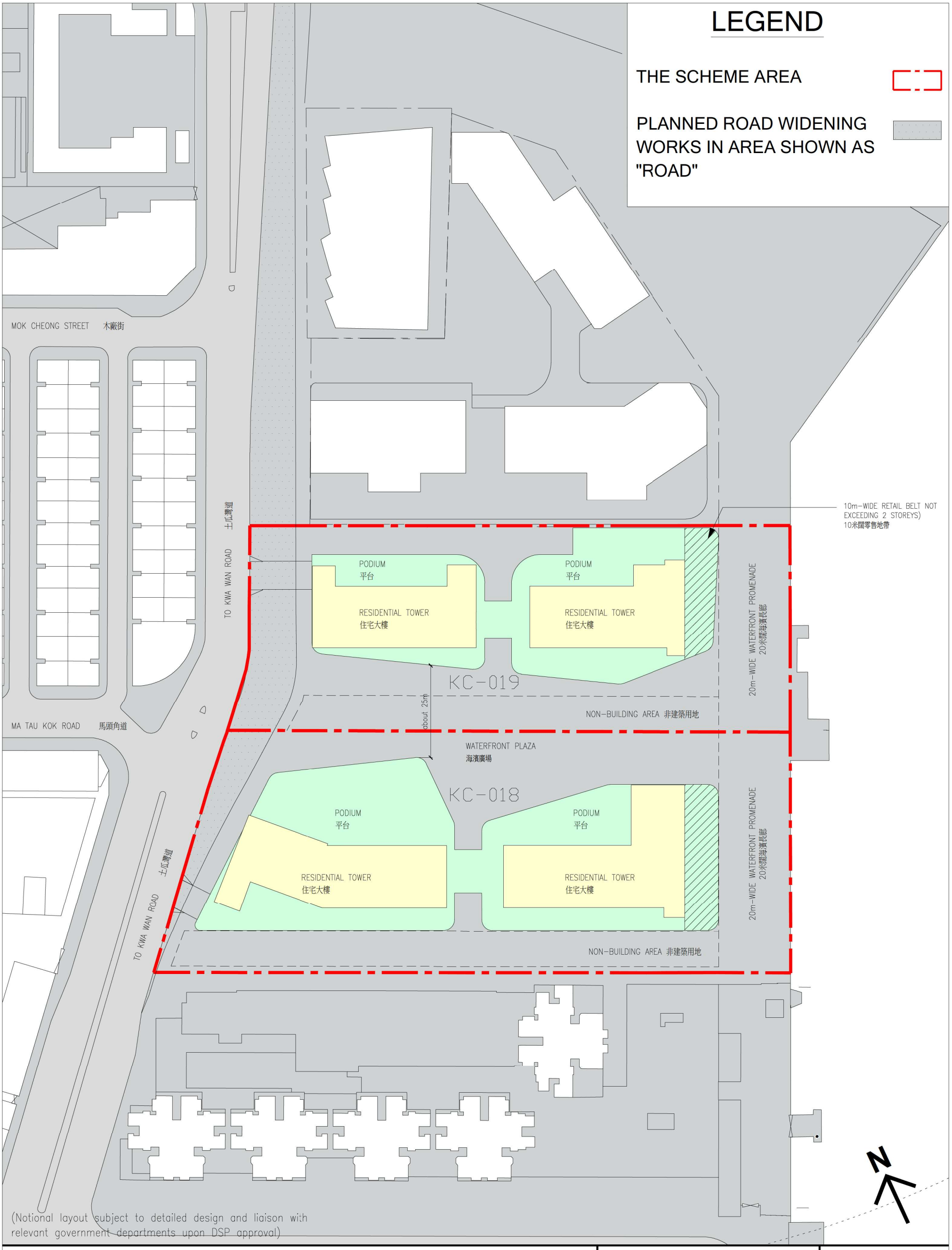
Project: TWO DEVELOPMENT SCHEMES - MING LUN STREET/ MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD/ MA TAU KOK ROAD (KC-019)

RAMBOLL

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Checked by:	CC
Rev.:	1.1
Date:	Jul 2022

Q:\Projects\URAKCAA2EI01\05 Assessments\05 SIA\Fig_SIA_20220728 KC018&KC019.dwg

Appendix 1.1 Master Layout Plan of the Proposed Development

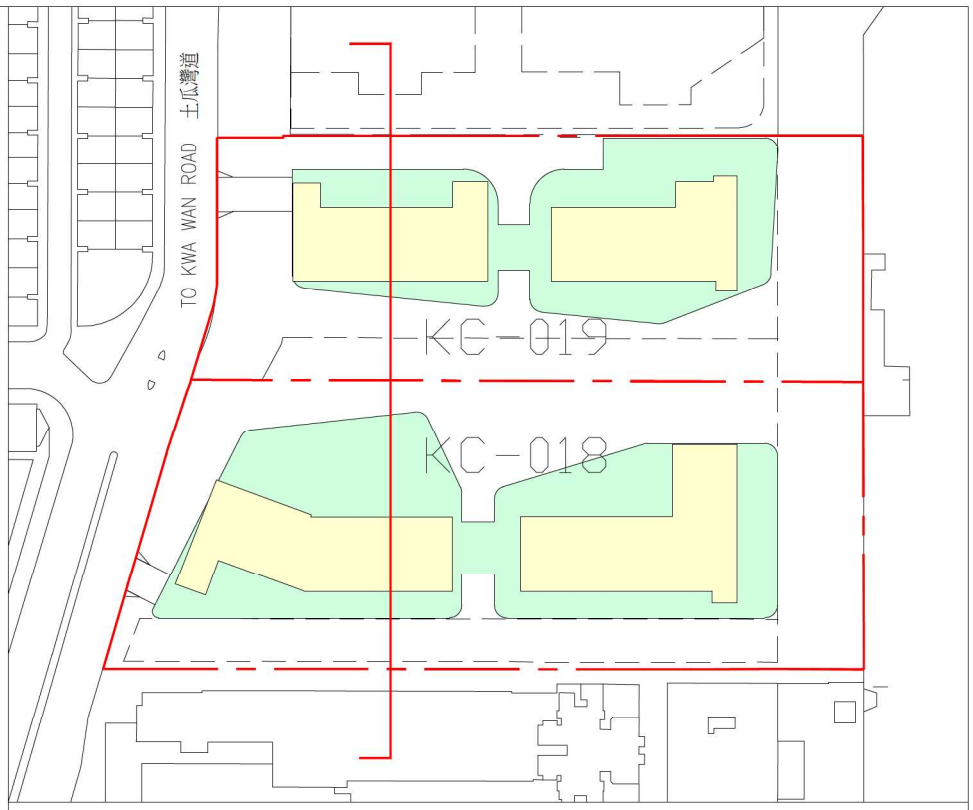


URBAN RENEWAL AUTHORITY 市區重建局

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Block Plan

FIGURE 1.1
NOT TO SCALE



KEY PLAN 索引圖

GRAND WATERFRONT
翔龍灣
+176mPD

KC-018

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

2/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

1/F

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

G/F

+3.6 mPD

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

B1

BASEMENT CARPARK/ E&M 地下停車場/機電房

B2

BASEMENT CARPARK/ E&M 地下停車場/機電房

B3

KC-019

NOT MORE THAN
不高於
+120 mPD R/F

RESIDENTIAL 33
住宅

NON-BUILDING AREA 非建築用地

B.L.

