Urban Renewal Authority Development Scheme

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



Shantung Street / Thistle Street (YTM-012)

市區重建局
URBAN RENEWAL AUTHORITY

Planning Report

October 2020

Urban Renewal Authority

DEVELOPMENT SCHEME

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EXECUTIVE SUMMARY

1. The Urban Renewal Authority (URA) submits this planning report to seek approval from the Town Planning Board (TPB) for the draft Development Scheme Plan (DSP) No. S/K3/URA4/A. The DSP refers to the Development Scheme (the Scheme) at Shantung Street / Thistle Street Development Scheme (YTM-012). The Development Scheme Area (the Scheme Area) is located in Mong Kok District. The Scheme boundary is in "L-shape" broadly bounded by Thistle Street to the east, Shantung Street to the south, part of Ferry Street to the west and part of Nelson Street to the north. With a total gross site area about 2,796 sq.m., the Scheme includes the buildings at 1-27 Shantung Street (odd nos.), 1-23 Thistle Street (odd nos.) and 2L-2M Nelson Street, part of the Leisure and Cultural Services Department (LCSD)'s Thistle Street Rest Garden, a government lane as well as the surrounding public pavement.

2. The Scheme aims to restructure and re-plan the area through redevelopment (R1) and to provide opportunities for revitalization (R4) for the surroundings. This integrated urban renewal approach, which is in line with the objectives of urban renewal under Urban Renewal Strategy (URS) 2011 and follow the principles and considerations developed under the District Planning Study for Yau Ma Tei and Mong Kok (YMDS) currently commissioned by the URA.

3. Part of the existing Thistle Street Rest Garden (about 780 sq.m.) (the "affected POS") is included in the Scheme. The existing Rest Garden is situated at a relatively "land-locked" area between buildings and is of poor visibility and accessibility. It is proposed to restructure and re-plan the area, including the layout of the affected POS, to open up the Rest Garden towards Shantung Street and Thistle Street to enhance its accessibility and permeability with adjoining streets. The affected POS at grade will be excluded from Plot Ratio (PR) / Gross Floor Area (GFA) calculation and will be re-provisioned to LCSD for maintenance after restructuring. An additional 200 sq.m. of sunken plaza will also be provided adjoining the re-provisioned POS. The sunken plaza will provide connection between the entrance of the re-provisioned POS and part of the retail shops at basement level to enhance the vibrancy of these public spaces.

4. To enhance planning gain to the area and to align the principle of "Single Site, Multiple Uses" promoted by the Government, GIC uses of not more than 2,850sq.m. GFA will be reserved in the Scheme. The non-domestic GFA for these GIC uses will be exempted from PR calculation under the Notes of the draft DSP. Under the notional design, existing tenement buildings will be redeveloped to provide a composite building with about

300 new residential units with commercial/ retail / Government, Institution or Community (GIC) facilities at the podium, and a low block for commercial/retail and GIC facilities.

5. The Scheme Area is currently zoned "Residential (Group A)" ("R(A)"), "Open Space ("O")" and the pavement shown as "Road" on the Approved Mong Kok Outline Zoning Plan (OZP) No. S/K3/32 gazetted on 18 October 2019. Under the draft DSP, the Scheme Area is proposed to be zoned "R(A)". The overall Plot Ratio (PR) is 9.0, which is in line with the development intensity of "R(A)" zone in Kowloon. Whilst keeping the planning objectives as identified above, a relaxation of maximum building height of the OZP from 100mPD to 120mPD for the draft DSP is proposed. This not only allows for the accommodating GIC at appropriate headroom in the podium, but also provides necessary separation of domestic use to meet air quality requirements under the Air Quality Objectives (AQOs) for the proposed development.

行政摘要

1. 市區重建局(市建局)向城市規劃委員會提交發展計劃草圖(編號S/K3/URA4/A)，名為山東街/地士道街發展計劃 (YTM-012) （該計劃）。該計劃位於旺角區，地盤呈「 L 」形，大概東面毗連地士道街，南面毗連山東街，西面毗連渡船街(部分) 、北面毗連奶路臣街(部分)。地盤總面積約 2,796 平方米，包括位於山東街 1 至 27 號(單數)、地士道街 1 至 23 號(單數)，奶路臣街 2L 至 2M 號的樓宇、部分康樂及文化事務署 (康文署) 轄下的地士道街休憩花園、一條政府土地上的小巷及周邊的公眾行人路。

2. 該計劃旨在透過重建(R1)以及在計劃範圍外活化(R4)的市區更新方法，重新規劃及重整該計劃內的土地。這些綜合市區更新方法同時符合 2011 年《市區重建策略》中所制定的市區更新目標，亦與市建局正在進行的「油麻地及旺角地區研究」(「油旺地區研究」)中所定立的規劃原則及相關考慮相符。

3. 該計劃涵蓋了地士道街休憩花園的一部份(即受影響公眾休憩用地)(面積約 780 平方米)，該花園現時被周邊樓宇包圍，位置隱蔽，建議透過重建，重新規劃該地塊，包括受影響公眾休憩用地的布局，打通山東街及地士道街的交界，提升休憩花園的可達性及通透性。於地面的受影響公眾休憩用地將不會用作計算總樓面面積/地積比率，並會重置及於重整後交回康文署管理。該計劃亦建議興建一個面積約 200 平方米的地下小廣場，連接重置後的休憩花園入口及地下部份商舖低層商店，提升休憩花園及地下小廣場的活力。

4. 為優化規劃裨益及切合政府近年推動的「一地多用」發展方針，該計劃建議提供不多於 2,850 平方米的非住用樓面面積作政府、機構或社區設施用途。有關政府、機構或社區設施的樓面面積會於發展計劃草圖中的說明書列明免於計算在地盤的地積比率內。根據初步的設計概念，現有的舊樓群將重建為一座現代化的住宅連平台，提供約 300 個住宅單位，及於平台附設零售/商業/政府、機構或社區設施用途，及一個低座建築物提供零售/商業/政府、機構或社區設施用途。

5. 根據 2019 年 10 月 18 日公布的 《旺角分區計劃大綱圖編號 S/K3/32》，該計劃座落於 「住宅(甲類)」地帶、「休憩用地」地帶及顯示為「道路」的行人路。發展計劃草圖建議把該計劃的土地劃為「住宅（甲類）」地帶。整體地積比率為 9.0，與九龍「住宅（甲類）」地帶的發展密度一致。為維持上述規劃目標，發展計劃草圖建議把該計劃土地的建築物高度限制由 100 米（主水平基準以上）略為放寬至 120 米（主水平基準以上），除提供足夠樓層高度以在平台內容納政府、機構或社區設施的樓面面積外，亦提供足夠距離分隔住宅用途以滿足空氣質素指標。

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PART 1

PLANNING REPORT

1. INTRODUCTION

1.1 The Development Scheme (the Scheme) involves the tenement buildings at 1-27 Shantung Street (odd nos.), 1-23 Thistle Street (odd nos.) and 2L-2M Nelson Street, a part of Thistle Street Rest Garden (about 780 sq.m.), a government back lane as well as the surrounding public pavement. The total gross site area of the Development Scheme is about 2,796 sq.m.

1.2 The Scheme was included in the URA's 19 Business Plan (BP) which was approved by the Financial Secretary for commencement in 2020/21. It is proposed to be proceeded as a Development Scheme under section 25 of the Urban Renewal Authority Ordinance (URAO). Subsequent to the URA Board's approval to submit the Scheme to the Town Planning Board (TPB) under section 25(5) of the URAO, the draft Development Scheme Plan (DSP), No. S/K3/URA4/A, was prepared for submission to the TPB.

1.3 Pursuant to section 23(1) of the URAO, the URA notified the public in the Government Gazette about the commencement of the Scheme on 16 October 2020. The draft DSP is hereby submitted under section 25(5) of the URAO to the TPB for its consideration.

1.4 This planning report (Part 1 of the whole report) was prepared to provide the TPB with the necessary background information and the planning proposal to facilitate its consideration of the draft DSP (Part 2 of the report), submitted under section 25 of the URAO. Supplementary information, including the preliminary design of the proposed development, a social impact assessment (SIA) (Stage 1), key technical assessments, and the implementation approach, are enclosed in Part 3 for reference.

2. THE DEVELOPMENT SCHEME AREA

2.1 The Development Scheme Area (the Scheme Area) is located in Mong Kok District, which is in "L-shape" broadly bounded by Thistle Street to the east, Shantung Street to the south, part of Ferry Street to the west and part of Nelson Street to the north. **Plan 1** shows the location of the Scheme.

2.2 The Scheme Area covers about a gross site area of 2,796 sq.m., including two clusters of tenement buildings, part of the Leisure and Cultural Services Department (LCSD)'s Thistle Street Rest Garden (the Rest Garden), a government lane and the surrounding public pavement. Subject to detailed site survey upon DSP approval, the net site area for plot ratio (PR) calculation is about 1,660 sq.m., involving only the private lots and the government lane within the Scheme. The part of Thistle Street Rest Garden and public pavement area will not be used for PR/GFA calculation. The Scheme Area is shown in **Plan 2.**

2.3 The Scheme Area is currently zoned "Residential (Group A)" ("R(A)"), "Open Space ("O")", and the pavement shown as "Road" on the Approved Mong Kok Outline Zoning Plan (OZP) No. S/K3/32. An extract of the OZP is shown in **Plan 3**.

2.4 The Scheme aims to re-structure and re-plan the area through Redevelopment (R1) and to provide opportunities for Revitalisation (R4) for the surroundings to improve the built environment and the quality of the existing environment. The part of the Rest Garden (the affected POS) will be restructured to open up the existing "land-locked" open space to enhance its accessibility, air permeability and the visual connectivity with adjoining streets. Building setback along Nelson Street and Thistle Street will be provided to improve the pavement environment and enhance walkability of the surroundings. Existing tenement buildings, which are without lift and poor serviceability, will be redeveloped to meet modern sanitation and hygiene standards. Opportunities to optimise underground space for sunken plaza to connect with retail shops and the re-provisioned POS for place-making initiatives will be explored to enhance the vibrancy of the area. The holistic planning driven approach and the objectives of the Scheme are in line with the principles developed under the district planning study for Yau Ma Tei and Mong Kok (YMDS) currently conducted by URA and in line with the objectives of urban renewal under Urban Renewal Strategy (URS) 2011 aiming to:

- Restructuring and replanning of 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
- Enhancing the townscape with attractive landscape and urban design

3. BACKGROUND AND EXISTING CONDITIONS

Historical Background of the Scheme Area

3.1 Mong Kok is part of Yau Tsim Mong District nowadays. It is an area in the western part of Kowloon. The Mong Kok area used to be a Hakka settlement. A Mong Kok village was located in an area recorded as Mong Kok Tsui in the 1819 edition of the Xinan Gazetteer. It is located close to the junction of today's Mong Kok Road and Fa Yuen Street. Mong Kok village grew steadily throughout the eighteenth and nineteenth centuries. In the 1930s, the Chinese name of Mong Kok Tsui ("芒角咀") was renamed to "旺角" which literally means 'the Point of Prosperity'. The English name of "Mong Kok" remained unchanged.

3.2 The Mong Kok village, before it was cleared in 1926, had access to agricultural land to the south of the main village. The street names nowadays in many cases took their names from those old trades in the area, such as Flower Market Street, Soy Street (Soy Sauce Street), Fa Yuen Street (Flower Garden Street), Tung Choi Street (Water-Spinach Street), Sai Yeung Choi Street (Watercress Street), etc. From these street names, it seems likely that the flower and vegetable growers concentrated on the fertile fields north of Mong Kok village, while the industrial trades were mostly to be found in the hamlets, in the stream valleys south of the village.

3.3 Following periodic reclamation which extended the urban land westwards from Shanghai Street, the area was developed for light industry during the 1920s and 1930s renowned for cigarette making, cotton spinning and metallic goods manufacturing, although most was developed for tenement housing. It also accommodated shops and activities in support of the floating population on the adjacent typhoon shelter. After World War II, many factories in the district moved to Tai Kok Tsui on the west coast of Mong Kok. The last reclamation, commenced in the 1990's, is the largest reclamation project in Hong Kong creating the West Kowloon District for provision of housing, transport infrastructure and Government/community and recreational uses.

3.4 Today, Mong Kok is one of the major shopping/ commercial/ entertainment attractions in Hong Kong, with commercial/retail activities mainly concentrated along Nathan Road. As promoted by the Hong Kong Tourism Board, there are also a number of character streets / themed shopping streets in the district, including "Ladies' Market" at Tung Choi Street, "Sneakers' Street" at Fa Yuen Street and numerous shopping centers. A high concentration of retail shops selling

construction materials and hardware was also observed at Reclamation Street and Canton Road between Argyle Street and Dundas Street, forming a "construction materials and hardware street". The district is also with mixed commercial/residential uses. There is a concentration of old and dilapidated residential buildings with commercial/retail/eateries on ground floor, particularly along the inner streets of the district.

Planned Developments in the Vicinity

3.5 A footbridge system is proposed by the Highways Department (HyD) for construction of a footbridge along Argyle Street from Tong Mi Road to Hak Po Street; and along Tong Mi Road from Argyle Street to Fuk Tsun Street. The proposed footbridge system aims to ease the existing heavy pedestrian movement and improve the pedestrian network system of central area of Mong Kok. The proposal and development programme are now under review by the HyD.

3.6 Apart from the above, a site at the junction of Sai Yee Street and Argyle Street, which was previously occupied by the Water Supplies Department compound, Food and Environmental Hygiene office-cum-vehicle depot and Luen Wan Street temporary car park ("Sai Yee Street Redevelopment Site"), was identified by the Government for redevelopment. The site was rezoned from "GIC" and "OU (Multi-Storey Car/Lorry Park)" to "C(4)" in 2018 for comprehensive development including residential, commercial/office/hotel, open space and/or GIC facilities.

Existing Uses, Building and Living Conditions

3.7 A part of the existing Thistle Street Rest Garden (the Rest Garden), about 780sq.m. out of a total of about 2,290sq.m., is included in the Scheme Area. The Rest Garden is surrounded by residential buildings on three sides, with low visibility and poor accessibility from main street. Main entrance of the Rest Garden is located at Thistle Street, a street with frequent loading/unloading activities and illegal road-side parking which often blocks the entrance of the Rest Garden. Other side entrances of the Rest Garden are via narrow back lanes between buildings from Ferry Street and Nelson Street. The Rest Garden is currently owned, managed and maintained by LCSD. It is equipped with a standalone public toilet, elderly exercise equipment, children's playground, outdoor badminton court and sitting area (**Plan 11** refers).

3.8 The Scheme consists of two clusters of tenement buildings with 6-9 storeys high, separated by the Thistle Street Rest Garden. All buildings were completed between 1958 and 1973 (i.e. ranging from 47 to 62

years). As shown in the approved General Building Plans (GBPs), all buildings are without lift and the serviceability are poor. The buildings are in general permitted for domestic use on upper floors and shops for ground floor, with office use is permitted on the first floor for some of the buildings. The building characteristics of the two clusters of affected tenement buildings, including building age, building height and building condition, are highlighted in **Plans 4**, **5** and **6** respectively.

3.9 Based on non-obtrusive site observation conducted in September 2020, the upper floor units of the buildings within the Scheme are mainly residential in nature, with the ground floor units using for non-domestic purposes. Uses of the shops along Shantung Street are observed to be extended from those along Kam Lam Street, which mainly comprises of retail for small electronic parts and hardware, as well as other services business such as massage establishment and Chinese medical clinic.

3.10 According to URA's Building Condition Assessment (as at June 2020), 3 buildings within the Scheme are in "Poor" (the worst category) conditions, 5 buildings are in "Varied" conditions (the second worst category), while the remaining 8 buildings are in "Acceptable" conditions. Based on the URA's experience and the consultant's advice on building conditions, for buildings in "Poor" and "Varied" conditions, its 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 building.

3.11 Based on Buildings Department's records as of August 2020, all buildings within the Scheme have received Fire Safety Notices (FSDN) and thirteen (13) buildings have received building orders. Seven (7) buildings have completed building rehabilitation works under the Operation Building Bright (OBB) in 2015 (i.e. 2L-2M Nelson Street and 15-23 Thistle Street). One (1) building (21-27 Shantung Street) has completed building rehabilitation works under the Common Area Repair Works Scheme (CAS) in 2017. Rehabilitation works under the Fire Safety Improvement Works Subsidy Scheme (FSWS) of three (3) buildings (i.e.17, 19 and 21-27 Shantung Street) are also in progress. It is understood that the OBB and CAS 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 past URA's 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.

Surrounding Land Uses

3.12 The Scheme Area and its vicinity is an older part of Mong Kok area, with predominantly mixed commercial/residential in nature with lower floors for commercial uses such as retail shops and eateries. The area is physically segregated from the busiest commercial part of Mong Kok by Shanghai Street to the east, and the commercial/residential clusters including The Hermitage, Olympic City, Park Avenue, Hoi Fu Court and Charming Garden in the West Kowloon area by the West Kowloon Corridor (elevated road) and Ferry Street to the west. A plan showing the Information on buildings Immediately adjacent to Scheme Area is shown in **Plan 7**.

3.13 To the immediate north of the Scheme Area is an on-street wet market activities covering a section of Nelson Street. It is a kind of traditional on-street wet market open daily with shops, street stalls and hawkers selling dry/wet groceries and daily necessities, fresh fruits, meat and vegetables, etc. The wet-market activities and its related loading/unloading activities also extends from Thistle Street/Nelson Street junction to the north and south along Canton Street.

3.14 To the south of the Scheme Area across Shantung Street is predominantly tenement buildings with ground floor shops mainly selling hardware and small electronic parts, e.g. along Kam Lam Street and Kam Fong Street, which appears to be a concentration of this type of businesses in the area.

3.15 To the west of the Scheme Area, the street block of the Scheme Area is bounded by the heavily trafficked Ferry Street and the elevated West Kowloon Corridor, disconnected the area to the west of Ferry Street.

Demographic Background

3.16 The existing population of the Scheme is estimated to be about 600 persons in around 280 households. Detailed demographic information of the Scheme will be ascertained after Freezing Survey and incorporated in the SIA (Stage 2) report.

Ownership Pattern

3.17 Based on the ownership records in the Land Registry as of September 2020, buildings within the Scheme are under multiple ownerships (**Plan 8**).

Existing Traffic Network

3.18 The Scheme Area is bounded by Thistle Street to the East, Shantung Street to the south, and Nelson Street to the north. All three roads are local roads, of which Shantung Street and Nelson Street operate in one-way westbound traffic direction and Thistle Street operates in one-way northbound traffic direction.

3.19 To the immediate west of the Scheme Area are the heavily trafficked West Kowloon Corridor (elevated road) and the Ferry Street (underneath), which are trunk roads providing connections between Yau Ma Tei and Mong Kok. The West Kowloon Corridor (elevated road) extends towards Lai Chi Kok in the northwest and Ferry Street ends at Argyle Street.

Existing Pedestrian Network

3.20 The Scheme is located in close proximity to Mong Kok MTR station, of which some station exits are within 5-10 minutes walking distance from the Scheme. Shantung Street is the main pedestrian walkway towards Mong Kok MTR station and Argyle Street. Besides, heavy pedestrian flow is also found at Nelson Street and Canton Street between Mong Kok Road and Shantung Street due to the existence of on-street wet market.

3.21 Thistle Street is currently the main entrance of the Rest Garden. The street is, however, often occupied for loading/unloading activities, illegal on-street parking, road-side storage in relation to the adjacent on-street wet market operation. The vehicle-pedestrian conflict, noise and hygiene issues caused by these on-street activities creates an unpleasant pedestrian environment that further constrains the use of Thistle Street as the main entrance to the Rest Garden.

3.22 Site Photos of existing buildings, the Rest Garden and adjoining streets are shown in **Plans 9 to 11.**

4. PLANNING & LAND USE PROPOSALS

Development Intensity

4.1 Under the draft DSP, the Scheme Area is proposed to be zoned "R(A)", which is primarily for residential use, with the lowest three floors or in the purpose-designed non-residential portion of a building for commercial use as stipulated in the proposed Notes of the "R(A)" zone.

4.2 In the proposed Notes of "R(A)" zone, the proposed PR is 7.5 for domestic building or 9.0 for a building that is partly domestic and partly non-domestic, which is in line with the development intensity of "R(A)" zone under the prevailing Mong Kok OZP. Not more than 2,850 sq.m. non-domestic GFA is proposed for GIC uses in the Scheme. 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 or intended for use solely as GIC facilities, as required by the Government, may be disregarded from GFA/PR calculation. As such, the maximum PR of the proposed development is 9.0 under the DSP, of which PR 7.5 is for domestic uses and PR 1.5 is for non-domestic uses. An addition of 2,850sq.m. non-domestic GFA will be for GIC uses to be exempted from PR/GFA calculation under the DSP.

4.3 The part of Thistle Street Rest Garden included in the Scheme Area (the affected POS) is proposed to be re-provisioned within the Scheme, subject to liaison and agreement with LCSD. The area of the affected POS will be dis-regarded for PR/GFA calculation. A POS of not less than 780sq.m, which is permitted as of right under "R(A)" zone, will be specified in the "Remarks" of the proposed Notes of the draft DSP. The re-provisioned POS will be handed back to LCSD for ownership, management and maintenance upon redevelopment.

4.4 Whilst achieving the planning objectives as identified in **Section 2.4** above, a relaxation of maximum building height from 100mPD to 120mPD is proposed under the draft DSP to facilitate greater design flexibility of the building blocks in the Scheme. This will not only allow for accommodating GIC at appropriate headroom in the podium, but also provide necessary separation of domestic use to meet air quality requirements under the Air Quality Objectives (AQOs) for the proposed development. The proposed building height of 120mPD in the Scheme is also not incompatible with the surrounding built environment, which includes high-rise developments such as Langham Place (260mPD) and Cordis Hotel (167mPD) in the east at Shanghai Street, as well as The Hermitage (197-232mPD) in the West across West Kowloon Corridor.

4.5 The proposed development parameters of the Scheme are shown in **Table 4.1**, which will be subject to adjustments in the detailed design stage after DSP's approval.

Table 4.1 Proposed Development Parameters of the Scheme

Parameters	**Details**
Scheme Area	2,796 sq.m.
Net Site Area *	1,660 sq.m. (Subject to site survey and detailed design)
Proposed Zoning	"R(A)"
Proposed Maximum Building Height (relaxation of Maximum Building Height of 100mPD under OZP)	Not more than 120mPD
Proposed Maximum Domestic GFA (PR) ^	Around 12,450 sq.m. (7.5)
Proposed Maximum Non-domestic GFA (excluding GIC Provision (PR)) ^	Around 2,490 sq.m. (1.5)
Proposed Non-domestic GFA for GIC Provision (PR) # (proposed to be exempted from GFA calculation under DSP)	Not more than 2,850 sq.m. (1.7)
Total GFA (PR) under DSP	Around 14,940 sq.m. (9)
Total GFA (PR) under B(P)R (Class C site)	About 17,790sq.m. (10.7) (Conform to First Schedule under B(P)R)
No. of Flats@	About 300 flats
Average Flat Size@	About 41.5 sq.m.
Internal Transport Facilities for the proposed development (including the proposed provision for GIC facilities)	• Ground floor and Basement ancillary car park to accommodate: - 36 nos. private car parking spaces (2 nos. for disabled parking) - 5 motor-cycle parking spaces - 7 nos. L/UL bays (LGV bays) (Provision subject to further agreement with Transport Department at land grant stage)

Notes:

* Net Site Area includes all private lots and the government lane within the Scheme boundary. The affected POS and public pavement are not GFA accountable.

^ The exact GFA and PR are subject to TPB approval, detailed design and prevailing First Schedule of the Building (Planning) Regulations (B(P)R).

\# The total GFA shall not exceed the maximum permissible plot ratio under B(P)R for a Class C Site under the composite formula, with domestic PR = 7.5.

@ Indicative only, subject to detailed design at project implementation stage.

Conceptual Layout

4.6 As shown in the indicative block plan and the section plan of the notional design for the Scheme in **Appendix 1**, the proposed development comprises of a residential tower on top of a commercial/retail/GIC podium, a low-rise retail/GIC block, a re-provisioned POS, a sunken plaza with retail shops at basement level and a basement for ancillary car park.

Re-structuring of POS to enhance Accessibility, Vibrancy and Visual Connectivity

4.7 The layout of the affected POS within the Scheme will be re-structured and re-planned to open up the existing open space to create a wide and welcoming entry plaza at the corner of Shantung Street and Thistle Street (the re-provisioned POS) to enhance its accessibility from the main pedestrian routes and visual openness in the dense urban context. A sunken plaza of about 200sq.m. will be created within the Scheme to connect with the re-provisioned POS at grade and shops at basement level to enhance the vibrancy of the re-provisioned POS for public enjoyment. Some landscaping, stairs, covered and uncovered sitting out area may also be provided at ground level to create an interesting and green urban space.

4.8 The re-provisioned POS will be handed back to LCSD for ownership, management and maintenance upon completion. The standalone public toilet within the affected POS, will be re-provisioned within the remaining part of the Rest Garden (outside the scheme). The sunken plaza will be owned, managed and maintained by URA or its assignee or its joint venture partner(s) upon completion.

Enhance Walkability to create a Pedestrian Friendly Neighbourhood

4.9 Under the current notional design, there will be a high-rise residential tower with a clubhouse/commercial/retail/GIC podium (the "Tower Block") and a low-rise commercial/retail/GIC block (the "Low Block") in the Scheme. The Tower Block is situated at the southern part of the site along Shantung Street, and the Low Block is situated at the northern part of the site.

4.10 To further enhance the walkability of the Scheme Area, building setback will be provided along Thistle Street and Nelson Street to create a wider pavement and more comfortable pedestrian walking environment. Possible chamfering of the podium corners will be explored in future development to create wider side entrances to the Rest Garden from Nelson Street and Ferry Street, so as to further enhance the accessibility of the POS and the overall pedestrian circulation in the area.

Provision of GIC to enhance Planning Gain

4.11 To further enhance planning gain and align with "Single Site, Multiple Uses" principle promoted by Government, it is proposed to provide not more than 2,850sq.m non-domestic GFA for provision of GIC facilities within the Scheme to meet the community's need. The actual use of the GIC provision will be subject to liaison with Planning Department as well as the views from the Yau Tsim Mong District Council (YTMDC) and the locals after DSP approval.

4.12 Given the intended GIC use is yet to be confirmed and there is no parking requirement for GIC facilities under the Hong Kong Planning Standards and Guidelines (HKPSG), one car parking space (for disabled) and 2 LGV loading/unloading bays, are considered in the notional design to support the GIC provision.

Improve Permeability through Building Design

4.13 The proposed Tower Block and Low Block in the Scheme will adopt careful design on block sizes, disposition and layout to take into account of building separation to improve permeability. With the proposed increase of building height to 120mPD, the Tower Block can be designed with a smaller building footprint and slimmer building form to enhance building permeability of the local area, while allowing the residential portion to be placed on top of a higher podium to fulfil the AQOs requirement. On the other hand, the proposed Low Block is of only 6 storeys above ground. It will be of similar building height as the surrounding existing buildings. It will reduce the air blockage and enable better air movement in the area.

4.14 The existing Rest Garden will be re-structured and re-provided at the street corner of Shantung Street and Thistle Street, which will enable better air flow and air penetration at the pedestrian level into the POS. The proposed sunken plaza in connection with the re-provisioned POS would further open up the POS to almost half of the Thistle Street to enhance the air flow from the streets towards the inner part of the whole Rest Garden.

4.15 A comparison of the block layout of the existing buildings and the proposed buildings of the Scheme are illustrated in **Figure 1.1** in **Appendix 1**.

Underground Use of the Re-provisioned POS

4.16 It is proposed to make use of the underground area of the re-provisioned POS for provision of ancillary basement carpark of the proposed development, and retail shops connecting to the proposed sunken plaza in the Scheme. Initial liaison has been made with LCSD who had no in-principle objection to the use of the underground of the re- provisioned POS for ancillary car park and retail uses. On land ownership issues, it is proposed to delineate the re-provisioned POS and the uses underneath by sub-strata title arrangement in the future land grant after DSP's approval, and subject to further agreement with Lands Department, LCSD and other relevant Government departments.

Greenery and Landscaping

4.17 A total of 9 nos. of trees (with 95mm Diameter at Breast Height (DBH) or above) were identified within the Scheme Area. The majority of the existing trees were found to be in poor to fair form, fair health and fair amenity value. No old and valuable tree (OVT) is recorded on site. All the existing trees will be retained/transplanted as far as practical.

4.18 The proposed development will follow Sustainable Building Design (SBD) Guidelines as far as practicable to provide greenery to enhance the built environment. Greenery will be provided at pedestrian level, podium edge as well as roof top where appropriate and applicable, to create a visual relief and enhancement of the built environment. Preliminary Landscape Design Concept, a tree survey and compensation planting proposal were conducted (see **Appendix 2**) to provide a preliminary design concept and to address the conditions of the existing vegetation on site, and mitigation measures are proposed for the affected trees by the proposed development of the Scheme. Detailed landscape design, layout arrangement and proposed tree treatment of the re-provisioned POS as well as the remaining part of the Thistle Street Rest Garden (outside DSP

boundary and to be implemented under separate revitalisation works) will be further liaised with LCSD upon DSP approval.

Other Separated Urban Renewal Initiatives to be considered after approval of DSP

Revitalisation of Remaining Part of Thistle Street Rest Garden

4.19 To bring greater planning gain to the community at large, leverage on the urban renewal opportunity aiming for the Scheme and integration of other urban renewal initiatives, URA will propose to carry out a separate revitalisation works (R4) at the remaining part of the Thistle Street Rest Garden, which is outside the Scheme, with a holistic approach to achieve a coherent design theme for the entire Thistle Street Rest Garden. Views of YTMDC and local stakeholders, and agreement from LCSD and relevant Government departments will be sought on the design and programme of the revitalisation works upon DSP's approval.

Street Improvement Works at Thistle Street

4.20 To mitigate the current vehicle-pedestrian conflict along Thistle Street, it is proposed to provide building setback of the Low Block and some road improvement works, including repaving, traffic calming measures, etc., to improve walkability, road safety and pedestrian environment of Thistle Street, subject to the views and agreement from relevant Government department. Details of the proposed improvement works is described in the TIA in **Appendix 5**.

Technical Assessments

Visual Appraisal

4.21 A Visual Appraisal (VA) was conducted (see **Appendix 3**) to study the potential visual impact with the implementation of the Scheme. Visual appraisal has been carried out both locally and at the strategic view points from the opposite side of the Victoria Harbour. The proposed relaxation of building height to 120mPD respects and complement to the building height profile of the surrounding context. The study has demonstrated that the proposed development was visually compatible with the surrounding built environment and would not create significant visual impact in general.

Social Impact

4.22 In accordance with the Urban Renewal Strategy (URS), a non-obtrusive SIA (Stage 1) has been conducted and the report is included as **Appendix 4**. The report highlights characteristics of the local population which will need to be prepared for and borne in mind during the implementation of the Scheme. The Stage 2 SIA Report is under preparation based on factual data and opinions collected from the freezing survey and SIA interviews, which has been conducted on the commencement of the Scheme. The Stage 2 SIA Report will be submitted to TPB separately. The SIA reports are to assess the likely effect of the implementation of the Scheme and to propose mitigation measures to minimise any social impact.

Traffic Impact

4.23 A TIA (**Appendix 5**) has been conducted to assess the traffic impact of the Scheme as well as the proposed provision of internal transport facilities of the proposed development. The TIA demonstrates that the Scheme has no adverse traffic impact on the local traffic network and the pedestrian walking environment. The proposed parking provision and the internal transport facilities are align with the requirements in the HKPSG and are acceptable from traffic engineering point of view.

4.24 Traffic calming measures are proposed to improve walkability and environment of Thistle Street, including shifting of loading/unloading areas, railing and widening of crossing, road markings. The proposed enhancement works aim to enhance pedestrian safety and visibility of the POS. Implementation of the traffic calming measures will be subject to the views and agreement from relevant Government departments.

Environmental Impact

4.25 An Environmental Assessment (EA) (see **Appendix 6**) was conducted to study any potential environmental impacts / benefits associated with the implementation of the Scheme. The study concluded that the impact on air quality, noise, waste management and land contamination were not insurmountable with mitigation measures adopted.

4.26 Air quality impact assessment (AQIA) indicated that in view of the local air quality condition, fresh air intake and residential units for the proposed development in the Scheme Area shall be located at minimum 36m above ground to meet the air quality requirement under AQOs.

4.27 On noise assessment, with the appropriate noise mitigation measures implemented during the construction period, no adverse noise impact arising from the construction activities is expected. Based on the notional

layout and adoption of proposed mitigation measures, such as acoustic balcony and top-hung window, the road traffic noise will be minimized and a noise compliance rate of 93.7% by flat could be achieved. The potential noise impact from the fixed noise sources has also assessed and no adverse noise impact is anticipated with mitigation measures adopted.

4.28 On waste management, appropriate sustainable measures/approaches to waste management are proposed to produce 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 Scheme are envisaged.

4.29 The potential of land contamination issues within the Scheme boundary is considered very low upon reviewing of historical aerial photos, site appraisal and government records. No detailed land contamination assessment nor remedial works are considered necessary.

Drainage and Sewerage Impact Assessment

4.30 A Drainage and Sewerage Impact Assessment (DSIA) (see **Appendix 7**) was conducted. 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 proposed development will be acceptable. With the proposed upgrade of existing pipes and proposed new pipes to connect with the existing systems, manholes and sewers, the existing public drainage network and public sewerage system would have sufficient capacity to cater for the proposed development.

Water Supply Impact Assessment

4.31 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 proposed development.

5. PLANNING AND URBAN DESIGN MERITS

5.1 The Scheme will provide the following planning and environmental benefits: -

- Re-configuration of land uses of the Scheme Area to open up the existing 'land-locked' open space towards the main pedestrian walkways to enhance its walkability, accessibility and permeability to the adjoining area;
- Creation of a 200sq.m of sunken plaza to provide connection between the entrance of the re-provisioned POS and part of the retail shops at basement level to enhance the vibrancy of these public spaces;
- Provision of not more than 2,850sq.m. non-domestic GFA for GIC to enhance planning gain to the community and align the principle of "Single Site, Multiple Uses" as promoted by Government;
- To optimize the use of underground space by providing ancillary car park and retail facilities underneath the re-provisioned POS;
- Redevelop existing tenement buildings within the Scheme into quality residential development with commercial/retail/GIC podium to meet modern standards;
- Contribute in providing more housing supply in the urban area;
- Enhancing the townscape, urban design and environment through rationalizing the land uses and layout, better building disposition and design; and
- To integrate urban renewal effect and create synergy with other revitalization works:
    - Separate revitalization works for the remaining part of Thistle Street Rest Garden to develop a harmonious design and upgrading of facilities of the POS for the community (do not form part of the DSP and subject to support from LCSD and local views).
    - Street improvement works at Thistle Street to improve walkability and safety of pedestrian walking environment.

6. IMPLEMENTATION OF THE DEVELOPMENT SCHEME

6.1 The URA does not own or lease any land within the boundaries of the Scheme and will acquire all the private lots within the Development Scheme boundary. The URA intends to acquire the properties within the Scheme boundary by purchase under the current acquisition policy. An owner of domestic and non-domestic property will receive the market value of his 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 7-year notional replacement unit of similar size within the same locality. Details on URA's acquisition, compensation and rehousing policies are provided in the SIA (Stage 1) report in **Appendix 4**, which will be subject to prevailing policies at time of issuing acquisition offers.

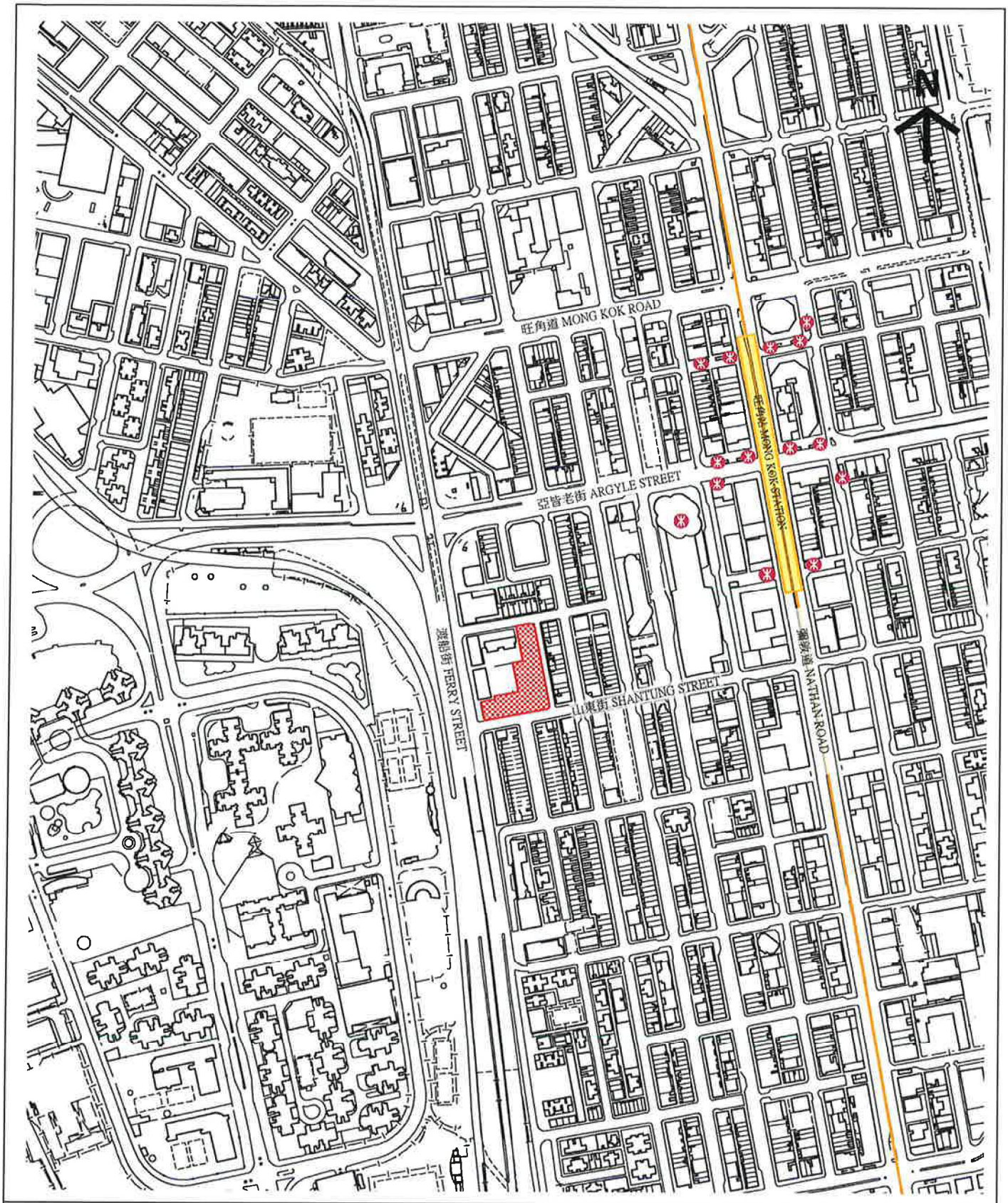
6.2 The URA may implement the Scheme in association with one or more parties or implementing the Scheme by itself alone.

6.3 Supplementary documents detailing the implementation programme for the Scheme and the URA's rehousing, compensation, acquisition and resumption principles are attached in **Appendices 9, 10** and **11** respectively.

6.4 Any information contained in this document relating to compensation and re-housing arrangements are with reference to the URA's prevailing policy on compensation and re-housing arrangements ("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 project 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 project.