TRANSFER PLATE
結構轉換層

RETAIL / GIC/ CLUBHOUSE/ E&M
零售/政府社區設施/會所/機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

COMMERCIAL/ RETAIL/ E&M
商業/ 零售/ 機電房

BASEMENT CARPARK/ L&UL/ E&M
地下停車場/上落貨設施/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

BASEMENT CARPARK/ E&M 地下停車場/機電房

DEDICATED
REHOUSING ESTATE
專用安置屋邨項目

+100 mPD

B.L.

+18.6 mPD

2/F

1/F

G/F

B1

B2

B3

(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

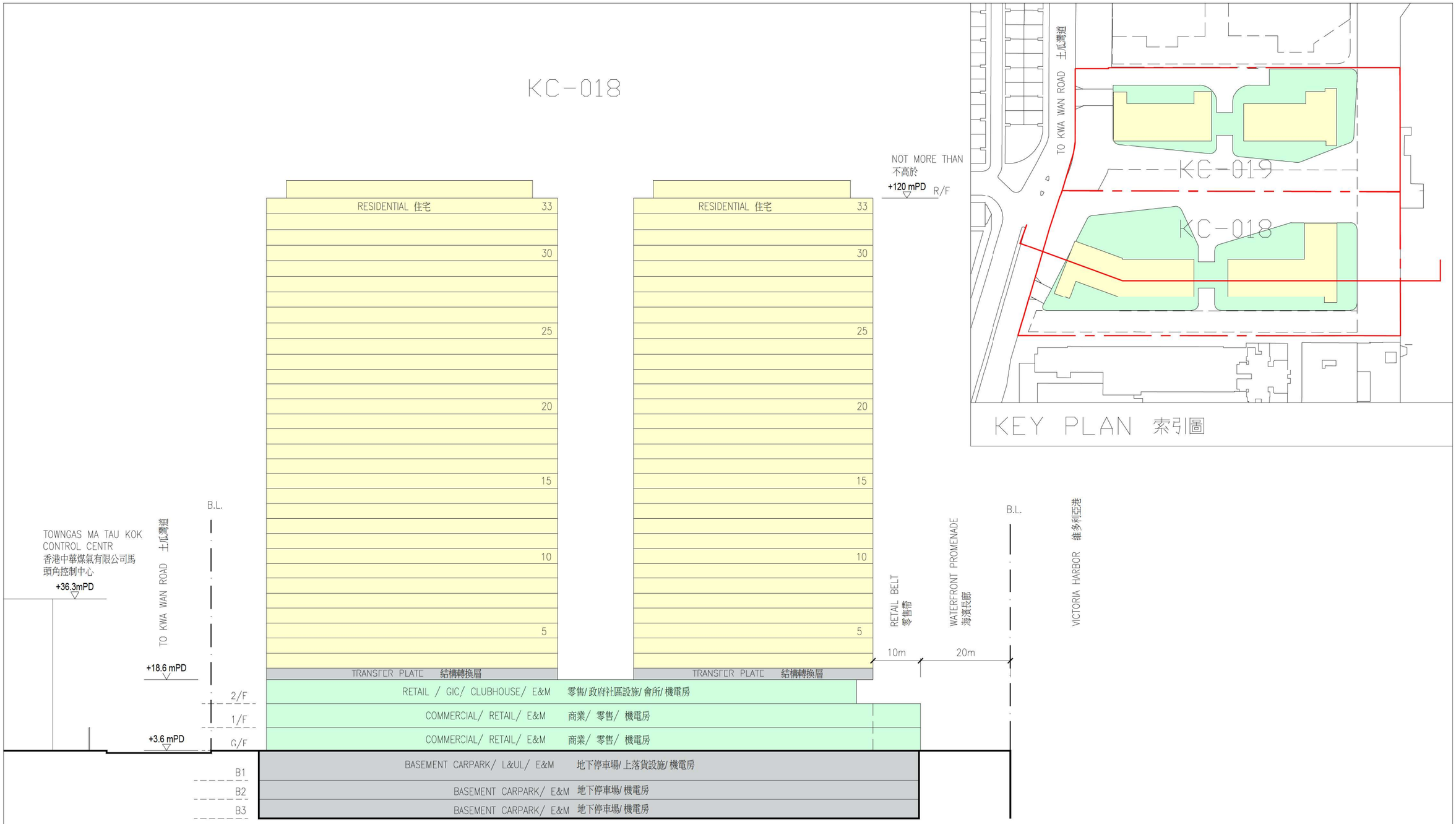
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018) & To Kwa Wan Road/ Ma Tau Kok Road (KC-019) Development Scheme

Notional Design - Schematic Section

FIGURE 1.2
NOT TO SCALE

KC-018



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

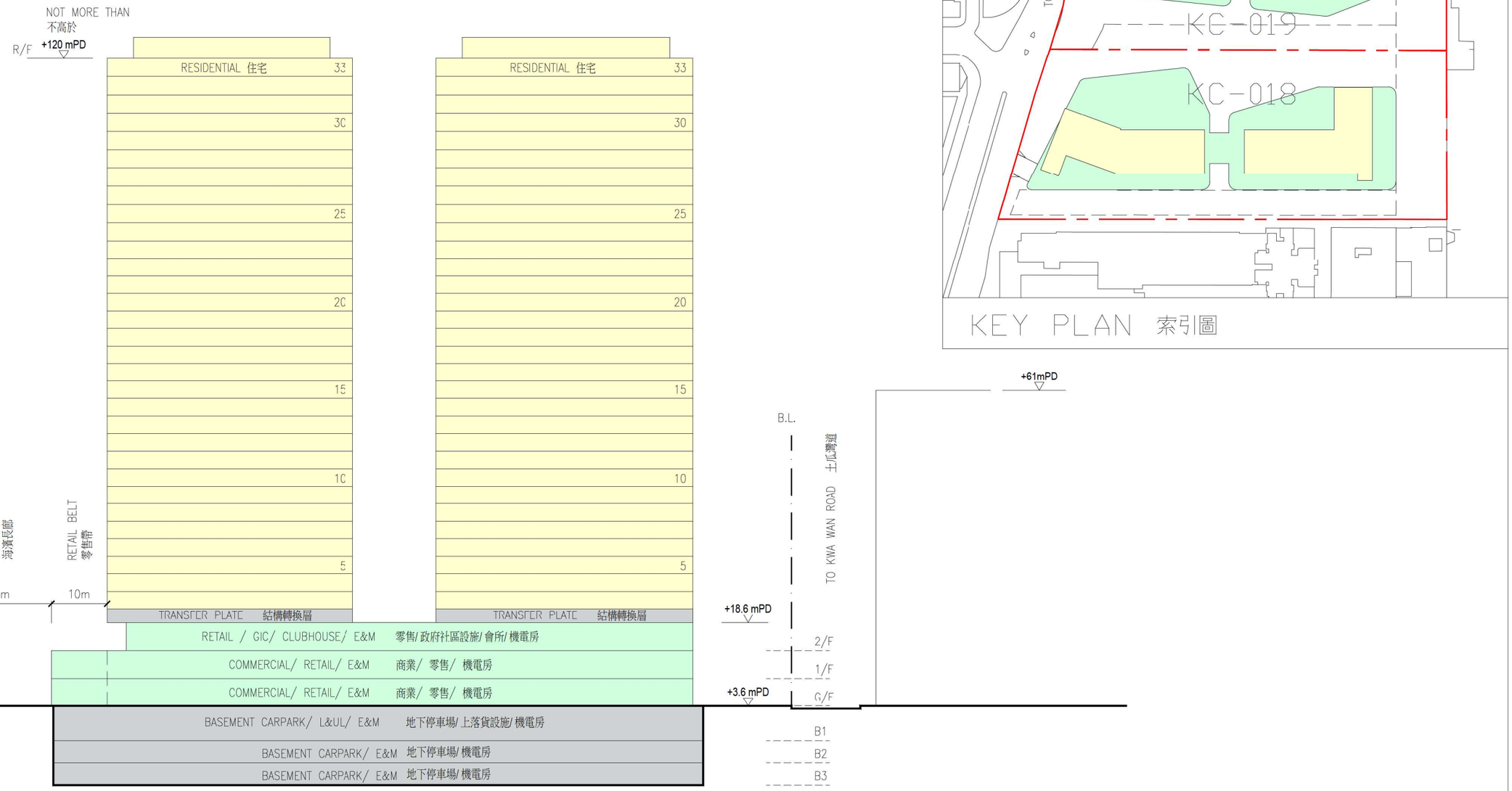
市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.3
NOT TO SCALE

KC-019



(Notional layout subject to detailed design and liaison with relevant government departments upon DSP approval)

市區重建局
URBAN RENEWAL AUTHORITY

URA Ming Lun Street/ Ma Tau Kok Road (KC-018)
&
To Kwa Wan Road/ Ma Tau Kok Road (KC-019)
Development Scheme

Notional Design - Schematic Section

FIGURE 1.4
NOT TO SCALE

Appendix 2.1 Records Obtained from Water Supplies Department

水 務 署
Water Supplies Department

長沙灣辦事處
Cheung Sha Wan Office
九龍長沙灣荔康街二號水務署九龍西區大樓
WSD Kowloon West Regional Building, 2 Lai Hong Street, Cheung Sha Wan, Kowloon

RECEIVED
14 NOV 2019
BY:----------

本署檔號 *Our ref.* : (2) in WSD/K 1728/103/80 Pt.3
來函檔號 *Your ref.* : 328000509_0_002411.19

電話 *Tel.* : 2360 6113
傳真 *Fax.* : 2386 7813

7 November 2019

Ramball Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong Kong.

(Attn: Ms Kitty Wong)

Dear Ms Wong,

Request for Information
Ho Man Tin High Level Fresh Water Service Reservoir and Salt Water Service Reservoir at To Kwa Wan

I refer to your above quoted letter dated 26.9.2019.

I attach herewith, for your information, a plan showing the 2 fresh water service reservoirs for water supply to the area around your proposed development. The capacity of Ho Man Tin East Fresh Water Service Reservoir is 152,411 m3 with daily consumption of 123 mld. Ma Tau Wai Fresh Water Service Reservoir has a capacity of 24,140 m3 with daily consumption of 36 mld.

Flushing water will be supplied via Tai Wan Salt Water Pumping Station with daily delivery of 85 mld and Lok Fu Salt Water Service Reservoir with capacity of 8,597 m3 to the proposed development.