URBAN RENEWAL AUTHORITY

October 2020



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-14C, 11-NW-14D, 11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

LOCATION PLAN

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

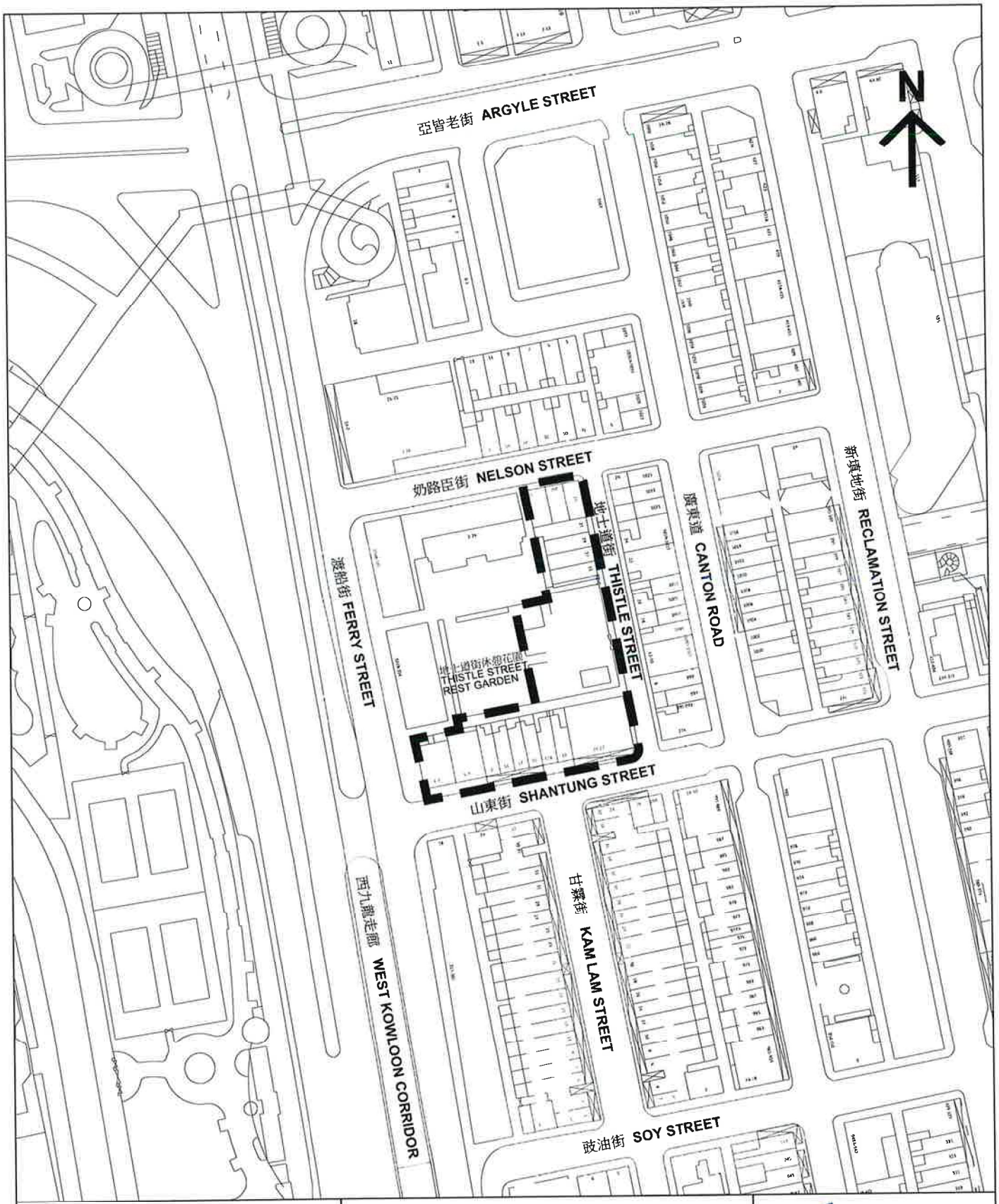
SCALE 1 : 5000

METRES 100 0 100 200 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 1



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A,
11-NW-19B, 11-NW-19C,11-NW-19D

SCHEME AREA

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

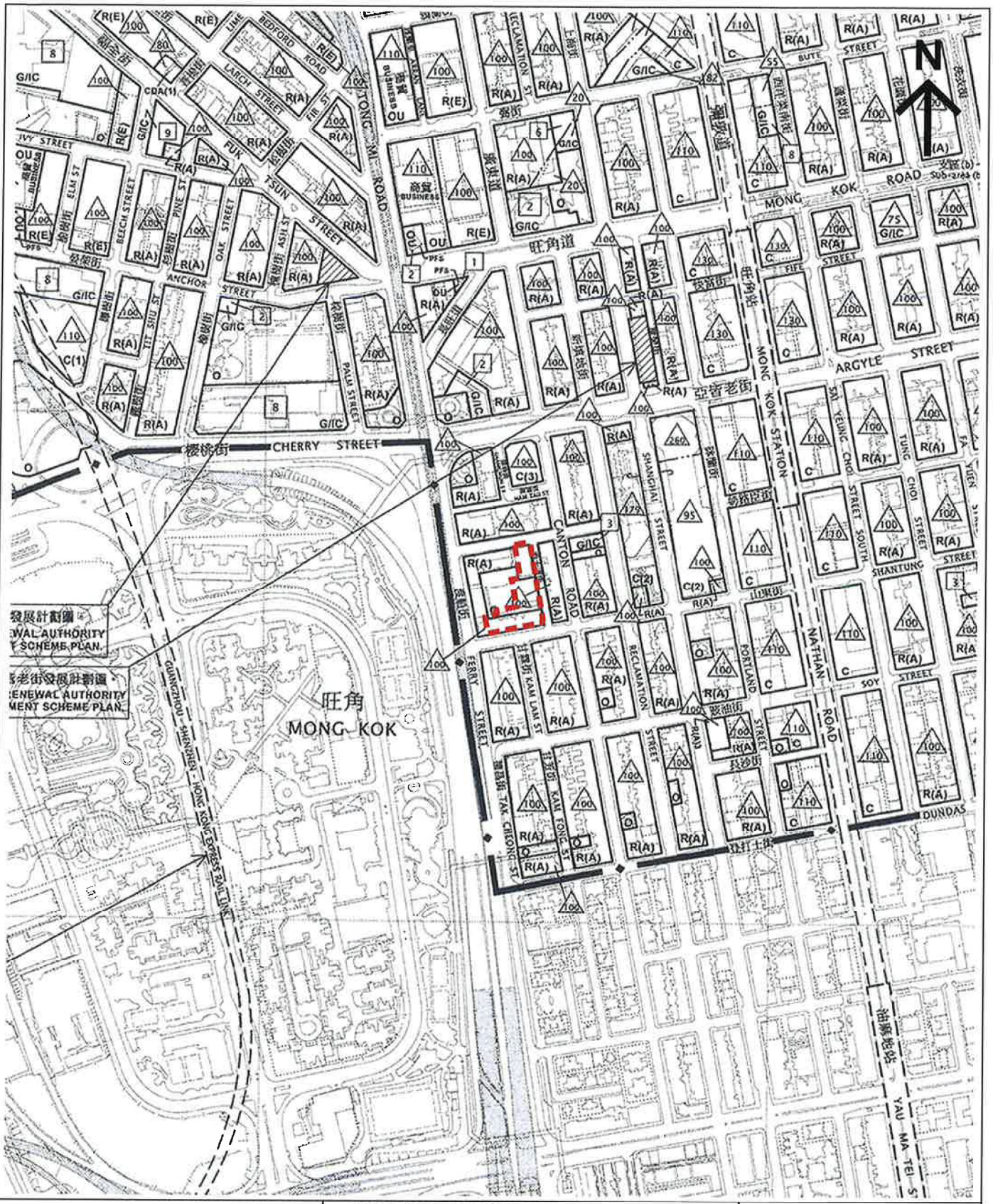
SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 2



THE SCHEME

EXTRACT PLAN BASED ON
APPROVED MONG KOK OUTLINE ZONING
PLAN No.S/K3/32

EXISTING ZONING OF DEVELOPMENT SCHEME

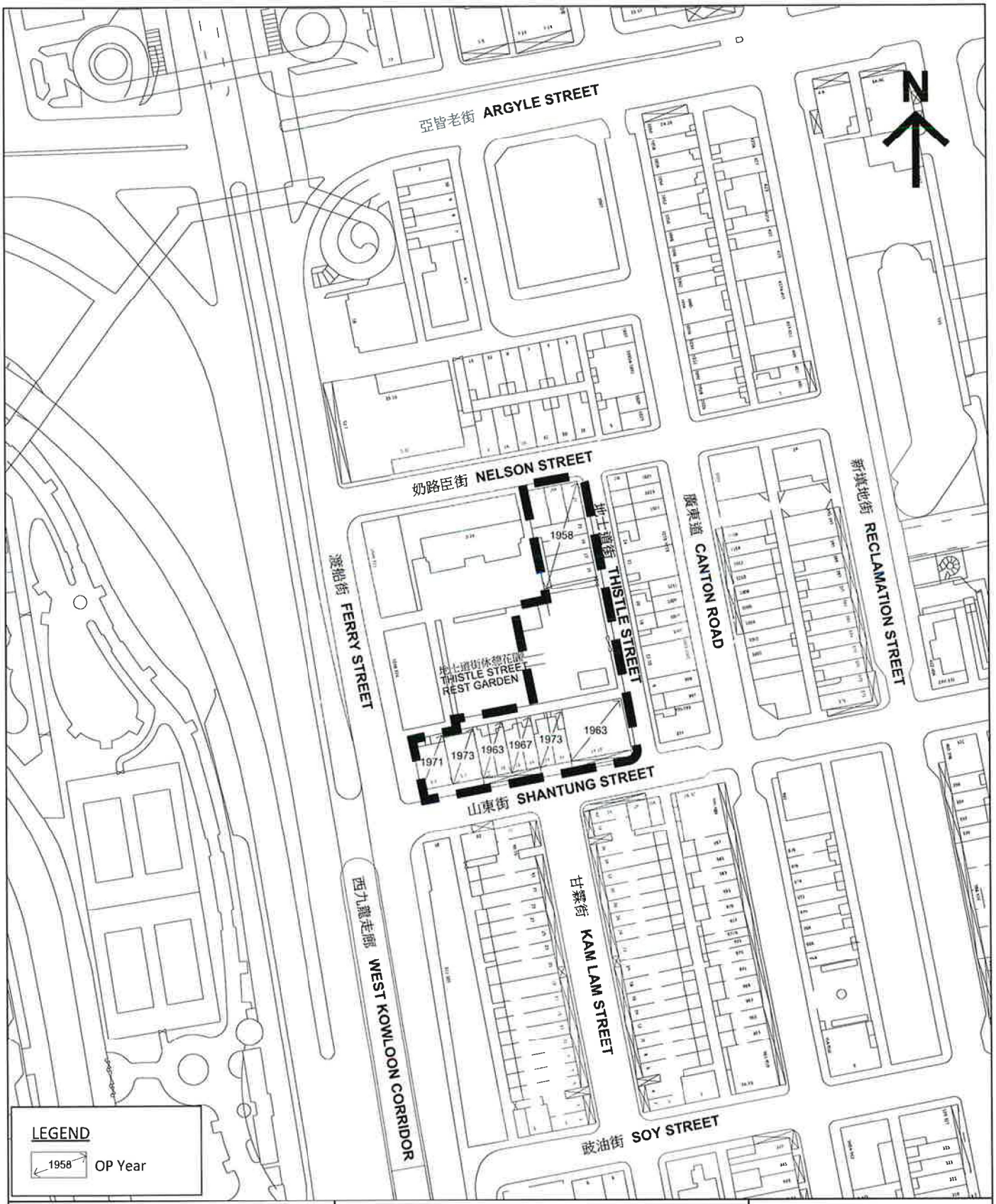
DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET
SCALE 1 : 5000

METRES 100 0 100 200 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 3



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

BUILDING AGE

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

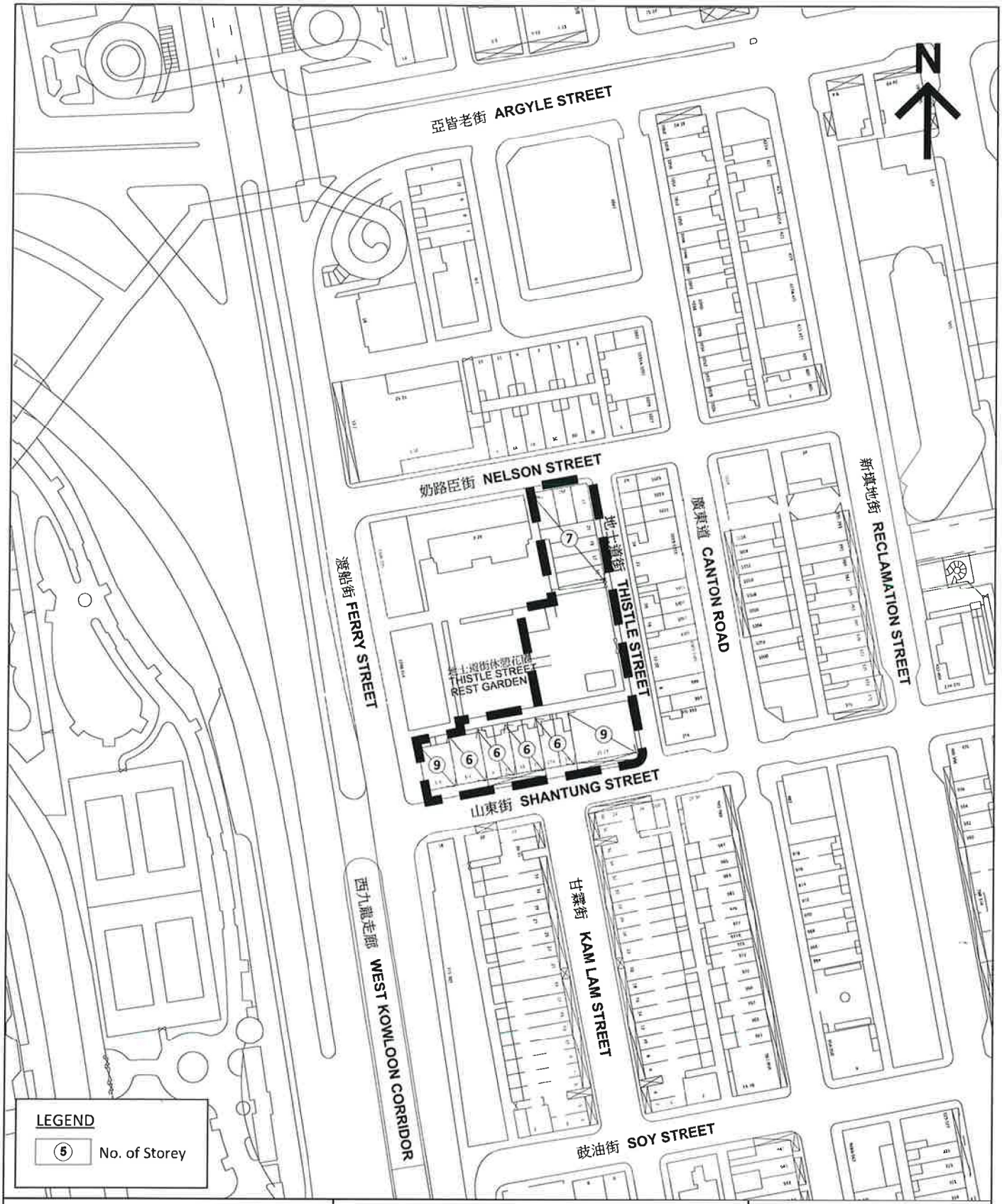
SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 4



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

BUILDING HEIGHT

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

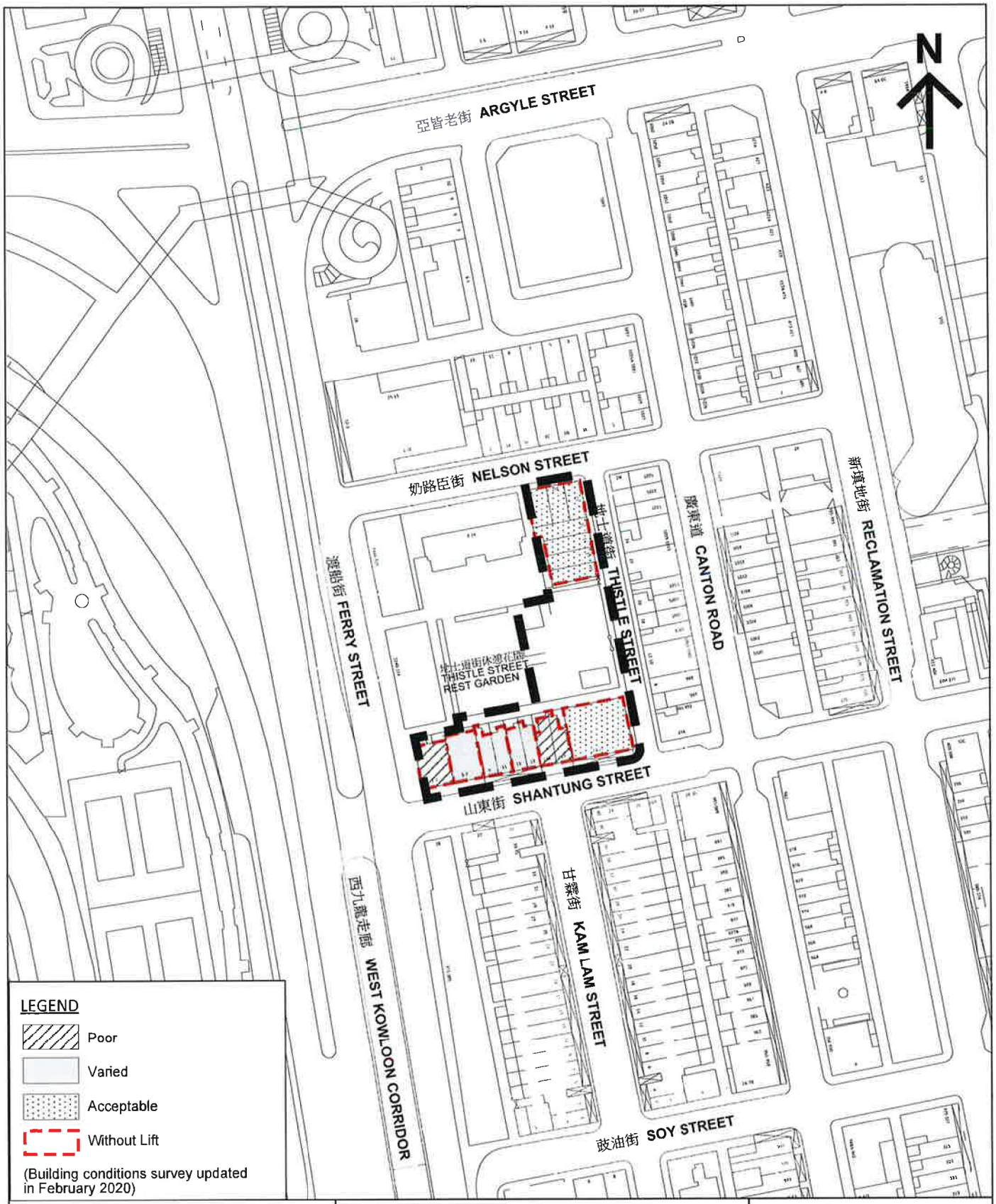
SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 5



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

BUILDING CONDITION

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

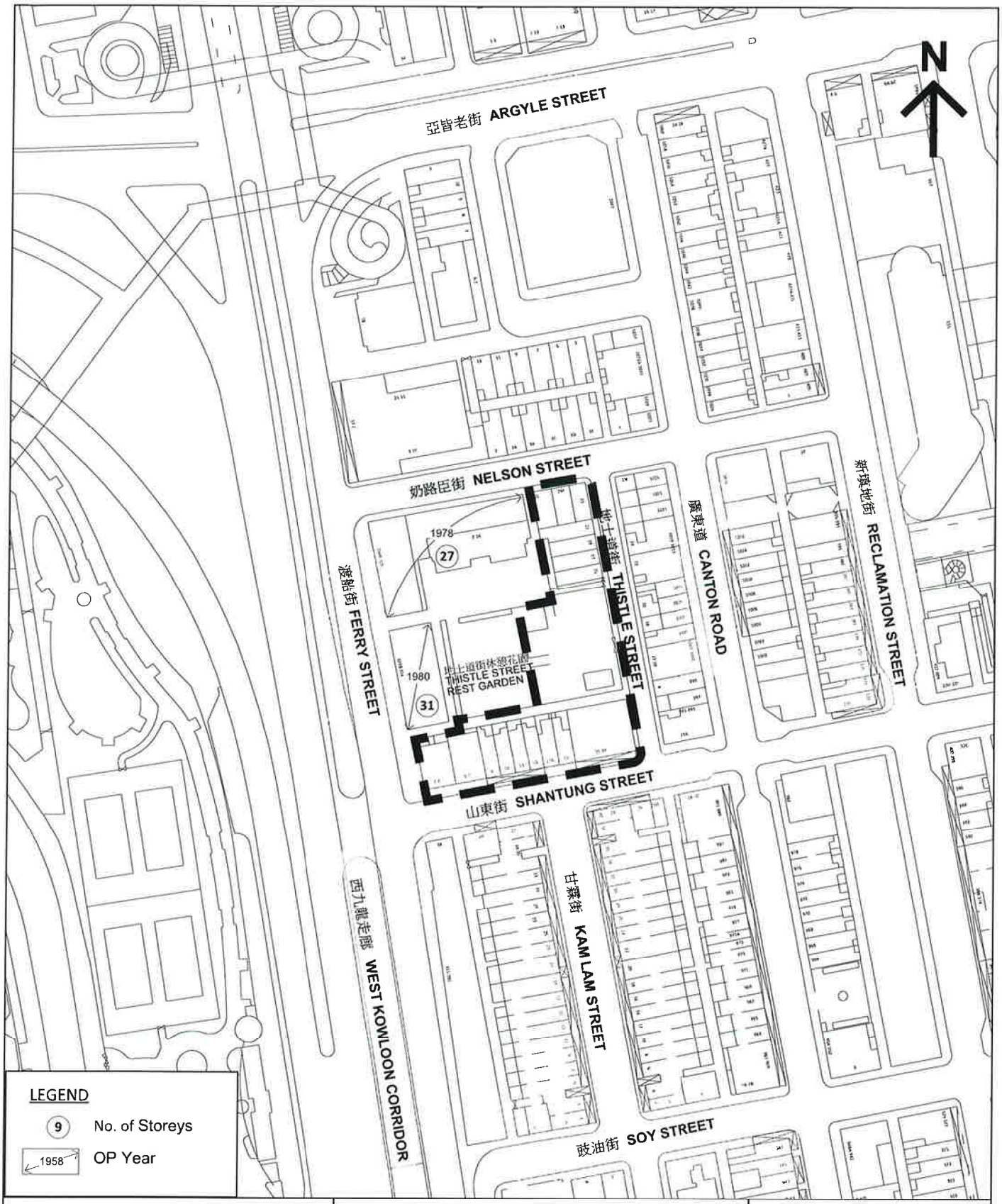
SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 6



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

INFORMATION ON BUILDINGS IMMEDIATELY ADJACENT TO SCHEME AREA

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

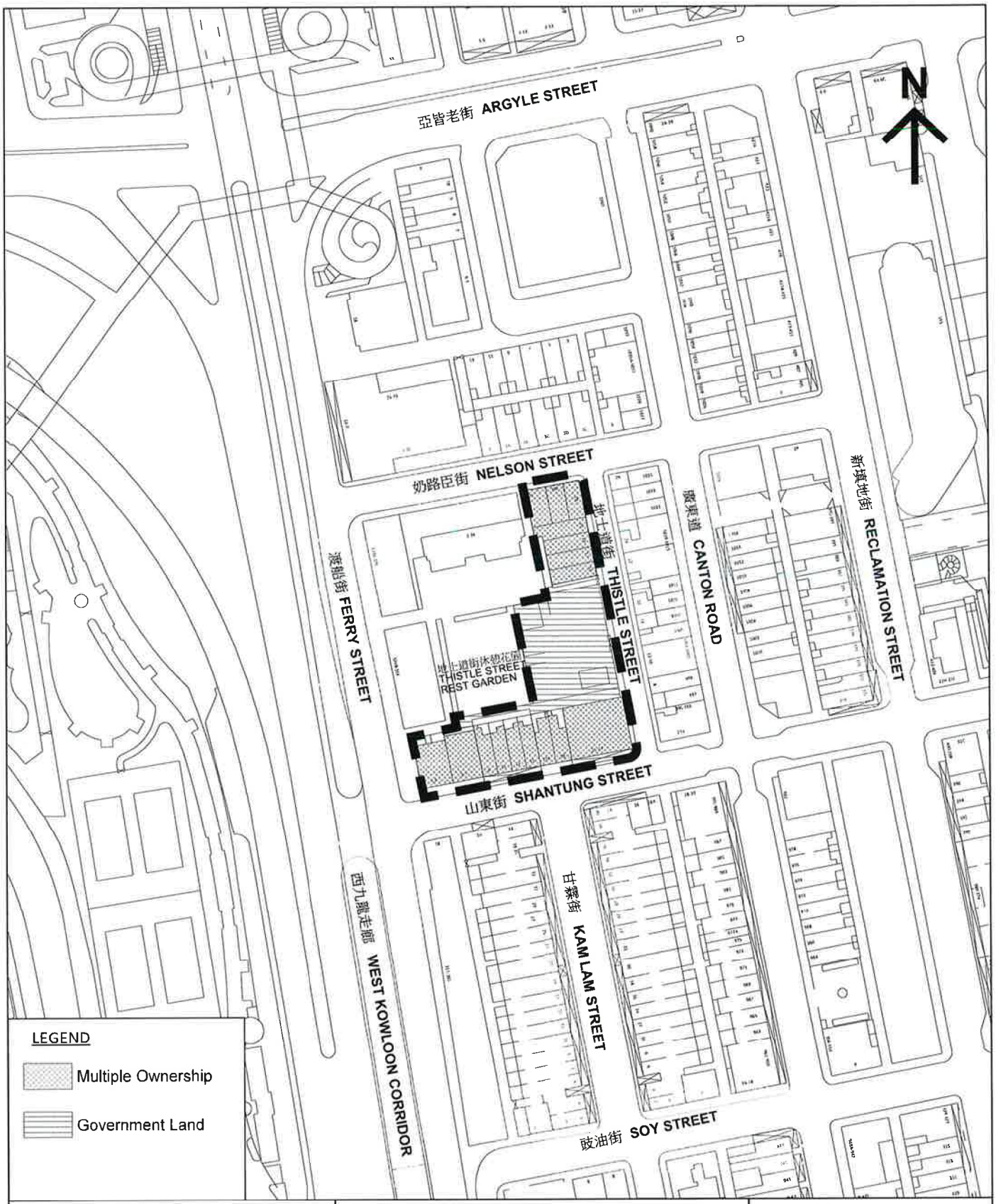
SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

PLAN 7



THE SCHEME

EXTRACT PLAN PREPARED ON 24.10.19
BASED ON SURVEY SHEET No.11-NW-19A, 11-NW-19B, 11-NW-19C,11-NW-19D

OWNERSHIP PATTERN

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

SCALE 1 : 1500

METRES 15 0 15 30 45 60 75 METRES

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

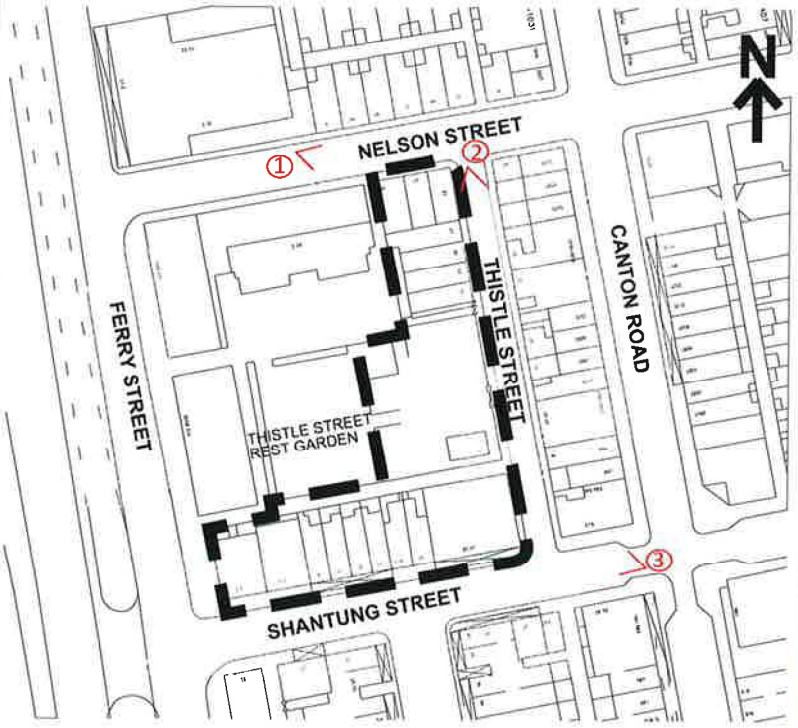
PLAN 8



VIEW 1: NELSON STREET



VIEW 2: THISTLE STREET





VIEW 3: SHANTUNG STREET

THE SCHEME

PHOTOS TAKEN IN
SEPT 2020

SITE PHOTOS

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

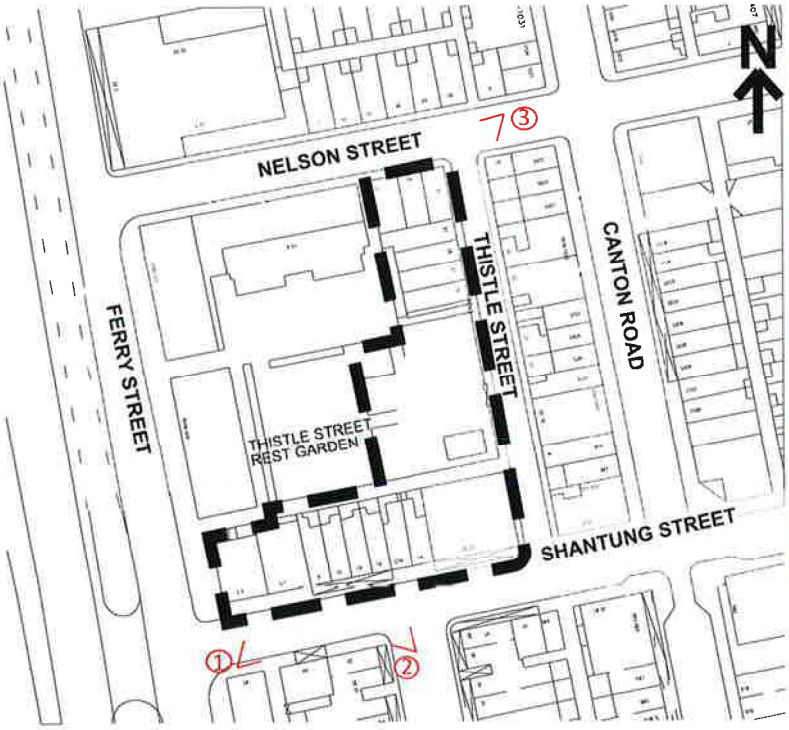
PLAN
9



VIEW 1: BUIDLINGS WITHIN SCHEME AREA ALONG SHANTUNG STREET



VIEW 2: BUILDINGS WITHIN SCHEME AREA ALONG SHANTUNG STREET





VIEW 3: BUILDING WITHIN SCHEME AREA ALONG NELSON STREET

THE SCHEME

PHOTOS TAKEN IN SEPT 2020

SITE PHOTOS

DEVELOPMENT SCHEME
AT SHANTUNG STREET / THISTLE STREET

市區重建局
URBAN RENEWAL AUTHORITY

YTM-012

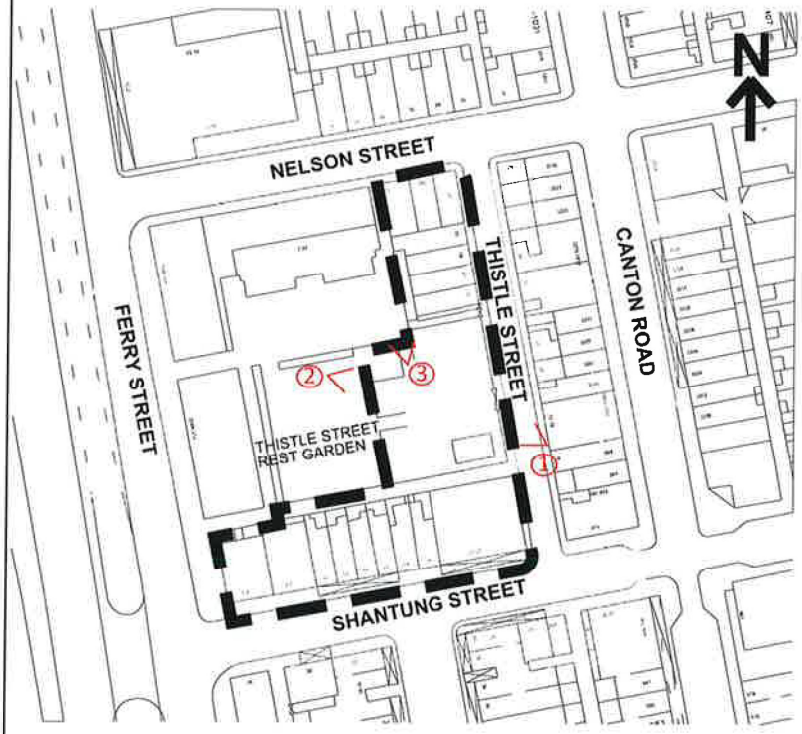
PLAN 10



VIEW 1: THISTLE STREET REST GARDEN - MAIN ENTRANCE



VIEW 2: OVERVIEW OF AFFECTED PUBLIC OPEN SPACE



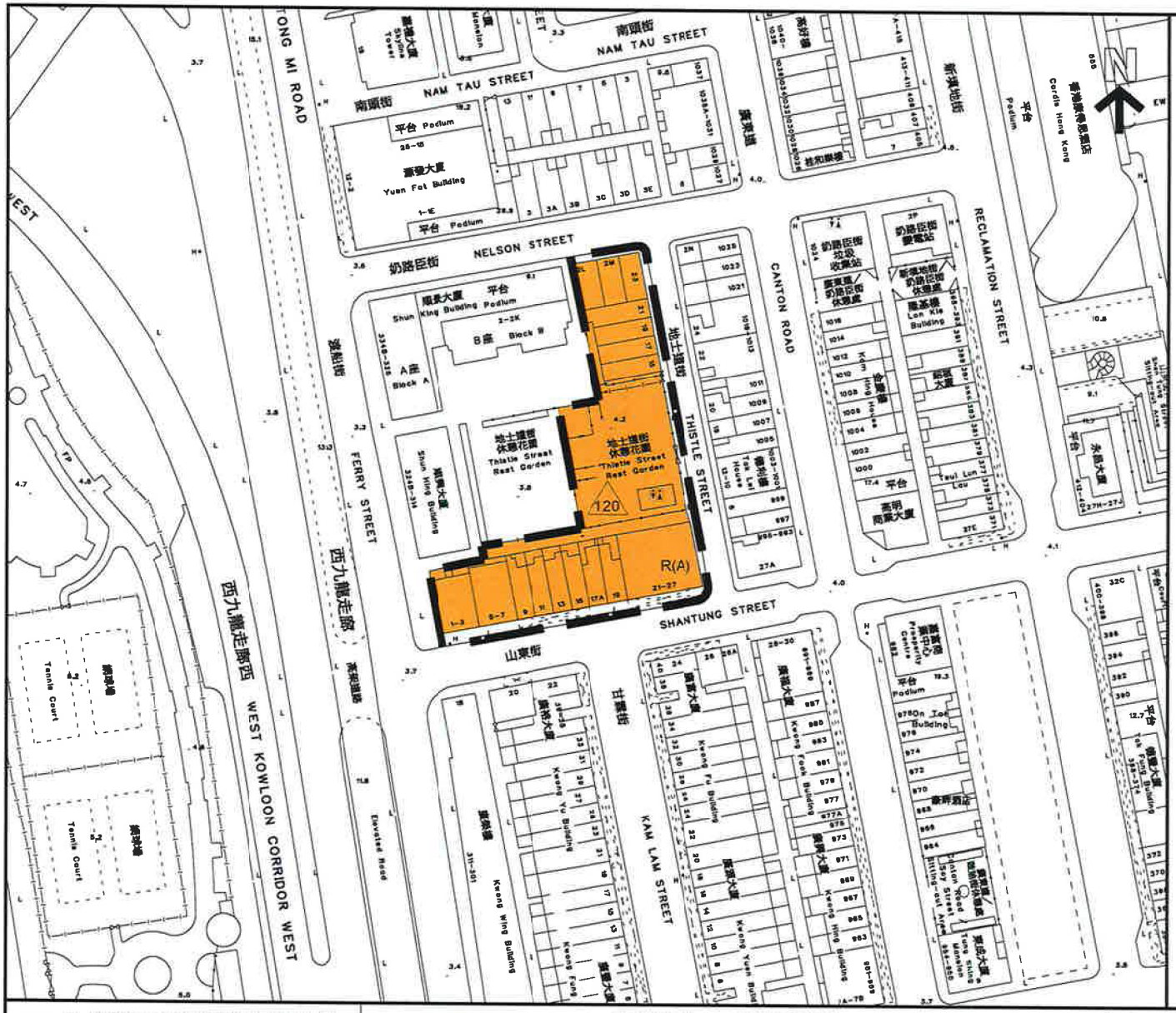


VIEW 3: ENTRANCE FROM NELSON STREET

THE SCHEME PHOTOS TAKEN IN SEPT 2020	SITE PHOTOS DEVELOPMENT SCHEME AT SHANTUNG STREET / THISTLE STREET	市區重建局 URBAN RENEWAL AUTHORITY YTM-012 PLAN 11

PART 2

THE DRAFT PLAN



圖例
NOTATION

BOUNDARY OF DEVELOPMENT SCHEME ..... 發展計劃範圍界線

RESIDENTIAL (GROUP A) ..... R(A) ..... 住宅(甲類)

MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM) ..... 120 ..... 最高建築物高度(在上水平基準上若干米)

夾附的<<註釋>>屬這份圖則的一部分

THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2020年 月 日城市規劃委員會根據市區重建局條例第25(3)(a)條擬為圖則建宜公布，並於2020年 月 日根據城市規劃條例第5條刻示。

PLAN DEEMED SUITABLE BY THE TOWN PLANNING BOARD FOR PUBLICATION UNDER SECTION 25(3)(a) OF THE URBAN RENEWAL AUTHORITY ORDINANCE ON 2020 AND EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 2020.

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山東街/地士道街發展計劃圖則
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD URBAN RENEWAL AUTHORITY SHANTUNG STREET / THISTLE STREET 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/K3/URA4/A

DRAFT URBAN RENEWAL AUTHORITY
SHANTUNG STREET/THISTLE STREET
DEVELOPMENT SCHEME PLAN NO. S/K3/URA4/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 widths, road junctions and alignments of roads 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 Schedule of Uses:

(a) provision, maintenance or repair of plant nursery, amenity planting, open space, rain shelter, refreshment kiosk, road, bus/public light bus stop or lay-by, cycle track, Mass Transit Railway station entrance, Mass Transit 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 coordinated or implemented by Government.

(8) 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.

(9) 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.

(10) 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
SHANTUNG STREET/THISTLE STREET
DEVELOPMENT SCHEME PLAN NO. S/K3/URA4/A

Schedule of Uses

	Page
RESIDENTIAL (GROUP A)	1

S/K3/URA4/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)	Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
Residential Institution	Office
School (in free-standing purpose-designed building only)	Petrol Filling Station
Social Welfare Facility	Place of Entertainment
Utility Installation for Private Project	Private Club
	Public Convenience
	Public Transport Terminus or Station (not elsewhere specified)
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Religious Institution
	School (not elsewhere specified)
	Shop and Services
	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. 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 the plot ratio for the building upon development and/or redevelopment in excess of 7.5 for a domestic building or 9.0 for a building that is partly domestic and partly non-domestic, or the plot ratio of the existing building, whichever is the greater. Except where the plot ratio is permitted to be exceed under paragraphs (7) and/or (8) hereof, under no circumstances shall the plot ratio for the domestic part of any building, to which this paragraph applies, exceed 7.5.

(Please see next page)

S/K3/URA4/A

RESIDENTIAL (GROUP A) (Cont'd)

Remarks (Cont'd)

(2) For non-domestic building to be erected on the site, the maximum plot ratio shall not exceed 9.0 except where the plot ratio is permitted to be exceeded under paragraphs (7) and/or (8) hereof.

(3) 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 plot 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.

(4) In determining the relevant maximum plot ratio for the purposes of paragraph (1) and (2) above, any floor space that is constructed or intended for use solely as car park, loading/ unloading bay, plant room, caretaker's office or caretaker's quarters, 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, can be disregarded. 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.

(5) A Public Open Space of not less than 780m^2 shall be provided. The Public Open Space shall not be used for GFA/plot ratio calculation.

(Please see next page)

S/K3/URA4/A

RESIDENTIAL (GROUP A) (Cont'd)

Remarks (Cont'd)

(6) 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 (mPD) as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(7) 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) or (2) above 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 paragraph (1) above may thereby be exceeded.

(8) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and building height restrictions as stated in paragraphs (1), (2) and (6) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

DRAFT URBAN RENEWAL AUTHORITY

SHANTUNG STREET / THISTLE STREET

DEVELOPMENT SCHEME PLAN NO. S/K3/URA4/A

EXPLANATORY STATEMENT

DRAFT URBAN RENEWAL AUTHORITY

SHANTUNG STREET / THISTLE STREET

DEVELOPMENT SCHEME PLAN NO. S/K3/URA4/A

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DRAFT URBAN RENEWAL AUTHORITY
SHANTUNG STREET / THISTLE STREET
DEVELOPMENT SCHEME PLAN NO. S/K3/URA4/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) Shantung Street / Thistle Street Development Scheme Plan (DSP) No. S/K3/URA4/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 19th Business Plan (2020/21) which was approved by the Financial Secretary, the Shantung Street / Thistle Street Development Scheme (YTM-012) was proposed to be processed as a Development Scheme (the Scheme) under section 25 of the URA Ordinance (URAO).

2.2 On 16 October 2020, pursuant to section 23(1) of the URAO, the URA notified in the Government Gazette the commencement of implementation of the Shantung Street / Thistle Street Development Scheme.

2.3 On the same day of commencement (i.e. 16 October 2020), the URA submitted the draft URA Shantung Street / Thistle Street DSP to the Board under section 25(5) of the URAO.

2.4 On XXXX, the Board, under section 25(6)(a) of the URAO, deemed the draft URA Shantung Street / Thistle Street 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 Town Planning Ordinance (the Ordinance).

2.5 On XXXX, the draft Shantung Street / Thistle Street DSP No. S/K3/URA4/1 (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 Approved Mong Kok Outline Zoning Plan (OZP) No. S/K3/32 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)"). It is planned to be developed by means of the Development Scheme prepared under section 25 of the URAO. The Development Scheme intends to be primarily for a high-density residential development. Commercial uses are always permitted on the lowest three floors of a building or in the purpose-designed non-residential portion of a building.

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 in "L-shape" broadly bounded by Thistle Street to the east, Shantung Street to the south, part of Ferry Street, and part of Nelson Street to the north. With a total gross site area of about 2,796m^2, the Scheme involves part of the Leisure and Cultural Services Department (LCSD)'s Thistle Street Rest Garden, two clusters of tenement buildings, a Government lane as well as the surrounding public pavement.

5.2 On the Approved Mong Kok OZP No. S/K3/32, the Area is zoned "Residential (Group A)" and "Open Space", and the pavement is shown as "Road" before the exhibition of the Plan.

6. EXISTING CONDITIONS

6.1 The Area consists of two clusters of tenement buildings with 6-9 storeys high, separated by the Thistle Street Rest Garden. All buildings were completed between 1958 and 1973, and are in general permitted for domestic use on upper floors and shops for ground floors, with office use is permitted on the first floor for some of the buildings. All buildings are without lift and the serviceability is poor.

6.2 Part of the Thistle Street Rest Garden (about 780m^2) is included within the Area. This part of Thistle Street Rest Garden is equipped with children's playground, elderly exercise equipment, a public toilet and sitting-out area.

7. PLANNING AND LAND USE PROPOSALS

7.1 On the Plan, the Area is zoned "R(A)" and the Notes of the Plan indicated broadly the intended land uses within the Area.

Uses

7.2 The "R(A)" zone is intended primarily for a high-density residential development. 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 9.0, 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 7.5. The "R(A)" zone is also subject to a maximum building height of 120 metres above Principal Datum (mPD).

7.4 To provide design flexibility, minor relaxation of the plot ratio and 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.

Re-provisioned Public Open Space

7.5 The part of Thistle Street Rest Garden within the Area (the affected POS) is proposed to be re-structured and re-provisioned, subject to liaison and agreement with LCSD. The area of the affected POS will be disregarded from plot ratio calculation. A POS of not less than 780m^2 will be specified in the "Remarks" of the Notes of the draft DSP for public use. The re-provisioned POS will be handed back to LCSD for ownership, management and maintenance upon completion.

Sunken Plaza

7.6 About 200 m^2 of sunken plaza, with retail shops, landscaping, covered and uncovered sitting out area, is proposed to connect with the re-provisioned POS to bring vibrancy to the community. The sunken plaza will form part of the development and will be managed and maintained by the URA or its joint venture partner(s), or its assignee. It will be opened for public use at reasonable hours to benefit the local community.

Government, Institution or Community (GIC) Facilities

7.7 Not more than 2,850m^2 non-domestic GFA would be proposed for GIC use within the non-domestic portion. The intended GIC use would be subject to further liaison with relevant Government Departments as well as collecting the views from the Yau Tsim Mong District Council and locals. In order to facilitate provision of GIC facilities, 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.

Internal Transport Facilities

7.8 Ancillary car parking spaces and loading/unloading bays would be provided in a basement car park to serve the proposed development. 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.

Landscaping and Greening

7.9 Subject to liaison and agreement with LCSD, a cohesive design for the re-provisioned POS and the proposed sunken plaza will be provided. Both soft and hard landscape, greening, will be provided, where appropriate and applicable, to provide visually appealing pedestrian environment. Greening on the podium edge and pedestrian level of the proposed development will be provided as far as practicable to meet the

Sustainable Building Design (SBD) Guidelines and to enhance the local streetscape.

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.

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 Hong Kong Housing Society (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 2020

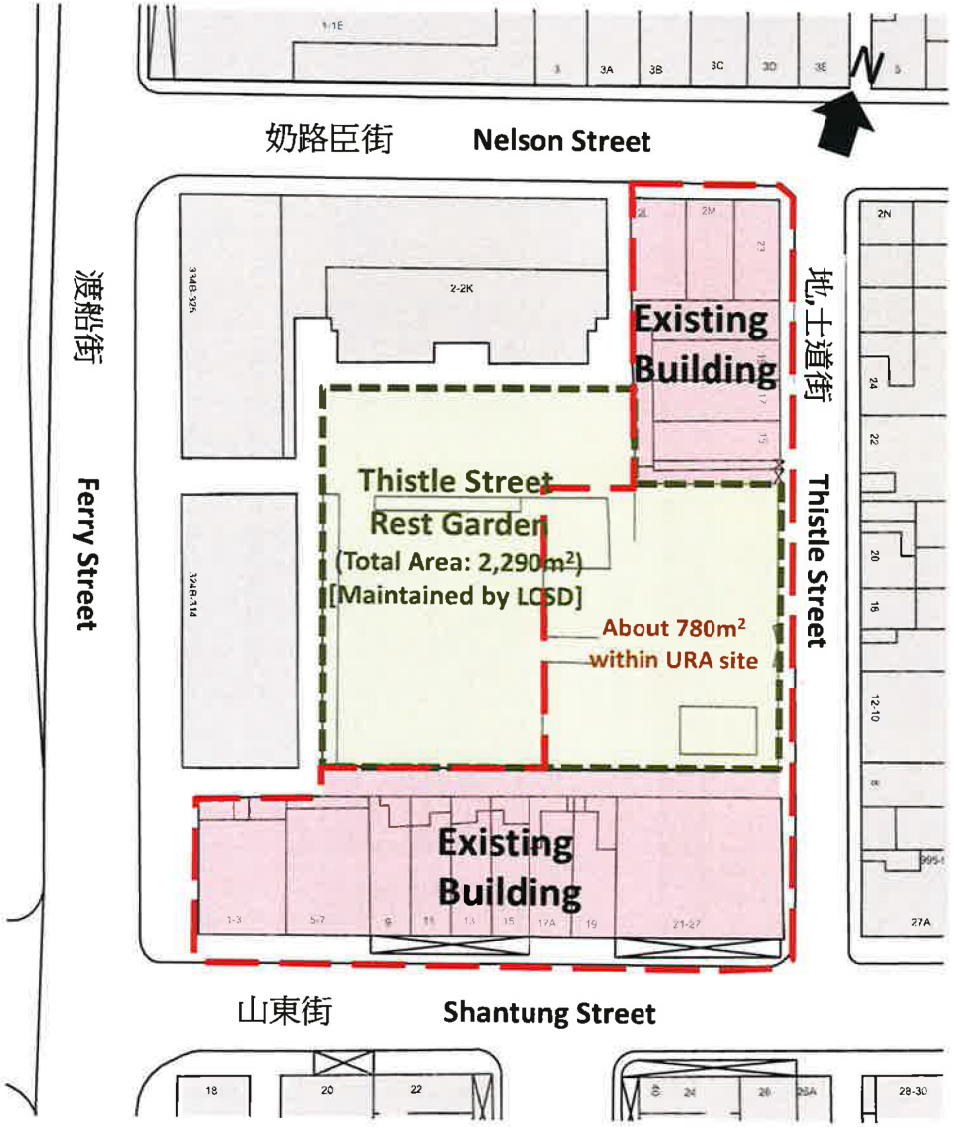
PART 3

SUPPLEMENTARY INFORMATION

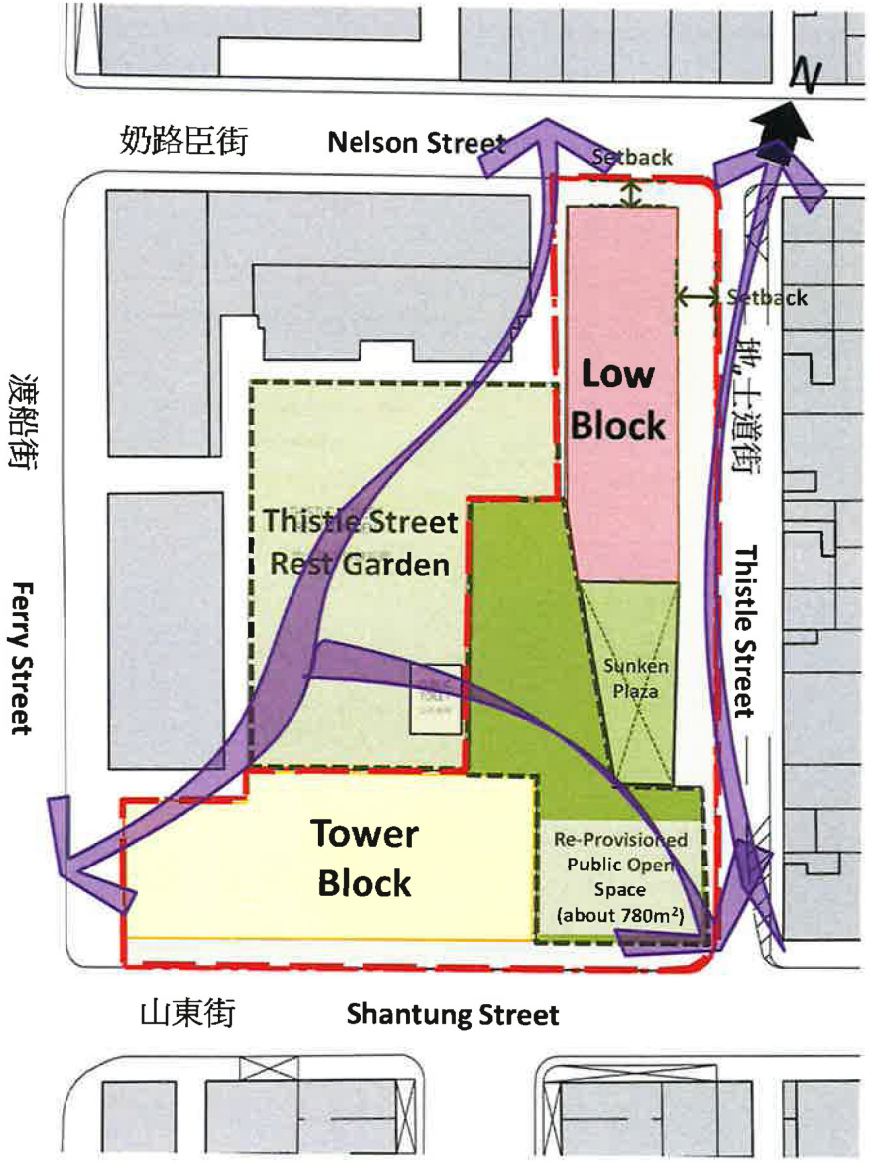
Appendix 1

Preliminary Design

Existing Condition



Proposed Redevelopment (Notional Design)



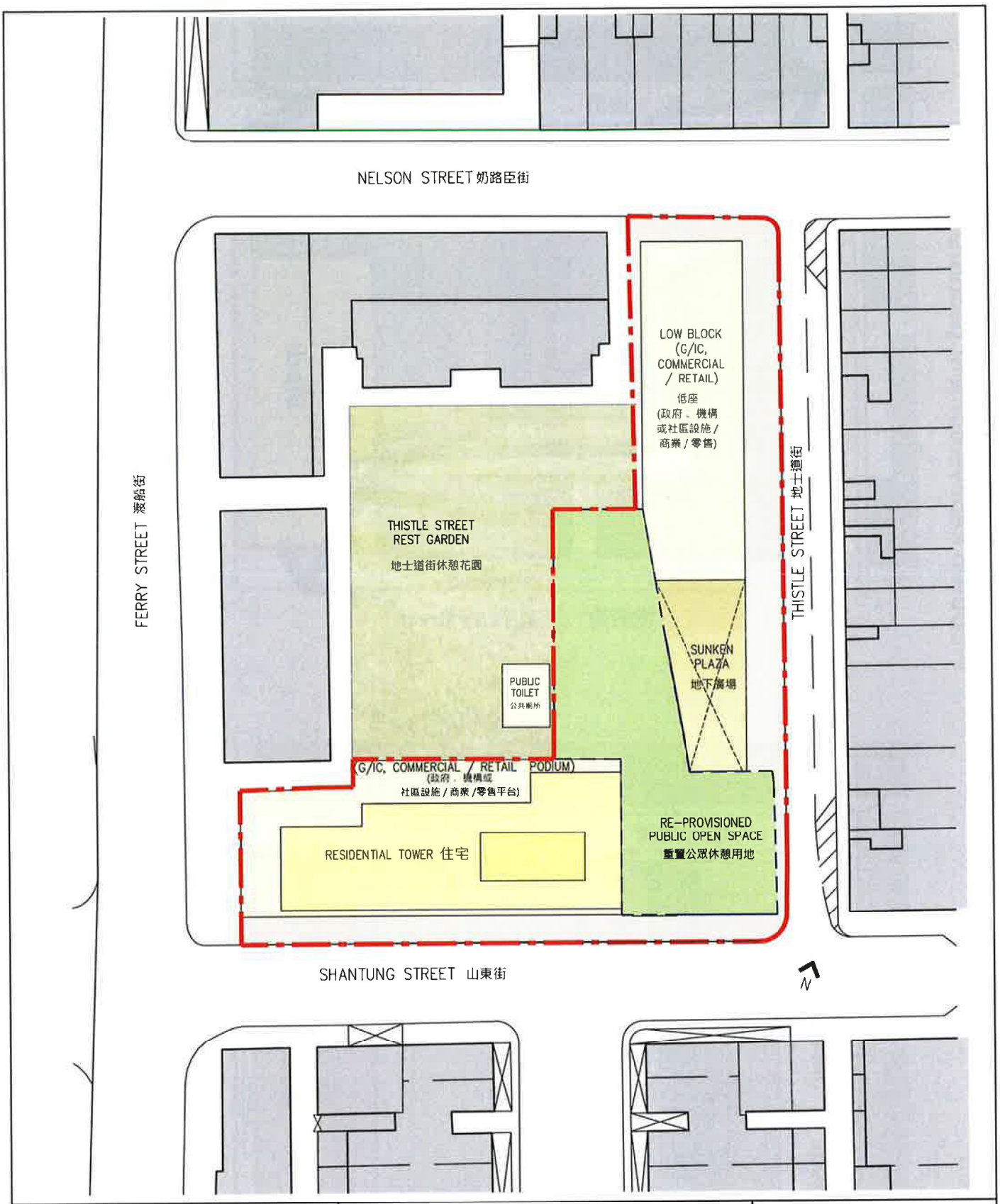
The Scheme Proposed Pedestrian Circulation

(Remarks: Notional layout subject to detailed design upon DSP approval.)

URA Shantung Street / Thistle Street Development Scheme (YTM-012)

Notional Design – Before and After Redevelopment

Figure 1.1



THE SCHEME

(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Block Plan

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

SCALE 1 : 600 (A4)

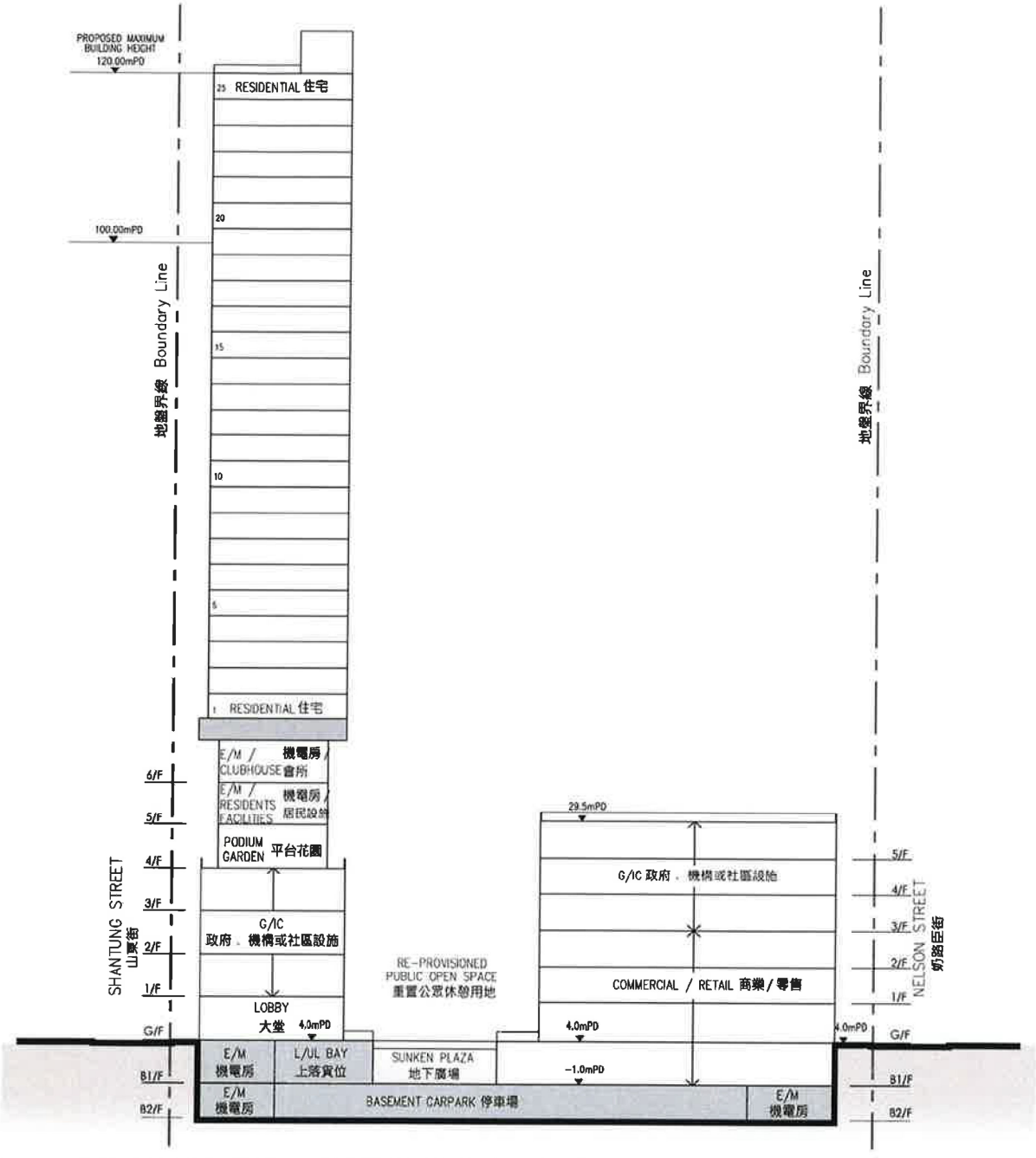
市區重建局 URBAN RENEWAL AUTHORITY

YTM-012

FIG 1.2



KEY PLAN



(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Section A-A

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012

FIG 1.3

Appendix 2

Preliminary Landscape Design and Tree Survey Report

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4 PRELIMINARY TREE PRESERVATION AND COMPENSATORY PLANTING PROPOSAL 2
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5.3 Hard and Soft Landscape Proposals 4

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FIGURES

Figure 2020032/LP/01 Site Location
Figure 2020032/LP/02 Mong Kok Outline Zoning Plan
Figure 2020032/LP/03 Site Existing Condition

APPENDICES

Appendix A Preliminary Tree Preservation and Compensatory Planting Proposal

1 INTRODUCTION

1.1 Background

1.1.1 The Urban Renewal Authority (URA) has proposed Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). AECOM Asia Co. Ltd. has been commissioned by URA to prepare a Preliminary Tree Preservation and Compensatory Planting Proposal and a Preliminary Landscape Design Concept in support of the submission of a draft Development Scheme Plan (DSP) with its planning proposal to Town Planning Board (TPB) for consideration.

1.1.2 The Preliminary Tree Preservation and Compensatory Planting Proposal has been prepared following the requirements in DEVB TC(W) No. 4/2020 "Tree Preservation".

1.2 Structure of the Report

1.2.1 Following this introductory section, the remainder of report is arranged as follows:

- Section 2 describes the Site Context;
- Section 3 describes the Proposed Development;
- Section 4 describes the findings in Preliminary Tree Preservation and Compensatory Planting Proposal; and
- Section 5 concludes the findings of this Report.

2 SITE CONTEXT

2.1 Existing Landscape Context of the Scheme and its Surrounding

2.1.1 The Scheme boundary is in a "L-shape" located between Nelson Street, Thistle Street, Shantung Street and Ferry Street. It is currently zoned as "Residential (Group A)" (R(A)) and "Open Space" (O) on the Approved Mong Kok Outline Zoning Plan No. S/K3/32. With a total gross site area about 2,796sqm, the Scheme comprises 2 clusters of tenement buildings and part of existing Leisure and Cultural Services Department (LCSD)'s Thistle Street Rest Garden ("Rest Garden"). The Site Location and Mong Kok Outline Zoning Plan are illustrated in **Figure 2020032/LP/01** and **Figure 2020032/LP/02** respectively.

2.1.2 The Rest Garden, with a total area of about 2,290sqm, is surrounded by residential buildings on three sides, with its main entrance located at Thistle Street. The main entrance is often being blocked by loading/unloading activities and on-street parking at Thistle Street, resulting in a land-locked public open space and not visible from main pedestrian routes. Other side entrances of the Rest Garden are via narrow back lanes between buildings from Ferry Street and Nelson Street. Facilities within the Rest Garden include a badminton court, children's playground, elderly exercise equipment, cobble stone walking path and a standalone public toilet. Existing trees within the Rest Garden are mostly planted as at-grade at the peripheral, with some in raised planters separating different zonings. The Site Existing Condition is illustrated in **Figure 2020032/LP/03**. Details of the preliminary tree findings are shown in **Appendix A**.

3 PROPOSED DEVELOPMENT

3.1 Proposed Development Parameters and Layout

3.1.1 The Scheme area is proposed to be rezoned to "R(A)" for redeveloping into high-density residential development, with commercial uses always permitted on the lowest three floors of a building or in a purpose-designed non-residential portion of a building. Under the current notional design, the proposed development is planned to develop 2 buildings and a sunken plaza. It includes a composite building (Tower Block) on the southern side of 25 residential storeys (about 300 units) and a 7 storey podium for club house, podium garden, G/IC facilities and retail uses. A GIC/retail block (Low Block) of 6 storeys (above ground) for retail shops and G/IC is located on the northern side of the site. A 2-storey basement ancillary car park will be provided for loading/unloading bays and private car parking spaces. The proposed total Gross Floor Area ("GFA") is about 14,940 sqm, of which 12,450 sqm is for domestic and 2,490 sqm for non-domestic commercial uses. In addition, about 2,850sqm. of non-domestic GFA will be reserved for GIC provision in the Scheme (which is exempted from GFA calculation in the DSP). The notional design is subject to change in detailed design stage.

3.1.2 Part of the Rest Garden (about 780 sqm) is included within the Scheme (the "affected POS") for the restructuring. The affected POS covers the main entrance as well as some existing facilities including a standalone public toilet, children play area, and some sitting area, etc. Through restructuring of the affected POS, a wide and welcoming frontage at the corner of Shantung Street and Thistle Street will be created to enhance its accessibility and connectivity towards the main pedestrian network. Under the Scheme, URA will be responsible for re-provisioning of the affected POS and will be handed back to LCSD for ownership, management and maintenance upon project completion.

3.1.3 To create cohesive and integrated design, URA also proposes to carry out a separate revitalization works for the remaining part of the Rest Garden outside the scheme boundary. Views and agreement from LCSD, relevant Government departments and local stakeholders will be sought on the landscape proposal, layout arrangement and implementation programme of the proposed revitalisation works upon DSP's approval. Given such intention, the following Tree survey will cover both the Scheme area and the remaining part of the Thistle Street Rest Garden.

4 PRELIMINARY TREE PRESERVATION AND COMPENSATORY PLANTING PROPOSAL

4.1 Preliminary Findings of Tree Survey

4.1.1 A total of approximately 17 nos. of trees (with 95mm Diameter at Breast Height (DBH) or above) were identified within the tree survey area, i.e. area bounded by Nelson Street, Thistle Street, Shantung Street and Ferry Street. Of the 17 nos. of trees, 9 nos. were within the Scheme and the rest were found at the remaining part of the Rest Garden (outside the Scheme). The 17 nos. of trees cover 8 species. There are 5 nos. of rare or precious trees - *Ailanthus fordii*. No registered Old and Valuable Tree (OVT) or potentially registrable OVT are found within the proposed scheme boundary. All the tree species identified are common species. They are generally in fair to poor form, fair health and fair amenity value. Dominant species include *Ailanthus fordii, Aleurites moluccana and Roystonea regia*. Details of the preliminary tree survey and its findings and are shown in **Appendix A**.

4.2 Preliminary Tree Treatment Recommendation

4.2.1 Based on the notional design of the Scheme, 10 trees are proposed to be retained, 7 trees are proposed to be transplanted/felled. Details of the preliminary tree treatment and its justifications are shown in **Appendix A**. Details on the tree treatment will be subject to view and agreement with LCSD upon DSP approval.

4.3 Preliminary Compensatory Planting Proposal

4.3.1 While all the existing trees will be retained/transplanted as far as practicable, should there be trees to be felled due to the proposed development, heavy standard trees (@75mm DBH) are proposed to be planted within the LCSD Rest Garden in compensation for the tree loss. Amenity trees will be provided within the proposed scheme boundary as far as practical at detailed design stage. Details of the preliminary compensatory planting proposal are shown in **Appendix A**.

5 PRELIMINARY LANDSCAPE DESIGN CONCEPT

5.1 Design Objectives

5.1.1 The objectives of the Landscape Proposal include the followings:

- To re-structure and re-plan the existing 'land-locked' public open space towards main pedestrian walkways to enhance its accessibility and visibility to the adjoining areas;
- To minimize the impact on existing trees and maximize greening opportunities within the boundary of the proposed development;
- To provide compensatory tree planting to the loss of existing trees due to the proposed development;
- To blend in with the proposed development and surrounding context; and
- To provide a balance of active and passive recreational facilities for the enjoyment of the public and future residents in the community.

5.2 Preliminary Landscape Design Concept

5.2.1 Landscape design concept for the proposed development within the scheme boundary include the followings: -

- Enhancing legibility and the arrival experience of the affected POS to the visitors and local residents by provision of welcoming and attractive entrance at the road junction at Shantung Street and Thistle Street;
- Creation of a more generous open space with greenery for public enjoyment;
- Creation of a sunken plaza to connect to the affected POS and retail shops at lower ground level to create an interesting urban space and draw people to enjoy the space and retail facilities at lower ground area;
- Enhancing streetscape environment with building setback, appropriate street furniture and landscaping along Thistle Street and Nelson Street;
- Preserve the mature trees and the rare/precious tree species in the Rest Garden as far as practicable (a large group of *Ailanthus fordii)*;
- Group the re-provisioned trees to the west side of the Rest Garden to create a green buffer with the residential buildings along Ferry Street; and
- Provision of universal accessibility to all landscape areas within the proposed development.

5.2.2 According to Sustainable Building Design (SBD) Guidelines PNAP APP-152 (January 2016), the minimum site coverage of greenery for Primary Zone is 10% and for overall is 20%, within the proposed scheme boundary. The notional design can achieve the SBD guidelines on greenery requirement. Also, the notional design can also achieve the provision of local open

space of 1 sqm per person under Chapter 4 of the Hong Kong Planning Standards and Guidelines (October 2015).

5.2.3 Should the draft DSP be approved, detailed design will be carried out and the above landscape design concept would be subject to change according to the design development at General Building Plan stage and other refinements, subject to liaison with relevant government departments.

5.3 Hard and Soft Landscape Proposals

5.3.1 Hard landscape elements will be designed and/or selected using the following general criteria:

- Using durable and long-lasting materials and finishes;
- Reasonable cost and maintenance requirement – materials shall be easily maintained and managed; and
- Visual compatibility to blend in with the proposed development and surrounding context.

5.3.2 The soft landscape elements will be selected using the following general criteria:

- Fast growing – able to provide the desired landscape design intent within short period of time;
- Use of native species where possible to enhance local biodiversity;
- Seasonal interest – providing seasonal variety or special seasonal flowers or foliage colour;
- Non-toxic – relatively safe and non-poisonous materials;
- The minimum distance of 1500 mm between the kerb and the tree pit is proposed. The proposed tree shall not be planted too close to the road kerb of motor carriageways to avoid causing potential hazards to vehicles and blocking of drivers' sight-lines due to overhanging tree branches intruding into the carriageways;
- Appropriate spacing for tree planting according to the different tree species and mature size is required; and
- Adequate soil depth shall be allowed for tree/ shrub/ groundcover planting. A minimum 1200 mm, 600 mm and 300 mm depth of planting soil (excluding drainage layer) in the form of raised or sunken planters shall be allowed for trees, shrubs and groundcovers respectively.

6 CONCLUSION

6.1.1 The Scheme involves redevelopment of existing buildings and restructuring of part of the existing Thistle Street Rest Garden. Through re-structuring and re-planning of scheme area, the existing 'land-locked' public open space will be opened up towards main pedestrian walkways with a re-provisioned POS to enhance its accessibility and visual connectivity to the adjoining areas. With the creation of a sunken plaza connecting to the re-provisioned POS and retail shops at lower ground level, an interesting and vibrant urban space for public enjoyment will be created.

6.1.2 Under the notional landscape design, existing plants will be retained as far as practicable. Only 7 trees will be affected and proposed to be transplanted/felled. Detail on the tree treatment will be subject the view and agreement with LCSD and relevant Government departments on the landscape design/layout arrangement of the Thistle Street Rest Garden upon DSP approval.

6.1.3 With the above design objectives and proposal, it is anticipated that the proposed redevelopment would enhance the landscape environment of the area and the proposed development will not bring any adverse landscape impact.

Figures



LEGEND

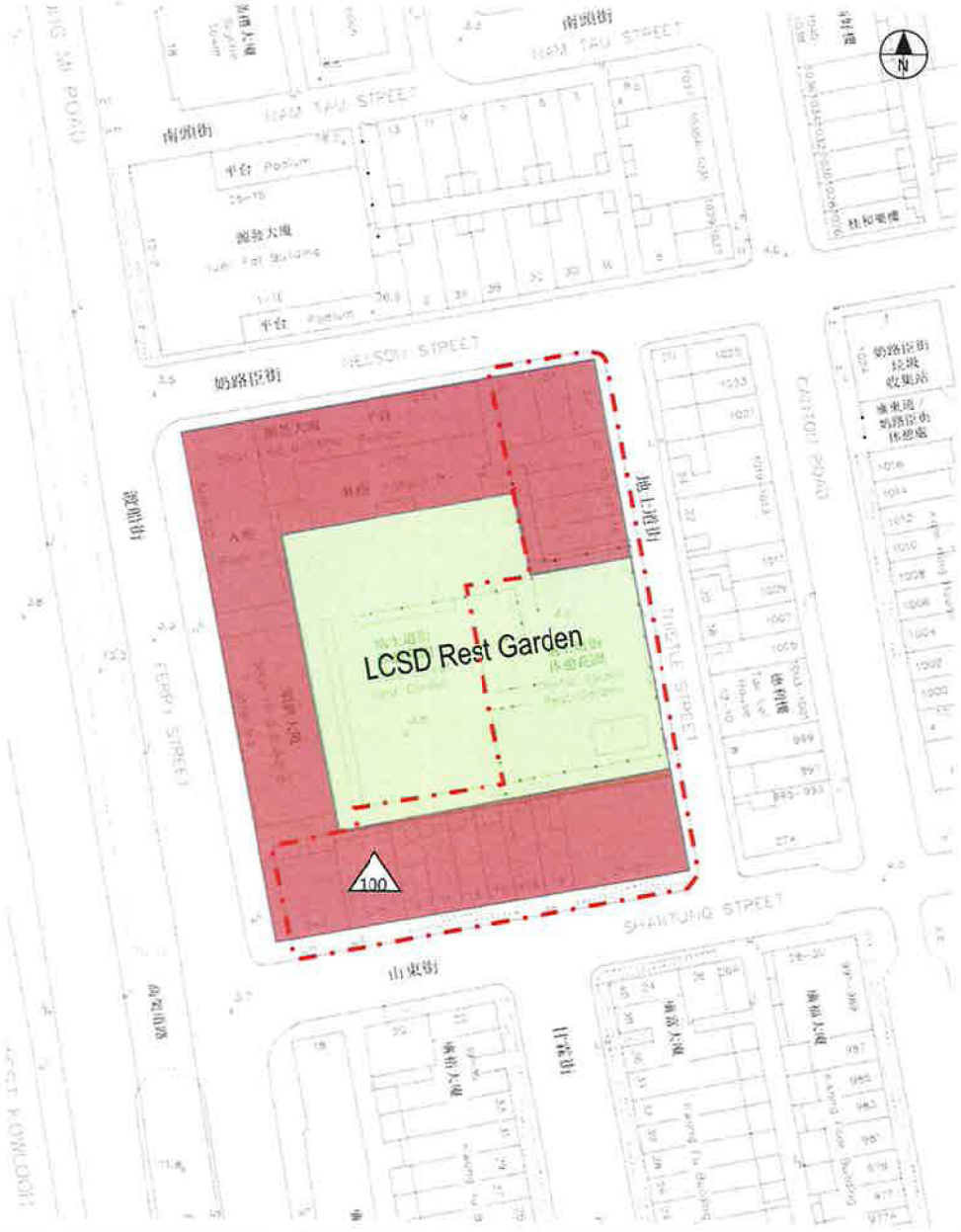
Scheme Boundary

0 5 10 25m

URA YTM-012 | Figure 2020032/LP/01 Site Location

Oct 2020

AECOM



LEGEND

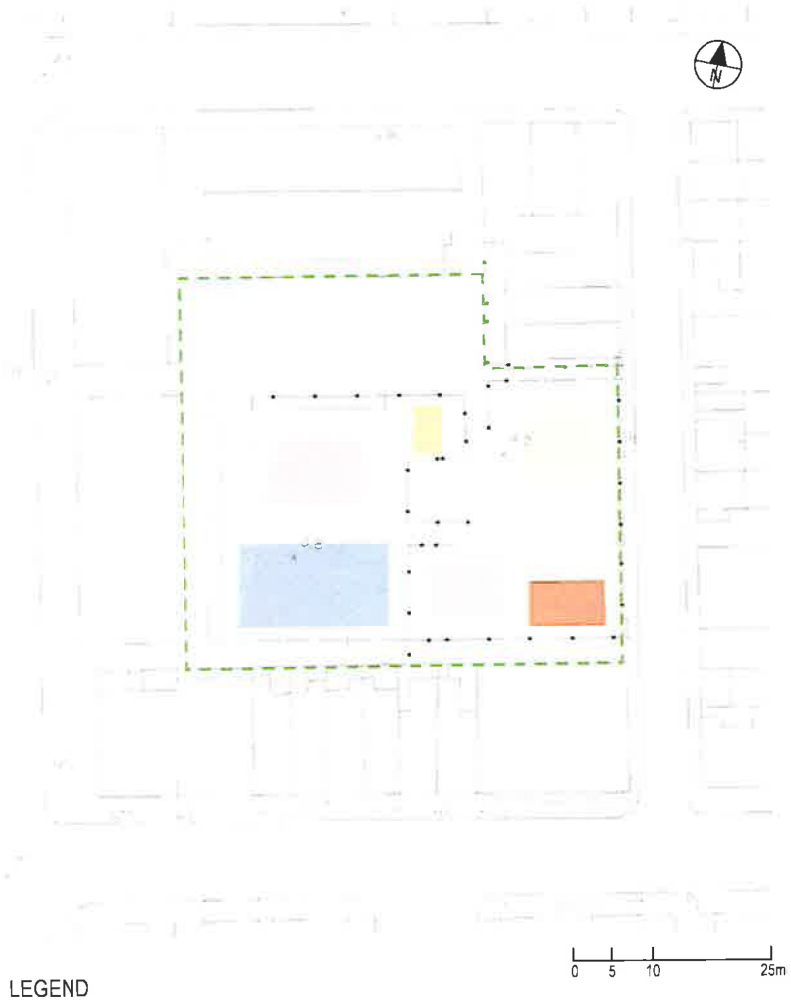
- Scheme Boundary
- Open Space
- Residential (Group A)
- 100 Maximum Building Height (In Metres Above Principal Datum)

0 5 10 25m

URA YTM-012 | Figure 2020032/LP/02
Mong Kok Outline Zoning Plan

Oct 2020

AECOM



Facility	Approximate Area
Badminton Court	Refer to Chapter 4, Hong Kong Planning Standards and Guidelines (October 2015).
Children's Playground	Area: 50 m^2
Elderly Exercise Equipment Cobble Stone Walking Path	Area: 130 m^2
Public Toilet	Area: 43 m^2


Badminton Court


Children's Playground


Public Toilet


Elderly Exercise Equipment


Elderly Exercise Equipment


Cobble Stone Walking Path

Appendix A : Preliminary Tree Preservation and Compensatory Planting Proposal

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Figure 2020032/TP/05 Tree Protection Requirement

APPENDICES

Appendix I Preliminary Tree Assessment
Appendix II Existing Tree Photos

1. INTRODUCTION

1.1 Objective and Purpose of this Proposal

1.1.1 The objective of this report is to provide preliminary tree preservation, transplanting, felling, and compensatory planting proposals following the requirements in DEVB TC(W) No. 4/2020 for tree preservation or LAO PN No. 2/2020 Tree Preservation and Tree Removal Application for Building Development in Private Projects.

1.2 Structure of this Proposal

1.2.1 This Proposal contains Preliminary Tree Identification and Condition Survey including photo records showing existing tree conditions, recommendations of trees to be retained, transplanted and felled, and compensatory tree planting proposals. Following this introductory section, the remainder of the Proposal is arranged as follows:

- Section 2 describes environmental legislations, standards and guidelines related to tree survey and removal application;
- Section 3 illustrates the tree survey methodology;
- Section 4 presents the tree survey findings and treatment recommendations;
- Section 5 describes the compensatory tree planting proposal; and
- Section 6 summarises the findings of the report.

2. ENVIRONMENTAL LEGISLATIONS, STANDARDS AND GUIDELINES

2.1 Government Publications, Guidelines, Reports and Technical Circulars related to Tree Preservation include:

- Agriculture, Fisheries and Conservation Department – AFCD Nature Conservation Practice Note No. 2 – Measurement of Diameter at Breast Height (DBH).
- Agriculture, Fisheries and Conservation Department – AFCD Nature Conservation Practice Note No. 3 – The Use of Plant Names.
- DEVB TC(W) No. 4/2020 – Tree Preservation.
- DEVB TC(W) No. 5/2020 – Registration of Old and Valuable Trees, and Guidelines for their Preservation.
- GEO Report No. 136 (2003) – Guidelines on Safe Access for Slope Maintenance.
- GEO Report No. 183 (2006) – Performance Assessment of Greening Techniques on Slopes.
- HyD GC No. 5/2016 – Technical Administrative Committees in Highways Department
- Lands Department, Lands Administration Office Instructions (LAOI) Section D-12 – Tree Preservation.
- Lands Department, Lands Administration Office Practice Note Issue No. 2/2020.
- Proper Planting Practices issued by Greening, Landscape and Tree Management Section of Development Bureau.

2.2 Ordinances and Regulations

2.2.1 Ordinances and Regulations related to Tree Preservation include:

- Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislations.
- Plant Varieties Protection Ordinance (Cap. 490).
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586).

3. METHODOLOGY

3.1 Tree Assessment Methodology

3.1.1 In accordance with DEVB TC(W) No. 4/2020 or LAO PN No. 2/2020, all existing individual trees with a trunk diameter larger than 95mm (300mm girth) measured 1300mm above ground level are surveyed and identified with the following information recorded:

(a) Figure No.: Figure where the individual tree can be found.

(b) Tree No.: Individual trees as being number labelled on site and marked on site and denoted correspondingly on the plan.

(c) Photo No.: The photograph reference number of the tree being identified.

(d) Species: Latin and Chinese common names of the trees surveyed.

(e) Tree size:

(i) Overall Height: Height measured from ground level to the top branch;

(ii) Trunk Diameter: Diameter of the main trunk measured at 1.3m high above ground level;

(iii) Crown Spread: Average diameter of the foliage canopy.

(f) Amenity Value of a tree should be assessed by its functional values for shade, shelter, screening, reduction of pollution and noise and also its fung shui significance, and classified into the following categories:

(i) Good – important trees which should be retained by adjusting the design layout accordingly;

(ii) Fair – trees that are desirable to be retained in order to create a pleasant environment, which includes healthy specimens of lesser importance than "Good" trees;

(iii) Poor – trees that are dead, dying or potentially hazardous and should be removed.

(g) Form:

(i) Good - Well-balanced crown and straight strong trunk(s);

(ii) Fair - Slightly unbalanced crown and non-straight trunk(s);

(iii) Poor - Misshapen or awkwardly-forked trunk and / or unbalanced crown.

(h) Health:

(i) Good - Sound and healthy trees;

(ii) Fair - Trees which are with few or no visible defects or health problem;

(iii) Poor - Rot and / or cavities in the main trunk and / or crown die back, severely infected with disease.

(i) Structural Condition:

(i) Good - Trees with no or little sign of structural defect and would have low risk level of potential failure;

(ii) Fair - Trees with moderate sign of structural defect and would have medium risk level of potential failure;

(iii) Poor - Trees with significant and obvious sign of structural defect and would have high risk level of potential failure.

(j) Suitability for Transplanting: Assess the suitability of affected trees be transplanted taken into account of the following factors: -

- conditions of the tree to be transplanted (including form, health and structure which will affect success of the proposed transplanting);
- size, species, and conservation status of the tree to be transplanted;
- availability and suitability of a permanent receptor site, both within and outside the project site;
- adequate time for preparation of transplanting operation;
- identification of a long-term maintenance party for the transplanted tree(s);
- access to the existing location and transportation to the receptor site (including availability of access to accommodate the tree, topography of the proposed route, engineering limitations, etc.); and
- cost-effectiveness.

Trees with the following features should not be considered suitable for transplanting under normal circumstances:

- low amenity value;
- irrecoverable form after transplanting (e.g. if substantial crown and root pruning are necessary to facilitate the transplanting);
- low survival rate after transplanting;
- very large size (unless the feasibility to transplant has been considered financially reasonable and technically feasible during the feasibility stage);
- with evidence of over-maturity and onset of senescence;
- with poor health, structure or form (e.g. imbalanced form, leaning, with major cavity/cracks/splits); or
- undesirable species (e.g. *Leucaena leucocephala* which is an invasive exotic tree).

Having considered the above factors and features of the trees, trees are assessed as follows: -

(i) High - Trees are highly suitable for transplanting.

(ii) Medium - Trees are moderately suitable for transplanting.

(iii) Low – Trees are not suitable for transplanting.

(k) Conservation Status: State the rarity and protection status of the species under relevant ordinances in Hong Kong. References such as Rare and Precious Plants of Hong Kong, the IUCN Red List of Threatened Species and the Forests and Countryside Ordinance (Cap. 96) are used.

(l) Recommendations: Proposed action for individual species which fall into three categories:

(i) Retain

(ii) Transplant

(iii) Fell

(m) Department to Provide Expert Advice to LandsD: AFCD (Agriculture, Fisheries and Conservation Department) / HyD (Highways Department) / LCSD (Leisure and Cultural Services Department) / Respective Government Department.

(n) Justification: Proposed works which justify the recommendation.

(o) Remarks: Supplementary note towards the assessment.

4. TREE SURVEY FINDINGS AND TREATMENT RECOMMEDATIONS

4.1 Existing Tree Survey Findings

4.1.1 The preliminary tree survey was carried out in October 2019. A total of approximately 17 nos. of trees (with 95mm DBH or above) are found within the tree survey area, i.e. area bounded by Nelson Street, Thistle Street, Shantung Street and Ferry Street. Of the 17 nos. of trees, 9 nos. were within the Scheme and the rest were found at the remaining part of the Rest Garden (outside the Scheme). The 17 nos. of trees cover 8 species. From the preliminary survey, 5 nos. of rare or precious trees - *Ailanthus fordii* are identified, and their locations are shown on **Figure 2020032/TP/02**.

4.1.2 No registered OVT or potentially registrable OVT are found within the tree survey area. All the tree species identified are common species. They are generally in fair to poor form, fair health and fair amenity value. Dominant species include *Ailanthus fordii*, *Aleurites moluccana* and *Roystonea regia*. Locations of individual tree surveyed are shown in **Figure 2020032/TP/01**.

4.1.3 Preliminary tree identification and condition of individual tree surveyed is tabled in **Appendix I - Preliminary Tree Assessment.** Photographic records of individual trees are shown in **Appendix II - Existing Tree Photos**.

4.2 Tree Treatment Recommendations

4.2.1 To determine if the existing trees will be affected by the proposed development, the notional design of the proposed development is overlaid in **Figure 2020032/TP/03**. It is subject to change in detailed design stage.

4.2.2 Among 17 nos. of surveyed trees, 10 nos. of trees are proposed to be retained and will be preserved in-situ on site as they would not be affected by proposed development. Proposed tree protection requirement is shown in **Figure 2020032/TP/05**.

4.2.3 Seven (7) nos. of trees are proposed to be transplanted/felled as they are conflicting with the proposed notional design of the Scheme. The locations of the trees to be transplanted/felled are shown in **Figure 2020032/TP/03**. Feasibility of tree transplanting for the affected trees has been reviewed. Subject to the view and agreement from LCSD, the affected trees will be transplanted as far as practicable. If transplanting is found not feasible/not suitable at the detailed design stage, tree felling will be proposed and tree compensation will be made.

4.2.4 Based on the above, preliminary findings and recommended treatments to the existing are summarized as follows: -

Total Trees Surveyed	Retain	Transplant/Fell*
17	10	7

**View and agreement from LCSD and relevant Government departments on the landscape design proposal and tree preservation and compensatory proposal to be sought upon DSP approval.*

4.2.5 Tree compensation is proposed in below for any tree felling.

5. COMPENSATORY TREE PLANTING PROPOSAL

5.1 Tree Compensation within Thistle Street Rest Garden

5.1.1 Tree compensatory ratio of 1:1 in number will be adopted. In compensation for the felled tree from the Rest Garden, heavy standard trees (@75mm DBH) with approximate spacing of 4000mm are proposed to be planted within the Rest Garden. The proposed tree species are *Tabebuia chrysantha* (黃鐘木) or *Callistemon viminalis* (串錢柳) for compensation. Details of the Preliminary Tree Transplantation / Compensation Proposal are shown in Figure 2020032/TP/04.

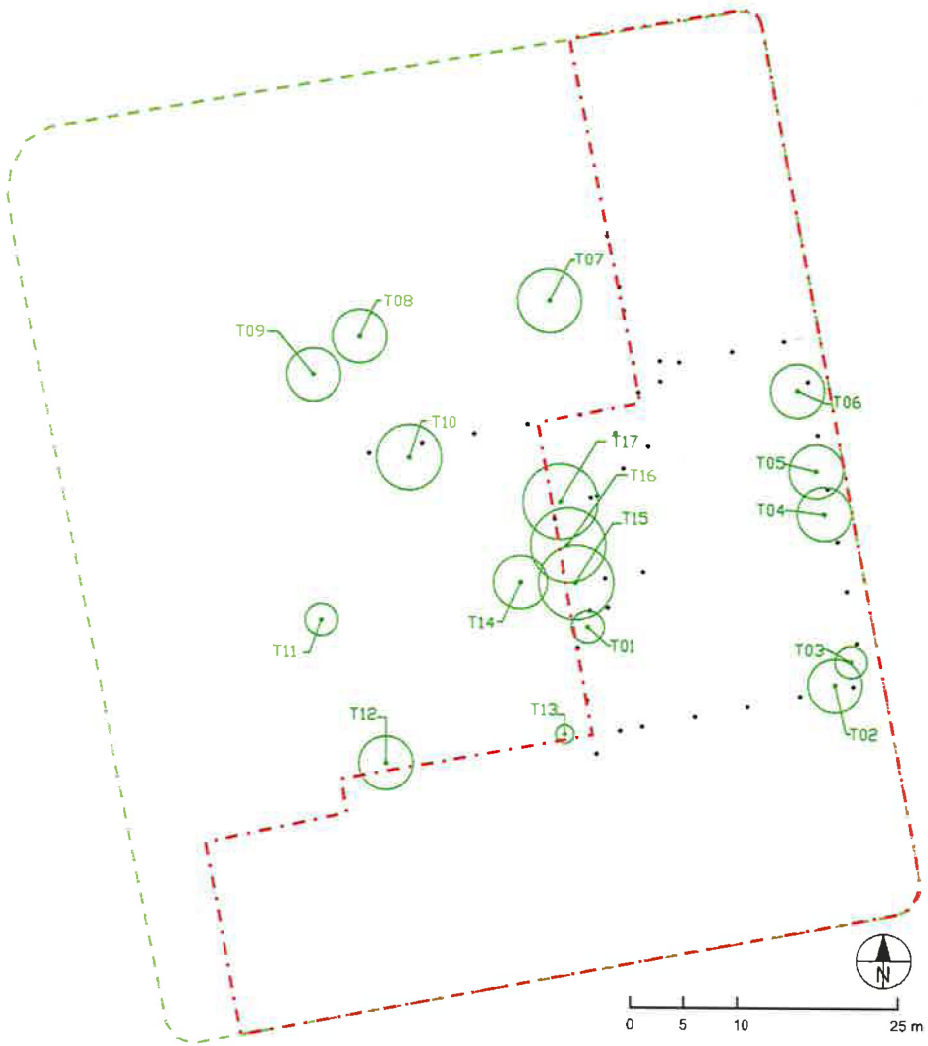
6. CONCLUSION

A total of 17 nos. of trees were recorded within the tree survey area, of which 9 nos. of trees are within the Scheme. Among the 17nos. of trees, 10 nos. of trees are proposed to be retained, 7 nos. of tree are proposed to be transplanted/felled. Should there be trees to be felled, a tree compensatory ratio of 1:1 in number will be adopted, with heavy standard trees (@75mmDBH) are proposed to be planted within the Rest Garden.

Figures

LEGEND

- Tree Survey Boundary
- Scheme Boundary
- Existing Tree



Site Visit

Date: Oct 2019

Tree Definition

According to DEVB TC(W) 4/2020,

"A plant is considered as a "**tree**" if its trunk diameter measures **95 mm or more** at a height of 1.3 m above the ground level."

Initial Findings

Total No. of Existing Plantings : 48 nos.

- Below 95mm DBH : 31 nos.
- 95mm DBH or more : 17 nos.





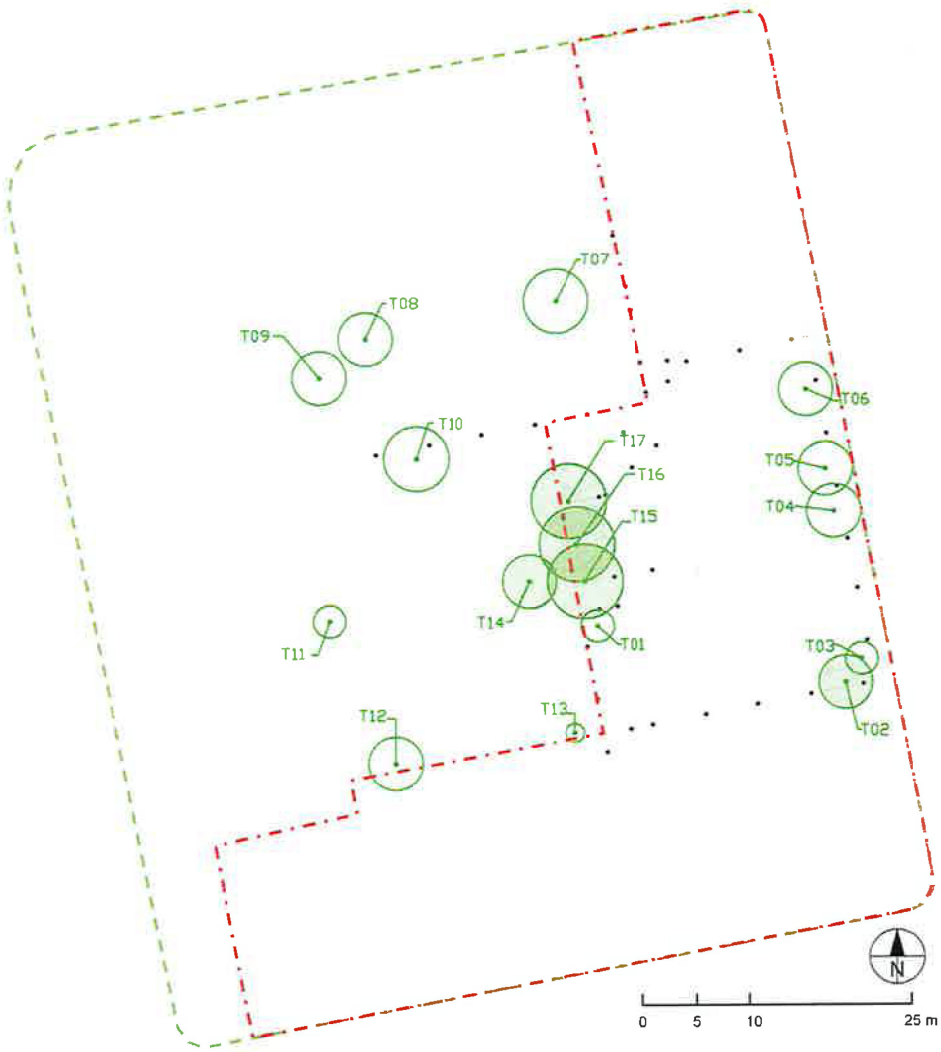
Site Photos

Observed Tree Species

Species Name	Chinese Name	Quantity (No.)
Ailanthus fordii	常綠臭椿	5
Aleurites moluccana	石栗	3
Archontophoenix alexandrae	假檳榔	1
Callistemon viminalis	串錢柳	1
Hibiscus tiliaceus	黃槿	1
Melaleuca cajuputi subsp. *Cumingiana*	白千層	2
Roystonea regia	王棕	3
Schefflera actinophylla	傘樹	1

LEGEND

- Tree Survey Boundary
- Scheme Boundary
- Existing Tree
- Rare and Precious Tree



Rare and Precious Tree Species

According to Cap. 96 Forests And Countryside Ordinance, and Rare and Precious Plants of Hong Kong (AFCD, 2003)

Total around **5** nos. of *Ailanthus fordii* (常綠臭椿)

Extracted from Cap. 96 Forests And Countryside Ordinance,

"No person shall without lawful excuse sell, offer for sale, or have in his possession or under his custody or control any portion of any of the following plants... "

T02



T14



T15



T16



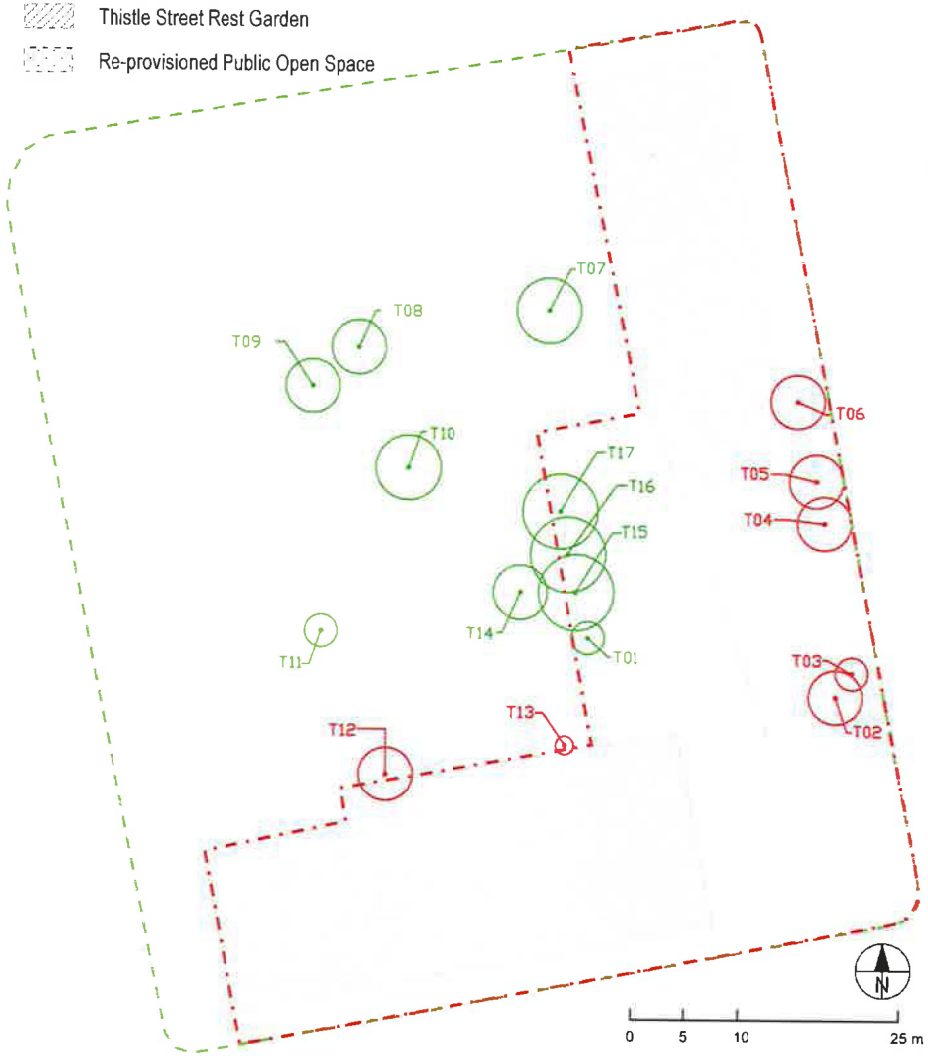
T17



Photos of 5 nos. of *Ailanthus fordii* (常綠臭椿)

LEGEND

- Tree Survey Boundary
- Scheme Boundary
- Tree Recommended to be Retained
- Tree Recommended to be Transplanted/ Felled
- Thistle Street Rest Garden
- Re-provisioned Public Open Space



Total No. of Existing Trees

- 95mm DBH or more : 17 nos.
- Total no. of existing trees expected to be affected: Approximately **7 nos.**
- The affected trees are **conflicting with the proposed building and levelling works**, so they are unavoidably proposed as transplanted or felled.