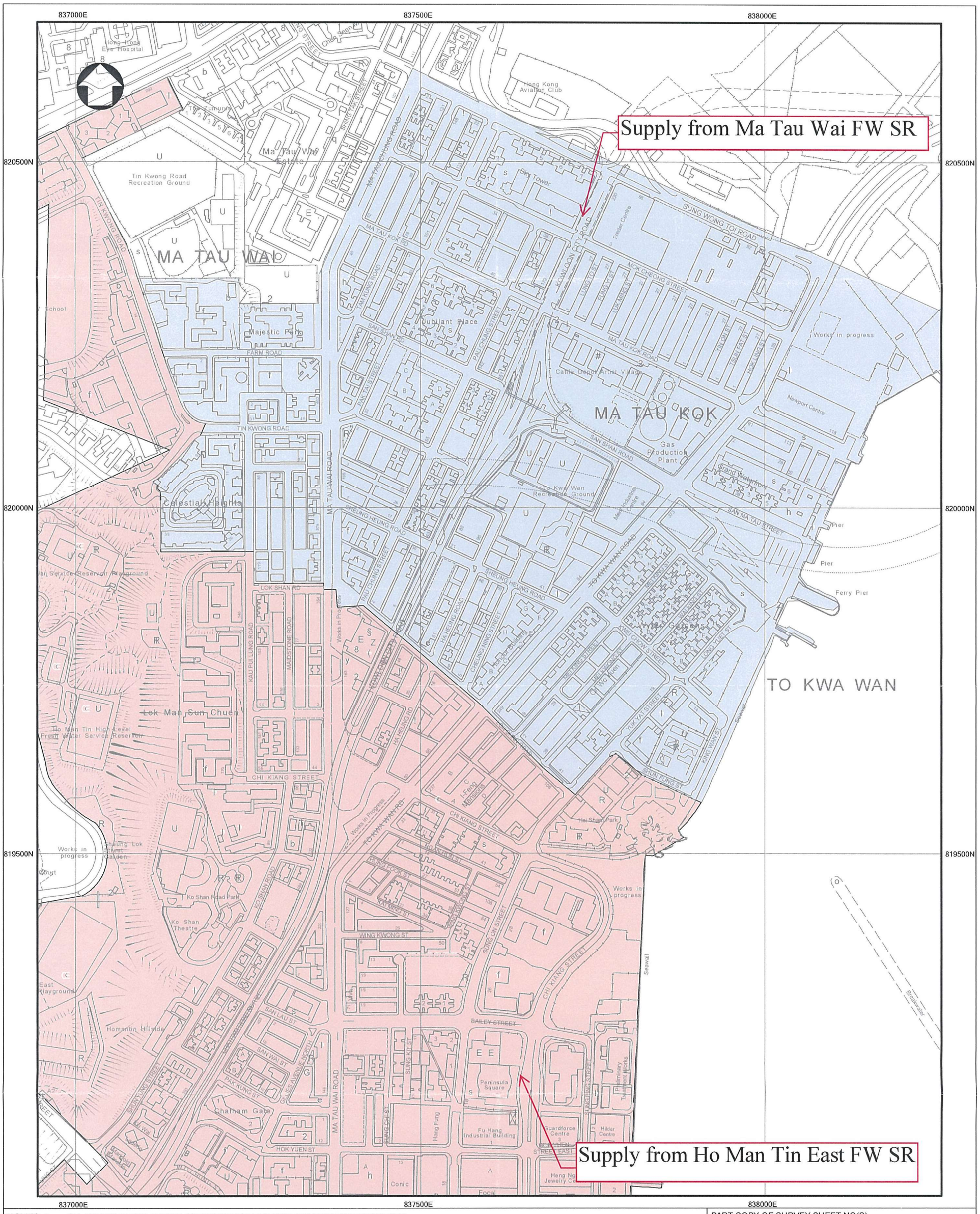
Yours faithfully,

(Thomas CHUNG)
for Chief Engineer/Kowloon
Water Supplies Department

Encl.

香港環境卓越大獎 Hong Kong Awards for Environmental Excellance
10 years+ 同心展關懷 caringorganisation

FRESH WATER



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.

PART COPY OF SURVEY SHEET NO(S).

11-NE-11C, 11D, 16B, 16D, 21A, 21B, 11-NW-15D, 20B, 20D & 25B

SHEET 1 OF 1 | SCALE 1:5000

水 務 署
Water Supplies Department

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Appendix 2.2 Water Demand Calculations

Future Water Demands of Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018)

					Freshwater			Saltwater			
		Type of Use	Population (head) [1]	Area (ha)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Future (Application Site)	Residential Development	Residential Density Zone R2	3,445	-	0.340	-	1171.30	0.070	-	241.15	WSD DI 1309
	Club House [2]	GIC	-	2.729	-	2.00	5.46	-	0.70	1.91	WSD DI 1309
	Retail	Commercial	-	10.496	-	2.00	20.99	-	0.70	7.35	WSD DI 1309
	Government, Institution or Community (GIC)	GIC	-	1.000	-	2.00	2.00	-	0.70	0.70	WSIA- CE 4/2004#
						TOTAL	**1199.7**			**251.1**	

*Overall Unit Demand includes 0.055 m^3/head/day for Service Trade
#Agreement No. CE 4/2004 (TP) South East Kowloon Development, Comprehensive Planning & Engineering Review Stage 1: Planning Review - Feasibility Study (from Planning Department). For details, please refer to the link below:

https://www.pland.gov.hk/pland_en/p_study/prog_s/sek_09/website_chib5_eng/english/TR1/Chapter%206.html

TOTAL FRESHWATER DEMAND (m^3/day) = 1199.7

TOTAL SALTWATER DEMAND (m^3/day) = 251.1

Remark: (1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

(2): Clibhouse area assumed 4% of domestic GFA

Baseline (Existing) Water Demands of Sites at Ming Lun Street/ Ma Tau Kok Road Development Scheme (KC-018)

							Freshwater			Flushing Water			
		Type of Use	Population (head)	Area (ha)	Laundry-washing unit (unit)	Laundry-Design flow for each washing unit (m3/kg/cycle)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Baseline (Existing Area)	No. 91-113 Ma Tau Kok Road, Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street	Residential Density Zone R3	1990	-	-	-	0.445	-	885.55	0.070	-	139.30	WSD DI 1309
		Commercial (Retail & Service)	-	3.492	-	-	-	2.00	6.98	-	0.70	2.44	WSD DI 1309
		Commercial (Restaurant)	5	0.096	-	-	-	2.00	0.19	1.580	-	7.90	WSD DI 1309 & EPD GESF
		Laundry	-	-	4	0.0173	-	-	0.0000692	-	-	-	WSD Survey
		*Overall Unit Demand includes 0.055 m^3/head/day for Service Trade						**TOTAL**	**892.7**			**149.6**	

TOTAL FRESHWATER DEMAND (m^3/day) = **892.7**

TOTAL SALTWATER DEMAND (m^3/day) = **149.6**

Future Water Demands of To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019)

					Freshwater				Saltwater			
		Type of Use	Population (head) [1]	Area (ha)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (mm/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Future (Application Site)	Residential Development	Residential Density Zone R2	2,565	-	0.355	-		910.58	0.070	-	179.55	WSD DI 1309
	Club House [2]	GIC	-	2.032	-	2.00		4.06	-	0.70	1.42	WSD DI 1309
	Retail	Commercial	-	7.816	-	2.00		15.63	-	0.70	5.47	WSD DI 1309
	Government, Institution or Community (GIC)	GIC	-	1.000	-	2.00	-	2.00	-	0.70	0.70	WSIA- CE 4/2004#
						TOTAL		**933.0**			**187.1**	

*Overall Unit Demand includes 0.055 m^3/head/day for Service Trade

#Agreement No. CE 4/2004 (TP) South East Kowloon Development, Comprehensive Planning & Engineering Review Stage 1: Planning Review - Feasibility Study (from Planning Department). For details, please refer to the link below:

https://www.pland.gov.hk/pland_en/p_study/prog_s/sek_09/website_chib5_eng/english/TR1/Chapter%206.html

TOTAL FRESHWATER DEMAND (m^3/day) = 933.0

TOTAL SALTWATER DEMAND (m^3/day) = 187.1

Remark: (1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

(2): Clibhouse area assumed 4% of domestic GFA

Baseline (Existing) Water Demands of the Sites at To Kwa Wan Road/ Ma Tau Kok Road Development Scheme (KC-019)

					Freshwater			Flushing Water			
		Type of Use	Population (head)	Area (ha)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Baseline (Existing Area)	New Port Centre along Ma Tau Kok Road	Commercial	-	8.786	-	2.00	17.57	-	0.70	6.15	WSD DI 1309
		Industrial	-	8.786	-	450	3953.52	-	210	1844.98	WSD DI 1309
						TOTAL	**3971.1**			**1851.1**	

TOTAL FRESHWATER DEMAND (m^3/day) = **3971.1**
TOTAL SALTWATER DEMAND (m^3/day) = **1851.1**

Future Water Demands of Proposed Comprehensive Development at Kowloon City (13 St.)

					Freshwater			Saltwater			
		Type of Use	Population (head) [1]	Area (ha)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Future (Application Site)	Residential Development	Residential Density Zone R2	11,902	-	0.355	-	4225.07	0.070	-	833.11	WSD DI 1309
	Club House/ Retail	Commercial	-	34.044	-	2.00	68.09	-	0.70	23.83	WSD DI 1309
*Overall Unit Demand includes 0.055 m³/head/day for Service Trade						**TOTAL**	**4293.2**			**856.9**	

TOTAL FRESHWATER DEMAND (m³/day) = 4293.2

TOTAL SALTWATER DEMAND (m³/day) = 856.9

Remark: (1):A more conservative approach is also carried out for +17% variation of population increase, which is about 2.7 as the same as the average domestic household size of Kowloon City District in 2021 Population Census. The results demonstrated that it will not incur major deviation from the current assessment.

Baseline (Existing) Water Demands of the Sites at Kowloon City (13 St.)

							Freshwater			Flushing Water			
		Type of Use	Population (head)	Area (ha)	Laundry-washing unit (unit)	Laundry-Design flow for each washing unit (l/unit/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Baseline (Existing Area)	13 Streets	Residential Density Zone R3	6124	-	-	-	0.445	-	2725.18	0.070	-	428.68	WSD DI 1309
		Commercial (Retail & Service)	-	16.956	-	-	-	2.00	33.91	-	0.70	11.87	WSD DI 1309
		Commercial (Restaurant)	45	0.880	-	-	-	2.00	1.76	1.580	-	71.10	WSD DI 1309 & EPD GESF
								TOTAL	**2760.9**			**511.6**	

*Overall Unit Demand includes 0.055 m^3/head/day for Service Trade

TOTAL FRESHWATER DEMAND (m^3/day) = 2760.9
TOTAL SALTWATER DEMAND (m^3/day) = 511.6

Future Water Demands of the Application sites and its Vicinity

		Freshwater Daily Demand (m^3/day)	Saltwater Daily Demand (m^3/day)
Baseline (Existing Area)	Ming Lun Street/ Ma Tau Kok Road (KC-018)	892.7	149.6
	To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	3971.1	1851.1
	13 Streets	2760.9	511.6
	Total (m^3/day)	**7624.7**	**2512.4**

		Freshwater Daily Demand (m^3/day)	Saltwater Daily Demand (m^3/day)
Future (Application Site)	Ming Lun Street/ Ma Tau Kok Road (KC-018)	1199.7	251.1
	To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	933.0	187.1
	13 Streets	4293.2	856.9
	Total (m^3/day)	**6425.9**	**1295.2**

Appendix 2.3 Water Demands Calculations (Sensitivity Test)

Future Water Demands of Proposed Comprehensive Development at Kowloon City (13 St.)
- Sensitivity Test

					Freshwater				Saltwater			
		Type of Use	Population (head)	Area (ha)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (mm/day)	Daily Demand (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Unit Demand (m^3/ha/day)	Daily Demand (m^3/day)	Reference
Future (Application Site)	Residential Development	Residential Density Zone R2	13,689	-	0.355	-		4859.60	0.070	-	958.23	WSD DI 1309
	Club House	GIC	-	9.822	-	2.00		19.64	-	0.700	6.88	WSD DI 1309
	Retail	Commercial	-	42.125	-	2.00		84.25		0.700	29.49	
	Government, Institution or Community (GIC)	GIC	-	11.420	-	2.00	-	22.84	-	0.70	7.99	WSIA- CE 4/2004#
						TOTAL		**4986.3**			**1002.6**	

*Overall Unit Demand includes 0.055 m^3/head/day for Service Trade

#Agreement No. CE 4/2004 (TP) South East Kowloon Development, Comprehensive Planning & Engineering Review Stage 1: Planning Review - Feasibility Study (from Planning Department). For details, please refer to the link below:

https://www.pland.gov.hk/pland_en/p_study/prog_s/sek_09/website_chib5_eng/english/TR1/Chapter%206.html

TOTAL FRESHWATER DEMAND (m^3/day) = 4986.3
TOTAL SALTWATER DEMAND (m^3/day) = 1002.6

Future Water Demands of the Application sites and its Vicinity
- Sensitivity Test

		Freshwater Daily Demand (m^3/day)	Saltwater Daily Demand (m^3/day)
Baseline (Existing Area)	Ming Lun Street/ Ma Tau Kok Road (KC-018)	892.7	149.6
	To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	3971.1	1851.1
	13 Streets	2760.9	511.6
	Total (m^3/day)	**7624.7**	**2512.4**

		Freshwater Daily Demand (m^3/day)	Saltwater Daily Demand (m^3/day)
Future (Application Site)	Ming Lun Street/ Ma Tau Kok Road (KC-018)	1199.74992	251.1
	To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	933.0	187.1
	13 Streets	4986.3	1002.6
	Total (m^3/day)	**7119.0**	**1440.8**

Appendix 9

Qualitative Appraisal of Risk Impact- Technical Note

Prepared for

Urban Renewal Authority

Prepared by

Ramboll Hong Kong Limited

TWO DEVELOPMENT SCHEMES - MING LUN STREET / MA TAU KOK ROAD (KC-018) AND TO KWA WAN ROAD / MA TAU KOK ROAD (KC-019)

QUALITATIVE APPRAISAL OF RISK IMPACT DUE TO OPERATION OF MA TAU KOK GAS WORK NORTH PLANT

Date	**October 2022**
Prepared by	**Simon Lai** **Environmental Consultant**
Signed	
Approved by	**Calvin Chiu** **Senior Manager**
Signed	
Project Reference	**URAKCAA2EI01**
Document No.	**R8590_V1.2**

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CHAPTERS

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Table 3 Variation of Population with "5 Streets" area when compared to the Approved QRA Report 2-3

FIGURES

Figure 1.1 The Schemes and its Environ

APPENDICES

Appendix 2.1 Extracts of Results from Approved QRA Report

1. INTRODUCTION

1.1 Background

1.1.1 Under a holistic planning approach, the URA has proposed two Development Schemes at Ming Lun Street / Ma Tau Kok Road (KC-018) and To Kwa Wan Road / Ma Tau Kok Road (KC-019) (the Schemes). URA's intention is to implement the 2 Schemes as 1 inclusive redevelopment. A comprehensive notional scheme is prepared considering the 2 connecting sites as one redevelopment.

1.1.2 This Qualitative Appraisal of Risk Impact Report due to operation of Ma Tau Kok Gas Work North Plant (MTK Plant) is prepared to support the two draft Development Scheme Plans (DSPs) submission to the Town Planning Board (TPB) under Section 25 of the Urban Renewal Authority Ordinance.

1.1.3 Ramboll Hong Kong Limited has been appointed by URA to conduct this appraisal of risk impact due to existing MTK Plant on opposite side of To Kwa Wan Road with reference to previous quantitative risk assessment study.

1.1.4 Architectural drawings and technical information of the redevelopment are provided by the project architect (Ho & Partners Architects Engineers & Development Consultants Limited (HPA)).