Proposed Tree Treatment

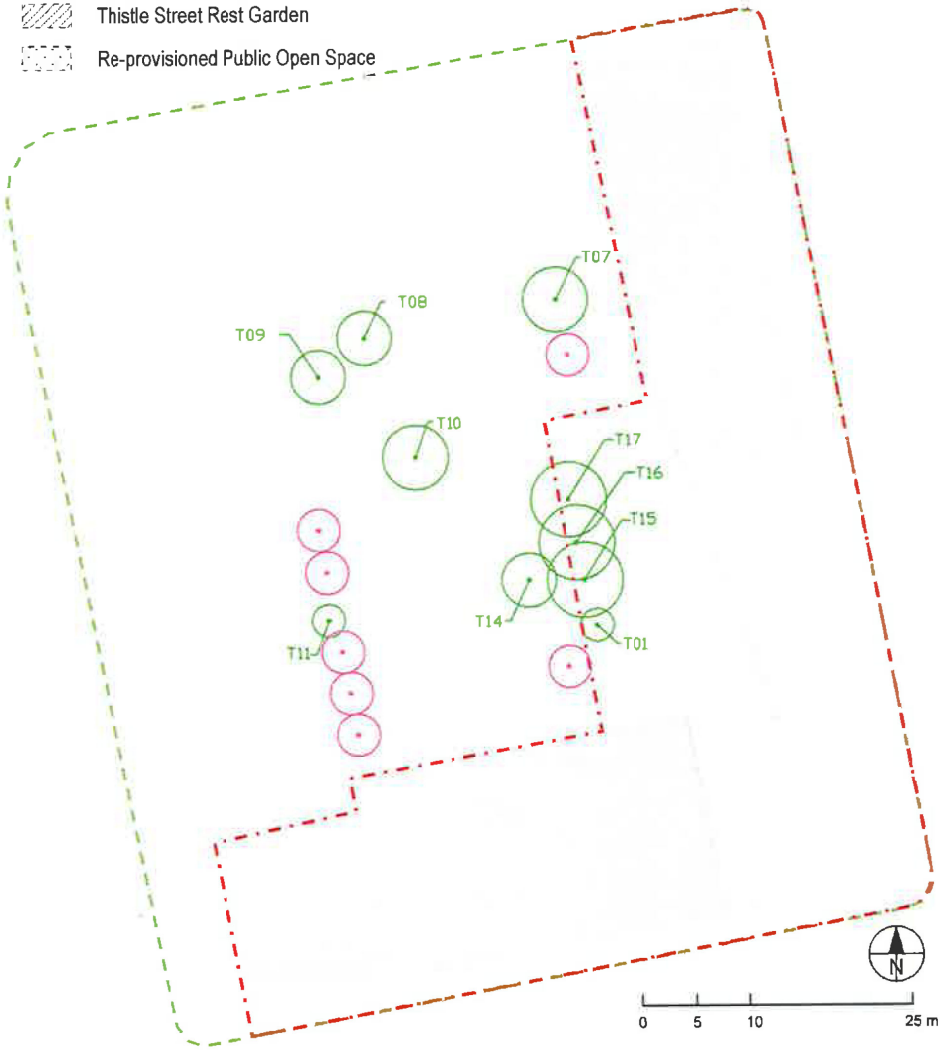
- Retain : 10 nos.
- Transplant / Fell : 7 no.

Tree No.	Species Name	Chinese Name
T02	*Ailanthus fordii*	常綠臭椿
T03	*Archontophoenix alexandrae*	假檳榔
T04	*Roystonea regia*	王棕
T05	*Roystonea regia*	王棕
T06	*Roystonea regia*	王棕
T12	*Melaleuca cajuputi* subsp. *Cumingiana*	白千層
T13	*Melaleuca cajuputi* subsp. *Cumingiana*	白千層

Recommended Transplant/ Fell Trees

LEGEND

- Tree Survey Boundary
- Scheme Boundary
- Tree Recommended to be Retained
- Tree Recommended to be Transplanted / Proposed Compensatory Tree
- Thistle Street Rest Garden
- Re-provisioned Public Open Space

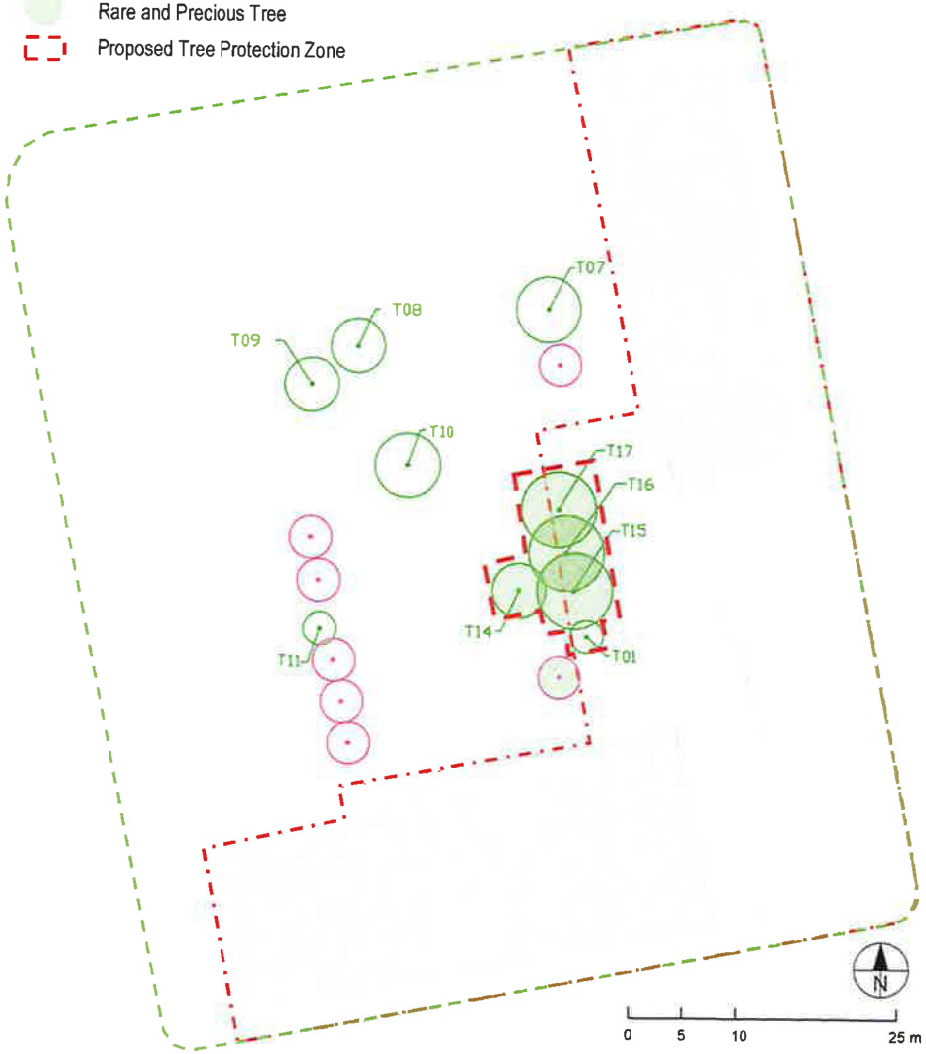


Preliminary Tree Transplantation / Compensation Proposal

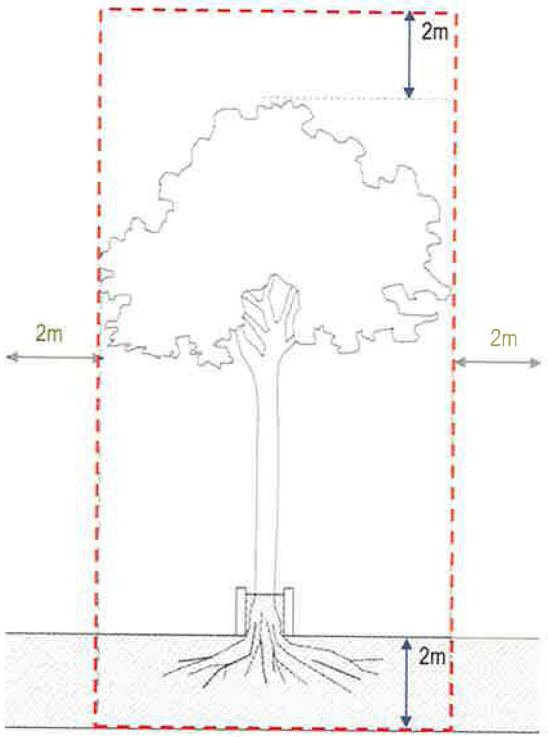
- To compensate by 1:1 in quantity (in number)
- Maintain a green buffer/ screening between the Park and the adjacent residential buildings.

LEGEND

- Tree Survey Boundary
- Scheme Boundary
- Tree Recommended to be Retained
- Tree Recommended to be Transplanted / Proposed Compensatory Tree
- Rare and Precious Tree
- Proposed Tree Protection Zone
- Thistle Street Rest Garden
- Re-provisioned Public Open Space



Tree Protection Requirement



Proposed Extend of Tree Protection Zone (TPZ)

Appendix I : Preliminary Tree Assessment

Tree No.	Photo No.	Botanical Name	Chinese Common Name	Jurisdiction (AFCD,HyD,LCSD&RGD)	SIZE (M)			Structural condition (Good/ Fair/ Poor)	Form (Good/ Fair/ Poor)	Health (Good / Fair/ Poor)	Amenity Value (Good/ Fair/ Poor)	Suitability for Transplanting		Conservation Status	Recommendations (Retain/Transplant /Fell)	Justification	Additional Remarks
					Height	Trunk DBH	Spread					(High/Medium/Low)	Remarks				
T01	T01	Schefflera actinophylla	傘樹	LCSD	6.0	0.18	3.0	Fair	Poor	Fair	Fair	Low	b,c,f	Nil	Retain	-	Unbalanced crown
T02	T02	Ailanthus fordii	常綠臭椿	LCSD	15.0	0.26	5.0	Fair	Fair	Fair	Fair	Medium	-	(B)	Transplant/ Fell	Building works	
T03	T03	Archontophoenix alexandrae	假檳榔	LCSD	15.0	0.15	3.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T04	T04	Roystonea regia	王棕	LCSD	15.0	0.28	5.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T05	T05	Roystonea regia	王棕	LCSD	15.0	0.27	5.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T06	T06	Roystonea regia	王棕	LCSD	15.0	0.30	5.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T07	T07	Aleurites moluccana	石栗	LCSD	15.0	0.30	6.0	Fair	Fair	Fair	Fair	Low	b,c,d	Nil	Retain	-	
T08	T08	Aleurites moluccana	石栗	LCSD	15.0	0.30	5.0	Fair	Fair	Fair	Fair	Low	b,c,d	Nil	Retain	-	
T09	T09	Aleurites moluccana	石栗	LCSD	15.0	0.30	5.0	Fair	Fair	Fair	Fair	Low	b,c,d	Nil	Retain	-	
T10	T10	Hibiscus tiliaceus	黃槿	LCSD	6.0	0.20	6.0	Fair	Poor	Fair	Fair	Low	b,c,f	Nil	Retain	-	Codominant Trunks
T11	T11	Callistemon viminalis	串錢柳	LCSD	6.0	0.15	3.0	Fair	Poor	Fair	Fair	Low	b,c,f	Nil	Retain	-	Leaning
T12	T12	Melaleuca cajuputi subsp. Cumingiana	白千層	LCSD	12.0	0.20	5.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T13	T13	Melaleuca cajuputi subsp. Cumingiana	白千層	LCSD	5.0	0.10	2.0	Fair	Fair	Fair	Fair	Medium	-	Nil	Transplant/ Fell	Building works	
T14	T14	Ailanthus fordii	常綠臭椿	LCSD	19.0	0.18	5.0	Fair	Fair	Fair	Fair	Low	b,c,d	(B)	Retain	-	
T15	T15	Ailanthus fordii	常綠臭椿	LCSD	23.0	0.59	7.0	Fair	Fair	Fair	Fair	Low	b,c,d	(B)	Retain	-	
T16	T16	Ailanthus fordii	常綠臭椿	LCSD	23.0	0.40	7.0	Fair	Fair	Fair	Fair	Low	b,c,d	(B)	Retain	-	
T17	T17	Ailanthus fordii	常綠臭椿	LCSD	23.0	0.58	7.0	Fair	Fair	Fair	Fair	Low	b,c,d	(B)	Retain	-	

Remarks for Suitability for Transplanting

(a) Low amenity value;
(b) Irrecoverable form after transplanting (e.g. if substantial crown and root pruning are necessary to facilitate the transplanting);
(c) Low survival rate after transplanting;
(d) Very large size (unless the feasibility to transplant has been considered financially reasonable and technically feasible during the feasibility stage);
(e) With evidence of over-maturity and onset of senescence;
(f) With poor health, structure or form (e.g. imbalanced form, leaning, with major cavity/cracks/splits); or cavity/cracks/splits);
(g) Undesirable species (e.g. *Leucaena leucocephala* which is an invasive exotic tree); or
(h) On steep slope.

Conservation Status

(A) The Protection of Endangered Species of Animals and Plants Ordinance (Cap.586)
(B) Forests and Countryside Ordinance (Cap. 96)

Appendix II : Existing Tree Photos



T01 - *Schefflera actinophylla* 傘樹 (Retain)



T02 - *Ailanthus fordii* 常綠臭椿 (Transplant/ Fell)


T03 - *Archontophoenix alexandrae* 假檳榔 (Transplant/ Fell)


T04 - *Roystonea regia* 王棕 (Transplant/ Fell)


T05 - *Roystonea regia* 王棕 (Transplant/ Fell)


T06 - *Roystonea regia* 王棕 (Transplant/ Fell)



T07 - *Aleurites moluccana* 石栗 (Retain)



T08 - *Aleurites moluccana* 石栗 (Retain)



T09 - *Aleurites moluccana* 石栗 (Retain)



T10 - *Hibiscus tiliaceus* 黃槿 (Retain)



T11 - *Callistemon viminalis* 串錢柳 (Retain)



T12 - *Melaleuca cajuputi* subsp. *Cumingiana* 白千層 (Transplant/ Fell)



T13 - *Melaleuca cajuputi* subsp. *Cumingiana* 白千層 (Transplant/ Fell)



T14 - *Ailanthus fordii* 常綠臭椿 (Retain)



T15 - *Ailanthus fordii* 常綠臭椿 (Retain)



T16 - *Ailanthus fordii* 常綠臭椿 (Retain)



T17 - *Ailanthus fordii* 常綠臭椿 (Retain)



T09 - *Aleurites moluccana* 石栗 (Retain)



T10 - *Hibiscus tiliaceus* 黃槿 (Retain)



T11 - *Callistemon viminalis* 串錢柳 (Retain)



T12 - *Melaleuca cajuputi* subsp. *Cumingiana* 白千層 (Transplant/ Fell)



T13 - *Melaleuca cajuputi* subsp. *Cumingiana* 白千層 (Transplant/ Fell)



T14 - *Ailanthus fordii* 常綠臭椿 (Retain)



T15 - *Ailanthus fordii* 常綠臭椿 (Retain)



T16 - *Ailanthus fordii* 常綠臭椿 (Retain)



T17 - *Ailanthus fordii* 常綠臭椿 (Retain)



T01 - *Schefflera actinophylla* 傘樹 (Retain)



T02 - *Ailanthus fordii* 常綠臭椿 (Transplant/ Fell)



T03 - *Archontophoenix alexandrae* 假檳榔 (Transplant/ Fell)



T04 - *Roystonea regia* 王棕 (Transplant/ Fell)



T05 - *Roystonea regia* 王棕 (Transplant/ Fell)



T06 - *Roystonea regia* 王棕 (Transplant/ Fell)



T07 - *Aleurites moluccana* 石栗 (Retain)



T08 - *Aleurites moluccana* 石栗 (Retain)

Appendix 3

Visual Appraisal Report (VA)

Visual Appraisal for URA Shantung Street / Thistle Street Development Scheme (YTM-012)

October 2020

1. Background

1.1. The Urban Renewal Authority has proposed the Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). This Visual Appraisal (VA) report is prepared in support of the submission of a draft Development Scheme Plan (DSP) with its planning proposal to the Town Planning Board for consideration.

1.2. With a total area of 2,796sq.m. the Scheme Area is located in Mong Kok District, which is in "L-shape" bounded by Thistle Street to the east, Shantung Street to the south, portion of Ferry Street, part of Thistle Street Rest Garden and a government back lane to the west and Nelson Street to the north. It is currently zoned "Residential (Group A)" ("R(A)") and "Open Space ("O")", and the pavement shown as "Road" on the Approved Mong Kok Outline Zoning Plan (OZP) No. S/K3/32. Under the draft DSP, the Scheme Area is proposed to be zoned "R(A)" with overall Plot Ratio (PR) is 9.0. A relaxation of maximum building height from 100mPD to 120mPD for the Scheme Area of the draft DSP is proposed.

1.3. Under notional design, the proposed development comprises of a residential tower on top of a clubhouse/commercial/retail/GIC podium (the Tower Block) and a low-rise commercial/retail/GIC block (Low Block). Part of the Thistle Street Rest Garden included within the Scheme will be re-configured and re-structured (the re-structured POS) to provide a new entrance at the corner of Shantung Street and Thistle Street. The new layout of the re-structured POS will largely enhance its accessibility from adjoining streets and its visual openness to the pedestrian. A layout of the notional design is shown at **Figure 1.1**.

2. Visual Appraisal

Strategic Viewpoints Assessment

2.1. The Scheme falls within the view-fan for protection of the ridgeline viewing from the Sun Yat Sen Memorial Park, Sai Ying Pun and the Central Pier No.7 vantage points, which were identified as Viewing Point No. 6 and Viewing Point No. 8 as stated under the Hong Kong Planning Standards and Guidelines (HKPSG) (see **Figure 2.1.** and **2.2**). Hence, both vantage points have been selected as the key strategic viewpoints in this visual appraisal.

Strategic Viewing Point No. 6 – Sun Yat Sen Memorial Park, Sai Ying Pun

2.2. As shown in **Figure 2.1 and 2.1a**, only part of the residential portion of the proposed development will be visible when viewing from the viewing point on the opposite side of the Victoria Harbour. The proposed Low Block will be blocked by the existing buildings along Ferry Street. Both the mountain ridgeline and the limit of the 20% building free zone are not interrupted by the Scheme. Given the Scheme is situated in the inland area, which is at least 700m away from the waterfront and separated by the West Kowloon Corridor and residential developments clusters in the West Kowloon area, impact on visual permeability from the Victoria Harbour is considered negligible.

Strategic Viewing Point No. 8 - Central Pier No. 7

2.3. As shown in **Figure 2.2 and 2.2a**, the proposed development will be blocked by the existing buildings in front of the Scheme when viewing from the Central Pier viewing point on the opposite side of the Victoria Harbour. Both the mountain ridgeline and the limit of the 20% building free zone are not interrupted by the Scheme. No adverse impact on visual permeability from the Victoria Harbour is anticipated.

Local Viewpoint Assessment

2.4. Visual appraisal is also carried out in the local context to assess any visual impact of the Scheme. For the local view assessment area, i.e. the visual envelope ("VE"), has taken 3 times of the proposed building height of the Scheme (i.e. 120mPD x 3 = 360m) as an assumption. Both representative viewpoints ("VPs") within the VE and outside the VE were selected to assess the visual impact of the Scheme. Selected VPs generally covers the pedestrian/vehicular view corridors from different directions, major open spaces and existing/future pedestrian nodes. Five local VPs are selected and their locations are shown in **Figure 3.1**.

2.5. The locations of the five selected VPs are listed in **Table 1** below. **Figure 3.2-3.6** shows the photomontages of each of the five local VPs with a comparison of the Base Scheme (with building height of 100mPD as permitted under OZP) and Proposed Scheme (with building height of 120mPD).

Table 1: Selected Local Viewpoints

Local Viewpoint(s) (VPs)		Approximate Distance from the Scheme
VP1	Yau Ma Tei Service Reservoir Rest Garden	750m
VP2	Junction of Canton Road and Dundas Street	250m
VP3	Footbridge from Olympian City 3	150m
VP4	Junction of Canton Road and Nelson Street	25m
VP5	Junction of Shantung Street and Reclamation Street	80m

VP 1 – Yau Ma Tei Service Reservoir Rest Garden

2.6. As shown in **Figure 3.2**, both Base Scheme and Proposed Scheme will be screened by the existing buildings in front of the Scheme and will not be visible from this viewing point.

VP 2 – Junction of Canton Road and Dundas Street

2.7. As shown in **Figure 3.3**, only part of the residential portion of the proposed development will be visible from the viewing point for both Base Scheme and Proposed Scheme. The proposed development will largely not be noticeable from this viewing point as the buildings will merge with the surrounding built form and environment.

VP 3 – Footbridge from Olympian City 3

2.8. As shown in **Figure 3.4**, the top floors of the residential portion of the development for the Proposed Scheme will be visible from the viewing point while the proposed development will be screened by existing buildings under the Base Scheme. Given the proposed development will still be largely blocked under the Proposed Scheme, the perception of the public viewers from this view point will unlikely be affected.

VP 4 – Junction of Canton Road and Nelson Street

2.9. As shown in **Figure 3.5**, with proposed building setback of the Low Block from Nelson Street and Thistle Street, the Low Block is not visible from both Base Scheme and the Proposed Development from the viewing point. The proposed residential portion will be highly visible from this viewing point, reducing the sky

view and visual openness of the existing environment. However, if compared with the Base Scheme, there is no significant change of visual composition between the Base Scheme and Proposed Scheme.

VP 5 – Junction of Shantung Street and Reclamation Street

2.10. As shown in **Figure 3.6**, part of the proposed residential portion of both Base Scheme and Proposed Scheme will be visible from this viewing point, which will marginally reduce the visual openness compared to the existing condition. However, if compared with the Base Scheme, there is no significant change of visual composition between the Base Scheme and Proposed Scheme.

Summary

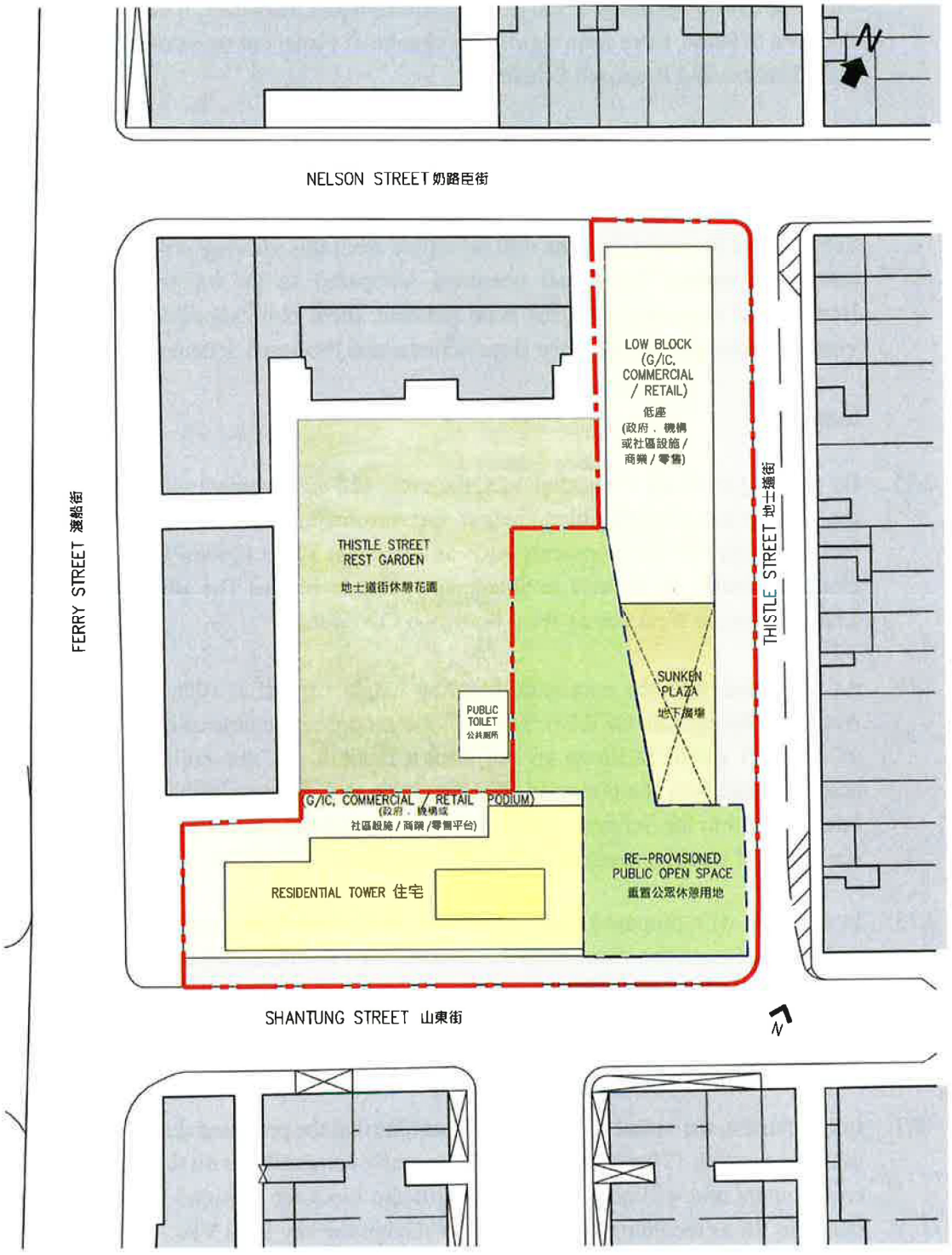
2.11. By viewing from the 5 selected VPs, the proposed development with 120mPD in the Scheme can generally blend in with the surrounding built environment, which includes high-rise developments such as Langham Place (260mPD) and Cordis Hotel (167mPD) in the east at Shanghai Street, as well as The Hermitage (197-232mPD) in the West across West Kowloon Corridor.

2.12. As compared with the maximum building height capped at 100mPD under the Approved Mong Kok OZP No. S/K3/32, the proposed increase of building height to 120mPD would facilitate greater design flexibility of the building blocks to accommodate both the proposed GIC provision and the permissible development intensity within the Scheme, while maintaining slimmer building bulk to enhance sunlight and wind penetration in the Rest Garden.

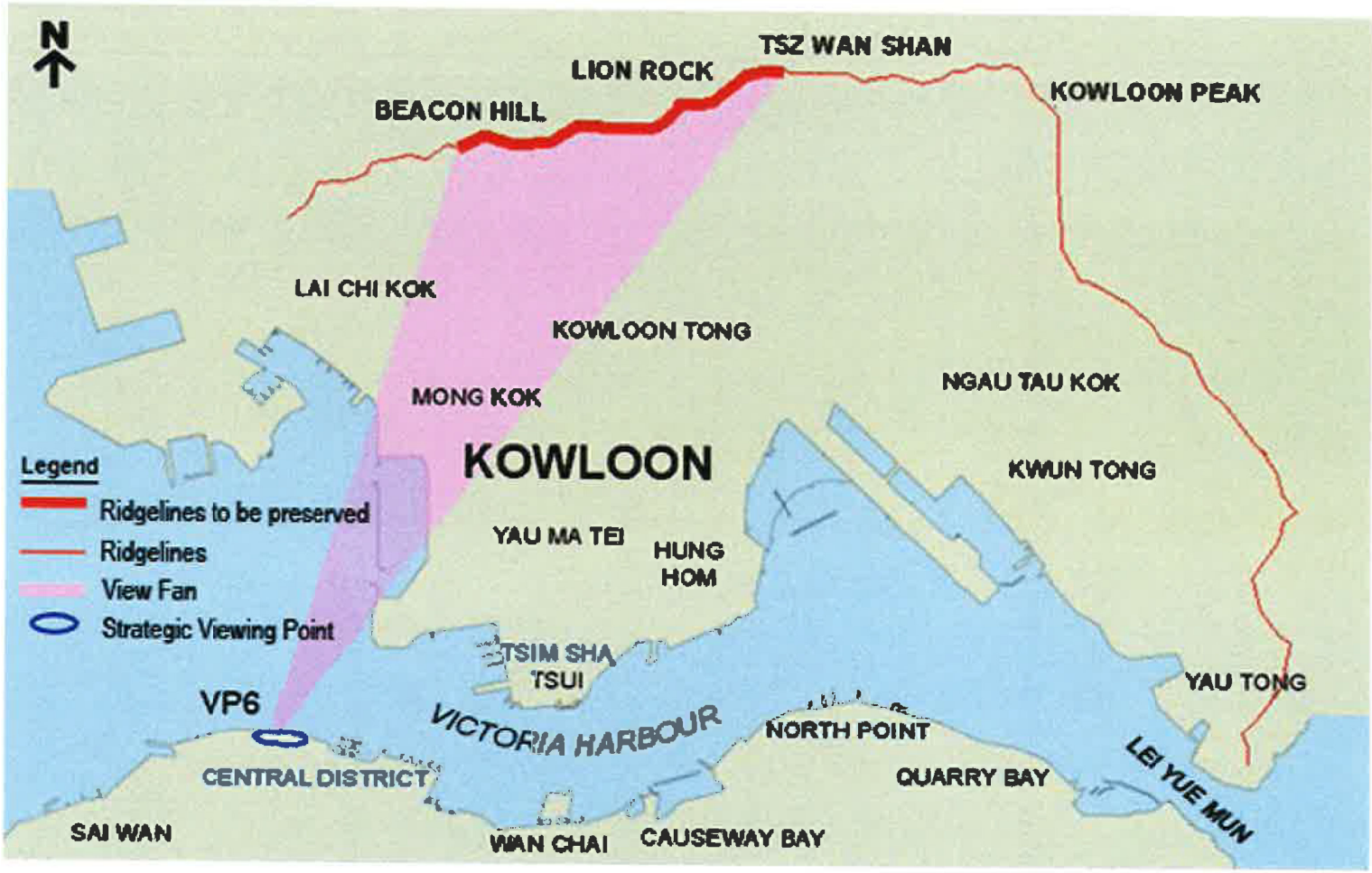
2.13. In addition, with proposed building setback of the Low Block from Nelson Street and Thistle Street, the views from the selected VPs are enhanced as the Low Block of the proposed development will not be visible from street level.

3. Conclusion

3.1. In conclusion, the visual appraisal demonstrates that the proposed developments in the Scheme with 120mPD is 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.



URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Block Plan	Figure 1.1	Scale 1:600(A4)



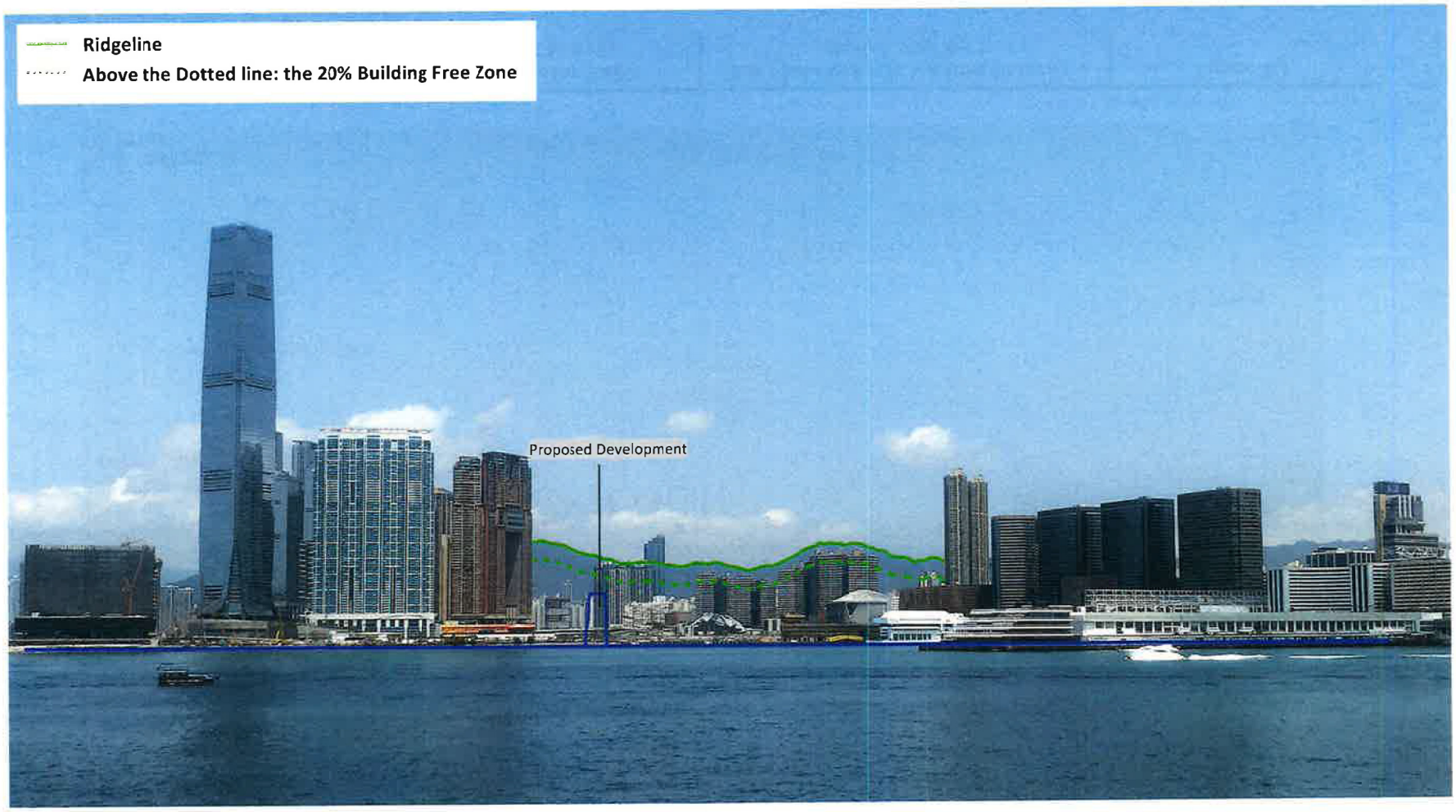
URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Site Plan (Strategic Viewing Point 6) – Sun Yat Sen Memorial Park, Sai Ying Pun	Figure 2.1



URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Proposed Scheme with 120mPD	Site Plan (Strategic Viewing Point 6) – Sun Yat Sen Memorial Park, Sai Ying Pun	Figure 2.1a



URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Site Plan (Strategic Viewing Point 8) – Central Pier No.7	Figure 2.2

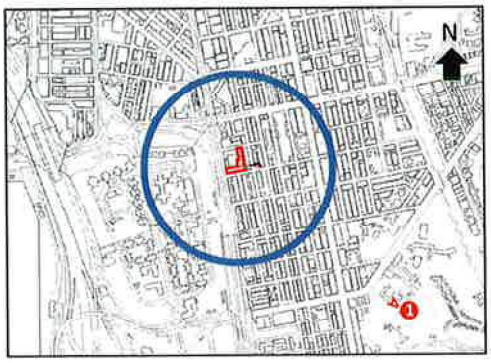


URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Proposed Scheme with 120mPD	Site Plan (Strategic Viewing Point 8) – Central Pier No. 7	Figure 2.2a



URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Site Plan (Local Viewing Points)	Figure 3.1	Not to Scale





Existing Condition



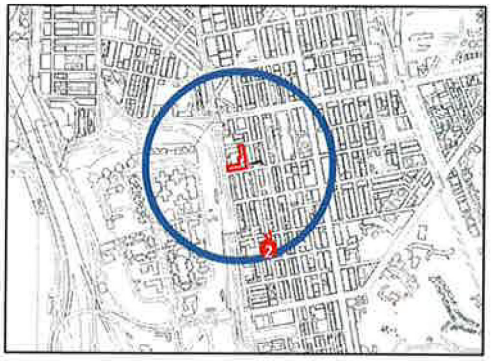
Base Scheme with 100mPD



Proposed Scheme with 120mPD

市區重建局 URBAN RENEWAL AUTHORITY	URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Viewpoint 1- Yau Ma Tei Service Reservoir Rest Garden	Figure 3.2





Existing Condition



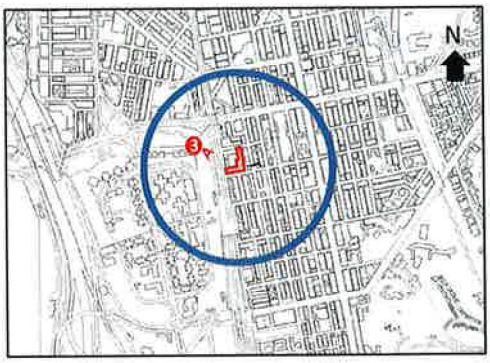
Base Scheme with 100mPD

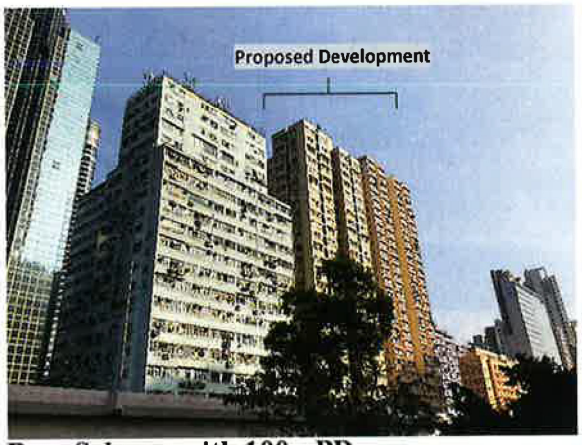


Proposed Scheme with 120mPD



Existing Condition





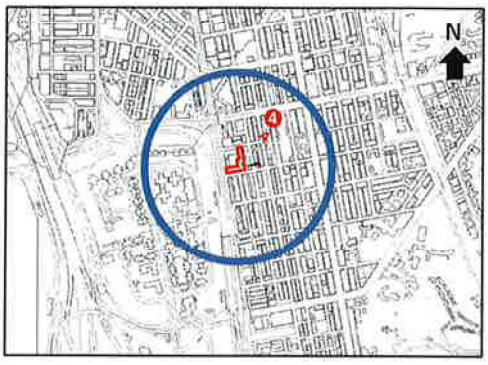
Base Scheme with 100mPD



Proposed Scheme with 120mPD

市區重建局 URBAN RENEWAL AUTHORITY	URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Viewpoint 3- Footbridge from Olympian City 3	Figure 3.4





Existing Condition



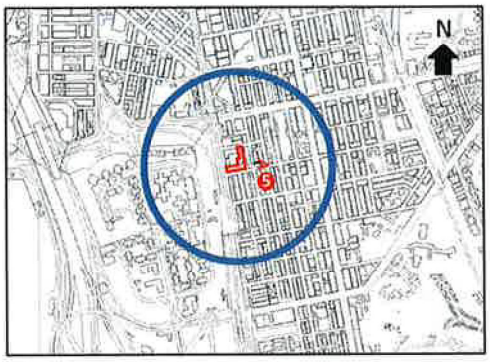
Base Scheme with 100mPD



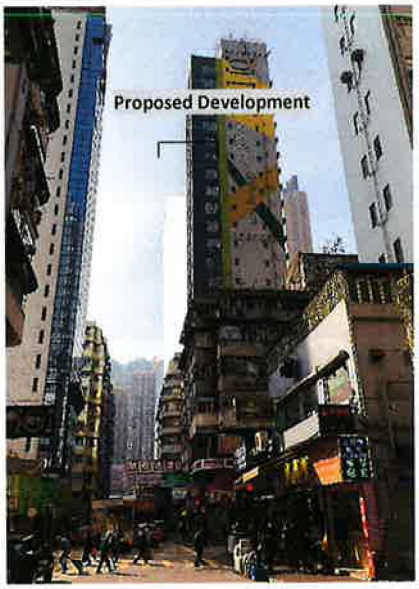
Proposed Scheme with 120mPD

市區重建局 URBAN RENEWAL AUTHORITY	URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Viewpoint 4 - Junction of Canton Road and Nelson Street	Figure 3.5





Existing Condition



Base Scheme with 100mPD



Proposed Scheme with 120mPD

市區重建局 URBAN RENEWAL AUTHORITY	URA Shantung Street / Thistle Street Development Scheme (YTM-012)	Viewpoint 5 - Junction of Shantung Street and Reclamation Street	Figure 3.6

Appendix 4

Social Impact Assessment (Stage 1) Report

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



Shantung Street / Thistle Street (YTM-012)

Stage 1 Social Impact Assessment

October 2020

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1. INTRODUCTION

1.1 In the new 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*".

1.2 The URS also states "*Early social impact assessments will be initiated and conducted by the 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.*" In the absence of a DURF conducted SIA for the area of the Development Scheme, the URA has carried out this Stage 1 SIA.

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

- the population characteristics of the proposed project 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 to be conducted after publication of the project will use factual information collected in the freezing survey at project commencement. The URS stipulates the URA should submit both Stage 1 and Stage 2 SIA reports to the Town Planning Board (TPB) when it submits a development scheme under section 25 of the Urban Renewal Authority Ordinance (URAO). It also stipulates the URA should release the reports for public information.

2. THE DEVELOPMENT SCHEME

2.1 The Shantung Street/ Thistle Street Development Scheme (the Scheme) located in Mong Kok District, which is in "L-shape" broadly bounded by Thistle Street to the east, Shantung Street to the south, part of Ferry Street to the west and part of Nelson Street to the north (**Figure 2.1)**. It covers a gross site area of about 2,796sq.m., includes buildings at 1-27 Shantung Street (odd nos.), 1-23 Thistle Street (odd nos.) and 2L-2M Nelson Street, part of the Leisure and Cultural Services Department (LCSD)'s Thistle Street Rest Garden, a government lane as well as the surrounding public pavement. Subject to site survey and detailed design, the net site area used to calculate the development potential of the Scheme is about 1,660 sq.m., involving only the private lots and the government lane within the Scheme.

2.2 The Scheme aims to restructure and re-plan the area through redevelopment (R1) and to provide opportunities for revitalization (R4) for the surroundings. These integrated urban renewal approach, which is in line with the objectives of urban renewal under Urban Renewal Strategy (URS) 2011 and follow the principles and considerations developed under the District Planning Study for Yau Ma Tei and Mong Kok (YMDS) currently commissioned by the URA .

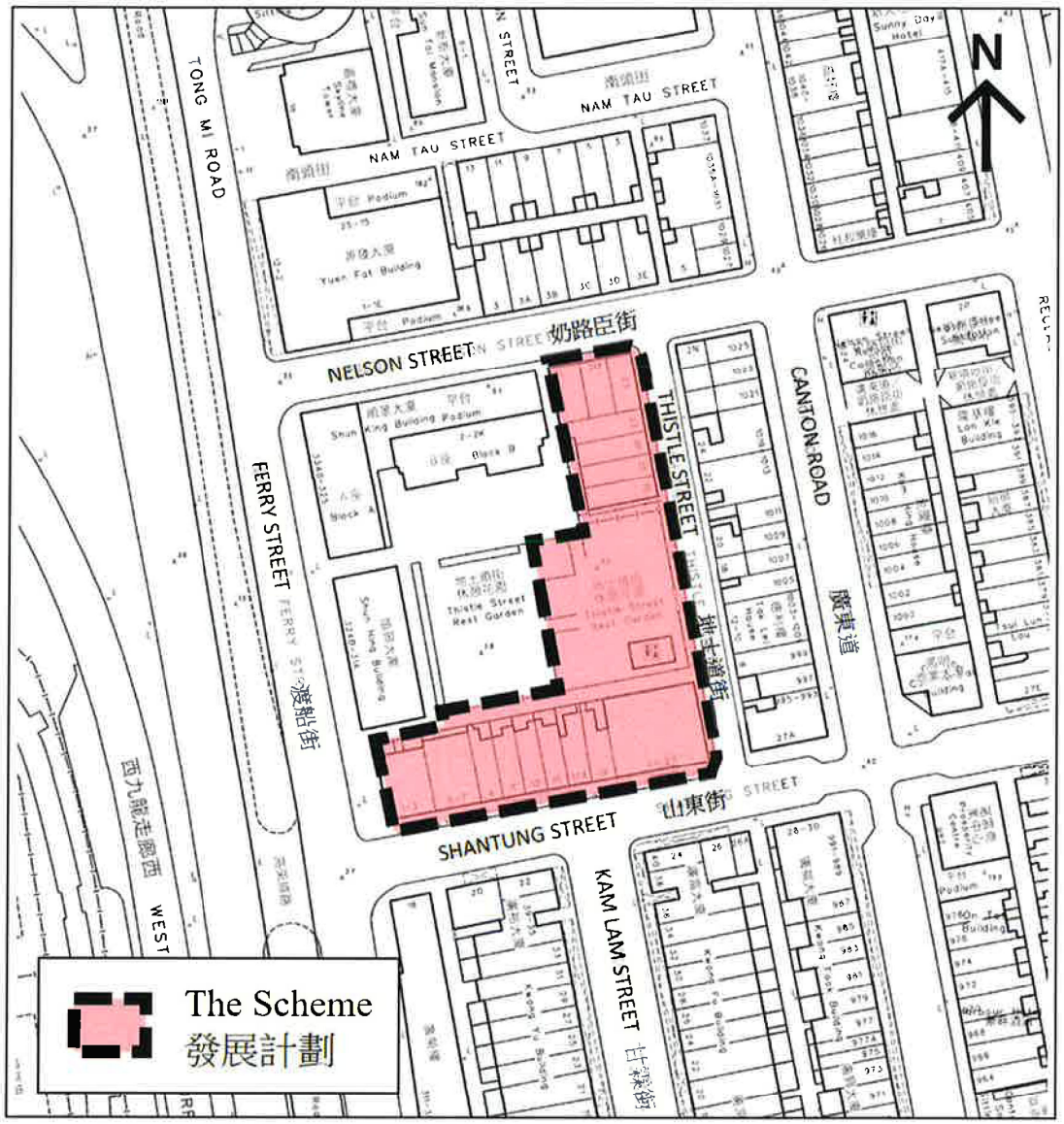


Figure 2.1 Location Plan

Planning Objectives

2.3 The 2011 URS promulgates a comprehensive and holistic approach to carry out urban renewal with the following objectives:

- Restructuring and re-planning of 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.