1.2 The Schemes and its Environs

1.2.1 The Schemes have a total gross site area of 20,189m^2 (11,430m^2 for KC-018 site and 8,759m^2 for KC-019 site). It is situated in Kowloon City area and about bounded by Hong Kong Housing Society's reserved site for Dedicated Rehousing Estate (DRE) to the north, To Kwa Wan Road to the west, existing Grand Waterfront (residential use) to the south and Ma Tau Kok waterfront to the east. **Figure 1.1** shows the location of the Schemes.

1.2.2 Existing roads including Ming Lun Street, Chung Sun Street, Hing Yin Street, Hing Yan Street and Ma Tau Kok Road fall within the Schemes. In addition, the Schemes is occupied by ageing residential buildings (not less than 60 years) of 7 to 8 storeys with street shops and Newport Centre (industrial building). The street shops include restaurants, retail shop, garage, shops for auto parts, auto cleaning service, hardware store, etc. Newport Centre (Phase 1 & 2) is currently occupied for offices, storage, workshops, showrooms and retail services use.

1.2.3 "13-Street" to the northwest is currently occupied by ageing residential buildings (about 60 years) of 6 to 7 storeys with street shops. The "13-Street" area falls within a "*Proposed Redevelopment Priority Area*" under DURF. The site is currently zoned as "CDA" under the approved Ma Tau Kok OZP No. S/K10/28 gazetted on 25 March 2022. According to the OZP, the planning intention of this "CDA" zone is for comprehensive re-/development of the area for residential and/or commercial uses with the provision of open space and other supporting facilities.

1.2.4 Grand Waterfront with 5 residential towers erected on top of a retail podium building is situated to the immediate south. MTK Plant is situated on the opposite side of To Kwa Wan Road. Developments further away include Cattle Depot Art Park and Artiest Village, To Kwa Wan Recreation Ground, a number of industrial/commercial buildings (e.g. Merit Industrial Centre, Kapok Industrial Building, New Lee Wah Centre) along To Kwa Wan Road, Wyler Gardens (residential uses) and a ferry pier.

1.3 Proposed Redevelopment

1.3.1 The Proposed Redevelopment at the Schemes consists of 4 residential towers with 3 lowest floors (G/F to 2/F) for retail/GIC/clubhouse purpose and 31 domestic storeys above (3/F to 33/F). The residential storeys start at an elevation of 21.1mPD with floor-to-floor heights of 3.15m for 3/F to 29/F, 3.35m for 30/F, 3.5m for 31/F to 33/F. Carparking facilities will be provided in 3 basement floors. There is a maximum BH (measured at the main roof of the tower) of 120mPD. There will be a total of 2,226 flat units provided after development.

1.3.2 The tentative completion dates of the proposed redevelopment at both KC-18 site and KC-019 site are 2033.

2. APPRAISAL OF RISK IMPACT

2.1 Background

2.1.1 MTK Plant is classified as a potentially hazardous installation (PHI). It is surrounded by "13 Streets" area, "5 Streets" area, existing Grand Waterfront (high-rise residential development), Cattle Depot Artist Village/Art Park, To Kwa Wan Recreation Ground and industrial buildings.

2.1.2 In 2021, the CCPHI had endorsed the Quantitative Risk Assessments (QRA) report ("Approved QRA Report"), which had assessed the risk levels associated with the Ma Tau Kok Gas Works (MTKGW) arising from potential residential development (including development in DRE site of HKHS, "5-Street" and "13-Street"area) within the Consultation Zone of the PHI of the MTKGW. This Qualitative Appraisal of Risk Impact report only serves as an appraisal to review that the proposed development of the two Schemes is in line with the Approved QRA. The population variation analysis is prepared based on the same assumptions adopted in the Approved QRA.

2.1.3 In the Approved QRA, "13 Streets" area, "5 Streets" area adopted the following assumptions:

Table 1 Summary of Development Parameters of "5 Streets" area in the Approved QRA Report

	"5 Streets" area
Plot Ratio: Domestic / Non-Domestic	6.0 / 0.5
Number of flats	2,458
Residential Population (based on PPOF of 2.3)	5,653
Non-domestic GFA (commercial area)	9,156 sq.m
Commercial/Non-Domestic area (based on density of 20sq.m/person)	458
Temporal variation – residential – day time (0600-1800)	25%
Night time 1 (1800-0000)	100%
Night time 2 (0000-0600)	100%
Temporal variation – commercial – day time (0600-1800)	100%
Night time 1 (1800-0000)	10%
Night time 2 (0000-0600)	0.5%

2.1.4 According to the result of the Approved QRA (see **Appendix 2.1**), the societal risk level taking into account cumulative risk impact by considering population within the consultation zone (including but not limited to "13 Streets" area and "5 Streets" area) is within ACCEPTABLE and ALARP region. In addition, it is understood that individual risk levels at off-site areas including "13 Streets" area and "5 Streets" area are lower than 1E-05 per year as stipulated in ProPECC PN 2/94 "Potentially Hazardous Installations".

2.1.5 Regarding the societal risk level, it is noted that the FN curve is nearest to the UNACCEPTABLE region at the point of 1.00E-09 per year (F) for fatality of 1000 (N). For example, with the same probability of occurrence, in case the number of fatality increases further, it may encroach into the UNACCEPTABLE region.

2.2 Change of Proposed Development in "5 Streets" area

2.2.1 According to the current proposal, both KC-018 site and KC-019 site within the Schemes will have the plot ratio increased when compared to the development parameters in the Approved QRA report.

2.2.2 Plot ratio of domestic / non-domestic area will be increased from 6.0 / 0.5 to 6.5 / 1.0. In addition, GIC facilities will be provided. The proposed GIC facilities would operate during day time and mainly serving general public instead of vulnerable population. GIC facilities such as recreational centre, day care centre, etc., could be considered within the Schemes while GIC facilities serving vulnerable population such as elderly home, elderly day care centre, residential child care services, hostel for disabled persons etc., would be avoided, subject to further liaison with relevant government departments at detailed design stage. In addition, the GIC facilities proposed in the Schemes will be located away from Ma Tau Kok Gas Works as far as practicable.

Table 2 Proposed Change of Development Parameters of the Schemes ("5 Streets" area) when compared to the Approved QRA Report

	Approved QRA Report	Current Proposal
Plot Ratio: Domestic / Non-Domestic	6.0 / 0.5	6.5 / 1.0
Number of flats	2,458	2,226
Commercial area	9,156 sq.m	18,312 sq.m
Commercial/Non-domestic population (based on density of 20sq.m/person)	458	916
GIC use	No	Yes
GIC population	0	75

2.2.3 In particular, it is worth noted that the increase of domestic plot ratio would help to increase flat size so that the minimum flat size would not be smaller than 280 sq.ft (or 26 sq.m), echoing the recent government policy. Therefore, the increase in plot ratio would not necessarily result in increase of flat units. According to the current proposal, the total number of flat of the Schemes would be 2,226 numbers, and is reduced when compared to the Approved QRA report.

2.3 Evaluation of Any Increased Risk Impact

Individual Risk

2.3.1 According to the finding in the Approved QRA report, the individual risk contour of 10-5 per year with consideration of exposure factor of 30% is marginally confined within the site boundary of the MTK Plant.

2.3.2 The site location and boundary of the Schemes does not change. Therefore, same conclusion can be drawn that there is no change on the individual risk level at the Schemes. The risk level would be lower than 1E-05 per year as stipulated in ProPECC PN 2/94.

Societal Risk

2.3.3 The societal risk level depends on the offsite population. In addition, temporal variation of population is accounted in QRA to reflect the change of population in a day. In the Approved QRA report, temporal variation was assumed as tabulated in Table 1.

2.3.4 Moreover, as discussed in Section 2.1, the societal risk level in the Approved QRA report is close to UNACCEPTABLE region at 1.00E-09 per year (F)/1000 (N). In other words, if there is any increase of maximum population, it may more possibly lead to change of societal risk to encroach into the UNACCEPTABLE region. Considering the nature of population within the consultation zone (predominantly residential), maximum population within the consultation zone would usually occur during night time period when residential population is highest.

2.3.5 Therefore, the variation of population is further analysed.

2.3.6 The population variation analysis is prepared based on same PPOF (2.3) (with reference to HKPSG Ch.2) adopted in the Approved QRA study for a fair comparison. According to the 2021 population census, the average household size in Hong Kong is decreasing to 2.7 in 10 years. Upon completion of the development in 2033 tentatively, the average household size is expected to agree to the HKPSG. Moreover, since the nature of the development in the Approved QRA report and current proposal is the same (mainly residential with retail facilities), there is no significant change anticipated on pedestrian population. Other assumptions such as indoor fraction is assumed unchanged.

2.3.7 Given that the building height of the proposed development is increased in the current proposal, the separation of population from risk source (at low level) will increase in general so that the actual risk impact will decrease. Yet, this factor is not accounted in the population variation analysis as well.

Table 3 Variation of Population with "5 Streets" area when compared to the Approved QRA Report

	Approved QRA Report			Current Proposal		
Population in:	Residential	Commercial	Total	Residential	Commercial+GIC	Total
Day Time	1,413	458	1,871	1,280	991	2,271
Night Time 1	5,653	46	5,699	5,120	99	5,219
Night Time 2	5,653	3	5,656	5,120	5	5,125
Maximum population			**5,699**			**5,219**

2.3.8 According to the comparison, daytime population is increased by 400 numbers; night time 1 population is decreased by 480 numbers; night time 2 population is decreased by 531 numbers. As discussed before, maximum population within consultation zone should occur during night time considering the nature of landuse. The proposed development is mainly residential in nature, maximum population will also occur during night time when most residents stay at home. The increase in daytime population compared with the Approved QRA is mainly due to the proposed commercial and GIC uses. These uses will be located away from the Ma Tau Kok Gas Works as far as practicable, subject to detailed design. In addition, the increase of population during day time would not affect the maximum population. The maximum population based on current proposal would be reduced by 480 numbers so that the maximum fatality would likely be reduced.

2.3.9 Given that the effective population in the Schemes will be reduced in future when compared to the Approved QRA report, no increase in potential risk due to operation of existing MTK Plant is anticipated.

2.3.10 It is considered that the societal risk level based on the latest development proposal would still fall within ALARP region so that practicable mitigation measures should be considered and adopted to reduce the risks. In the Approved QRA report, the recommended measures applicable to the Schemes at KC-018 & KC-019 including (1) to provide at-grade passageway on southern side of both KC-018 and KC-019 sites, and (2) to minimise bench/ sitting-out area at grade facing MTK Plant.

2.3.11 The same mitigation measures will be incorporated into the latest development proposal so as to reduce the risk impact. While vulnerable population arising from GIC use is not anticipated at this stage, it is noted that (3) in case uses such as elderly day care centre which would attract vulnerable population is planned in future, the GIC use will be located away from the risk source as practicably possible.

3. CONCLUSION

3.1.1 The development potential of KC-018 site and KC-019 site within previously referred "5 Streets" area is proposed to be increased with revised P.R. of 6.5 (domestic) + 1.0 (non-domestic)

3.1.2 Based on the evaluation in this context, the current proposal for KC-018 site and KC-019 site would result in reduced number of maximum population when compared to the assumption in previously Approved QRA report.

3.1.3 Therefore, no further increase in societal risk impact encroaching into UNACCEPTABLE region due to the operation of existing Ma Tau Kok Gas Work North Plant is anticipated.

3.1.4 Since the societal risk impact would fall within ALARP region with respect to the latest development proposal, same mitigation measures recommended in the Approved QRA report will be adopted to reduce the risk impact. In addition, due to incorporation on GIC use, further mitigation measures will be recommended. The risk mitigation measures are summarised below:

(1) to provide at-grade passageway on southern side of both KC-018 and KC-019 sites;

(2) to minimise bench/ sitting-out area at grade facing MTK Plant;

(3) to locate the GIC use away from the risk source as practicably possible in case uses such as elderly day care centre which would attract vulnerable population is planned in future

3.1.5 Upon DSP approval by the CE in C, the URA will liaise with relevant government departments and CCPHI on the available mitigation measures, and follow as far as practicable, subject to detailed design.