2.4 Specifically, to achieve the objectives in URS, the Scheme will include the following planning proposals:

i. Part of the existing Thistle Street Rest Garden ("the affected POS") (about 780m^2) is included in the Scheme. The existing Rest Garden is situated at a relatively "land-locked" area between buildings and is of poor visibility and accessibility. It is proposed to restructure and re-plan the area, including the layout of the affected POS, to open up the Rest Garden towards Shantung Street and Thistle Street to enhance its accessibility and permeability with adjoining streets. The affected POS at grade will be excluded from Plot Ratio (PR) /Gross Floor Area (GFA) calculation and will be re-provisioned to LCSD for maintenance and management after restructuring. Detailed design of the re-provisioned POS is to be further discussed with relevant Government Departments upon DSP approval.

ii. An additional 200sq.m of sunken plaza will also be created within the Scheme to connect with the re-structured POS at grade and shops at basement level to bring vibrancy to the community.

iii. To further enhance planning gains and to align with "Single Site, Multiple Uses" principle promoted by the Government, it is proposed to reserve not more than 2,850 sq.m non-domestic GFA for provision of Government, Institution or Community (GIC) facilities within the Scheme to meet community's need. The non-domestic GFA for these GIC uses will be exempted from PR calculations under the Notes of the draft DSP.

iv. Existing tenement buildings within the Scheme will be redeveloped to provide about 300 new residential units with commercial/retail/GIC facilities at the podium and ancillary car park at basement.

v. In addition, carry out street improvement works at Thistle Street through street revitalization initiatives, including repaving, traffic calming measures, etc., to improve walkability and provide pedestrian-friendly walking environment, subject to the views and agreement from relevant Government department.

2.5 To bring greater planning gain to the community at large, leverage on the urban renewal opportunity aiming for the Scheme and integration of other urban renewal initiatives, URA will propose to carry out a separate revitalization works (R4) at the remaining part of the Thistle Street Rest Garden, which is outside the Scheme, with a holistic approach

to achieve a coherent design theme for the entire Thistle Street Rest Garden. Detailed design and programme of the said works would be subject to the opinion and agreement with LCSD and other relevant Government departments.

URA Projects in the Vicinity

2.6 The Scheme is located close to various completed and on-going URA projects nearby (**Figure 2.2**). To the east of the Scheme is the Langham Place (K2), one of URA's flagship redevelopment projects and a milestone for urban renewal in Mong Kok. The project comprises of a commercial complex with hotel, office and shopping centre which was completed in 2005/06. To the north of Langham Place is the Shanghai Street/Argyle Street Preservation cum Revitalisation Project (MK/01), a project for preservation, revitalisation and adaptive re-use of the shop houses cluster for commercial and cultural uses, which was completed in November 2019 and known as "618 Shanghai Street". To the southeast of the Scheme is the Reclamation Street/Shantung Street Project (YTM-010), which involves redeveloping of buildings into modern residential development. It is currently under construction and is expected to be completed by 2022/23.

2.7 To the northwest of the Scheme in the Tai Kok Tsui district is a cluster of URA redevelopment projects. Completed URA projects include Larch Street / Fir Street Project (K31), Pine Street / Anchor Street Project (K32), Fuk Tsun Street / Pine Street Project (TKT/1/001) and Anchor Street / Fuk Tsun Street Development Scheme (TKT/2/002), which were completed in 2011, 2013, 2014 and 2019, respectively. There are also 3 commenced URA projects, include Oak Street / Ivy Street Redevelopment Project (YTM-011), Ash Street Demand-led Redevelopment Project (DL-11:YTM), Pine Street/ Oak Street Project (DL-3:YTM), which are currently under construction. The Scheme will contribute to part of the urban renewal of this part of Mong Kok.

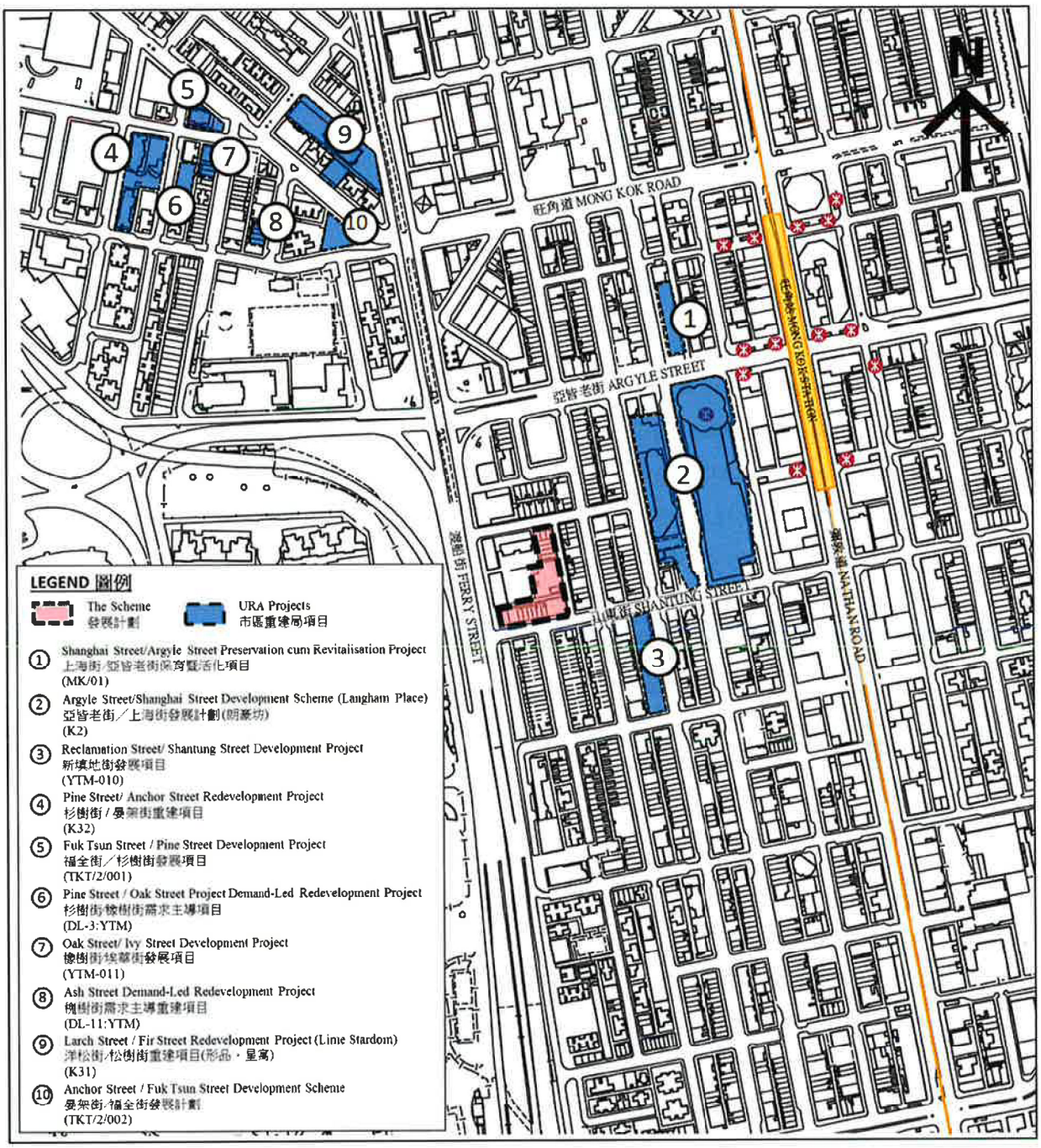


Figure 2.2 – URA Projects in the vicinity

3. HISTORICAL BACKGROUND AND LOCAL CHARACTERISTICS

3.1. Mong Kok is part of Yau Tsim Mong (YTM) District nowadays. It is an area in the western part of Kowloon. The Mong Kok area used to be a Hakka settlement. A Mong Kok village was located in an area recorded as Mong Kok Tsui in the 1819 edition of the Xinan Gazetteer. It is located close to the junction of today's Mong Kok Road and Fa Yuen Street. Mong Kok Village grew steadily throughout the eighteenth and nineteenth centuries. In the 1930s, the Chinese name of Mong Kok Tsui ("芒角咀") was renamed to"旺角"which literally means 'the Point of Prosperity'. The English name of "Mong Kok" remained unchanged.

3.2. The Mong Kok village, before it was cleared in 1926, had access to agricultural land to the south of the main village. The street names nowadays in many cases took their names from those old trades in the area, such as Flower Market Street, Soy Street (Soy Sauce Street), Fa Yuen Street (Flower Garden Street), Tung Choi Street (Water-Spinach Street), Sai Yeung Choi Street (Watercress Street), etc. From these street names, it seems likely that the flower and vegetable growers concentrated on the fertile fields north of Mong Kok village, while the industrial trades were mostly to be found in the hamlets, in the stream valleys south of the village.

3.3. Following periodic reclamation which extended the urban land westwards from Shanghai Street, the area was developed for light industry during the 1920s and 1930s renowned for cigarette making, cotton spinning and metallic goods manufacturing, although most was developed for tenement housing. It also accommodated shops and activities in support of the floating population on the adjacent typhoon shelter. After World War II, many factories in the district moved to Tai Kok Tsui on the west coast of Mong Kok. The last reclamation, commenced in the 1990's, is the largest reclamation project in Hong Kong creating the West Kowloon District for provision of housing, transport infrastructure and Government/community and recreational uses.

3.4. Today, Mong Kok is one of the major shopping/ commercial/ entertainment attractions in Hong Kong, with commercial/retail activities mainly concentrated along Nathan Road. As promoted by the Hong Kong Tourism Board, there are also a number character streets / themed shopping streets including "Ladies' Market" at Tung Choi Street, "Sneakers' Street" at Fa Yuen Street and numerous shopping centers. A high concentration of retail shops selling construction materials and hardware was also observed at Reclamation Street and Canton Road between Argyle Street and Dundas

Street, forming a "construction materials and hardware street". The district is also with mixed commercial/residential uses. There is a concentration of old and dilapidated residential buildings with commercial/retail/eateries on ground floor particularly along the secondary streets at the outer area of the district. Some street markets, small local open space, and GIC facilities are scattered in the area to support the residential neighbourhood. A plan showing the places with historical background and local characters in Mong Kok is shown in **Figure 3.1.**

Ex-Mong Kok Market

3.5. The ex-Mong Kok Market (MKM) is a 2-storey building located at the junction of Canton Road and Argyle Street. Established in 1977, the MKM had a total of 129 stalls selling mainly fresh groceries serving the residents in the vicinity. Due to the high vacancy rate, MKM ceased operation in 2010[1]. The site was subsequently rezoned from "Government, Institution or Community" ("GIC") zone to "Commercial (Group 3)" ("C(3)") zone in 2011 for redevelopment. The site is currently under Government's review and consideration.

Kun Yam Temple and All Saints' Church

3.6. The Kun Yam Temple (also known as the Shui Yuet Kung Temple) was previously located at the corner of Waterloo Road and Argyle Street (known as Tai Shek Kwu in 1920s) and was a rocky feature on top of which sat the original temple and was very popular serving the local villages nearby. In 1926, the temple moved to 90 Shantung Street to the east of Nathan Road where it remains today. It is graded as a Grade III building by the Antique Advisory Board (AAB) and overseen by the Tung Wah Group of Hospitals.

3.7. All Saints' Church is one of the two earliest centres of Chinese missionary outreach on Kowloon Peninsula. It is a member of the Anglican Church of Hong Kong and belongs to the Diocese of Western Kowloon. The Church was first established in 1891 and relocated to No. 2 Yim Po Fong Street in 1928. The Church provides educational services since its establishment in the early 1890s. During the Japanese Occupation, the Church was used as the Japanese Officers' Discussion Centre. It is graded as a

[1] Food and Health Bureau (June 2013). *"Declaration of Markets (Amendments) Notice 2013. Public Health and Municipal Services Ordinance (Public Markets) (Amendment of Tenth Schedule) Order 2013 (FH CR 3/3801/06)".*

Grade III building by the AAB and providing church and educational services after the war.

Shop houses at Nathan Road and Shanghai Street

3.8. Shop houses at No. 729 Nathan Road and Nos. 600 – 606 (even numbers), 612, 614 and 620 – 626 (even numbers) Shanghai Street were built in the 1920s and 1930s and are graded as Grade II and III buildings by the AAB. These shop houses are typical Verandah type pre-war buildings given their architectural characteristics.

3.9. The above-mentioned shop houses at Shanghai Street are the subject of URA's preservation and revitalization project commenced since 2008. The project is for preservation, revitalisation and adaptive re-use of the shop houses cluster for commercial and cultural uses. The project has been completed in November 2019. URA will manage the project and the shops in the project are rented and opened for business.

Tung Wah Museum

3.10. Characterized by its combination of Chinese and Western architectural features, the Tung Wah Museum is one of the declared monuments in Hong Kong. It was originally the Main Hall Building of Kwong Wah Hospital opened in 1911 to provide medical services for the public in Kowloon and the New Territories. In 1958, Kwong Wah Hospital undergone a complete reconstruction, and only the Main Hall Building was preserved. In 1970, the Main Hall Building was converted into the Tung Wah Museum to display historical relics and house the invaluable archives of the Tung Wah Group of Hospitals. The museum was officially opened the public in 1993.

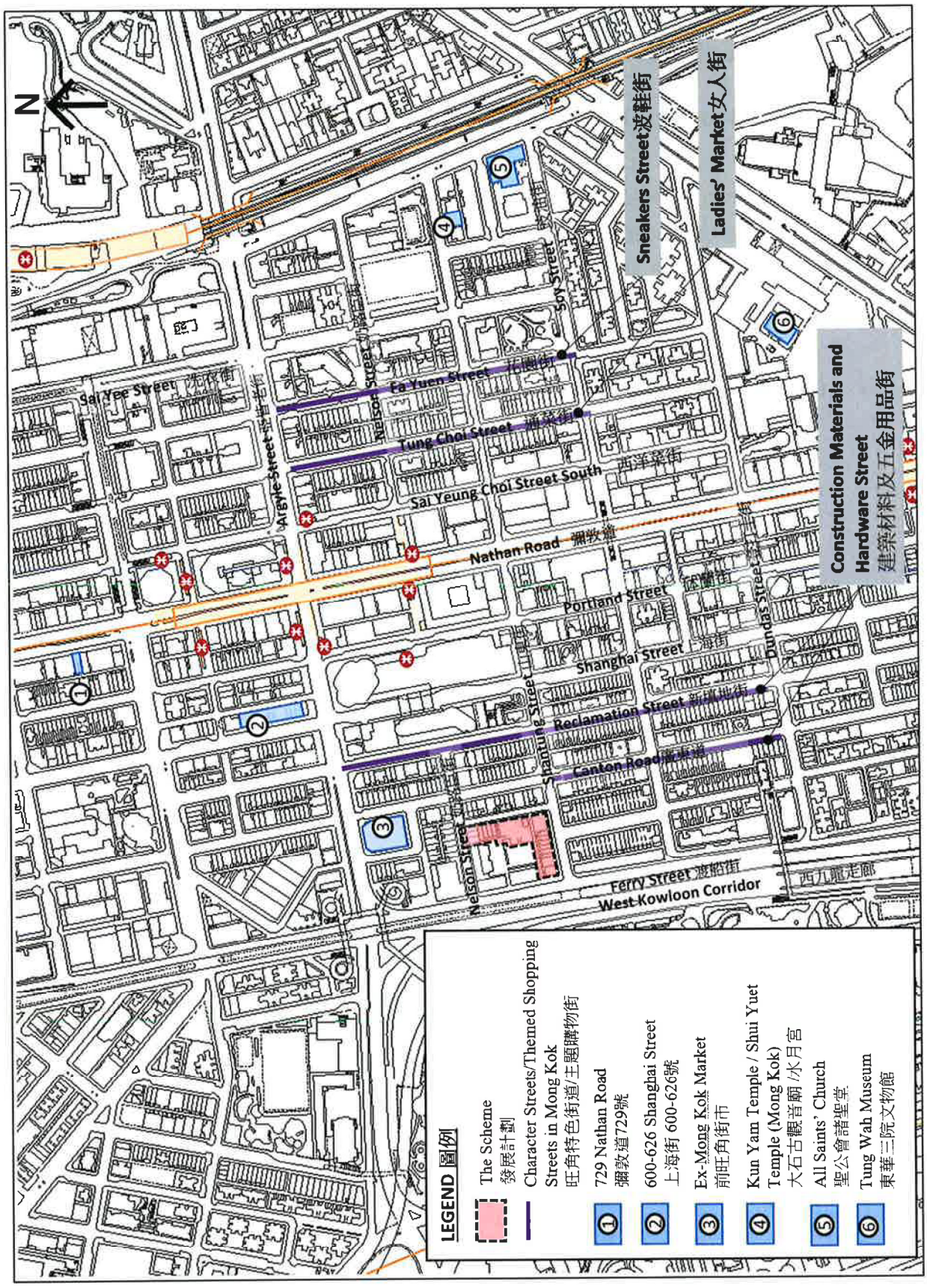


Figure 3.1 Places with Historical Background and Local Characters in Mong Kok

4. POPULATION & SOCIO-ECONOMIC CHARACTERISTICS

4.1. To assess the population and socio-economic characteristics of the Scheme, a combination of sources has been used, including the 2016 Population By-Census results and past experience from other URA projects. For the accommodation assessment, it is based on approved building plans and on-site non-obtrusive observation. Given the background of the (general and non-obtrusive nature) sources of the data 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.

4.2. The Census and Statistics Department's (C&SD) website provides the 2016 Population By-Census results. Depending on the type of census data, the 'lowest' disaggregated data available may be down to Small Street Block Group (SSBG), Large Street Block Groups (LSBG) level, Constituency Area level and Tertiary Planning Unit (TPU).

4.3. The Scheme falls within the Mong Kok West (E06) Constituency Area of the Yau Tsim Mong (YTM) District and within Tertiary Planning Unit (TPU) 229 (**Figure 4.1**).

4.4. The Scheme lies within the TPU SSBG 229/08 and LSBG 22908 (**Figure 4.2**). In this case, both SSBG and LSBG coincidentally cover the same boundary, which are bounded by Canton Road to the East, Shantung Street to the South, Ferry Street to the West and Nelson Street to the North. The SSBG and LSBG cover both the buildings within the Scheme and a few more buildings outside the Scheme, which are the closest area coverage to the Scheme area. Given the buildings within the Street Blocks are generally over 40 years, it can be assumed that the socio-economic characteristics reflected by the census data of the SSBG and LSBG are similar to those residing within the Scheme, of which the buildings were completed between 1958-1973 (i.e. ranging from 47 to 62 years).

4.5. Based on past URA experience, the average household size of those within the Scheme is estimated to be around 2.1. A tenure split of about 30% owner occupied and 70% tenanted households is assumed in the preparation of this report. Site observation indicates some existing units in the Scheme appear to have been converted into subdivided units. The actual number will be ascertained as far as practicable at Stage 2 SIA.

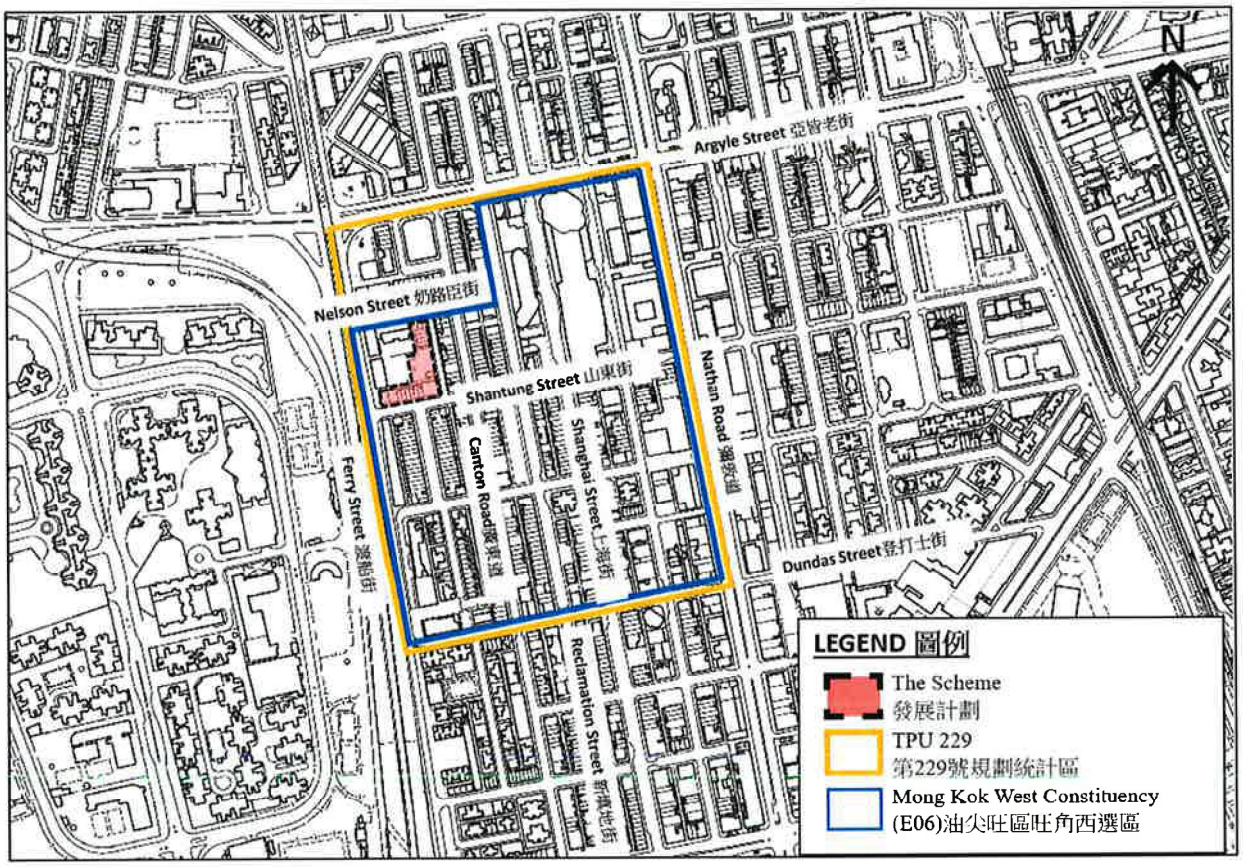


Figure 4.1 Boundaries of Mong Kok West Constituency (E06) and Tertiary Planning Unit (TPU) 229

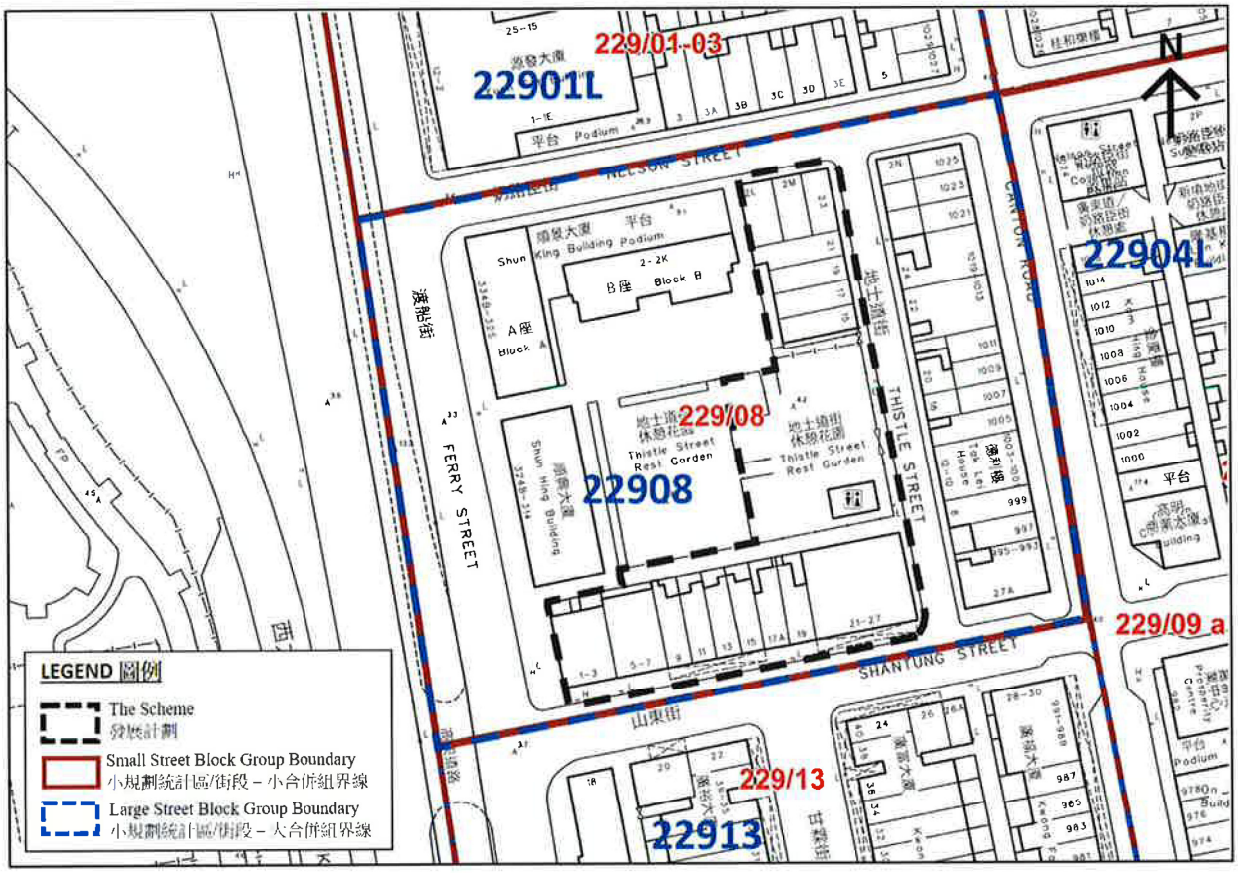


Figure 4.2 Street Block Boundaries of the Scheme (22908)

Overview of Housing & Population Characteristics of Mong Kok District

4.6. As revealed in the 2016 By-census, the overall YTM District has a population of about 342,970. In terms of monthly household income, especially the Mong Kok West (E06) Constituency Area, has a median monthly household income of $15,200, which is much lower than the average of the whole YTM District ($23,500). The household income level in the Scheme, including nos. of households with Comprehensive Social Security Assistance (CSSA) Recipients, will be ascertained in the Freezing Survey upon commencement.

4.7. According to the 2016 By-Census, the majority of the living quarters in YTM District are in private housing blocks (about 90%); only about 6% of living quarters are in public rental housings / subsidized home ownership housings. The remaining living quarters (about 4%) are in other types of housing. There is no Public Rental Housing (PRH) or Home Ownership Scheme (HOS) within the Scheme, and Mong Kok West Constituency.

Household Composition

4.8. In accordance with the approved General Building Plan (GBP), the total number of upper floor residential units (excluding ground floor units for shops, and/or units permitted for office uses on upper floors) within the Scheme is 143. Based on the 2016 By-census, the degree of sharing for YTM District and the Territory is 1.0 (i.e. one household per unit). However, if based on actual experience of URA projects previously undertaken in various districts, the degree of sharing within redevelopment projects is generally about 2 due to the existence of sub-divided units. By adopting a degree of sharing of 2, the total number of households within the Scheme is estimated to be about 286 households. It reflects the overcrowded and unsatisfactory living conditions, which are common characteristics found in URA redevelopment projects. The actual number of domestic units may be different from that under the approved GBP due to the existence of subdivided units. The household composition will be verified in the Freezing Survey upon commencement.

4.9. According to Census LSBG proportion of singleton (26%), doubletons (29%) and 3-person or above households (45%), the proportion of singletons is higher than the territorial ratio. On the other hand, the proportion of doubleton households is lower than the territorial ratio. The 3-person or above households is similar to the Territorial data. The proportion of all household types is similar for LSBG and the TPU data (see **Table 4.1**). The actual proportion of household types in the Scheme will be verified in Stage 2 SIA.

Table 4.1 Distribution of singletons, doubletons, and 3-person or above households

	Singletons	Doubletons	3-person or above households
LSBG 22908	26%	29%	45%
TPU 229	25%	27%	48%
Territorial	18%	27%	55%

4.10. Based on past URA past experience as stated in Para. 4.5 above, the average household size of those within the Scheme is estimated to be around 2.1, which is lower than the average household sizes of the YTM District (2.6) and the territory (2.8). This 'smaller' household size compared to district and territorial data could be a result of the presence 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. An average household size of 2.1 has been assumed based on URA's experience. Assuming 286 households, the number of residents living within the Scheme is estimated to be around 600 persons. The number of households, living quarters and population affected will all be verified by the results of the Stage 2 SIA.

4.12. **Table 4.2** below compares the distribution of the percentage of working population and elderly residents over 65 among the LSBG, Mong Kok West Constituency (E06), TPU, YTM District and the whole territory. The LSBG data, which is the closest area coverage to the Scheme area, indicates that the percentage of working population is lower than the other wider district / territory. The percentage of elderly residents of LSBG is slightly lower than the wider district / territory. Despite so, particular attention would be paid to elderly residents and their needs when the Scheme is implemented.

Table 4.2 Distribution of percentage of working population and elderly residents

	Percentage of working population	Percentage of elderly residents
LSBG 22908	44%	14%
Mong Kok West Constituency (E06)	51%	16%
TPU 229	51%	16%
YTM District	53%	15%
Territorial	51%	16%

4.13. According to the 2016 By-Census, the proportion of ethnic minorities residing in YTM district was 9.1%, which is the highest among all 18 District Council districts in the territory. **Table 4.3** shows the comparison of percentage of ethnic minorities among the LSBG, Mong Kok West Constituency (E06), YTM District and the whole territory. Both the LSBG and Mong Kok West Constituency data indicated that the proportion of ethnic minorities covering the Scheme area was lower than the district level, with a proportion at 5-6%. The actual number of households with ethnic minority members will be ascertained in the Freezing Survey and reported in the SIA Stage 2 as far as practicable.

Table 4.3 Distribution of percentage of ethnic minorities

	Percentage of ethnic minorities
LSBG 22908	6%
Mong Kok West Constituency (E06)	5%
TPU 229	5%
YTM District	9.1%
Territorial	8%

4.14. **Table 4.4** shows the comparison of percentage of owner-occupiers and tenanted occupiers among the LSBG, Mong Kok West Constituency (E06), YTM District and the whole territory. Based on URA's experience obtained from previous redevelopment projects which mainly involved old buildings, an assumption of 30% of the households will be owner occupiers and 70% being tenants is adopted. The composition will be ascertained in the Freezing Survey and reported in the SIA Stage 2 as far as practicable.

Table 4.4 Distribution of percentage of owner-occupiers and tenanted occupiers

	Percentage of owner occupiers	Percentage of tenanted occupiers
LSBG 22908	49%	51%
Mong Kok West Constituency (E06)	54%	46%
TPU 229	54%	46%
YTM District	51%	49%
Territorial	48%	52%

4.15. **Table 4.5** shows that the LSBG and Constituency area has a lower median monthly rent than the YTM District. It may be due to the presence of newer and more modern private residential developments in the YTM District, such as those newer residential developments in the West Kowloon Area across West Kowloon Corridor. Those new and modern residential developments have much higher rent than the generally old private housings concentrated in the LSBG and Constituency area. The median monthly rent for the territory, however, is much lower due to the inclusion of public rental housing.

Table 4.5 Median monthly domestic household rent for all housing types

	Median Monthly Domestic Household Rent (HKD)
LSBG 22908	$5,000
Mong Kok West Constituency (E06)	$4,500
TPU 229	$4,500
YTM District	$6,000
Territorial	$2,180

4.16. The Stage 2 SIA to be conducted upon project commencement will give clearer and accurate information concerning the existing population and socio-economic characteristics of the buildings within the Scheme.

5. HOUSING & ENVIRONMENTAL CONDITIONS

Building Age, Building and Living Condition

5.1 The Scheme consists of two clusters of tenement buildings with 6-9 storeys high. The buildings were completed between 1958 to 1973 (i.e. ranging from 47 to 62 years old). According to the GBP records, none of the buildings is served by lift and the serviceability of the buildings are poor.

5.2 According to URA's Building Condition Assessment (as at June 2020), 3 buildings within the Scheme are in "Poor" (the worst category) conditions, 5 buildings are in "Varied" conditions (the second worst category), while the remaining 8 buildings are in "Acceptable" conditions. Based on the URA's experience and the consultant's advice, for buildings in "Poor" and "Varied" conditions, its 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 building.

5.3 Based on the ownership records in the Land Registry as of September 2020, buildings within the Scheme are under multiple ownerships. According to Home Affairs Department Building Management's "Database of Private Buildings in Hong Kong" (as of September 2020), four buildings (25%) within the Scheme are "3-nil" buildings without Owner's Corporations for building management.

5.4 Based on Buildings Department's records as of August 2020, all buildings within the Scheme have received Fire Safety Notices (FSDN) and thirteen (13) buildings have received building orders. Seven (7) buildings have completed building rehabilitation works under the Operation Building Bright (OBB) (i.e. 2L-2M Nelson Street and 15-23 Thistle Street). One (1) building (i.e. 21-27 Shantung Street) has completed building rehabilitation works under the Common Area Repair Works Scheme (CAS). Improvement works under the Fire Safety Improvement Works Subsidy Scheme (FSWS) of three (3) buildings (i.e. 17,19 and 21-27 Shantung Street) are also in progress. It is understood that the OBB and CAS works comprise mainly repairing defects (e.g. major cracks, spalling) and FSWS works comprises improvement/provision 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 past URA's experience in rehabilitation works, even buildings that have undergone such

repair works need to undertake comprehensive building rehabilitation regularly in order to avoid deterioration.

5.5 Non-obtrusive site observations conducted in September 2020 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 Survey.

Existing Uses

5.6 Based on non-obtrusive site observation conducted in September 2020, the upper floor units of the buildings within the Scheme area along Shantung Street and Thistle Street are mainly residential in nature. All the ground floor units within the Scheme were used for non-domestic purposes. The ground floor shops along Shantung Street include retail for electronic parts/supplies, foot massage, Chinese medical clinic and other service businesses. The ground floor shops along Nelson Street and Thistle Street include supermarket, butcher/seafood shops, which forms part of the on-street wet market at Nelson Street and Canton Road. The detailed uses of the units will be verified in the Freezing Survey and reported in the SIA Stage 2 as far as practicable.

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

5.7 The Scheme area is currently zoned "R(A)" and "O" on the Approved Mong Kok Outline Zoning Plan (OZP) No. S/K3/32. The "R(A)" zone is intended primarily for high-density residential developments with commercial uses always permitted on the lowest three floors of the buildings. The area where the Scheme locates is generally residential neighbourhood with ground floor retail shops.

5.8 A footbridge system is proposed by the Highways Department (HyD) for construction of a footbridge along Argyle Street from Tong Mi Road to Hak Po Street; and along Tong Mi Road from Argyle Street to Fuk Tsun Street. The proposed footbridge system aims to ease the existing heavy pedestrian movement and improve the pedestrian network system of central area of Mong Kok. The proposal and development programme are now under review by the HyD.

5.9 A site at the junction of Sai Yee Street and Argyle Street, which was previously occupied by the Water Supplies Department compound, Food and Environmental Hygiene office-cum-vehicle depot and Luen Wan Street temporary car park, was identified by the Government for redevelopment (Sai Yee Street Redevelopment Site). The site was

rezoned from "GIC" zone and "OU (Multi-Storey Car/Lorry Park)" zone to "C(4)" zone in 2018 for comprehensive development including residential, commercial/office/hotel, open space and/or GIC facilities.

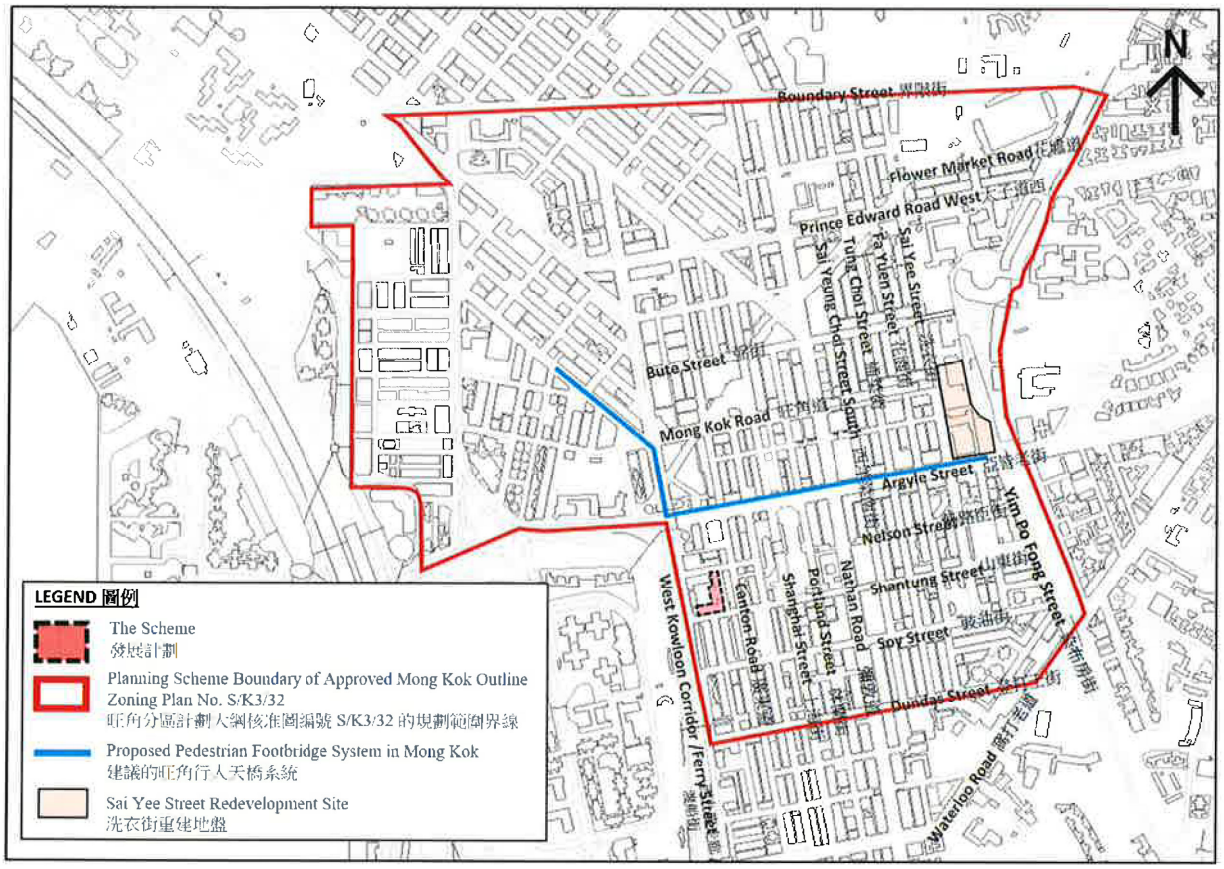


Figure 5.1 Outline Zoning Plan Boundary and Planned Developments in the Vicinity

Existing Pedestrian Network

5.10 The Scheme is located in close proximity to Mong Kok MTR station, of which some station exits are within 5-10 minutes walking distance from the Scheme. Shantung Street is the main pedestrian walkway towards Mong Kok MTR station and Nathan Road. Besides, heavy pedestrian flow is also found at Nelson Street and Canton Road between Mong Kok Road and Shantung Street due to the existence of on-street wet market.

5.11 Thistle Street along the eastern boundary of the Scheme is currently the main entrance of the Thistle Street Rest Garden. Pedestrian flow along Thistle Street is relatively low due to its unwelcoming pedestrian environment caused by the loading/unloading activities, illegal on-street parking, and road-side storage in relation to the adjacent wet market operations.

Environmental Condition

5.12 The Scheme Area is bounded by the heavily trafficked Shantung Street to the south, and the West Kowloon Corridor (elevated road) and the Ferry Street (underneath) to the west. The Scheme Area is envisaged to be subject to severe noise impact generating from road traffic along these major roads.

5.13 To the immediate north of the Scheme Area is an on-street wet market covering a section of Nelson Street. The wet market sells mainly fresh goods including fishes, vegetables and fruits. It serves the local neighbourhood for daily food/goods, and also attract tourists/shoppers to visit due to the convenient and central location in Mong Kok. Heavy pedestrian flow and vehicular traffic in relation to the market is observed in the surrounding streets.

5.14 The vehicle-pedestrian conflict, noise and hygiene issues caused by these on-street activities at Thistle Street creates an unpleasant environment and nuisances to pedestrians and users of the Thistle Street Rest Garden that further constrain the use of Thistle Street as the main entrance to the rest garden. In addition, the main entrance of the Rest Garden at Thistle Street is often being blocked by on-street parking and road-side storage, making the Rest Garden difficult to be seen and entered from its main entrance. Side entrances of the Rest Garden are via back lanes from Nelson Street and Ferry Street which are narrow and often found being occupied for storage purposes.

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

6.1 The Scheme Area and its vicinity is an older part of Mong Kok area, with predominantly mixed commercial/residential in nature with lower floors for commercial uses such as retail shops and eateries. The area is physically segregated from the busiest commercial part of Mong Kok by Shanghai Street to the east, and the commercial/residential clusters including The Hermitage, Olympic City, Park Avenue, Hoi Fu Court and Charming Garden in West Kowloon area by the West Kowloon Corridor (elevated road) and Ferry Street to the west.

6.2 To the immediate north of the Scheme Area is an on-street wet market activities covering a section of Nelson Street. It is a kind of traditional on-street wet market open daily with shops, street stalls and hawkers selling dry/wet groceries and daily necessities, fresh fruits, meat and vegetable, etc. The on-street wet market is extended from the wet market at Canton Road. Covering the section of Canton Road between Yau Ma Tei and Prince Edward, it is a busy street market comprises of local eateries, shops, street stalls and hawkers selling dry/wet groceries, daily necessities and other fresh goods to meet the local needs.

6.3 To the south of the Scheme Area across Shantung Street is predominately tenement buildings with ground floor shops mainly selling hardware and small electronic parts, e.g. along Kam Lam Street and Kam Fong Street, which appears to be a concentration of this type of businesses in the area.

6.4 About 19 shops were identified at ground floor of the Scheme during site visits in September 2020. Uses of the shops along Shantung Street are observed to be extended from those along Kam Lam Street, which mainly comprises of retail for small electronic parts, as well as other services business such as massage establishment and Chinese Medical Clinic. Shops along Nelson Street includes supermarket and butcher/seafood shops, forming part of the wet market. A recycling workshop is also found on Thistle Street within the Scheme. Several shops were un-identified 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

	Address	Current Use*
1.	1 Shantung Street	Chinese Medical Clinic (Bone-setting)
2.		General Contractors
3.	3 Shantung Street	Diesel Injection Services Shop
4.	5 Shantung Street	Massage establishment
5.	7 Shantung Street	Vacant
6.	9 Shantung Street	Hardware shop
7.	11 Shantung Street	Hardware shop
8.	13 Shantung Street	Hardware shop
9.	15 Shantung Street	Machinery and hardware shop
10.	17 Shantung Street	Machinery and hardware shop
11.	19 Shantung Street	Construction materials and machinery shop
12.	21 Shantung Street	Electronic parts and hardware shop
13.	23 Shantung Street	Electronics parts and hardware shop
14.	25 Shantung Street	Machinery and hardware shop
15.	27 Shantung Street	Machinery and hardware shop
16.	1 Thistle Street	Waste Paper and Metal Recycling workshop
17.	Shop 1, 2L-2M Nelson Street	Butcher Shop
18.	Shop 2, 2L-2M Nelson Street	Seafood Shop/ Butcher Shop
19.	Shop 3 -7, 2L-2M Nelson Street	Supermarket

（Based on site visits conducted in September 2020）

* Nature/details of businesses subject to Freezing Survey and Stage 2 SIA

7. RECREATIONAL, AMENITY & COMMUNITY AND WELFARE FACILITIES

7.1. **Figure 7.1** shows the location of various government, institution and community (GIC) facilities and public open spaces within the 500m radius area of the Scheme Area. In general, public open spaces in Mong Kok are scatter in locations and mainly in 'pocket-size' sandwiched between old buildings with limited facilities provided. Large scale public open spaces, namely Cherry Street Park and King's Park, are located at the fringe of Mong Kok serving mainly residents in West Kowloon and Ho Man Tin areas respectively. The Thistle Street Rest Garden (Rest Garden), with an area of about 2,290sq.m, is one of the few public open spaces in the vicinity. The Rest Garden is surrounded by residential buildings on three sides, with low visibility and poor accessibility from main street. The Rest Garden is equipped with elderly exercise equipment, children's playground, public toilet, badminton court and sitting area. Part of the Rest Garden (about 780 sq.m.) is included in the Scheme boundary.

7.2. Major GIC facilities within 500m radius of the Scheme are located at the Mong Kok Complex at Shanghai Street and Hoi Fu Court to the west of the Scheme area. Mong Kok Complex comprises of a Community Hall, Cooked Food Market, and some social welfare facilities, while educational and elderly services are provided at the ground floor of Hoi Fu Court. There are also a number of educational facilities, including kindergarten, primary schools and secondary schools within 500m of the Scheme. A list of existing social welfare facilities within 500m of the Scheme is provided in **Table 7.1** below.

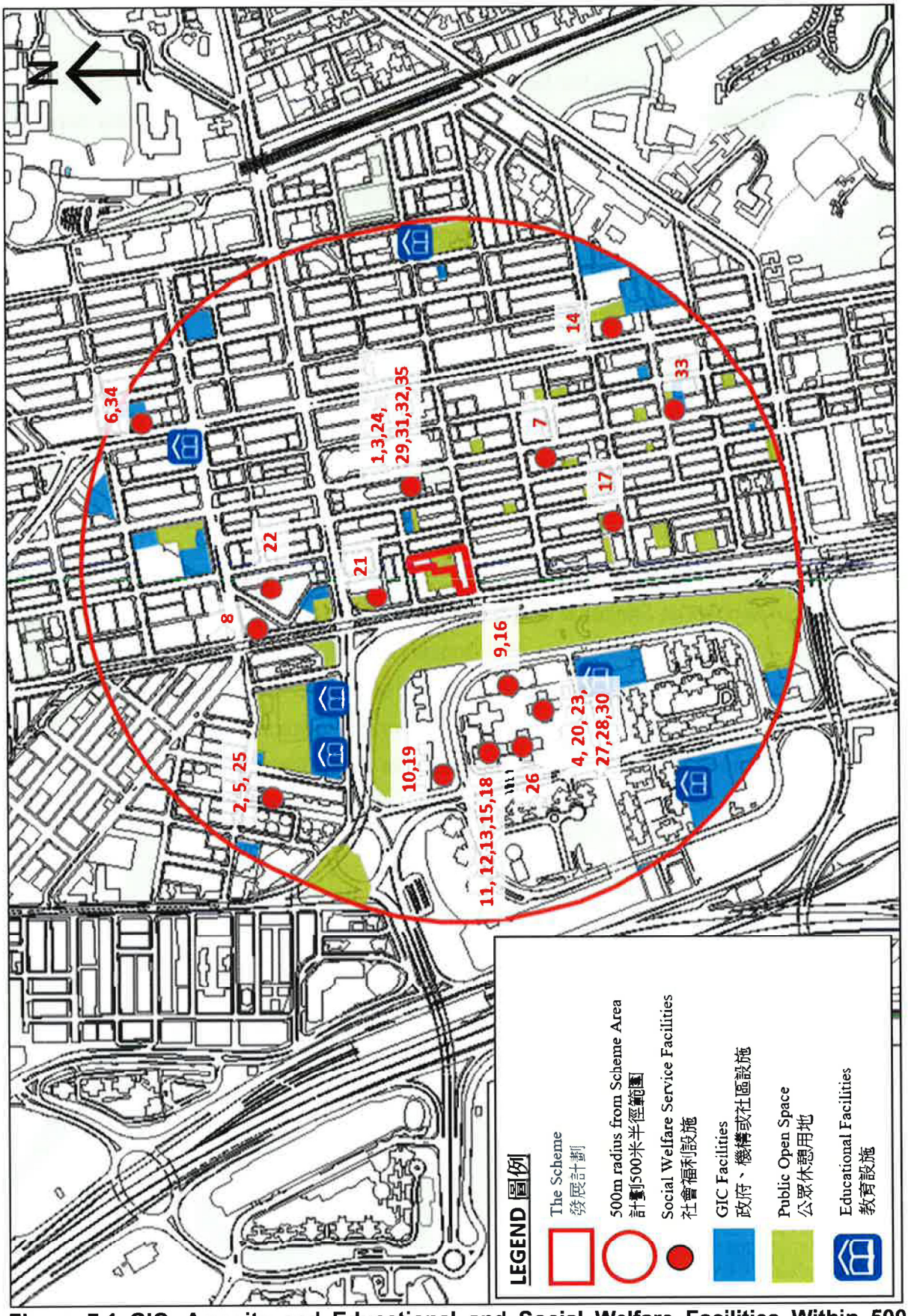


Figure 7.1 GIC, Amenity and Educational and Social Welfare Facilities Within 500m Radius of the Scheme Area (Source: *Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Yau Tsim Mong) as of September 2020. Home Affairs Department's website: Community Halls/ Community Centres > List of Community Halls / Community Centres (with Application Forms and Guidelines) as of September 2020.)*

Table 7.1: Social Welfare Facilities within 500m Radius of the Scheme Area

Service Unit	Operator	Address
A. Family and Child welfare		
Extended Hours Child Care Service		
1. HKCS Central Nursery School	Hong Kong Christian Service	3/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon
2. PLK Lui Kam Tai Nursery (OCCS)/ Kindergarten-cum-nursery	Po Leung Kuk	1/F, Block 2, Hoi Hong Building, 43 Tit Shu Street, Tai Kok Tsui, Kowloon
Occasional Child Care Service		
3. HKCS Central Nursery School	Hong Kong Christian Service	3/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon
4. HHS Healthy Kids Nursery School	Heep Hong Society	G/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
5. PLK Lui Kam Tai Nursery (OCCS)/ Kindergarten-cum-nursery	Po Leung Kuk	1/F, Block 2, Hoi Hong Building, 43 Tit Shu Street, Tai Kok Tsui, Kowloon
Integrated Family Service Centre		
6. YMMSS Mong Kok Integrated Family Service Centre	Yang Memorial Methodist Social Service	G/F, Central Commercial Tower, 736 Nathan Road, Mong Kok, Kowloon
B. Social Security		
Integrated Employment Assistance Programme for Self-reliance		
7. BOKSS Integrated Employment Assistance Programme for Self-reliance	Baptist Oi Kwan Social Service	1/F, Shanghai Centre, 473-475 Shanghai Street, Mongkok, Kowloon
Social Security Services		
8. Mongkok Social Security Field Unit	Social Welfare Department	22/F, One Mongkok Road Commercial Ctr, 1 Mongkok Road, Mongkok, Kowloon
C. Services for the elderly		
Care & Attention Homes for the Elderly		
9. SA Hoi Tai Residence for Senior Citizens	Salvation Army (The)	2/F, Hoi Tai House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
Contract Home		
10. LST Hoi Wang Road Nursing Home	Lok Sin Tong Benevolent Society	2-3/F, 1 Hoi Wang Road, West Kowloon
Day Care Centre / Unit for the Elderly		
11. SA Hoi Yu Day Care Centre for Senior Citizens	Salvation Army (The)	G/F, Wing C, Hoi Lam House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon

Service Unit	Operator	Address
Dementia Supplement		
12. SA Hoi Tai Residence for Senior Citizens	Salvation Army (The)	2/F, Hoi Tai House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
Infirmary Care Supplement		
13. SA Hoi Tai Residence for Senior Citizens	Salvation Army (The)	2/F, Hoi Tai House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
Neighbourhood Elderly Centre		
14. PLK Lo Yau Yuk Sheung Neighbourhood Elderly Centre	Po Leung Kuk	3/F, Kelly Commercial Centre, 570-572 Nathan Road, Mong Kok, Kowloon
15. SA Hoi Lam Centre for Senior Citizens	Salvation Army (The)	1/F, Hoi Yu House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
16. SA Hoi Lam Centre for Senior Citizens	Salvation Army (The)	Room HT1, G/F, Hoi Tai House, Hoi Fu Court, 2 Hoi Tin Road, Mong Kok, Kowloon
17. Ho Wong Neighbourhood Centre for Senior Citizens (Sponsored by Sik Sik Yuen)	Sik Sik Yuen	1/F, King Centre, 23 Dundas Street, Mong Kok, Kowloon
Pilot Scheme on Community Care Service Voucher for the Elderly		
18. SA Hoi Tai Residence for Senior Citizens	Salvation Army (The)	2/F, Hoi Tai House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
Respite Services		
19. LST Hoi Wang Road Nursing Home	Lok Sin Tong Benevolent Society, Kowloon (The)	2-3/F, 1 Hoi Wang Road, West Kowloon
D. Rehabilitation & medical social services		
Early Education & Training Centres		
20. HHS Hoi Fu Centre	Heep Hong Society	G/F & 1/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
21. TWGHs Ma Kung Lin Chi Child Development Centre	Tung Wah Group of Hospitals	Unit A-D, 2/F, Skyline Tower, 18 Tong Mi Road, Mong Kok, Kowloon
Integrated Community Centre for Mental Wellness		
22. NLPRA The Wellness Centre (Yau Tsim Mong)	New Life Psychiatric Rehabilitation Association	G/F-1/F, Flourish Mansion, 9 Cheung Wong Road, Mong Kok, Kowloon
Integrated Programme in Kindergarten-cum-Child Care Centre		
23. HHS Healthy Kids Nursery School	Heep Hong Society	G/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
24. HKCS Central Nursery School	Hong Kong Christian Service	3/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon

Service Unit	Operator	Address
25. PLK Lui Kam Tai Nursery (OCCS)/ Kindergarten-cum-nursery	Po Leung Kuk	1/F, Block 2, Hoi Hong Building, 43 Tit Shu Street, Tai Kok Tui, Kowloon
26. SA Hoi Fu Nursery School	Salvation Army (The)	G/F, Wing B & C, Hoi Ning House, Hoi Fu Court, 2 Hoi Ting Road, Mong Kok, Kowloon
Occasional Child Care Service for Disabled Children		
27. HHS Hoi Fu Centre	Heep Hong Society	G/F & 1/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
Parents/Relatives Resource Centre for Disabled Persons		
28. HHS Hoi Fu Centre	Heep Hong Society	G/F & 1/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
E. Services for young people		
Integrated Children and Youth Service Centre		
29. HKPA Mongkok Integrated Service Centre for Children and Youth	Hong Kong Playground Association	3/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon
30. YMMSS Yau Tsim Mong Integrated Centre for Youth Development	Yang Memorial Methodist Social Service	G/F-2/F, Hoi Yan House, Hoi Fu Court, Hoi Wang Road, Mong Kok, Kowloon
District Youth Outreaching Social Work Teams		
31. HKPA Yau Tsim Mong District Youth Outreaching Social Work Team	Hong Kong Playground Association	2/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon
Integrated Children and Youth Service Centre with Services for Young Night Drifters		
32. HKPA Mongkok Integrated Service Centre for Children and Youth	Hong Kong Playground Association	3/F, Mongkok Complex, 557 Shanghai Street, Mong Kok, Kowloon
F. Services for Offenders		
Services for Ex-offenders and Discharged Prisoners		
33. SRACP Kowloon South Social service Centre	Society of Rehabilitation and Crime Prevention, Hong Kong (The)	2/F, 402 Shanghai Street, Yau Ma Tei, Kowloon
G. Clinical Psychology Service		
Clinical Psychological Service in Case Work Setting in SWD & NGO		
34. YMMSS Mongkok Integrated Family Service Centre	Yang Memorial Methodist Social Service	G/F, Central Commercial Tower, 736 Nathan Road, Mong Kok, Kowloon

Service Unit	Operator	Address
H. Community Hall		
35. Mong Kok Community Hall	Home Affairs Department	L2, Mong Kok Complex, 557 Shanghai Street, Mong Kok

Source: Social Welfare Department's website: Local District Service Profile: Welfare Service Units Managed or Funded by Social Welfare Department (Yau Tsim Mong) as of September 2020. Home Affairs Department's website: Community Halls/ Community Centres > List of Community Halls / Community Centres (with Application Forms and Guidelines) as of September 2020.

8. INITIAL ASSESSMENT OF POTENTIAL SOCIAL IMPACT, AND MITIGATION MEASURES

Potential Social Impact

8.1. The Scheme is estimated to affect 286 households, with 600 residents. About 19 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 at Stage 2 SIA.

8.2. The proposed redevelopment offers an opportunity to re-plan and restructure land uses, enhance accessibility of the POS and improve the living environment of the affected households. Upon implementation of the scheme, the overall environment of the neighbourhood will be significantly enhanced. To further enhance planning gain to the area and to align with "Single Site, Multiple Uses" principle promoted by the Government, not more than 2,850sq.m. GFA will be reserved for Government, Institution or Community (GIC) uses in the Scheme.

8.3. The Scheme, if implemented, will inevitably affect the domestic and non-domestic occupants within the Scheme. Generally, the most vulnerable resident groups in the Scheme are the elderly, the disabled, single parent families, low-income households, and those who rely heavily on their social network (including receiving support/care from their friends/relatives who live nearby). Upon implementation of the Scheme, the existing residents will be displaced to areas where they have to rebuild their social networks, whereas the existing shops will have to move to other locations to continue their businesses, depending on individual operator's needs. Given similar business operations are commonly found in the vicinity, it is possible for these affected operators to relocate in the surrounding area, no significant impact to these operators as well as nearby residents is therefore anticipated.

8.4. During the Freezing and SIA surveys, 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. will be identified. It is expected that the Social Service Team (SST) commissioned by the Urban Renewal Fund (URF) will provide assistance to those in need. This SST is independent of the URA and will directly report to the Board of the URF.

8.5. Apart from the above, a portion of the wet market activities to the immediate north of the Scheme may be affected by the construction activities and environmental nuisance generated during the construction of the Scheme. It may have some temporary impacts on the businesses of some hawkers and the street vibrancy.

Mitigation Measures and Prevailing Compensation & Rehousing Policies

8.6. Upon implementation, compensation based on the prevailing URA Policy would be offered to the affected owners. 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 compensation and require any other assistance.

8.7. 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.

8.8. 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.

8.9. 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. In addition, if practicable, those vulnerable groups would be re-housed on compassionate ground.

8.10. 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. The URA will closely monitor and consult Food and Environmental Hygiene Department (FEHD), if necessary, on considering any mitigation measures required to minimise the impact on the street market activities.

Prevailing Measures

8.11. The URA will offer an owner-occupier of domestic property the market value (valued on vacant possession basis) of his/her property plus an ex-gratia allowance, namely Home Purchase Allowance (HPA), for purchase of the property. The assessment of HPA is based on the unit rate of a notional replacement flat, which is defined as a hypothetical seven-year-old flat in a building of comparable quality, situated in a similar locality in terms of characteristics and accessibility, and located at the middle floor with average orientation. The HPA is the difference between the value of the notional replacement flat and the market value of the property being acquired.

8.12. The URA may also offer "flat-for-flat" (FFF) (subject to any changes in the relevant legislations) in a URA new development in-situ (in the lowest three floors) 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 compensation to owner-occupiers of domestic units. The amount of cash compensation and ex-gratia payment 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.

8.13. According to the new URS, the URA will offer an ex-gratia 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.

8.14. 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 Ex-gratia Allowance (EGA), which is calculated with a sliding scale that begins with the first $10,000 of the rateable value of their leased properties multiplied by 9, the second $10,000 of the rateable value multiplied by 8, and so on. The EGA for eligible domestic tenants will be subject to a minimum amount of $180,000 for one-person household and $200,000 for two-person or larger household. The minimum amount is subject to annual review.

8.15. Domestic tenants who are not provided re-housing due to various reasons or who decline re-housing, will be offered ex-gratia allowances. The amount of ex-gratia allowance will be dependent on, amongst other things, whether the domestic tenants have been living in the project area before and since the first date of the freezing survey and have no alternative accommodation.

8.16. In case where tenants were notified that their tenancies would not be renewed, URA will explain to their owners that they would not get more compensation by evicting the tenants. The URA has also introduced the "Domestic Tenants Compassionate Assistance Programme" to take care of those domestic tenants whose tenancies commenced before the Freezing Survey 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 ex-gratia allowance based on the sliding scale as mentioned in paragraph 8.14, or public housing, if eligible, or units at URA's rehousing blocks, subject to meeting URA's requirements.

8.17. For owner-occupied non-domestic premises, the market value of the affected property plus an ex-gratia allowance of 4 times the rateable value or 35% of the market value of the affected property, whichever is the higher, will be offered. Owner-occupiers may lodge a claim for business loss in lieu of both the ex-gratia allowance and the Ex-gratia Business Allowance (EGBA) as stated in the next paragraph. For owners of tenanted or vacant non-domestic properties, the market value of the affected property plus an ex-gratia allowance of 1 time the rateable value or 10% of the market value of the affected property, whichever is the higher, will be offered.

8.18. For non-domestic tenants of non-domestic premises, an ex-gratia allowance of 3 times the rateable value of the affected premises will be offered. An additional payment of EGBA is also payable to tenants who commenced occupying the premises for business before the date of Freezing Survey. The amount is subject to a minimum of $110,000 and a maximum of $700,000, depending on the number of years of continuous operation by the tenant-operator as business owner in the property. In calculating the number of years of continuous operation, the expiry date of continuous operation in 2 years from the date which URA issues initial acquisition offer to property owners. The EGBA arrangement will also be applicable to non-domestic owner-operators occupying the properties for their own businesses. Those non-domestic tenant-operators who have occupied the properties before Freezing Survey 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.

8.19. 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. For the shops with special characteristics, URA will consider and depend on the demand from the shop operators to provide special arrangements similar to C&W-005 (for dried seafood shops), subject to the findings of SIA2 and the approval of URA Board.

8.20. 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.

8.21. The Stage 2 SIA to be conducted after the Freezing Survey 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. This Stage 1 SIA study provides a general profile of the Scheme. Based on past URA 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 freezing survey. The needs of the affected households will be assessed and appropriate arrangements to minimise major adverse social impact, if any, from the Scheme will be proposed in the Stage 2 SIA.

9.3. For the 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 freezing survey upon commencement of the Scheme under section 23 of the URAO. The ground floor business activities are commonly found in the vicinity which is possible for most of them to be relocated in the surrounding area. The needs of the affected non-domestic occupants will be assessed in the Stage 2 SIA.

9.4. The holistic urban renewal planning-driven approach adopted for this Scheme aims to achieve the following objectives upon implementation:

i. Re-structuring of land uses of the Scheme Area to open up the existing 'land-locked' open space towards the main pedestrian walkways to enhance its accessibility and permeability with adjoining streets.

ii. Create a sunken plaza of about 200 sq.m to provide connection between the re-structured POS at grade and shops at basement level to bring vibrancy to the community.

iii. Provision of not more than 2,850sq.m. non-domestic GFA of GIC reserve subject to Government demand (exact GFA to be determined at subsequent land grant

stage) to further enhance planning gain and align with "Single Site, Multiple Uses" principle as promoted by the Government.

iv. Redevelop existing tenement buildings without lift within the Scheme into residential buildings cum commercial/retail components with modern design facilities to improve the liveability of the living environment.

v. To integrate urban renewal effects and create synergy with other revitalization works (subject to the views and agreement from relevant Government department):

- Separate revitalization works for the remaining part of Thistle Street Rest Garden to develop a harmonious design to bring greater planning gain to the community at large (do not form part of the DSP).
- Street improvement works at Thistle Street to improve walkability and safety of pedestrian walking environment.

9.5. With the above initiatives as well as the holistic planning of urban renewal works in this area, it is anticipated that the local urban environment and residents will be benefited from the better built and planned environment in the long term.

URBAN RENEWAL AUTHORITY
October 2020

Appendix 5

Traffic Impact Assessment (TIA) Report

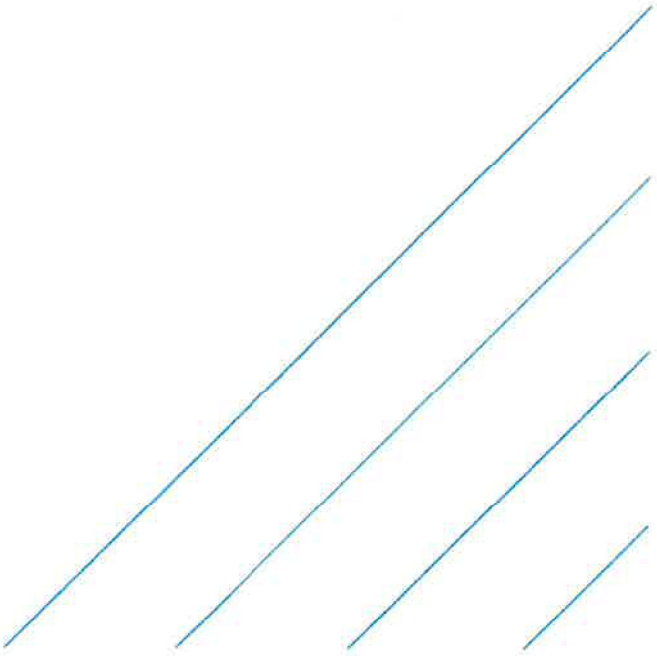
SNC·LAVALIN

ATKINS
Member of the SNC-Lavalin Group

Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Traffic Impact Assessment Report

October 2020



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1. Introduction

1.1. Background

1.1.1. The Shantung Street/ Thistle Street Development Scheme (the Scheme) is located in Mong Kok district, which is in "L-shape" broadly bounded by Thistle Street to the east, Shantung Street to the south, part of Ferry Street to the west and part of Nelson Street to the north.

1.1.2. This Traffic Impact Assessment (TIA) is to support the submission of the Scheme under S25 of the Urban Renewal Authority Ordinance (URAO) to the Town Planning Board (TPB).

1.1.3. Atkins China Limited (Atkins) was commissioned by URA to conduct a TIA study to assess the traffic impact and the proposal of traffic provisions for the Scheme.

1.2. Scope

1.2.1. The scope of this TIA is outlined as follows:

- conduct surveys to collect the existing traffic flows within the study area;
- recommend an appropriate and feasible provision and layout of internal transport facilities under notional design of the Scheme;
- proposed street improvement works and traffic calming measure at the adjoining streets, where appropriate, to improve the pedestrian environment and traffic network;
- estimate the vehicular traffic generated by the Scheme;
- forecast the future vehicular traffic demand in the vicinity at the appropriate design year;
- examine the traffic impact of the Scheme on the surrounding road network; and
- recommend improvement measures to the problematic roads and junctions, if considered necessary and practicable to the Scheme wherever applicable.

1.3. Report Structure

1.3.1. Following this introductory chapter, there are 5 chapters:

- **Chapter 2** – presents the Scheme and internal transport facilities;
- **Chapter 3** – describes the road network and transport facilities in the vicinity;
- **Chapter 4** – describes the methodology for traffic forecasting;
- **Chapter 5** – presents the results of the TIA at the adopted design year, and recommends any improvement measures to alleviate the foreseeable traffic problem, if considered necessary; and
- **Chapter 6** – summarizes the findings of the study and presents the conclusion.

2. The Development

2.1. Site Location

2.1.1. The subject site is bounded by Thistle Street at the east, Shantung Street at the south, part of Thistle Street Rest Garden and part of Ferry Street at the west and Nelson Street at the north. The location of the subject site is indicated in **Figure 2.1**.

2.2. Development Parameters

2.2.1. The subject site covers a gross site area of about 2,796 m^2, including about 356 m^2 of the adjacent public street/ pavement, part of which with the affected buildings overhang, and about 780 m^2 of the existing open space. The net site area for plot ratio calculation is about 1,660 m^2. The Scheme is anticipated to be completed by year 2030 and the proposed development parameters are tabulated in **Table 2.1**.

Table 2.1 Proposed Development Parameters

Component	Development Parameters		
Completion year	2030		
Gross Site Area	Approx. 2,796 m^2		
Net Site Area	Approx. 1,660 m^2		
Total Gross Floor Area (GFA) under DSP	Approx. 14,940 m^2		
Proposed Gross Floor Area (GFA) and Plot Ratio (PR)	Domestic	Approx. 12,450 m^2 GFA	7.5 PR
	Non-Domestic	Approx. 2,490 m^2 GFA	1.5 PR
	GIC (1)	Approx. 2,850 m^2 GFA	1.7 PR
No. of Residential Block	1		
No. of Residential Flats	40 m^2 GFA ≤ Flat Size		225 Flats
	40 m^2 GFA < Flat Size ≤ 70 m^2 GFA		75 Fats
	Total		**300 Flats**
Average Flat Size	Approx. 41.5 m^2		

Note: Subject to change at detailed design stage

Remarks: (1) The 2,850 m^2 of non-domestic GFA of GIC reserve is proposed to be exempted from GFA calculations under DSP. The use of the GIC is not yet determined and subject to liaison with government departments upon approval of the Scheme.

2.3. Parking and Servicing Facilities Provision

2.3.1. The required parking and servicing facilities provision are determined in according with the Hong Kong Planning Standards and Guidelines (HKPSG) and those are summarized in **Table 2.2**.

Table 2.2 Required Transport Facilities According to HKPSG

Type	Parameter	HKPSG Parking Provision Requirement		Required Provision (nos.)	Proposed Provision (nos.)
Residential					
Private Car Parking Space	300 flats	Global Parking Standard (GPS): 1 car space for 6-9 flats Demand Adjustment Ratio (R1): i) Flat Size < 40= **0.4** ii) 40 < Flat Size ≤ 70 = **0.7** Accessibility Adjustment Ratio (R2): Within a 500m- radius of rail station = 0.75 Development Intensity Adjustment Ratio (R3): 5.00 < Plot Ratio ≤ 8.00 = 0.90 Parking Requirement = GPS x R1 x R2 x R3	i) 225 units, Flat Size < 40	7 – 11	-
			ii) 75 units, 40 < Flat Size ≤ 70	4 - 6	
			Sub-total	*11 – 17*	*17*
Visitor Car Parking	1 block	1 - 5 nos. per residential block with more than 75 units		1 - 5	5
Motorcycle Parking	300 flats	1 motorcycle parking space per 100-150 flats		2 - 3	3
Loading/ unloading Bay	300 flats/ 1 block	1 bay per 800 flats or minimum 1 bay for each housing block or as determined by Authority		1	1
Retail					
Private Car Parking Space	2,490 m^2	Zone 1: Car space per 200 – 300m^2 GFA		9 - 13	13
Motorcycle Parking	9 - 13	5 – 10% of private car parking space		1 - 2	2
Loading/ unloading Bay	2,490 m^2	1 bay for GV for every good vehicle for every 800 - 1,200 m^2 GFA		3 - 4	4
GIC Facility (~2,850 m^2 GFA) (1)					
Private Car Parking Space	-	-		-	1
Loading/ unloading Bay	-	-		-	2
Total		**Private Car Parking**		**21 – 35**	**36**
		Motorcycle Parking		**3 – 5**	**5**
		Loading/ unloading Bay		**4 – 5**	**7**
Accessible Car Parking Space	21 - 35	1 for first 50 nos. of Car Parking Space in lot		1	2

Remarks: (1) The intended GIC uses of the 2,850 m^2 of non-domestic GFA will be subject to further liaison with relevant Government Departments as well as the views from the Yau Tsim Mong District Council and locals. The proposed transport facilities provision is assumption only.

2.3.2. As shown in **Table 2.2**, the Scheme will require about 21 - 35 nos. of private car parking spaces, including 1 - 5 nos. of visitor car parking spaces, 3 - 5 nos. of motorcycle parking spaces and 4 - 5 nos. of loading/ unloading bays. Moreover, as the type of GIC facilities are not yet identified and no parking requirements under HKPSG, additional 1 no. of car parking space and 2 nos. of loading/ unloading bays are proposed for the Scheme to facilitate future operation needs. The actual provision will be subject to liaison with the relevant government departments and services providers upon the Development Scheme Plan (DSP) approval. Besides, 2 nos. of car parking spaces will be reserved for persons with disabilities.

2.4. Proposed Relaxation from HKPSG

2.4.1. URA aims to facilitate the redevelopment to incorporate Government's guidelines and HKPSG requirements as far as practicable, while achieving the urban renewal objectives to improve the urban living environment and efficient use of land through the Scheme.

2.4.2. The parking provision is proposed to adopt the high-end provision under HKPSG.

2.4.3. Given the Scheme is in a densely built urban context with all buildings and LCSD's rest garden surrounding of the subject site, the available area within the narrow "L-shape" site for accommodating internal transport facilities and vehicle manoeuvring is limited.

2.4.4. Besides, the building disposition has to be carefully designed to meet the current building codes and regulations. It is also necessary for the design to accommodate all essential building facilities at ground floor such as a reasonable size lobby, lifts, entrance, staircase, structural walls, E/M facilities in the limited site area and site constraints on building disposition.

2.4.5. Given the limited size and the narrow width of the site, loading/unloading (L/UL) bay for Heavy Goods Vehicle (HGV) is not feasible on both the ground and basement levels, due to impractical turning requirement of HGV resulted from stringent site size and layout after accommodating the essential structural and building facilities. Besides, the egress movement of HGV onto Shantung Street is also considered not feasible as it will conflict with the traffic on the middle traffic lane as shown in the swept path analysis results in **Figure 2.8**.

2.4.6. The proposed development is a small scale development with only 1 residential tower and two podia for GIC and some retail facilities. Under the current notional design, it is proposed to provide about 300 units, with 75% of units (about 225 units) are small sized units. Besides, the retail podia is intended to be used by some local neighbourhood shops to serve the local community. It is considered that the demand from the small sized families and local retail shops would mainly be LGV bays instead of HGV bays.

2.4.7. In view of the above site constraints, technically infeasibility for HGV manoeuvring and the anticipated low demand for HGV uses from the proposed development, it is proposed that only LGV bays is proposed at the site and a high-end provision for LGV L/UL bays is proposed.

2.5. Summary of Proposed Parking and Servicing Provision

2.5.1. Based on consideration as stated in **Section 2.4**, the proposed parking and servicing provision for the Scheme will provide 36 nos. of private car parking spaces, including 5 nos. of visitor car parking spaces, 5 nos. of motorcycle parking spaces and 7 nos. L/UL bays as listed in **Table 2.2**.

2.5.2. Besides, as explained in **Section 2.4,** L/UL bay for HGV is found to be technically not feasible due to the site constraint and it is anticipated the demand for HGV bays is low for the proposed development, thus only L/UL bay for LGV at high-end provision (i.e. 5 LGV bays) would be proposed for the proposed development. Furthermore, LGV requires less manoeuvring space and time while entering and leaving the subject site, hence it would also enhance the operation at run in/out and within the subject site. It is envisaged less congestion would be created at run-in/out.

2.6. Proposed Layout and Arrangement of Internal Transport Facilities

2.6.1. Ancillary car park for the proposed development within the Scheme is proposed at basement levels. Given the acute L-shape of the site with very narrow site width (internal width of about 16m) which cannot accommodate a proper two-way ramp system, two car lift system is therefore proposed to serve the 2-level ancillary basement car park. (see **Section 2.7 and 2.8** for details).

2.6.2. Two car lifts are proposed to provide connections between the ground and basement levels. One of the car lifts is designed for serving the LGV, however it can also be shared use with other smaller vehicles. Waiting spaces are also provided at each level near the car lift to prevent blockage of internal access road by the waiting vehicles. The operation performance of the car lifts and the number of waiting space have been assessed and justified and the assessment results are presented in **Section 6.**

2.6.3. The 2 nos. of L/UL bays for GIC facilities will be provided on the ground level for operational needs and convenience access by the user of GIC facilities.

2.6.4. The layouts of transport facilities for ground level, basement levels 1 and 2 and the typical swept path analysis results for the notional scheme are shown in Figures 2.2 to 2.7.

2.6.5. As shown in Figures 2.3, 2.5 and 2.7, there is sufficient manoeuvring space for 5.2m long private car and 7.0m long LGV within the proposed car park and L/UL area respectively. However, due to the limited site area, a turntable is proposed on ground level to facilitate the parking and turnaround movement of LGV.

2.6.6. There will be no provision of public car park within the Scheme. The tight ground floor area cannot accommodate more car lifts to serve additional car parking spaces generated from public car park. In addition, separate run-in/out may be required for public car park to avoid future ownership and management conflicts. Considering the limited ground floor space, there is no space within the proposed development to provide separate run-in/out for a public car park.

2.6.7. In addition, there are approximate 1,200 nos. of monthly, hourly or metered car parking spaces within 500m distance from the subject site, including 30 nos. of on-street metered car parking spaces at Canton Road, public car park at Langham Place, Sun Hing Building, Soy Street, Olympian City 2 & 3, Greenfield Garden and Canton Road. Some of the public car parking spaces are located within 5-10 minutes walking distance from the Scheme. Given the Scheme has only a net site area of about 1,660m^2, the small scale of the proposed development and the availability of public car park in close proximity, no public vehicle park is therefore proposed within the Scheme.

2.7. Vehicular Access (Run-in/out) Arrangement

2.7.1. The proposed run-in/out of the Scheme would be located at westbound of Shantung Street forming a "right-in/ right-out" arrangement.

2.7.2. Despite the Scheme also abuts Thistle Street and Nelson Street, both streets are considered not desirable for the vehicular access for the proposed development. Thistle Street is a narrow road (approx. 6m) running one-way direction and often being occupied with loading/unloading activities; while Nelson Street forms part of the on-street wet market with street hawkers and busy pedestrian traffic. Should the run-in/out be located at Thistle Street or Nelson Street, adverse traffic impact to the surrounding area is anticipated. The proposed run-in/out at Shantung Street is therefore considered the only and most suitable location for the proposed development.

2.7.3. The schematic layout of the run-in/ out leading to the car lift and L/UL area and the swept path analysis result for the typical vehicle turning movements are illustrated in Figures 2.2 and 2.3 respectively.

2.7.4. As shown in **Figure 2.3**, swept path analysis was assessed at the run-in/ out. The result shows that there are sufficient manoeuvring spaces for the ingress and egress movements of the 7m long LGV. As the proposed run-in/out is located on the right side of the carriageway, there may have some interface of vehicles entering and leaving the proposed development. It is proposed to adopt various traffic management and safety measures within the site upon occupation of the development, such as installation of convex mirror and flashing light, assign management staff at the run-in/out, etc., to enhance smooth and safe vehicular and pedestrian circulation at the run in/out in future.

2.7.5. For the proposed run-in/out location, due considerations have been given to the overall design intent of the proposed development. Under notional design, part of the Thistle Street Rest Garden will be re-structured and re-provisioned at the corner of Shantung Street and Thistle Street (the re-provisioned POS) to improve its connectivity, accessibility and visibility for enjoyment by the public and future residents. In order to create a wide and welcoming entrance plaza for the Rest Garden, building footprints of the proposed development will be setback from the re-provisioned POS, with the proposed high-rise residential tower with podium situated at the southern part of the site along Shantung Street, and a low-rise block with retail and G/IC facilities situated at the northern part of the site at the corner of Nelson Street and Thistle Street, to facilitate the urban re-structuring opportunities of providing a good street frontage for the POS and create a harmonious integration with the surroundings.

2.7.6. Given the tight ground floor space, the proposed run-in/out is already at its optimal location to provide an efficient layout to accommodate the internal transport facilities as well as other design requirements such as fireman's lift, firefighting and rescue stairway and emergency vehicular access, while keeping a reasonable distance away from the junction of Shantung Street and Ferry Street to ensure traffic safety concern.

2.7.7. Further shifting of the run-in/out towards the east is considered not desirable given the following reasons:

- If the turntable is moved towards the east side of the site, it would be in conflict with the proposed tower lift and stair core facilities which is of restrictive location requirements due to tight ground floor layout;

- According to Building (Planning) Regulation ("B(P)R") 41B, Fireman's lift is required to serve the proposed development. According to the Section 4, Part D of the Code of Practice for Fire Safety in Buildings ("FSI Code"), fireman's lift shall be accessed from an open area or street at the ground storey at a maximum distance of not more than 18m measured from the lift door, and serve all the floors of the entire building. If the run-in/out is moved towards the east and the Fireman's lift has to unavoidably be relocated to the west side of the site, the fireman's lift would not be able to serve to the ground storey and would contravene B(P)R 41B; and the fireman's lift location would exceed the maximum allowed distance of 18m from open space and would contravene Section 4, Part D of the FSI Code.

- The provision of run-in/out towards the east would be too close to the re-provisioned POS entrance, and might pose potential safety concern to future POS users.

2.8. Traffic Calming Measure

2.8.1. The eastern boundary of the subject site is abutting Thistle Street and is often being used for loading/unloading activities, on-street parking and road-side storage in relation to the adjacent on-street wet market operation, blocking the main entrance of the Thistle Street Rest Garden. Upon redevelopment, the accessibility and visibility of the existing "land-locked" public open space will be significant improved. To further enhance pedestrian safety and visibility of the public open space, some traffic calming measures at Thistle Street are proposed.

2.8.2. The existing loading/unloading bays at Thistle Street are proposed to be relocated to the opposite side of the road to provide unobstructed sightline for the pedestrian from Thistle Street Rest Garden. Different road surface colour is also proposed to alert the motorist to slow down.

2.8.3. Other enhancement such as proposed pedestrian railing on both side of the pedestrian cautionary crossing near Shantung Street and widening of cautionary crossing are also proposed to improve the overall pedestrian walking environment.

2.8.4. The preliminary layout of the proposed traffic calming measure is illustrated in **Figure 2.2**.

2.9. Pedestrian Access Arrangement

2.9.1. The anticipated major pedestrian accesses of the Scheme would be located at the corner of Shantung Street and Thistle Street next to the plaza to the re-provisioned POS for the high residential and GIC block and at the northern end of Thistle Street for the low retail and GIC block.

2.9.2. The building/ podium of low block will have setback on Nelson Street and Thistle Street to provide wider pedestrian walkway and thus enhance the pedestrian walking environment.

2.9.3. Moreover, in order to enhance the accessibility and visibility of existing Thistle Street Rest Garden, part of the Rest Garden has been included with the Scheme and re-configured to provide a new and wide opening facing the corner of Shantung Street and Thistle Street. Side entrances with landscaping and wider corridors will be provided from Nelson Street and Ferry Street towards the Rest Garden to improve the comfortability and walkability of the area.

2.9.4. The footpath along Shantung Street would be the major access route for the east-west direction between the site and MTR Mong Kok Station. Pedestrian accessing between the site and the other public transport nodes could via Thistle Street, Nelson Street, Canton Road, Ferry Street and the elevated walkway connecting The Hermitage. The anticipated pedestrian routes are indicated in **Figure 2.9**.

3. Traffic Context

3.1. Road Network

3.1.1. The local road network in the vicinity is essentially a grid formed by east-west and north-south running roads.

3.1.2. The subject site will be served by the primary distributors of Ferry Street, Tong Mi Road and Argyle Street, district distributors of Shanghai Street and Cherry Street and local roads of Shantung Street and Canton Road. The major vehicular ingress and egress routes to and from the subject site are shown in **Figure 3.1**.

3.1.3. There are two major frontages of the subject site abutting Shantung Street and Thistle Street.

3.1.4. The section of Shantung Street abutting the subject site is a one-way westbound carriageway providing linkage from Nathan Road northbound to Ferry Street and also connects the major district/ local distributors such as Shanghai Street and Canton Road.

3.1.5. Thistle Street is also an one-way northbound carriageway providing linkage from Shantung Street to Nelson Street and it is often being occupied for loading/unloading activities for the adjacent on-street wet market.

3.1.6. Ferry Street and Tong Mi Road are dual three-lanes carriageway runs in north-south directions providing linkage to Lai Chi Kok Road to the north and Waterloo Road/ Lin Cheung Road to the south.

3.1.7. Argyle Street and Cherry Street runs in east-west direction providing linkage to Prince Edward Road East to the east and the West Kowloon Corridor West, Hoi Wang Road, Tai Kok Tsui Road and Tong Mi Road.

3.1.8. These adjacent roads provide access to/from other areas in the territory. It is anticipated that the subject site will be well served by the existing road network in the vicinity.

3.2. Observed Traffic Condition

3.2.1. The illegal parking and kerbside activities are known to be the concern at some of the local streets in Mong Kok. As the peak traffic generation of the Scheme occurs during the morning and evening peak periods, the existing traffic condition of the local streets along the development access routes, including Shantung Street, Reclamation Street, Shanghai Street and Dundas Street, during the same peak periods are observed.

Shantung Street

3.2.2. It is observed that illegal parking is minor at Shantung Street during the morning peak period and increased during the evening peak period. However, as the width of Shantung Street is approximate 9.2m, traffic can still be moving smoothly with the vehicles stopping on the side of the road.



Shantung Street (Reclamation Street to Canton Road) – AM Peak



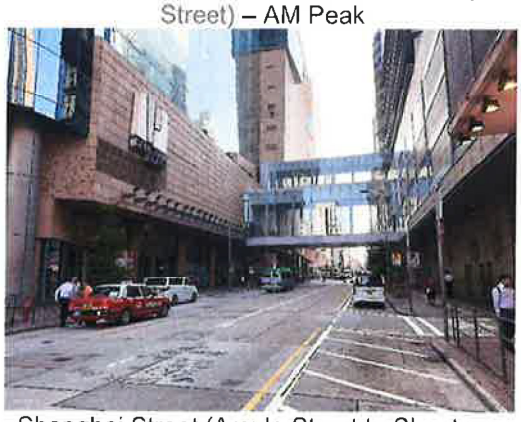
Shantung Street (Reclamation Street to Canton Road) – PM Peak



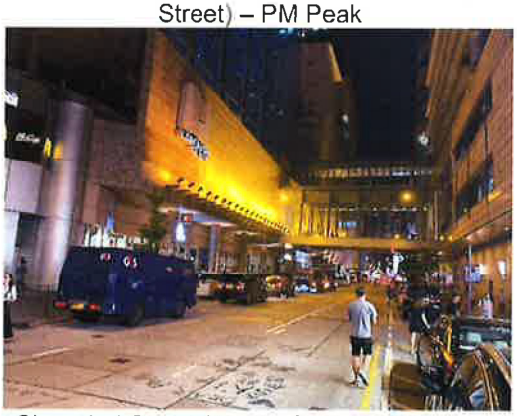
Shantung Street (Canton Road to Ferry Street) – AM Peak



Shantung Street (Canton Road to Ferry Street) – PM Peak



Shanghai Street (Argyle Street to Shantung Street) – AM Peak



Shanghai Street (Argyle Street to Shantung Street) – PM Peak

Reclamation Street

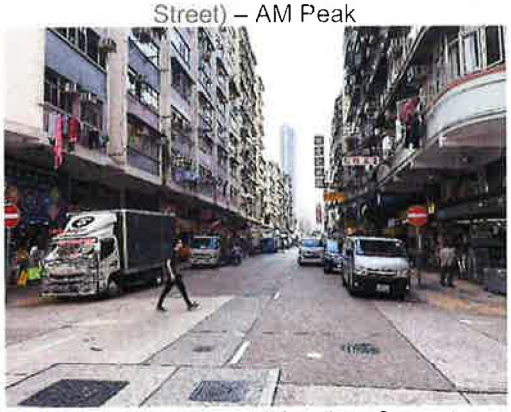
3.2.3. Loading/unloading activities and illegal parking are observed at both side of Reclamation Street during the morning and evening peak respectively. Loading/unloading bay is generally provided on one side of the Reclamation Street and wide traffic lanes are provided at some section without loading/unloading bay. It is observed that minimum of 2 traffic lanes can be maintained for through traffic.



Reclamation Street (Pitt Street to Hamilton Street) – AM Peak



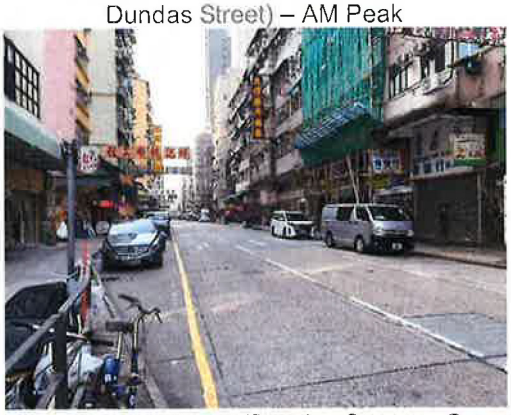
Reclamation Street (Pitt Street to Hamilton Street) – PM Peak



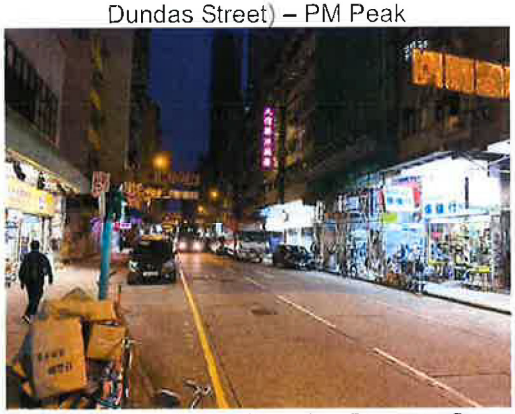
Reclamation Street (Hamilton Street to Dundas Street) – AM Peak



Reclamation Street (Hamilton Street to Dundas Street) – PM Peak



Reclamation Street (Dundas Street to Soy Street) – AM Peak



Reclamation Street (Dundas Street to Soy Street) – PM Peak



Reclamation Street (Soy Street to Shantung Street) – AM Peak



Reclamation Street (Soy Street to Shantung Street) – PM Peak

Shanghai Street

3.2.4. The section of Shanghai Street between Argyle Street and Shantung Street is part of the ingress access route for the traffic to the subject site from the westbound of Argyle Street. Illegal parking and pick-up/drop-off activities are observed at Shanghai Street, however the impact to traffic is considered minor as there are 3 traffic lanes and only serving the traffic volume approximate 900 pcu/hr. It is observed that minimum of 2 traffic lanes can be maintained for the by-pass traffic use.



Shanghai Street (Argyle Street to Shantung Street) – AM Peak



Shanghai Street (Argyle Street to Shantung Street) – PM Peak

Dundas Street

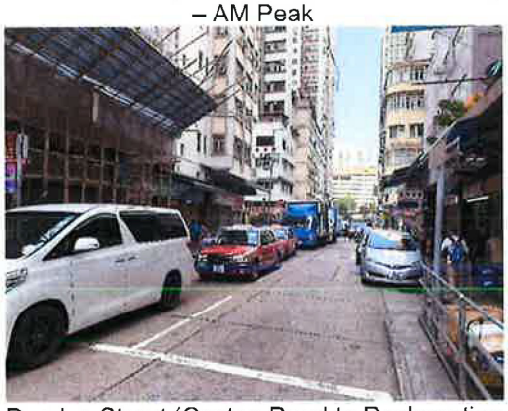
3.2.5. Dundas Street is a 1 to 2 lane carriageway often with loading/unloading activities on both side of the road during the day time and illegal parking during the evening. As the width of Dundas Street varies between 9.7m to 10.3m, minimum 1 traffic lane can always be maintained when vehicles are stopping on both side of the road.



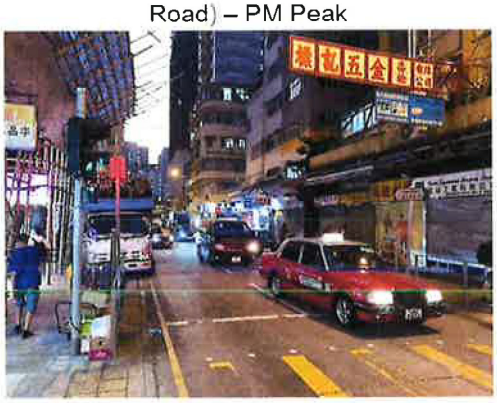
Dundas Street (Ferry Street to Canton Road) – AM Peak



Dundas Street (Ferry Street to Canton Road) – PM Peak



Dundas Street (Canton Road to Reclamation Street) – AM Peak



Dundas Street (Canton Road to Reclamation Street) – PM Peak

3.2.6. As observed on site, despite illegal parking and loading/unloading activities are observed along these local streets, through traffic can always be maintained at the section of local streets along the access route of the Scheme during both the morning and evening peak periods. Besides, as mentioned in paragraph 2.6.7 above, it is observed that there are approximate 1,200 nos. of monthly and hourly public car parking spaces in the vicinity of the subject site to meet the public parking space demand in the area.