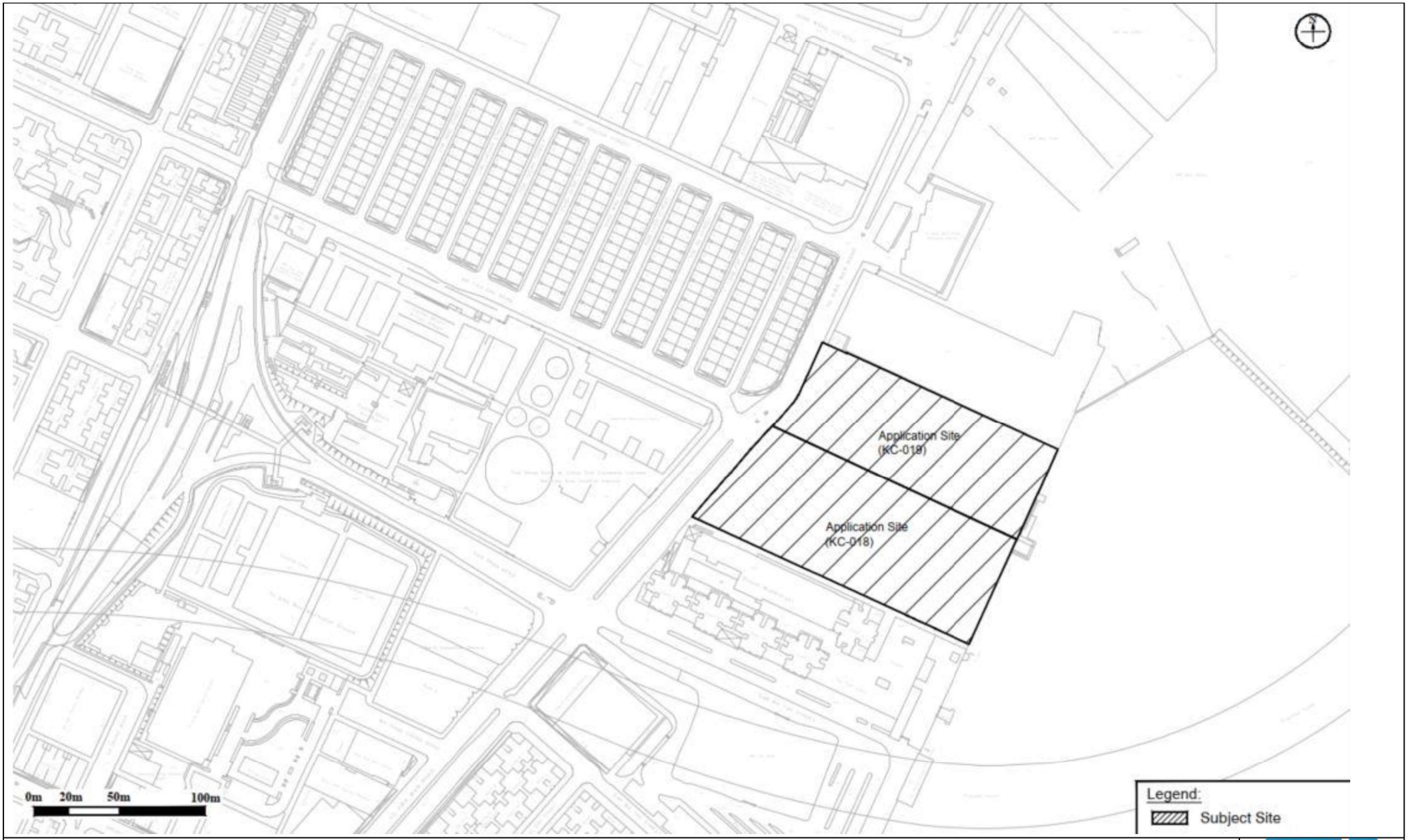
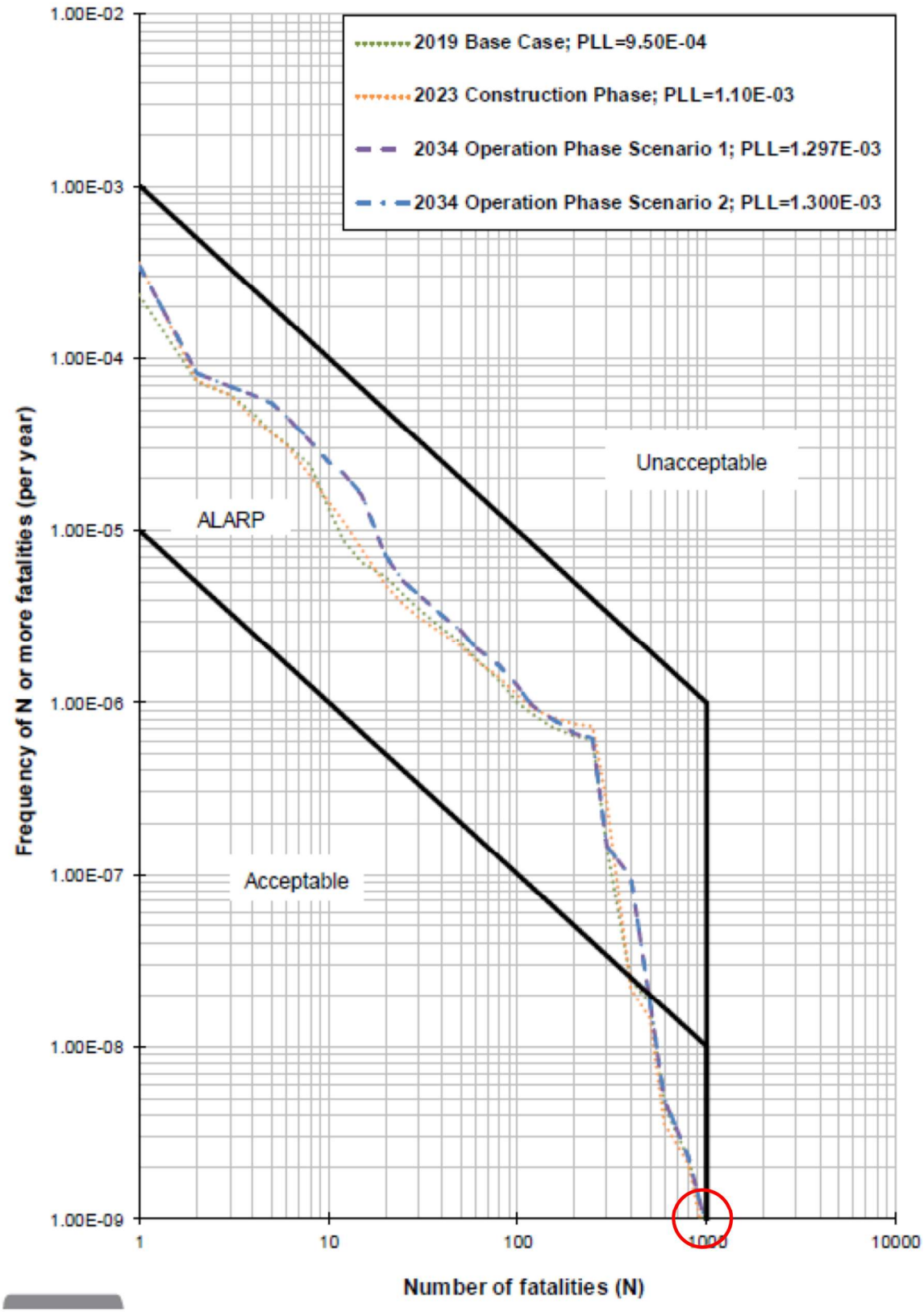


Figure: 1.1	RAMBOLL
Title: Application Site and its Environs	Drawn by: SL
	Checked by: CC
Project: Two Development Schemes - Ming Lun Street/ Ma Tau Kok Road (KC-018) and To Kwa Wan Road/ Ma Tau Kok Road (KC-019)	Rev.: 1.1
	Date: Jul 2022

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Appendix 2.1 Extracts of Results from Approved QRA Report

Observation: FN curve falls within ACCEPTABLE and ALARP regions. The FN curve is nearest to UNACCEPTABLE region at N=1000



Appendix 10

Tentative Implementation Programme

KC-018 & KC-019 URA Ming Lun Street / Ma Tau Kok Road & To Kwa Wan Road / Ma Tau Kok Road Development Schemes

Tentative Implementation Programme