3.3. Public Transport Services

3.3.1. Currently, the subject site is serving by several public transport services including MTR, franchised bus, Green Mini-bus (GMB) and Public Light Bus (PLB). The MTR Mong Kok Station is located approximate 300m away from the subject site. Moreover, there are more than 200 numbers of franchised bus, GMB and PLB routes with servicing points in the vicinity of the subject site. Detail of the services are tabulated in **Table 3.1** and the existing adjacent public transport service points are shown in **Figure 2.8**.

Table 3.1 Existing Public Transport Services

Route No.	Origins & Destinations	Frequency (mins)	Remarks
Franchised Bus			
1	Chuk Yuen Estate ↔ Star Ferry	6 - 15	Daily
1A	Shau Mau Ping (Central) ↔ Star Ferry	6 - 10	Daily
1R #	Hung Hom (Hong Luen Road) → Ngong Ping	3 trips/day	Sun and Public Holidays only
2	So Uk Estate ↔ Star Ferry	10 - 20	Daily
2A	Mei Foo ↔ Lok Wah	8 - 15	Daily
2E	Kowloon City Ferry ↔ Pak Tin Estate	15 - 25	Daily
2X	Mei Foo ↔ Choi Fook	20 - 30	Daily
3C	Tsz Wan Shan (North) ↔ China Ferry Terminal	9 - 25	Daily
3X #	Tsz Wan Shan (North) ↔ China Ferry Terminal	3 trips in AM Peak	Mon to Fri (except Public Holidays)
6	Lai Chi Kok ↔ Star Ferry	8 - 15	Daily
6C	Mei Foo ↔ Kowloon City Ferry	9 - 12	Daily
6F	Lai Kok Estate ↔ Kowloon City Ferry	20 - 30	Daily
6X #	Mei Foo → Kowloon City Ferry	3 trips in PM Peak	Mon to Fri (except Public Holidays)
9	Choi Fook ↔ Tsim Sha Tsui East (Mody Road)	15 - 25	Daily
10 *	Choi Wan ↺ Tai Kok Tsui	15 - 25	Daily
12	Hoi Lai Estate ↔ Tsim Sha Tsui East (Mody Road)	12 - 20	Daily
13D	Po Tat ↔ Island Harbourview	15 - 25	Daily
13P #	Po Tat ↔ Lai Kok Estate	2 trips in AM Peak	Mon to Sat (except Public Holidays)
16	Lam Tin (Kwong Tin Estate) ↔ Mong Kok (Park Avenue)	7 - 20	Daily
16 #	Ping Tin → Mong Kok (Park Avenue)	20	Mon to Sat AM Peak only (except Public Holidays)
16X #	Ping Tin → Mong Kok (Park Avenue)	1 trip in AM Peak	Mon to Fri (except Public Holidays)
18 *	Cheung Sha Wan (Sham Mong Road) ↺ Oi Man	20 - 40	Daily
20	Kai Tak (Muk Ning Street) ↔ Island Harbourview	-	Daily
27 *	Shun Tin ↺ Mong Kok	6 - 15	Daily
30X	Allway Gardens ↔ Whampoa Garden	15 - 25	Daily
32	Shek Wai Kok ↔ Olympic Station	15 - 25	Daily
33A	Tsuen Wan (Nina Tower) ↔ Mong Kok (Park Avenue)	15 - 20	Daily
35A	On Yam Estate ↔ Tsim Sha Tsui East	5 - 20	Daily
35X #	On Yam Estate → Tsim Sha Tsui East	2 trips in AM Peak	Mon to Sat (except Public Holidays)
	Tsim Sha Tsui East → On Yam Estate	20 - 30	Mon to Sat PM only (except Public Holidays)
36B	Lei Muk Shue ↔ West Kowloon Station	11 - 20	Daily
36X #	Lei Muk Shue → West Kowloon Station	1 trip in AM Peak	Mon to Fri (except Public Holidays)

Route No.	Origins & Destinations	Frequency (mins)	Remarks
37	Kwai Shing (Central) ↔ Olympic Station	12 - 20	Daily
41	Cheung Ching Estate ↔ Kowloon City Ferry	20 - 35	Daily
41A	Cheung On Estate ↔ Tsim Sha Tsui East	10 - 25	Daily
42A	Cheung Hang Estate ↔ West Kowloon Station	4 - 15	Daily
43C #	Cheung Hong Estate → Island Harbourview	12 - 18	Mon to Sat AM Peak only (except Public Holidays)
	Island Harbourview → Cheung Hang Estate	15 - 20	Mon to Sat PM Peak only (except Public Holidays)
44	Tsing Yi Estate ↔ Mong Kok East Station	8 - 20	Daily
44 #	Cheung On Estate → Mong Kok East Station	2 trips in AM Peak	Mon to Fri (except Public Holidays)
45	Lai Yiu ↔ Kowloon City Ferry	20 - 30	Daily
46	Lai Yiu ↔ West Kowloon Station	15 - 35	Daily
52X	Tuen Mun Central ↔ Mong Kok (Park Avenue)	5 - 20	Daily
52X #	So Kwun Wat ↔ Mong Kok (Park Avenue)	1 trip in AM Peak	Mon to Fri (except Public Holidays)
58X	Leung King Estate ↔ Mong Kok East Station	5 - 15	Daily
58X #	Kin Sang → Mong Kok East Station	1 trip in AM Peak	Mon to Sat (except Public Holidays)
59X	Tuen Mun Pier Head ↔ Mong Kok East Station	3 - 15	Daily
59X #	Sun Tuen Mun Centre → Mong Kok East Station	1 trip in AM Peak	Mon to Sat (except Public Holidays)
59X #	Lung Mun Oasis → Mong Kok East Station	6 trips in AM Peak	Mon to Sat (except Public Holidays)
60X	Tuen Mun Central ↔ West Kowloon Station	6 - 20	Daily
63X	Hung Shui Kiu (Hung Fuk Estate) ↔ West Kowloon Station	12 - 30	Daily
66X	Tai Hing ↔ Olympic Station	8 - 20	Daily
67X	Siu Hong Court ↔ Mong Kok East Station	6 - 20	Daily
68X	Hung Shui Kiu (Hung Fuk Estate) ↔ Mong Kok (Park Avenue)	9 - 25	Daily
68X #	Yuen Long (West) ↔ Mong Kok (Park Avenue)	2 trips in AM Peak	Mon to Sat (except Public Holidays)
69X	Tin Shui ↔ West Kowloon Station	10 - 30	Daily
69X #	Tin Yiu → West Kowloon Station	2 trips in AM Peak	Mon to Sat (except Public Holidays)
70S	Hung Hom Station ↔ Wo Hop Shek	-	Tomb Sweeping Festival and Chung Yeung Festival only
72X	Tai Po Central ↔ Mong Kok (Park Avenue)	8 - 25	Daily
81	Wo Che ↔ West Kowloon Station	10 - 20	Daily
81S #	Mei Tin → Nathan Road (Public Square Street)	3 trips in AM Peak	Mon to Fri (except Public Holidays)
87B	Sun Tin Wai ↔ Island Harbourview	15 - 30	Daily
87D	Kam Ying Court ↔ Hung Hom Station	4 - 25	Daily

Route No.	Origins & Destinations	Frequency (mins)	Remarks
87D #	Ma On Shan Town Centre → Hung Hom Station	10 - 12	Mon to Sat (except Public Holidays)
87E #	Nai Chung → Tsim Sha Tsui (Middle Road)	1 trip in AM Peak	Mon to Fri (except Public Holidays)
93K	Po Lam ↔ Mong Kok East Station	15 - 25	Daily
95	Tsui Lam ↔ West Kowloon Station	10 - 25	Daily
98C	Hang Hau (North) ↔ Mei Foo	8 - 20	Daily
98S #	LOHAS Park Station → Mei Foo	4 trips in AM Peak	Mon to Fri (except Public Holidays)
	Mei Foo → LOHAS Park Station	4 trips in PM Peak	Mon to Fri (except Public Holidays)
102	Mei Foo ↔ Shau Kei Wan	3 - 15	Daily
102 #	Mong Kok (Bank Centre) → Shau Kei Wan	1 trip in AM Peak, 2 trips in PM Peak	Mon to Fri (except Public Holidays)
102 #	Shau Kei Wan → Mong Kok (Bute Street)	2 trips in PM Peak	Mon to Fri (except Public Holidays)
102P #	Mei Foo → Shau Kei Wan	5 trips in AM Peak, 2 trips in PM Peak	Mon to Fri (except Public Holidays)
	Shau Kei Wan → Mei Foo	2 trips in AM Peak, 2 trips in PM Peak	Mon to Sat (except Public Holidays)
102R	Happy Valley Racecourse → Mei Foo	-	After Events at Happy Valley Racecourse
104	Pak Tin Estate ↔ Kennedy Town	5 - 17	Daily
104 #	Chak On Estate → Central Market	2 trips in AM Peak	Mon to Sat (except Public Holidays)
104 #	Pak Tin Estate → Central Market	1 trip in AM Peak	Mon to Fri (except Public Holidays)
112	So Uk Estate ↔ North Point	2 - 12	Daily
117	Happy Valley (Lower) ↔ Sham Shui Po (Yen Chow Street)	12 - 30	Daily
117R	Hong Kong Stadium → Mong Kok (Bute Street)	-	After Events at Hong Kong Stadium
118	Cheung Sha Wan (Sham Mong Road) ↔ Island Resort	3 - 12	Daily
118 #	Greenwood Terrace → Cheung Sha Wan (Sham Mong Road)	2 trips in AM Peak	Mon to Sat (except Public Holidays)
118P #	Island Resort ↔ Cheung Sha Wan (Sham Mong Road)	5 - 9	Mon to Sat AM Peak only (except Public Holidays)
	Island Resort ↔ Mong Kok (Bute Street)	2 trips in AM Peak	Mon to Sat (except Public Holidays)
	Cheung Sha Wan (Sham Mong Road) ↔ Island Resort	12 - 15	Mon to Fri (except Public Holidays)
171	Lai Chi Kok → South Horizons	5 - 18	Daily
	South Horizons → Lai Chi Kok	5 - 18	Daily (except Mon to Sat AM Peak)

Route No.	Origins & Destinations	Frequency (mins)	Remarks
171A #	South Horizons → Lai Chi Kok	9 - 15	Mon to Sat AM Peak only (except Public Holidays)
171P #	Lei Tung → Lai Chi Kok	5 - 13	Mon to Sat AM Peak only (except Public Holidays)
203E	Choi Hung ↔ Kowloon Station	12 - 20	Daily
203S #	Chak On Estate → Tsim Sha Tsui East (Mody Road)	1 trip in AM Peak	Mon to Sat (except Public Holidays)
203X #	Choi Hung → Jordan (Battery Street)	1 trip in AM Peak	Mon to Fri (except Public Holidays)
213D *	Sau Mau Ping (Central) ↺ Mong Kok	10 - 20	Daily
230X #	Allway Gardens → Whampoa Garden	2 trips in AM Peak	Mon to Sat (except Public Holidays)
234P #	Bayview Garden → Tsim Sha Tsui East (Mody Road)	1 trip in AM Peak	Mon to Sat (except Public Holidays)
234X	Bayview Garden ↔ Tsim Sha Tsui East (Mody Road)	12 - 15	Daily
238P #	Riviera Gardens → China Ferry Terminal	4 trips in AM Peak	Mon to Sat (except Public Holidays)
238X	Riviera Gardens ↔ China Ferry Terminal	12 - 20	Daily
241X #	Cheung Ching → Oi Man	1 trip in AM Peak	Mon to Fri (except Public Holidays)
242X #	Cheung Hang → Tsim Sha Tsui (Middle Road)	2 trips in AM Peak	Mon to Sat (except Public Holidays)
252B #	Handsome Court → Tsim Sha Tsui (Middle Road)	3 trips in AM Peak	Mon to Sat (except Public Holidays)
259B #	Tuen Mun Pier Head → Tsim Sha Tsui (Middle Road)	3 trips in AM Peak	Mon to Fri (except Public Holidays)
259C #	Sun Tuen Mun Centre → Tsim Sha Tsui (Middle Road)	2 trips in AM Peak	Mon to Fri (except Public Holidays)
260B #	Tuen Mun Central → Tsim Sha Tsui (Middle Road)	4 trips in AM Peak	Mon to Fri (except Public Holidays)
261B #	Sham Shing → Tsim Sha Tsui (Middle Road)	1 trip in AM Peak	Mon to Sat (except Public Holidays)
	So Kwun Wat → Tsim Sha Tsui (Middle Road)	2 trips in AM Peak	Mon to Fri (except Public Holidays)
265B	Tin Hang Estate ↔ Mong Kok (Park Avenue)	5 - 20	Daily
268X	Hung Shui Kiu (Hung Fuk Estate) ↔ West Kowloon Station	7 - 35	Daily
270B	Sheung Shui ↔ Olympic Station	15 - 35	Daily
	Sheung Shui → Charming Garden	1 trip in AM Peak	Mon to Fri (except Public Holidays)
270P #	Sheung Shui → Kowloon Station	2 trips in AM Peak	Mon to Sat (except Public Holidays)
270S ^	Tsim Sha Tsui East (Mody Road) → Luen Wo Hui	5 trips at midnight	Daily
271S ^	Hung Hom Station → Tai Wo	2 trips at midnight	Daily
272X #	Tai Po Central → Mong Kok Road	3 trips in AM Peak	Mon to Fri (except Public Holidays)

Route No.	Origins & Destinations	Frequency (mins)	Remarks
	Mong Kok East Station → Tai Po Central	3 trips in PM Peak	Mon to Fri (except Public Holidays)
281A	Kwong Yuen ↔ Kowloon Station	6 - 20	Daily
287X *	Shui Cheun O ↺ Jordan	8 - 25	Daily
291P	H.K.U.S.T. (South) → Mong Kok Station	1 trip in PM Peak	Mon to Fri (except Public Holidays)
293S ^	Mong Kok East Station ↔ Hang Hau (Ngan O Road)	2 trips at midnight	Daily
	Hang Hau (Ngan O Road) ↔ Mong Kok East Station	2 trips at midnight	Daily
296C	Sheung Tak ↔ Hoi Ying Estate	15 - 30	Daily
296P *#	Sheung Tak ↺ Mong Kok	1 trip in AM Peak, 1 trip in PM Peak	Mon to Fri (except Public Holidays)
701 *	Hoi Lai Estate ↺ Mong Kok	5 - 15	Daily
701 #	Hoi Lai Estate → Mong Kok Road	1 trip in AM Peak	Mon to Fri (except Public Holidays)
701A *	Hoi Ying Estate ↺ Mong Kok	30	Daily
701S *^	Hoi Lai Estate ↺ Mong Kok	20	Daily
701R	Hong Kong Coliseum ↔ So Uk	-	After Events at Hong Kong Coliseum
796C	Oscar by the Sea ↔ So Uk	11 - 29	Daily
796E #	Tseung Kwan O Industrial Estate → So Uk	1 trip in AM Peak	Mon to Fri (except Public Holidays)
887	Shatin Racecourse → Mong Kok (Park Avenue)	-	After Events at Shatin Racecourse
904	Lai Chi Kok ↔ Kennedy Town (Belcher Bay)	12 - 23	Daily
905	Lai Chi Kok ↔ Wan Chai (North)	5 - 18	Daily
905P #	Lai Chi Kok → Wan Chai (Harbour Road)	2 trips in AM Peak	Mon to Fri (except Public Holidays)
914	Hoi Lai Estate ↔ Causeway Bay (Tin Hau)	10 - 20	Daily
914P #	Hoi Lai Estate → Causeway Bay (Tin Hau)	1 trip in AM Peak	Mon to Sat (except Public Holidays)
914X #	Hoi Lai Estate → Causeway Bay (Tin Hau)	3 trips in AM Peak	Mon to Sat (except Public Holidays)
970	Cyberport ↔ So Uk	5 - 20	Daily
970X	Aberdeen ↔ So Uk	8 - 20	Daily
970X #	Tin Wan Estate → So Uk	2 trips in AM Peak, 5 trips in PM Peak	Mon to Sat (except Public Holidays)
971	Aberdeen (Shek Pai Wan) ↔ Hoi Lai Estate	-	Daily
971R *	Cyberport ↺ Mong Kok	-	Tomb Sweeping Festival and Chung Yeung Festival only
971R	Cyberport → Mong Kok (Bute Street)	-	
A20	Airport ↔ Hung Hom Station	60	Daily
A21	Airport ↔ Hung Hom Station	8 - 30	Daily
E21	AsiaWorld-Expo ↔ Island Harbourview	10 - 30	Daily
E21A	Yat Tung Estate ↔ Oi Man	-	Daily

Route No.	Origins & Destinations	Frequency (mins)	Remarks
E21C #	Island Harbourview → Aircraft Maintenance Area	1 trip in AM Peak	Mon to Fri (except Public Holidays)
	Aircraft Maintenance Area → Island Harbourview	1 trip in PM Peak	Mon to Fri (except Public Holidays)
H2	Central (Star Ferry) ↔ Peninsula Hotel	30	Daily, PM Peak only
N21 ^	Airport ↔ Star Ferry	20 - 30	Daily
N21A ^	Star Ferry → Airport	4 trips at midnight	Daily
	Airport → Star Ferry	1 trip at midnight	Daily
N23 ^	Tsz Wan Shan (North) → Tung Chung Station	-	Daily
N41X ^	Hung Hom Station → Cheung Wang Estate	4 trips at midnight	Daily
N118 ^	Cheung Sha Wan (Sham Mong Road) ↔ Island Resort	15 - 20	Daily
N122 ^	Mei Foo ↔ Shau Kei Wan	10 - 15	Daily
N171 ^	Lai Chi Kok ↔ South Horizons	20	Daily
N216 ^	Hung Hom Station ↔ Yau Tong	15 - 20	Daily
N241 ^	Hung Hom Station ↔ Cheung Wang Estate	20 - 25	Daily
N271 ^	Hung Hom Station → Fu Heng	15 - 20	Daily
N281 ^	Hung Hom Station → Kam Ying Court	20 - 30	Daily
N283 ^	Tsim Sha Tsui East (Mody Road) → Wong Nai Tau	3 trips at midnight	Daily
N287 ^	Tsim Sha Tsui East (Mody Road) → Wu Kai Sha Station	3 trips at midnight	Daily
N293 ^	Mong Kok East Station ↔ Sheung Tak	15 - 20	Daily
N796 *^	Tseung Kwan O Station ↺ Tsim Sha Tsui	-	Daily
	Tseung Kwan O Station → Tsim Sha Tsui → LOHAS Park	2 trips at midnight	Daily
NA20 ^	HZMB Hong Kong Port → Whampoa Garden	1 trip at midnight	Daily
	Whampoa Garden → HZMB Hong Kong Port	1 trip at midnight	Daily
NA21 ^	HZMB Hong Kong Port → Tai Kok Tsui (Hoi Fai Road)	3 trips at midnight	Daily
X970 #	Cyberport → So Uk	1 trip in AM Peak	Mon to Fri (except Public Holidays)
GMB			
3	Tsim Sha Tsui (Ashley Road) ↔ Cosmopolitan Estates	3 - 10	Daily
	Tsim Sha Tsui (Ashley Road) → Cosmopolitan Estates	3	Daily, AM Peak only
5M *	Waterloo Hill (Hok Yu Lane) ↺ Mong Kok Station	10 - 15	Daily
12A	Cosmopolitan Estates ↔ Mong Kok East Station	7 - 9	Daily
12B	Metro Harbour View ↔ Mong Kok East Station	6 - 8	Daily
12S	Tai Kok Tsui (Cherry Street) ↔ Mong Kok East Station	10 - 15	Daily
27M	Lok Man Sun Chuen ↔ Mong Kok Station	7 - 15	Daily
27MS *	Mong Kok Station ↺ Ho Man Tin (Sheung Lok Street)	10	Daily
28M	Kowloon City (Wyler Gardens) ↔ Mong Kok Station	5 - 15	Daily

Route No.	Origins & Destinations	Frequency (mins)	Remarks
30A	Chak On Estate ↔ Mong Kok Station	25	Daily
43M *	Mong Kok (Park Avenue) ↺ Yau Ma Tei Station	4 - 10	Daily
43M *	Tai Kok Tsui (Cherry Street) ↺ Yau Ma Tei Station	4 - 15	Daily
46	Richland Gardens ↔ Olympic Station	3 - 15	Daily
47S ^	Tuen Mun Pier Head ↔ Mong Kok (Bute Street)	15 - 20	Daily
48S ^	Leung King Estate ↔ Mong Kok (Bute Street)	15 - 20	Daily
58S ^	Sheung Shui Station ↔ Mong Kok Station	12 - 15	Daily
61 ^	Siu Sai Wan (Island Resort) ↔ Mong Kok (Fife Street)	60	Daily
61S ^	Fo Tan ↔ Mong Kok Station	4 trips/day	Daily
63S *^	Mei Tin Estate ↔ Mong Kok	8 - 15	Daily
65S ^	Wong Nai Tau ↔ Mong Kok Station	8 - 25	Daily
66S ^	Hammer Hill Road ↔ Mong Kok Road	20 - 25	Daily
74 *	Kowloon Station ↺ Mong Kok (Luen Wan Street)	10 - 12	Daily
78 *	Island Harbourview ↺ Tsim Sha Tsui (Peking Road)	10 - 14	Daily
78A #	Island Harbourview → Tsim Sha Tsui (Peking Road)	1 trip in AM Peak	Mon to Sat (except Public Holidays)
79K	Mong Kok (Park Avenue) ↔ Mong Kok East Station	-	Daily
79W *	Mong Kok (Park Avenue) ↺ Sai Yeung Choi Street South	10 - 15	Daily
606S ^	Yuen Long (Fung Cheung Road) ↔ Tsim Sha Tsui East (Mody Road)	6 - 13	Daily
610S ^	Tin Shui Wai (Tin Shui Estate) ↔ Tsim Sha Tsui (Haiphong Road)	12 - 15	Daily
805S ^	Kam Ying Court ↔ Mong Kok	5 - 12	Daily
PLB			
-	Kwun Tong (How Ming Street) → Mong Kok -(Sincere Podium)	Depart when fully loaded	Mon to Fri PM Peak only and Sat 13:00-13:30 only (except Public Holidays)
-	Mong Kok (Sincere Podium) ↺ Kowloon Bay *	5 - 20	Daily
-	Mong Kok (Sincere Podium) → Sau Mau Ping	Depart when fully loaded	Daily, 24-hour Service
-	Sau Mau Ping → Mong Kok (Sincere Podium)	5 - 8	Daily, 24-hour Service
-	Sau Hong House Sau Mau Ping Estate → Mong Kok (Sincere Podium) #	10	Mon to Fri AM Peak only (except Public Holidays)
-	Sau Yee House Sau Mau Ping Estate → Mong Kok (Sincere Podium)	-	Daily, early morning and 09:00-15:30 only
-	Mong Kok (Sincere Podium) ↺ Lei Yue Mun *	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Sincere Podium) ↔ To Kwa Wan (Jubilant Place)	Depart when fully loaded	Daily
-	Mong Kok (Sincere Podium) (Fa Yuen Street) ↔ Wong Tai Sin	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Sincere Podium) (Fa Yuen Street) ↔ Tsz Wan Shan	Depart when fully loaded	Daily, 24-hour Service

Route No.	Origins & Destinations	Frequency (mins)	Remarks
-	Mong Kok (Fa Yuen Street) ↺ Lam Tin *	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Fa Yuen Street) ↔ Ho Man Tin Estate	Depart when fully loaded	Daily
-	Mong Kok (Fa Yuen Street) ↔ Oi Man Estate	Depart when fully loaded	Daily
-	Mong Kok (Dundas Street) ↔ Ngau Tau Kok Station	7 - 10	Daily
-	Mong Kok (Dundas Street) ↔ Sai Kung	Depart when fully loaded	Daily
-	Mong Kok (Argyle Street) ↔ Sheung Shui ^	Depart when fully loaded	Daily
-	Mong Kok (Reclamation Street) → Yuen Long ^	Depart when fully loaded	Daily
-	Mong Kok (Langham Place) ↔ Tsuen Wan (Fuk Loi Estate)	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Langham Place) → Tai Wo Hau Estate	Depart when fully loaded	Daily, 14:30-19:00 only
-	Mong Kok (Langham Place) ↺ Tai Wo Hau Estate *	Depart when fully loaded	Daily, 19:00-00:00 only
-	Mong Kok (Langham Place) → Shek Lei Pui	Depart when fully loaded	Daily, 24-hour Service
-	Shek Lei Pui → Jordan Road	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Langham Place) → On Yam	Depart when fully loaded	Mon to Sat (except Public Holidays), 16:00-01:00 only
-	Kwai Chung (Wo Yi Hop Road) → Jordan Road	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Langham Place) → Lei Muk Shue	Depart when fully loaded	Daily, 24-hour Service
-	Lei Muk Shue → Jordan Road	-	Daily, 24-hour Service
-	Mong Kok (Changsha Street) → Tsuen Wan (Belvedere Garden)	-	Daily after AM Peak
-	Tsuen Wan (Belvedere Garden) → Jordan Road	-	Mon to Sat AM Peak only (except Public Holidays)
-	Mong Kok (Portland Street) → Shek Wai Kok	Depart when fully loaded	Daily, 17:00-03:30 only
-	Shek Wai Kok → Jordan Road	Depart when fully loaded	Daily, 17:30-04:00 only
-	Kwai Shing → Jordan Road	15	Daily, 06:30-14:00 only
-	Mong Kok (Soy Street) ↔ Kwai Shing	Depart when fully loaded	Daily, 18:15-03:30 only
-	Mong Kok (Golden Era Plaza) ↔ Aberdeen (Tung Sing Road)	Depart when fully loaded	Daily, 24-hour Service
-	Mong Kok (Portland Street) ↔ Shau Kei Wan	-	Daily, 17:30-00:00 only
-	Mong Kok (Bank Centre) → Shau Kei Wan ^	-	Daily

Route No.	Origins & Destinations	Frequency (mins)	Remarks
-	Shau Kei Wan → Mong Kok (Kei Wing Primary School) ^	-	Daily
-	Mong Kok (Bank Centre) → Kennedy Town ^	-	Daily
-	Kennedy Town → Mong Kok (Kei Wing Primary School) ^	-	Daily
-	Central (Lan Kwai Fong) → Mong Kok (Langham Place) ^	Depart when fully loaded	Daily
-	Shek O → Mong Kok (Langham Place) ^	Depart when fully loaded	Sat, Sun and Public Holidays only

Remarks: ** Circular routes*
 # Peak period services
^ Overnight services

3.3.2. As shown in the above, the subject site is well served by the existing public transport facilities provided in the vicinity.

3.4. Pedestrian Facilities

3.4.1. The existing pedestrian facilities are well-developed in the vicinity of the subject site. Pedestrians can access the subject site via the surrounding footpaths, pedestrian crossings and elevated walkway to/from nearby taxi, bus and PLB servicing points as well as MTR Mong Kok Station.

3.5. Planned Highway Infrastructure

3.5.1. The Central Kowloon Route (CKR) is a dual 3-lane trunk road connecting the West Kowloon reclamation and the proposed Kai Tak Development to relieve traffic congestion on the existing east-west roads across Central Kowloon area and it is anticipated to be commissioned in 2025.

3.5.2. Other planned infrastructure includes a proposed Pedestrian Footbridge System in Mong Kok (MKFS) which comprises two sections, the Argyle Street Section running along Argyle Street from Tong Mi Road Footbridge to Hak Po Street and the Tong Mi Road Section running along Tong Mi Road from Tong Mi Road Footbridge to Fuk Tsun Street. The MKFS aims to improve the crowded footpaths in the district, the pedestrian environment, the connectivity of the walkway system in the central district of Mong Kok and to minimise the vehicle-pedestrian conflicts as well as enhance the pedestrian safety. The design of MKFS is now under reviewed by the Highways Department. Although the implementation programme is uncertain, the preliminary road improvement measures as shown in the public consultation documents have been considered in this TIA study. The preliminary junction improvement measures for the assessed key junctions proposed by MKFS are illustrated in **Appendix A**.

3.5.3. Moreover, junction improvement schemes along some sections of Sai Yee Street and Argyle Street are also proposed by the project of Redevelopment of Government Sites at Sai Yee Street and the proposed scheme at the assessed junction of Argyle Street and Sai Yee Street is also illustrated in **Appendix A**.

3.5.4. The above mentioned planned highway infrastructure and junction improvement schemes have been considered in the traffic assessment of this project.

4. Traffic Forecast

4.1. Methodology

4.1.1. According to the current programme, the completion of the Scheme is anticipated at year 2030. For the purposes of this study, it has been assumed that full occupation of the Scheme will be occurs in the completion year.

4.1.2. Therefore, year 2033 (3 years after completion) would be adopted as the design year for assessment purpose.

4.1.3. As discussed in the previous section, the CKR is planned to be commissioned by year 2025 and the local traffic pattern would be affected by the new connection bypass the central Kowloon area. The background traffic forecasts for the design year 2030 was therefore derived according to the 2015 Based District Traffic Models (BDTM) K1 published by Transport Department (TD). The validation adjustment to the traffic model will make reference to the observed traffic flows obtained from the traffic surveys and then projected by applying a growth rate.

4.1.4. The growth factor used was derived by referring to the past traffic growth trend on the Annual Traffic Census (ATC) Reports, latest BDTM published by TD and the latest 2014-based Territory Population and Employment Data Matrices (TPEDM) of Mong Kok Area on the website of Planning Department (PlanD).

4.1.5. Trip generations by other planned developments in the vicinity were estimated and assigned onto the surrounding road network to produce the reference traffic forecasts at design year.

4.1.6. Trip generations of the Scheme was estimated by using appropriate trip generation rates. Traffic generations were then assigned to the surrounding road network and superimposed onto the reference traffic forecasts to create the design year forecasts for assessment at design year.

4.2. Traffic Survey

4.2.1. Manual classified traffic count surveys were conducted to identify the existing traffic flows during the peak hour periods from 07:30 to 09:30 and from 17:30 to 19:30 on a typical weekday in September 2019. The locations of the surveyed junctions in the vicinity are listed in **Table 4.1** and shown in **Figure 2.1**.

Table 4.1 Location of Key Junctions

Index (1)	Location	Junction Type
J1	Tong Mi Road/ Mong Kok Road	Signal
J2	Nathan Road/ Mong Kok Road	Signal
J3	Argyle Street / Tong Mi Road	Signal
J4	Argyle Street / Shanghai Street	Signal
J5	Argyle Street / Nathan Road	Signal
J6	Argyle Street / Sai Yeung Choi Street South / Tung Choi Street	Signal
J7	Argyle Street / Sai Yee Street	Signal

Index (1)	Location	Junction Type
J8	Ferry Street/ Shantung Street	Signal
J9	Reclamation Street/ Shantung Street	Signal
J10	Shanghai Street/ Shantung Street	Signal
J11	Reclamation Street/ Dundas Street	Signal
J12	Shanghai Street/ Dundas Street	Signal

*Remarks: (1) Refer to **Figure 2.1**.*

4.2.2. The morning and evening peak hours were identified as 08:30 – 09:30 and 17:30 – 18:30 respectively. The year 2019 observed traffic flows are presented in **Figure 4.1**.

4.3. Growth Rate Determination

4.3.1. Traffic forecasts for the design years were projected by applying an appropriate growth rate to the validated year 2026 BDTM model traffic flows. The growth rates were determined with reference to the ATC reports and the latest BDTM published by TD and the latest 2014-based TPEDM of Mong Kok Area on the website of PlanD.

Annual Traffic Census (ATC)

4.3.2. The historical traffic growth trend of the major roads in the vicinity of the subject site was reviewed making reference to the ATC reports. The Annual Average Daily Traffic (AADT) data from year 2012 to year 2018 were extracted and the estimated average annual growth rate is given in **Table 4.2**.

Table 4.2 Traffic Growth Rate Derived from ATC

Station No.	Road Name	AADT							Growth Rate (p.a.)
		2012	2013	2014	2015	2016	2017	2018	
3006	Nathan Rd	33,680	32,420	25,950	30,130	30,120	29,280	29,330	-0.03%
3015	Shanghai St	11,270	11,270	11,390	11,490	11,450	11,240	11,590	
3247	Mong Kok Rd	11,690	12,800	12,940	12,750	12,820	12,760	12,520	
3815	Tong Mi Rd	44,020	43,900	43,720	43,900	35,040	36,160	36,400	
3817	Nathan Rd	34,990	34,900	34,600	35,300	30,520	29,810	29,420	
3842	Cherry St	29,430	29,400	28,500	29,440	30,830	32,840	33,280	
3843	Argyle St	29,940	29,190	29,560	29,120	27,620	32,590	32,440	
3893	Ferry St	40,560	40,460	40,120	40,930	35,760	40,030	39,510	
4015	Nathan Rd	46,500	45,710	45,320	46,240	46,490	46,080	41,970	
4035	Dundas St	2,470	2,430	2,460	2,420	2,440	2,670	2,360	
4042	Anchor St	8,970	9,780	9,480	9,790	9,660	10,320	8,580	
4043	Argyle St	30,170	27,420	27,760	27,350	27,490	29,960	27,530	
4209	Shanghai St	15,560	15,830	17,590	17,180	17,020	15,120	14,430	
4210	Reclamation St	7,440	7,960	7,030	6,310	7,180	7,530	6,170	
4214	Ferry St & Ferry St <FO>	77,690	78,290	79,900	84,790	83,350	78,590	76,650	
4220	Hoi Wang Rd	16,480	15,850	16,020	15,990	15,980	15,590	15,870	
4404	Portland St	5,390	4,660	5,500	5,220	5,190	5,700	5,640	

Station No.	Road Name	AADT							Growth Rate (p.a.)
		2012	2013	2014	2015	2016	2017	2018	
		446,250	442,270	437,840	448,350	428,960	436,270	423,690	

Notes: The AADT figures shown in italic are estimated values based on the ATC Reports. Those estimated figures are excluded in calculating the weighted average annual growth rate.

4.3.3. As shown in **Table 4.2**, the weighted average annual growth rate determined from ATC data is about -0.03% per annum (p.a.) from year 2012 to year 2018.

Base District Traffic Models (BDTM)

4.3.4. The AM and PM peak hours traffic flows of the key road links in Mong Kok area extracted from the 2015-based K1 BDTM was reviewed for the years of 2015, 2021 and 2026 and the data was given in **Table 4.3**.

Table 4.3 Traffic Growth Rate Derived from BDTM

Road Link	Dir.	AM			PM		
		2015	2021	2026	2015	2021	2026
Tong Mi Road (from Mong Kok Road to Bute Street)	NB	862	787	787	1,320	1,261	1,140
	SB	1,837	953	1,155	970	1,024	1,115
Ferry Street (from Shantung Street to Tong Mi Road)	NB	1,052	920	938	1,442	1,340	1,245
Ferry Street (from Shantung Street to Dundas Street)	SB	1,427	1,422	1,850	1,136	1,257	1,509
Cherry Street (from Oak Street to Palm Street)	EB	528	743	708	441	550	545
Cherry Street (from Argyle Street to Cherry Street Roundabout)	WB	1,701	1,801	1,781	2,349	2,541	2,453
Hoi Wang Road (from Hoi Ting Road to Cherry Street Roundabout)	NB	649	709	598	538	726	520
	SB	519	555	730	492	535	552
Reclamation Street (from Waterloo Road to Pitt Street)	NB	369	383	390	504	598	520
Shanghai Street (from Pitt Street to Waterloo Road)	SB	834	759	794	1,026	777	776
Nathan Road (from Argyle Street to Mong Kok Road)	NB	857	936	841	1,305	1,228	1,110
Nathan Road (from Argyle Street to Shantung Street)	SB	1,588	1,680	1,800	1,401	1,550	1,632
Mong Kok Road (from Nathan Road to Sai Yeung Choi Street South)	EB	1,839	2,078	1,679	1,837	2,088	1,877
Argyle Street (from Sai Yeung Choi Street South to Tung Choi Street)	EB	129	138	134	123	129	126
	WB	1,869	2,125	1,945	1,906	2,113	2,152
Overall Growth Rate % p.a.		**+0.14%**			**+0.22%**		

4.3.5. As shown in **Table 4.3**, the annual growth rate determined from the morning and evening peak BDTM traffic flows are about +0.14% p.a. and +0.22% p.a. respectively from year 2015 to year 2026.

4.3.6. In addition, a decreasing traffic flow in future year is also observed at some junctions, such as morning peak traffic of the northbound straight-ahead movement at Nathan Road is reduced from 491 pcu/hr in the base year 2015 to 457 pcu/hr in year 2026, as well as Sai Yee Street, where morning and evening peak traffic of the northbound straight-ahead movement have reduced from 74 pcu/hr and 177 pcu/hr in the base year 2015 to 32 pcu/hr and 70 pcu/hr in year 2026. The change in traffic pattern might be due to the road network change in future with the Central Kowloon Route.

Territory Population and Employment Data Matrices (TPEDM)

4.3.7. Reference was also made to the latest 2014-based TPEDM from year 2014 to year 2026 in Mong Kok area published on the PlanD website. The population and employment planning data from year 2014 to 2026 and the estimated annual growth rates are illustrated in **Table 4.4**.

Table 4.4 Traffic Growth Rate Derived from TPEDM

District	Population			Employment			Overall		
	2014	2021	2026	2014	2021	2026	2014	2021	2026
Mong Kok	135,650	134,200	114,300	137,050	139,400	139,100	**272,700**	**273,600**	**253,400**
Yau Ma Tei	158,350	158,100	137,100	274,050	296,800	268,850	**432,400**	**454,900**	**405,950**
Growth Rate (p.a.)	-1.53%			-0.24%			**-0.75%**		

4.3.8. As shown in **Table 4.4**, the annual growth rate determined from TPEDM population, employment and the sum of two are about -1.53% p.a., -0.24% p.a. and -0.75% p.a. respectively from year 2014 to year 2026.

Adopted Growth Rate

4.3.9. Based on the above, the highest growth rate derived from the three sets of data is +0.22% p.a. and thus a nominal growth rate of +0.22% p.a. is adopted for assessment to produce the year 2033 background traffic flows in order to conduct a conservative assessment.

4.4. Other Planned Development Trip Generation

4.4.1. According to the available information, it is noted that there are five planned developments in the vicinity of the subject site and the location are shown in **Figure 2.1**. These planned developments have been considered in the reference traffic flows forecasting and the relevant development parameters are summarised in **Table 4.5**.

Table 4.5 Design Parameters for Planned Developments

Developments (1)	Development Component	Parameters
URA Projects		
Pine Street / Oak Street	Residential	About 142 Flats
	Retail	959 m²
Ash Street	Residential	About 69 Flats
	Retail	About 390 m²
Reclamation Street/ Shantung Street	Residential	About 322 Flats
	Retail	About 2,085 m²
Oak Street/ Ivy Street	Residential	About 115 Flats
	Retail	About 998 m²
Government Project		
Redevelopment of Government Sites at Sai Yee Street	Retail	About 17,872 m²
	Office	About 107,260 m²
	Public Transport Interchange	60 bays for PLB 20 bays for L/UL facilities for cross-boundary (X-B) coaches
	Public Car Park	80 spaces (10 spaces for MGVs / HGVs)

*Remarks: (1) Refer to **Figure 2.1** for location of the planned development.*

4.4.2. Development trips generated by the above planned developments were estimated making reference to the Transport Planning and Design Manual (TPDM) published by TD. Adopted trip rates and traffic generation of the planned / committed developments are summarized in **Table 4.6**.

Table 4.6 Traffic Generation by Planned Developments

Developments	Parameters	Adopted Trip Rates (pcu/hr/flats or pcu/hr/100m² GFA or pcu/hr/space) (1)				Trip Generation (pcu/hr)			
		AM		PM		AM		PM	
		Gen (2)	Att (2)	Gen (2)	Att (2)	Gen (2)	Att (2)	Gen (2)	Att (2)
Pine Street / Oak Street (DL-3: YTM)	142 flats	0.0718	0.0425	0.0286	0.0370	10	6	4	5
	959 m² Retail	0.2296	0.2434	0.3100	0.3563	2	2	3	3
Ash Street (DL-11: YTM)	69 flats	0.0718	0.0425	0.0286	0.0370	5	3	2	3
	391 m² Retail	0.2296	0.2434	0.3100	0.3563	1	1	1	1
Reclamation Street/ Shantung Street (YTM-010)	322 flats	0.0718	0.0425	0.0286	0.0370	23	14	9	12
	2,085 m² Retail	0.2296	0.2434	0.3100	0.3563	5	5	6	7
Oak Street/ Ivy Street (YTM-011)	115 flats	0.0718	0.0425	0.0286	0.0370	8	5	3	4
	998 m² Retail	0.2296	0.2434	0.3100	0.3563	2	2	3	4
Redevelopment of Government Sites at Sai Yee Street	17,872 m² Retail (3)	0.1285	0.1525	0.2360	0.2622	23	28	42	47
	107,260 m² Office (3)	0.1045	0.1646	0.1217	0.0840	112	177	131	90
	5,018 m² GIC	-	-	-	-	20	20	20	20
	PTI (4)	-	-	-	-	247	247	273	273
	Public Car Park	0.1318	0.7795	0.4682	0.1955	11	62	37	16
Total						**469**	**572**	**534**	**485**

Remarks: *(1) Refer to TPDM Vol. 1, Ch. 3, Appendix, Table 1 and Table 2 or in-house survey results;*
(2) "Gen" means "Generation" and "Att" means Attraction;
(3) Trips are referenced to the Final Report for CE58/2014(TP) Planning and Design Study on the Redevelopment of Government Sites at Sai Yee Street and Mong Kok East Station – Feasibility Study;
(4) Trips are referenced to the public transport demand at Tung Choi Street and Fa Yuen Street;
Note: * *Trip Generation is rounded to the nearest digit.*

4.4.3. As shown in **Table 4.6**, the planned developments will generate overall 2-way trips of 1,041 pcu/hr and 1,019 pcu/hr during the morning and evening peak hour respectively. The Sai Yee Street Redevelopment project would generate a significant traffic demand and involve relocation of the terminal stops for PLB and cross boundary bus services.

4.5. Reference Traffic Flows

4.5.1. The traffic demand generated/ attracted by the planned/ committed developments will be assigned on the surrounding road network and superimposed onto the year 2033 background traffic flows to produce the reference traffic flows. The year 2033 reference traffic flows are shown in **Figure 4.2**.

4.6. Development Traffic Generation

4.6.1. Trip generation of the Scheme is estimated using the appropriate trip rates given in TPDM. The estimation of traffic trips to be generated by the Scheme is summarized in **Table 4.7**.

Table 4.7 Traffic Generation by the Scheme

Component	Parameter	Adopted Trip Rates (pcu/hr/flat or pcu/hr/100 m² GFA) (1)				Trip Generation (pcu/hr)			
		AM		PM		AM		PM	
		Gen (2)	Att (2)	Gen (2)	Att (2)	Gen (2)	Att (2)	Gen (2)	Att (2)
Residential	300 flats	0.0718	0.0425	0.0286	0.0370	22	13	9	11
Retail	2,490 m² 1	0.2296	0.2434	0.310	0.3563	6	6	8	9
GIC (3)	2,500 m²	-	-	-	-	10	10	10	10
					Total	**38**	**29**	**27**	**30**

Remarks: *(1) Refer to TPDM Vol. 1, Ch. 3, Appendix, Table 1 and Table 2. Adopted the trip rate for private residential development with average flat size of 70m² GFA.*
(2) "Gen" means "Generation" and "Att" means Attraction
(3) The intended uses for the 2,500m² GIC reserve will be subject to further liaison with relevant Government Departments as well as the views from the Yau Tsim Mong District Council and locals. The adopted traffic trip is assumed only for conservative assessment purpose.
Note: * *Trip Generation is rounded to the nearest digit.*

4.6.2. As presented in the above table, the Scheme will produce 2-way trips of 67 pcu/hr and 57 pcu/hr during the morning and evening peak hours respectively.

4.7. Design Traffic Flows

4.7.1. The estimated development vehicular flows of the Scheme were assigned on the surrounding road network and superimposed onto the year 2033 reference traffic flows to produce the design traffic flows. Year 2033 design traffic flows during the peak hours are shown in **Figure 4.3.**

5. Traffic Impact Assessment

5.1. Methodology

5.1.1. Junction capacity analysis was conducted for the base year 2019 and design year 2033 (three years after completion) for the junctions which are likely to be affected by the Scheme.

5.1.2. Capacity analysis was carried out in accordance with the procedures outlined in the Transport Planning and Design Manual (TPDM). The capacity analysis was based on the observed traffic flows at year 2019 and traffic forecasts at design year 2033 for Reference Scenario (without the Scheme) and Design Scenario (with the Scheme).

5.1.3. Besides, as the implementation programme of MKFS is uncertain, the scenarios with and without the MKFS have been assessed to present the difference in junction operational performance.

5.2. Junction Analysis

5.2.1. The results of the capacity analysis for existing year 2019 Observed Scenario, design year 2033 Reference and Design Scenarios are summarized in **Tables 5.1** and **5.2** respectively. The calculation sheets are attached in **Appendix B**.

Table 5.1 Junction Performance for Year 2019 Observed Scenario

Index (1)	Location	Junction Type	Reserve Capacity (RC)	
			AM	PM
J1	Tong Mi Road/ Mong Kok Road	Signal	30%	43%
J2	Nathan Road/ Mong Kok Road	Signal	>50%	>50%
J3	Argyle Street / Tong Mi Road	Signal	7%	4%
J4	Argyle Street / Shanghai Street	Signal	>50%	>50%
J5	Argyle Street / Nathan Road	Signal	16%	12%
J6	Argyle Street / Sai Yeung Choi Street South / Tung Choi Street	Signal	28%	46%
J7	Argyle Street / Sai Yee Street	Signal	20%	21%
J8	Ferry Street/ Shantung Street	Signal	>50%	>50%
J9	Reclamation Street/ Shantung Street	Signal	>50%	>50%
J10	Shanghai Street/ Shantung Street	Signal	>50%	>50%
J11	Reclamation Street/ Dundas Street	Signal	>50%	>50%
J12	Shanghai Street/ Dundas Street	Signal	48%	46%

*Remarks: (1) Refer to **Figure 2.1**.*

5.2.2. As can be seen in **Table 5.1**, most of the assessed key junctions are operating satisfactorily in the existing year 2019 (RC ≥15%). Besides, junctions of Argyle Street / Tong Mi Road (J3) and Argyle Street / Nathan Road (J5) would be operated below the marginal capacity (RC <15%) especially during the evening peak period.

Table 5.2 Junction Performance for Year 2033

Index (1)	Location	Reserve Capacity (RC)							
		Reference				Design			
		without MKFS		with MKFS (2)		without MKFS		with MKFS (2)	
		AM	PM	AM	PM	AM	PM	AM	PM
J1	Tong Mi Road/ Mong Kok Road	21%	38%	9%	28%	20%	37%	9%	27%
J2	Nathan Road/ Mong Kok Road	31%	>50%	-	-	31%	>50%	-	-
J3	Argyle Street / Tong Mi Road	2%	1%	2%	1%	2%	1%	2%	1%
J4	Argyle Street / Shanghai Street	>50%	>50%	-	-	>50%	>50%	-	-
J5	Argyle Street / Nathan Road	8%	1%	-	-	8%	1%	-	-
J6	Argyle Street / Sai Yeung Choi Street South / Tung Choi Street	25%	22%	26%	22%	23%	18%	23%	18%
J7	Argyle Street / Sai Yee Street	11%	4%	-	-	8%	1%	-	-
J8	Ferry Street/ Shantung Street	>50%	47%	-	-	>50%	44%	-	-
J9	Reclamation Street/ Shantung Street	>50%	>50%	-	-	>50%	>50%	-	-
J10	Shanghai Street/ Shantung Street	>50%	>50%	-	-	>50%	>50%	-	-
J11	Reclamation Street/ Dundas Street	>50%	>50%	-	-	>50%	>50%	-	-
J12	Shanghai Street/ Dundas Street	45%	>50%	-	-	44%	>50%	-	-

*Remarks: (1) Refer to **Figure 2.1**.*
(2) Junctions with no results are not affected by MKFS project.

5.2.3. As shown in **Tables 5.2**, most of assessed key junctions would be operating satisfactorily (i.e. RC ≥ 15%) in design year 2033 even with the Scheme. However, Junction of Argyle Street / Tong Mi Road (J3), Argyle Street / Nathan Road (J5) and Argyle Street Sai Yee Street (J7) would operate close to capacity (i.e. RC ~ 0) during both AM and PM peak hours even without the Scheme.

5.2.4. Besides, Junction of Tong Mi Road/ Mong Kok Road (J1) which would be operated below the marginal capacity (i.e. 15% > RC > 0%) during AM peak hour even under Reference Scenario (without the Scheme) as shown in **Table 5.2**.

5.2.5. Owing to the minimal development trip generations of the Scheme, the RCs to the marginal Junctions J1, J3 and J5 are not affected in the design year and thus the impact is considered insignificant. Therefore, no junction improvement work is proposed for these 3 junctions under the Scheme.

5.2.6. As some of the development traffic, even the traffic is minimal, will bypass Junction J7 which may affect its operation performance of this junction. Minor traffic enhancement measure is therefore proposed in order to improve the operational performance of Junction J7. The junction improvement scheme is to provide additional left-turn at northbound of Sai Yee Street to share with the straight-ahead traffic movement and thus increase the capacity for the left-turn traffic movement. Minor modification of the radius of kerb is required to provide sufficient space for the turning movements of two 12.0m coaches. The assessment results of the enhanced Junction J7 are summarised in **Table 5.3** and the indicative arrangement as shown in **Figure 5.1**.

Table 5.3 Junction Performance of J7 with Enhancement Measure

Index (1)	Location	Reserve Capacity (RC)							
		Reference				Design			
		without MKFB		with MKFB (2)		without MKFB		with MKFB (2)	
		AM	PM	AM	PM	AM	PM	AM	PM
J7	Argyle Street / Sai Yee Street	16%	17%	-	-	*12%*	*14%*	-	-

*Remarks: (1) Refer to **Figure 2.1**.*
(2) Junction operational performance is not affected by MKFS project.

5.2.7. The assessment results indicate that the operational performance of Junction J7 during the peak hours would be improved from the original RC 1% to RC 12% in the design year with the Scheme.

6. Car Lift Assessment

6.1. Background

6.1.1. Due to the site constraint, two car lifts are proposed instead of a car ramp to/ from the basement car park and L/UL area of the Scheme.

6.1.2. In order to avoid any tailing back situation occurred on the public road at any time, sufficient queuing spaces would be provided on ground floor (G/F) within the subject site for the car park.

6.1.3. The L/UL area and car park for the Scheme are located on Basement Level 1 (B1) and Basement Level 2 (B2) respectively and providing 5 nos. of L/UL bays and 33 nos. of private car parking spaces.

6.1.4. Based on the latest design of the Scheme, details of the transport facilities on the G/F to B2 are summarised in **Table 6.1**.

Table 6.1 Design Detail of the Basement Levels

Floor	Level	Transport Facilities Provision	
Ground Floor (G/F)	+4.0 mPD	2 nos. of L/UL bay	
Basement Level 1 (B1)	-1.0 mPD	5 nos. of L/UL bay	
Basement Level 2 (B2)	-5.0 mPD	Car Parking Space	33 nos.
		Motorcycle Parking Space	5 nos.

Note: Subject to change at detailed design stage

6.1.5. Two car lifts are proposed to provide vertical connections between G/F, B1 and B2 for the proposed Development Scheme. Car Lift No. 1 is only serving private car and motorcycle and provide access between G/F and B2 only whilst Car Lift No. 2 could also serve LGV and access all of the three levels.

6.2. Queueing Analysis

6.2.1. The analysis is applied the Poisson distribution for arrival pattern and multi-servers queuing (M/M/N) theory to determine the queues induced due to the vehicles waiting for the proposed car lifts.

6.2.2. The probability that n vehicles are in the car lift system is given by:

For $e = \frac{\lambda}{\mu}$,

$$P(n) = \frac{1}{\sum_{n=0}^{N-1} \frac{e^n}{n!} + \frac{e^N}{N!\left(1 - \frac{e}{N}\right)}} \qquad \text{for } n = 0$$

$$P(n) = \frac{e^n}{n!} P(0) \qquad \text{for } 0 < n \le N$$

$$P(n) = \frac{e^{n}}{N^{n-N}N!}P(0) \qquad \text{for } n > N$$

where: $P(n)$ = Probability of n vehicles in the system;
λ = Peak 15-minutes arrival rate;
μ = Servicing time;
n = Number of vehicles in the system; and,
N = Number of car lift.

6.2.3. In order to produce a conservative assessment result, it is assumed that all the transport facilities on B1 and B2 levels will be fully occupied within an hour. Therefore, the peak 15-minute arrival rates (λ) for the car park should therefore be derived as follows:

λ = Overall No. of transport facilities on B1 & B2 / 4 * 1.2 (peak of peak factor)
= (33 + 5 + 5) / 4 * 1.2
= 12.9 veh/15-min

6.2.4. With reference to the specification of a traction type car lift, it is assumed that the speed of the car lift is about 0.5 m/s. The travelling time of the car lift between different levels are tabulated as **Table 6.2**.

Table 6.2 Car Lift Travelling Time

	Travelling Distance (m)	Travelling Time (sec)
From G/F to B2	9.0	18.0

6.2.5. In order to consider the worst-case scenario, it is assumed that when an incoming vehicle arrived and called the car lifts, the car lifts has just left G/F and going to B2 due to the use of another incoming vehicles which is going to park on B2. After the vehicles has just left the car lifts, the car lifts were called by the outgoing vehicles on B2. As such, the outgoing vehicles would enter the car lifts for leaving the car park. The incoming vehicle would only be able to use the car lifts when the car lifts arrived at G/F and the outgoing vehicles left the car lifts.

6.2.6. Assuming that the machine operation time for the car lift door opening or closing is 5 sec, the time required for a vehicle entering or leaving the car lift in the forward gear is 5 sec with a safety buffer of 2 sec, the anticipated round-trip time for the proposed car lift is summarized in **Table 6.3**.

Table 6.3 Round-Trip Time of Car Lift

Activity	Required Time (sec)
Travelling Time from G/F to B2	18.0
Door Opening Time at B2	5.0
Car Exiting Lift	10.0
Car Entering Lift	10.0
Safety Buffer	2.0
Door Closing Time at B2	5.0
Travelling Time from B2 to G/F	18.0
Door Opening Time at G/F	5.0

Activity	Required Time (sec)
Car Exiting Lift	10.0
Safety Buffer	2.0
Car Entering Lift	10.0
Door Closing Time at G/F	5.0
Total	**100.0**

6.2.7. As shown in **Table 6.3**, the overall round-trip time is 100.0 sec. Therefore, the average 15-minute servicing time (μ) is:

μ = 60 / Overall round-trip time
= 60 / 100.0
= 0.60 veh/min
= 9.00 veh/15-min

6.2.8. With the application of the peak 15-minute arrival rate (λ) and the average 15-minute servicing rate (μ) to the queuing theory, the number of vehicles in the system and the required waiting spaces can be determined. **Table 6.4** below summarized the results.

Table 6.4 Car Lift Queuing Analysis Results

No. of Vehicles in the System, *n* (nos.)	Probability of Having *n* Vehicle in the System, *P(n)*	Required Waiting Space (nos.)
0	0.165	-
1	0.402	0
2	0.170	0
3	15.553	1

6.2.9. As suggested in **Table 6.4**, there will be 3 vehicles (1 vehicle at each car lift and 1 is waiting for the lifts) in the car lift system of the Scheme at a 95% level of confidence following the M/M/N queuing theory. Therefore, it is anticipated that 1 no. of waiting space is sufficient for the proposed car lifts based on the current layout of the Scheme.

6.2.10. Nevertheless, waiting spaces are also provided on each basement level near the car lift in order to avoid blockage of internal access. In addition, to minimize the potential queuing of vehicles at Shantung Street, physical access control, such as drop bar will be avoided as far as practicable. Appropriate access control facilities will be designed within site at the detailed design/GBP submission stage for TD's agreement, subject to DSP approval by the CE in C.

6.3. Car Lift Breaks Down

6.3.1. The potential impact on the surrounding during the incidental malfunctioning or requires maintenance of the proposed car lift have been assessed.

6.3.2. As two car lifts are proposed in the current design of the Scheme, the operation of car park will not be completely stopped in case of one of the car lifts is broken down.

6.3.3. Moreover, it is suggested the shortlisted car lift manufacturers should commit a set of requirements to shorten the time period for repairing in order to minimise the traffic disturbance in the vicinity.

6.3.4. It is therefore considered that the car lifts arrangement would not generate any adverse traffic impact in the future operation of the proposed development and is acceptable from traffic engineering point of view.

7. Summary and Conclusion

7.1. Summary

7.1.1. A Traffic Impact Assessment (TIA) Study was carried out to investigate the traffic impact induced by the Scheme in Mong Kok.

Internal Parking and Serving Provision

7.1.2. The proposed Development Scheme will meet the high-end of the HKPSG requirement for the proposed residential and retail development, including 33 nos. of private car parking spaces, 5 nos. of parking space for visitor, 5 nos. motorcycle parking spaces and 5 nos. of LGV L/UL bays would be provided at the ancillary basement car park. Due to site constraints/technical problem, L/UL bays for LGV instead of HGV are proposed in the Scheme. Besides, 2 car lifts and a 9.0m diameter turntable are proposed at G/F to facilitate vehicle manoeuvring and entering to the basement car park.

7.1.3. To facilitate the future operation needs of the GIC provision, it is also proposed to provide 1 no. of car parking space and 2 nos. of loading/ unloading bays. The actual provision for GIC uses will be subject to liaison with the relevant government departments and services providers upon the Development Scheme Plan (DSP) approval.

7.1.4. Swept path analysis is conducted based on the notional layout. The notional layout for the car parking facilities is technically feasible from traffic engineering point of view.

7.1.5. The above car park provision will be provided on G/F and the 2-levels basement in view of site limit as car lift provision is the feasible option for the subject site.

7.1.6. Traffic management and safety measures within the site upon occupation of the development, such as installation of convex mirror and flashing light, assign management staff at the run-in/out, etc., are proposed, if necessary, to enhance smooth and safe vehicular and pedestrian circulation at the run in/out.

7.1.7. There will be no provision of public car park within the Scheme in view of the tight site configuration and limited ground floor space to accommodate additional car-lifts and separate run-in/out for the public car park.

Traffic Calming Measure

7.1.8. Traffic calming measures including relocation of existing loading/unloading bay, change of road surface colour, additional pedestrian railing and widening of cautionary crossing point are proposed at Thistle Street to enhance the safety of pedestrian.

Pedestrian Walking Environment

7.1.9. Building setback on Nelson Street and Thistle Street and re-configuration of the entrance of Thistle Street Rest Garden with better landscaped side entrances from different directions have been proposed in the Scheme to provide wider pedestrian walkway and thus enhance the pedestrian walking environment and encourage the use of Thistle Street Rest Garden.

Provision of Car Lift

7.1.10. Car lifts are proposed instead of car ramp to/ from the basement levels due to insufficient width for accommodating the ramp; and limited space on the ground floor to provide ramp after taken into account of the need to allow space for the residential tower core and other internal parking facilities required on ground level.

7.1.11. In order to avoid any tailing back situation occurred on the public road at any time, a car lift queuing analysis is assessed. Based on the Poisson distribution for arrival pattern and multi-servers queuing (M/M/N) theory, it is expected that there will be 1 no. of vehicle queuing for the car lifts during the peak attraction period. Therefore, the proposed 1 no. of waiting space on the G/F is considered sufficient for the operation of car lifts in current layout.

7.1.12. Besides, it is expected that the car lifts system could maintain the operation of car park in case of emergency such as one of the car lifts broken down. The car park can still operate in case of one of the car lifts is broken down.

7.1.13. It is suggested the shortlisted of car lift manufacturers should commit a set of requirements to shorten the time period for repairing in order to minimise the traffic disturbance in the vicinity.

Existing Traffic Condition

7.1.14. It is observed that the existing loading/unloading activities and illegal parking along the local streets in Mong Kok including Shantung Street, Reclamation Street, Shanghai Street and Dundas Street would induce minor impact to the development traffic as through traffic circulation can be maintained during the peak hour periods.

Traffic Impact Assessment

7.1.15. Pedestrians can access the subject site via the surrounding footpaths and pedestrian crossings to/ from nearby bus, GMB and PLB servicing points as well as to/ from MTR Mong Kok Station.

7.1.16. The key junctions within the study area were assessed with respect to traffic generation of the Scheme in design year 2033 (three years after completion), taking into account the traffic generation by the major planned/ approved developments in the vicinity of the subject site.

7.1.17. Based on the assessment results, it was found that most of concerned junctions would be operating satisfactorily (i.e. RC $\geq$ 15%) in design year 2033 even with the Scheme. However, Junction of Argyle Street / Tong Mi Road (J3), Argyle Street / Nathan Road (J5) and Argyle Street Sai Yee Street (J7) would operate close to capacity (i.e. RC ~ 0) during both AM and PM peak hours even without the Scheme.

7.1.18. Besides, Junction of Tong Mi Road/ Mong Kok Road (J1) which would be operated below the marginal capacity (i.e. 15% > RC > 0%) during AM peak hour even under Reference Scenario (without the Development Scheme).

7.1.19. Owing to the minimal development trip generations of the Scheme, the RCs to the marginal Junctions J1, J3 and J5 are not affected in the design year and thus the impact is considered insignificant.

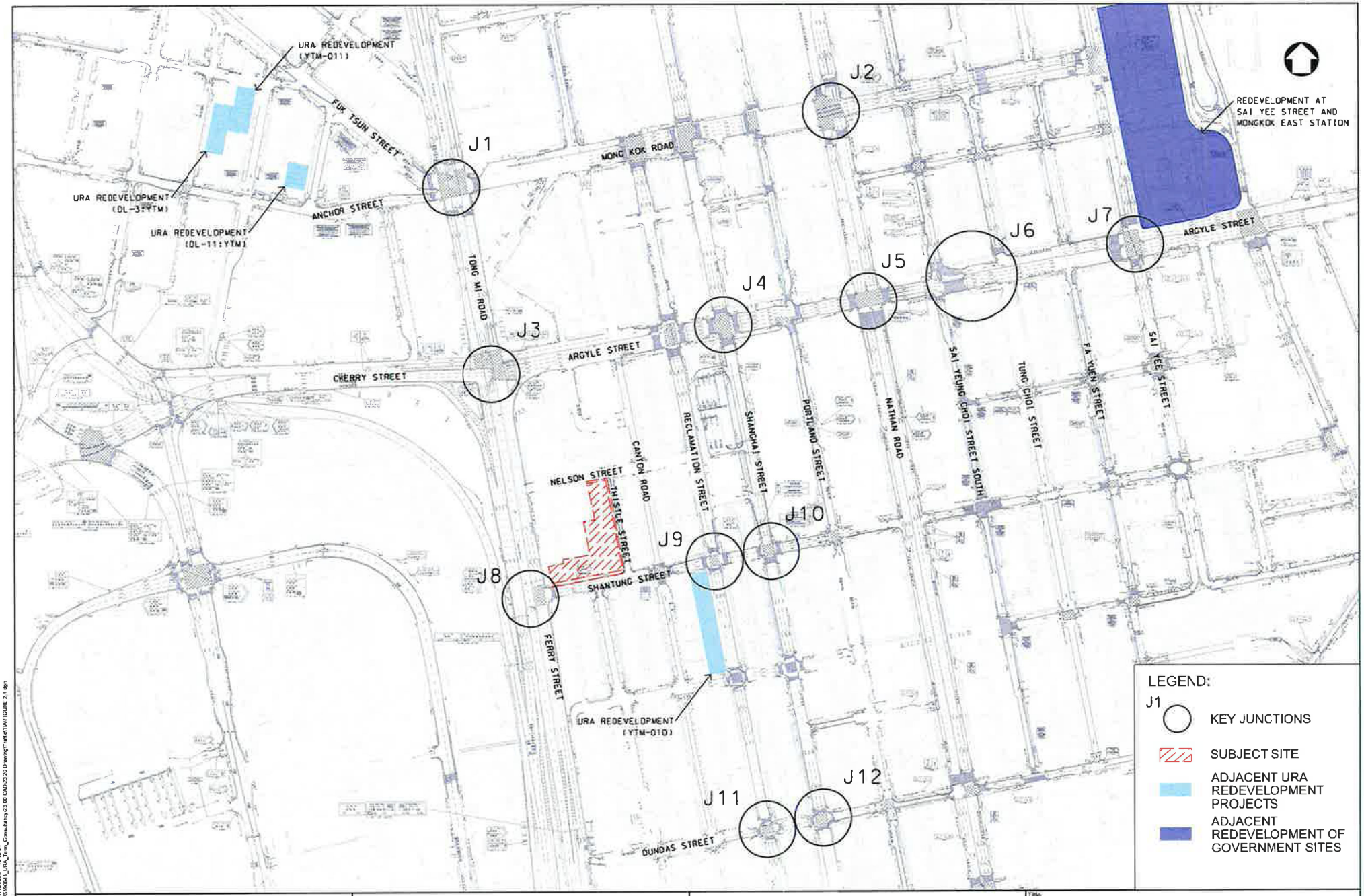
7.1.20. Traffic enhancement measure is proposed for the Junction J7 in order to improve the marginal operational performance. The assessment results indicate that the operational performance of Junction J7 would be improved significantly with the implementation of the proposed enhancement measure.

7.2. Conclusion

7.2.1. It is concluded that the Scheme would not induce adverse traffic impact on the surrounding road network and would enhance the pedestrian walking environment of the adjacent local streets.

7.2.2. The proposed traffic provision to the Scheme, with reference to the notional layout, is considered technically feasible and acceptable.

Figures



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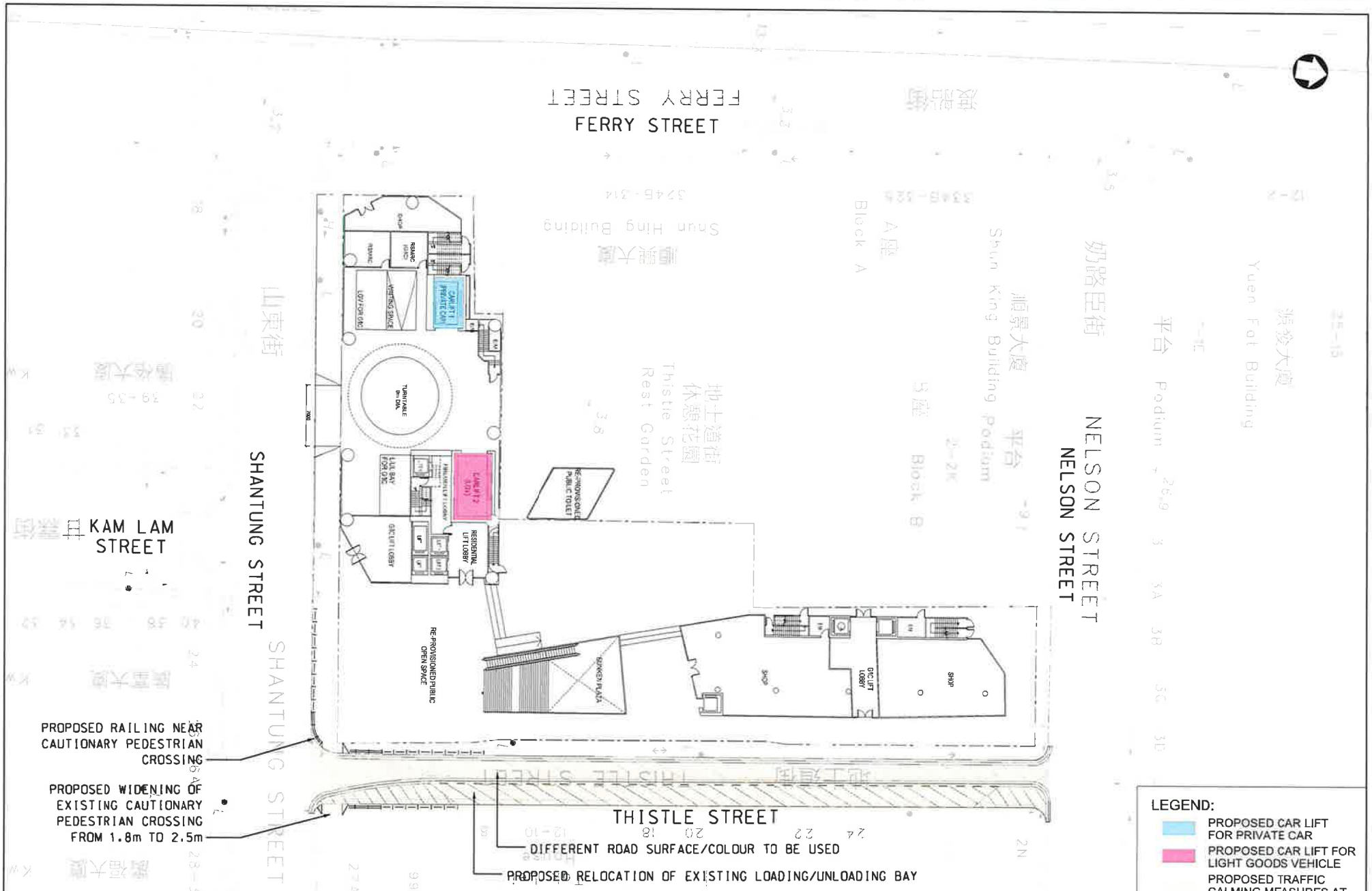
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LOCATION PLAN, KEY JUNCTIONS AND ADJACENT PLANNED DEVELOPMENTS

Scale at A3	Date	Figure No.
N.T.S.	Oct 2020	2.1



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PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LAYOUT OF NOTIONAL SCHEME - GROUND FLOOR

Scale at A3	Date	Figure No.
1 : 400	OCT 2020	2.2

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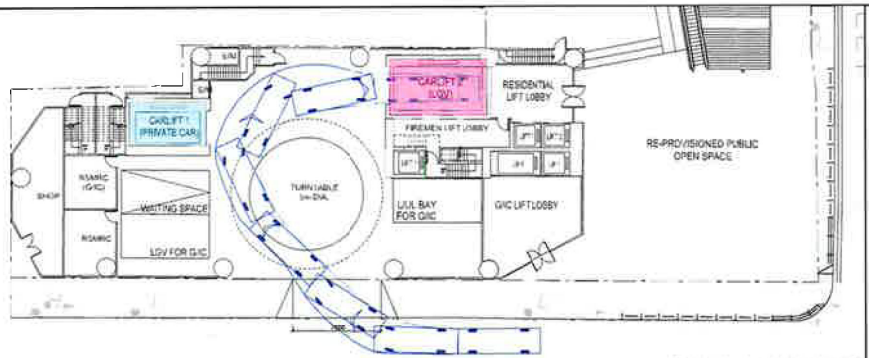
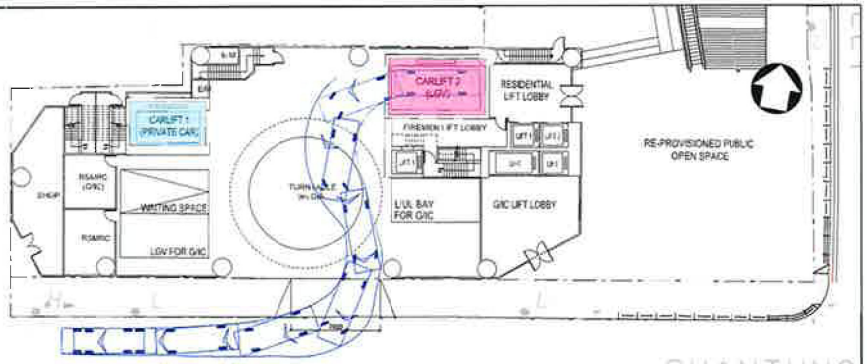
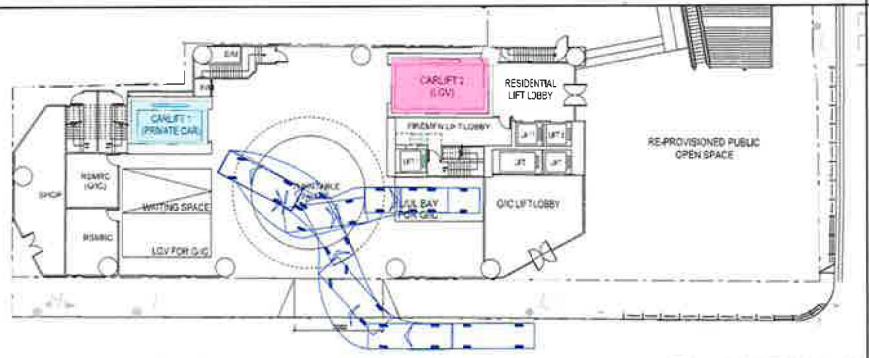


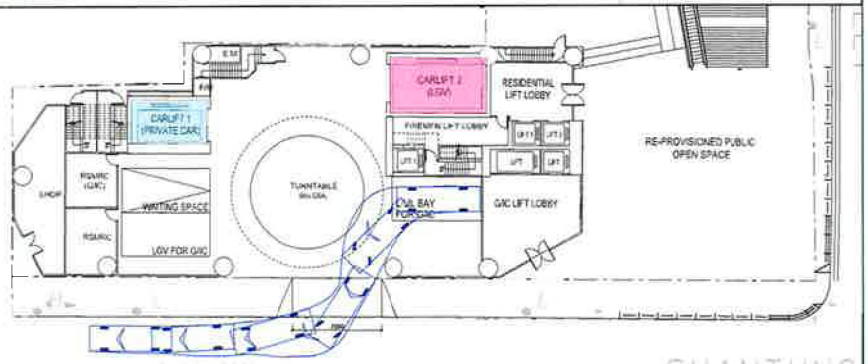
GROUND FLOOR (LGV CAR LIFT - IN)



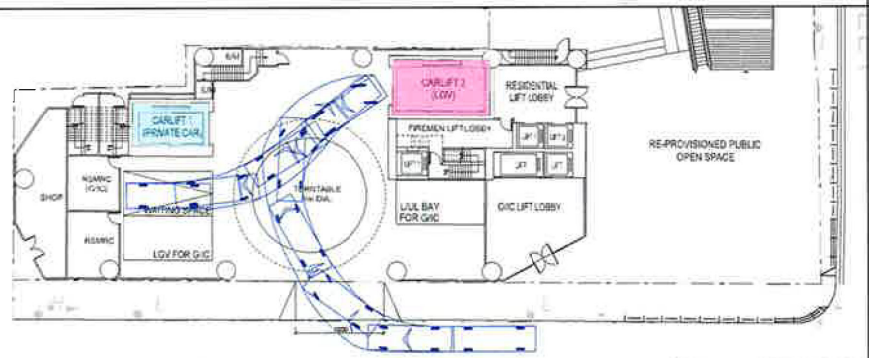
GROUND FLOOR (LGV CAR LIFT - OUT)



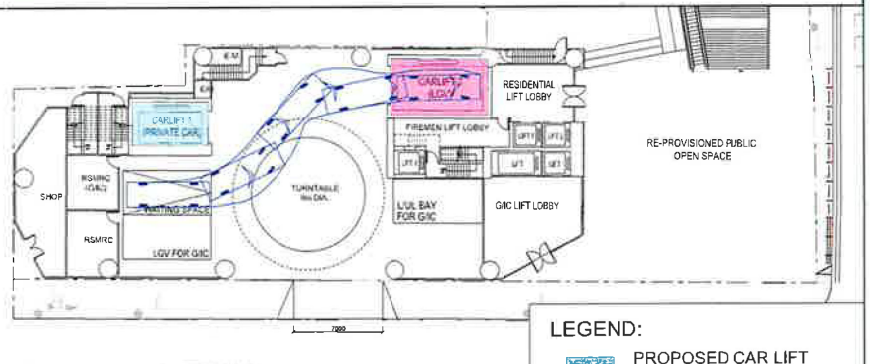
GROUND FLOOR (LGV L/UL BAY 1 - IN)



GROUND FLOOR (LGV L/UL BAY 1 - OUT)



GROUND FLOOR (LGV WAITING SPACE - IN)



GROUND FLOOR (LGV WAITING SPACE - OUT)

LEGEND:

- PROPOSED CAR LIFT FOR PRIVATE CAR
- PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LAYOUT OF NOTIONAL SCHEME - GROUND FLOOR (SWEPT PATH ANALYSIS)

Scale at A3	Date	Figure No.
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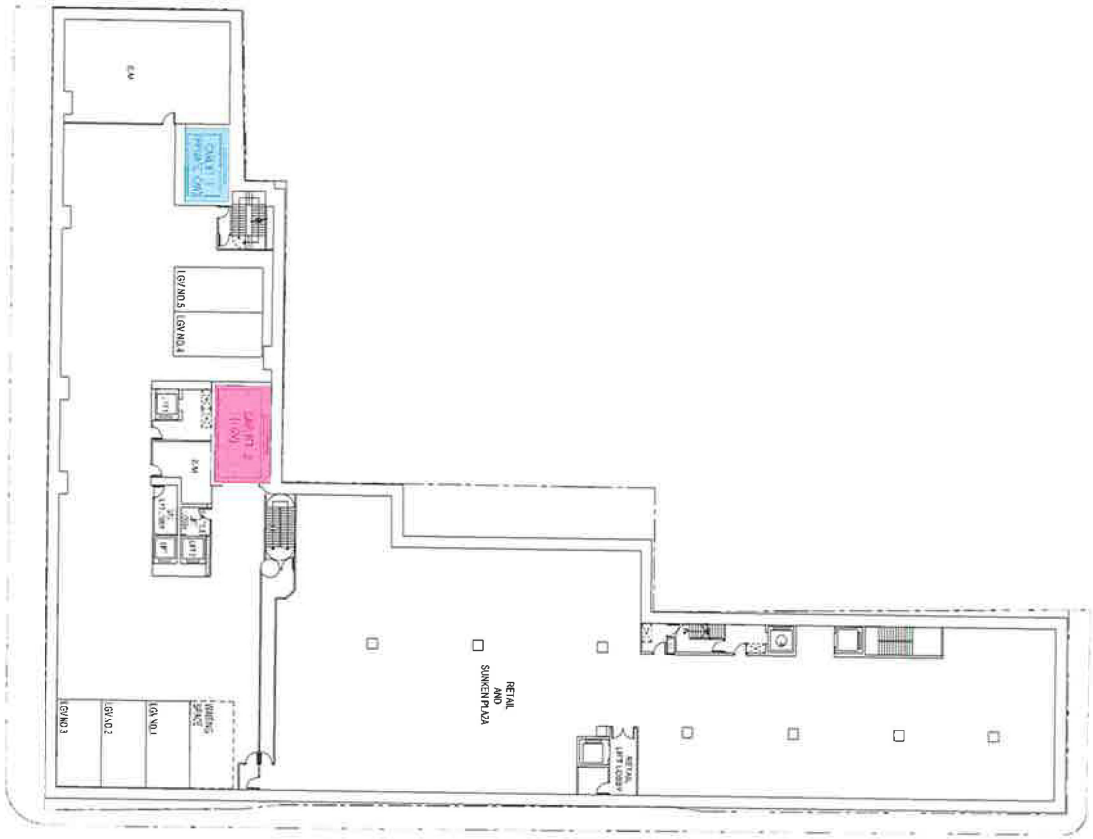

LEGEND:

- PROPOSED CAR LIFT FOR PRIVATE CAR
- PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
LAYOUT OF NOTIONAL SCHEME - BASEMENT LEVEL 1

Scale at A3	Date	Figure No.
1 : 400	OCT 2020	2.4

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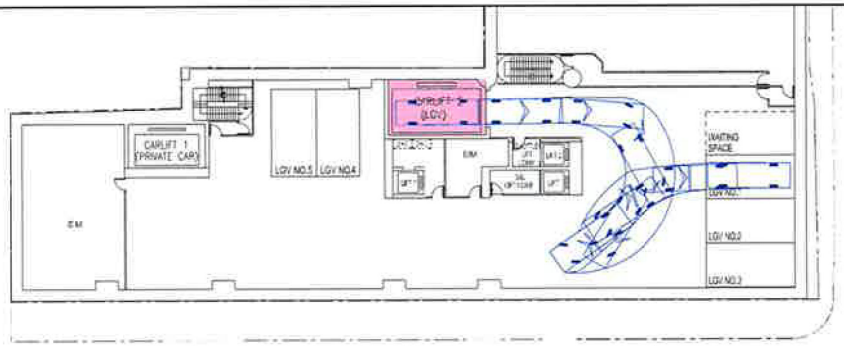
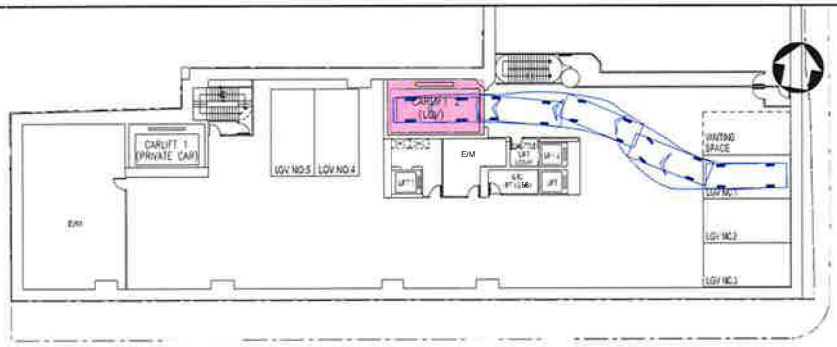
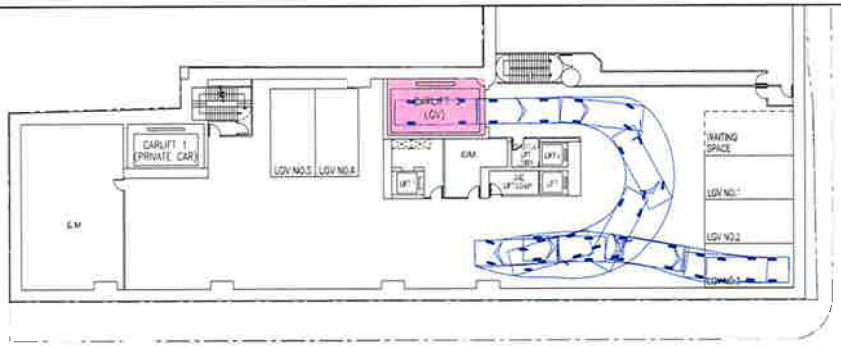


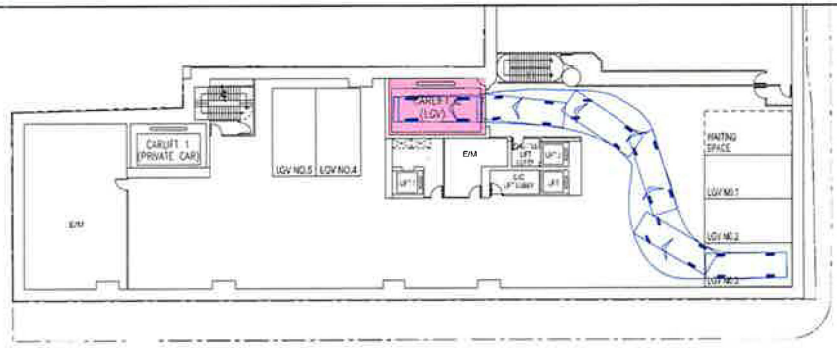
BASEMENT LEVEL 1 (LGV L/UL BAY 1 - IN)



BASEMENT LEVEL 1 (LGV L/UL BAY 1 - OUT)



BASEMENT LEVEL 1 (LGV L/UL BAY 3 - IN)



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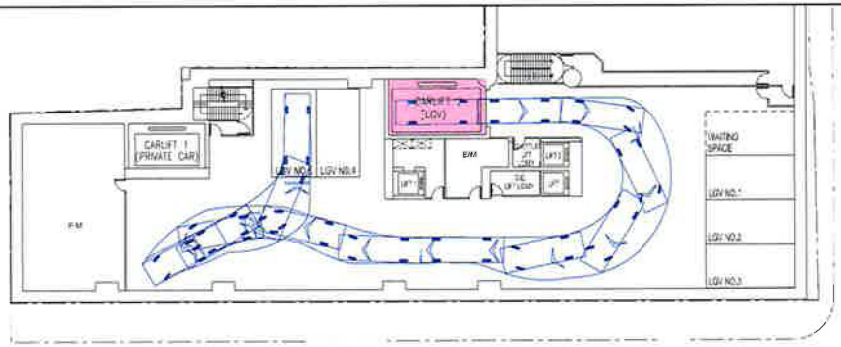
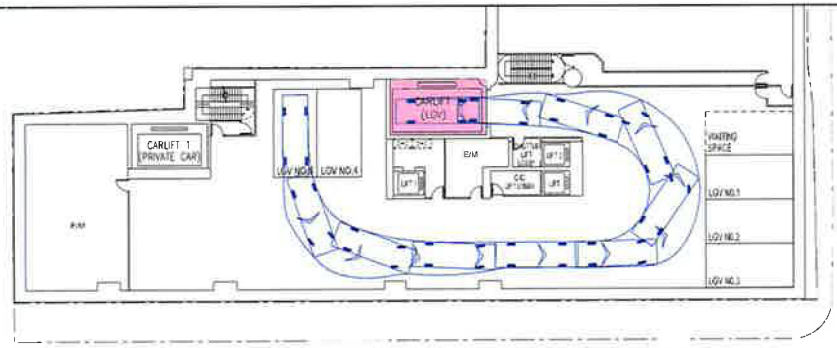


BASEMENT LEVEL 1 (LGV L/UL BAY 5 - IN)



BASEMENT LEVEL 1 (LGV L/UL BAY 5 - OUT)

LEGEND:

PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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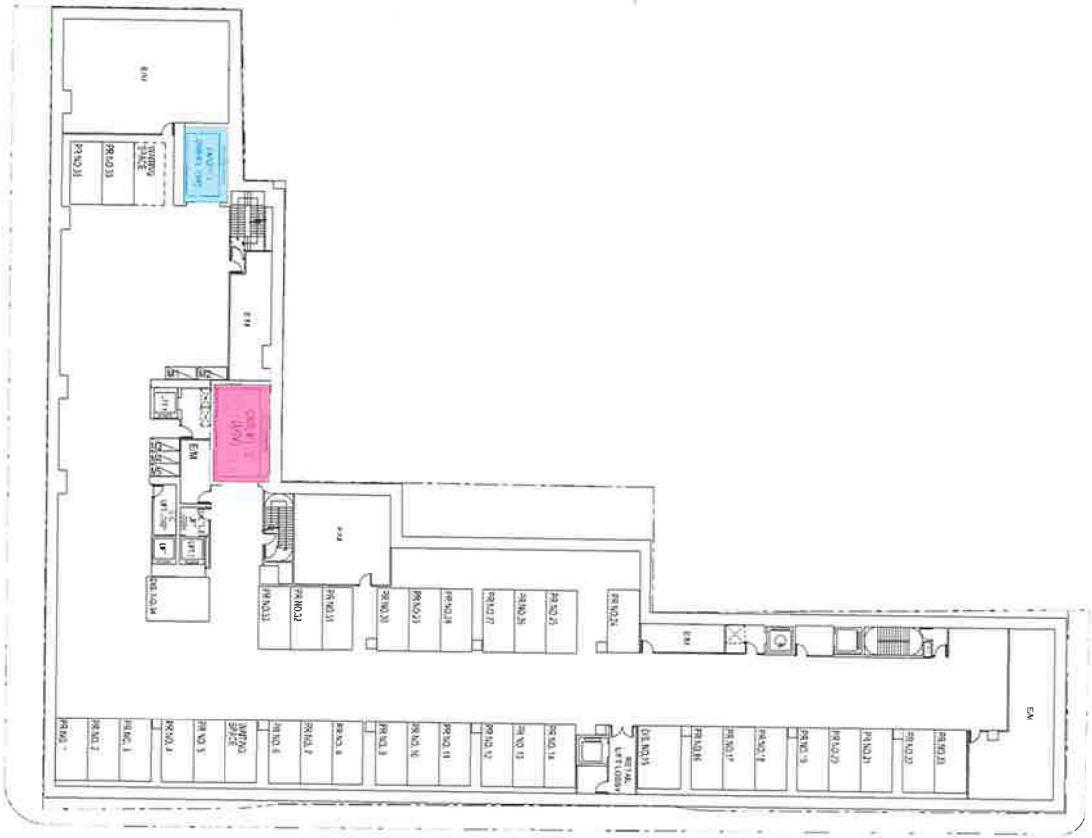
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LAYOUT OF NOTIONAL SCHEME - BASEMENT LEVEL 1 (SWEPT PATH ANALYSIS)

Scale at A3	Date	Figure No.
1:400	OCT 2020	2.5



LEGEND:

- PROPOSED CAR LIFT FOR PRIVATE CAR
- PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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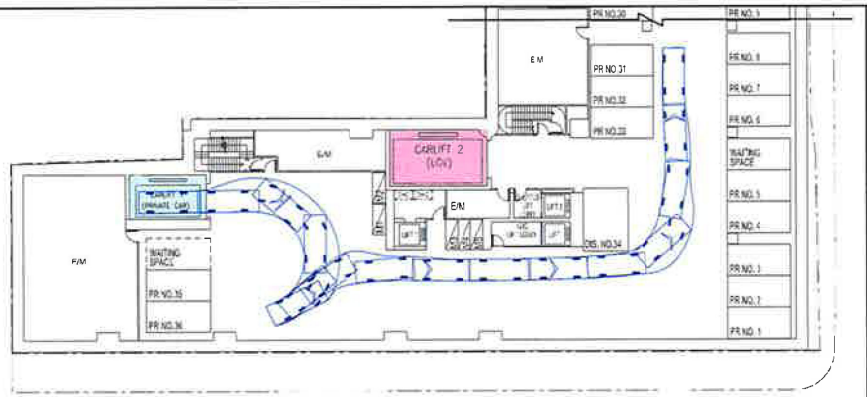
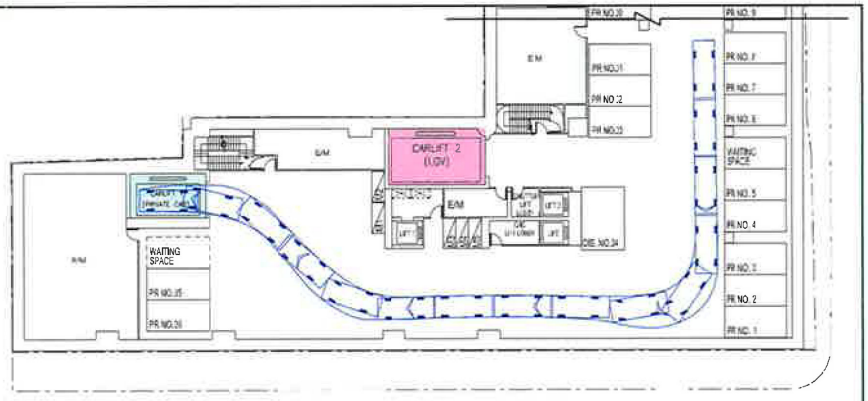
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LAYOUT OF NOTIONAL SCHEME - BASEMENT LEVEL 2

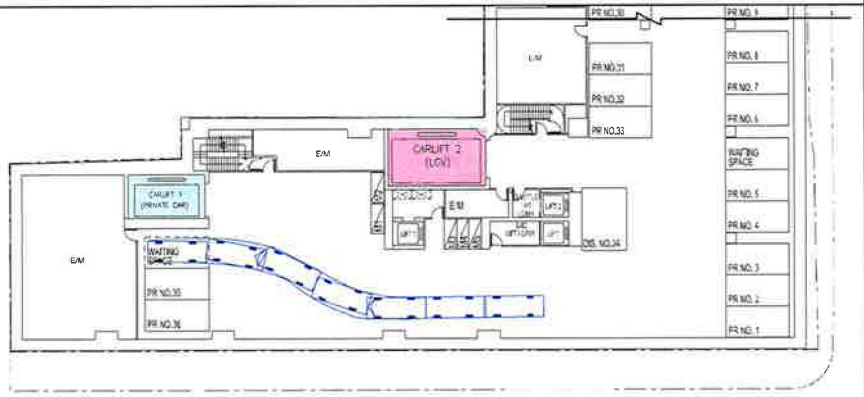
Scale at A3	Date	Figure No.
1 : 400	OCT 2020	2.6



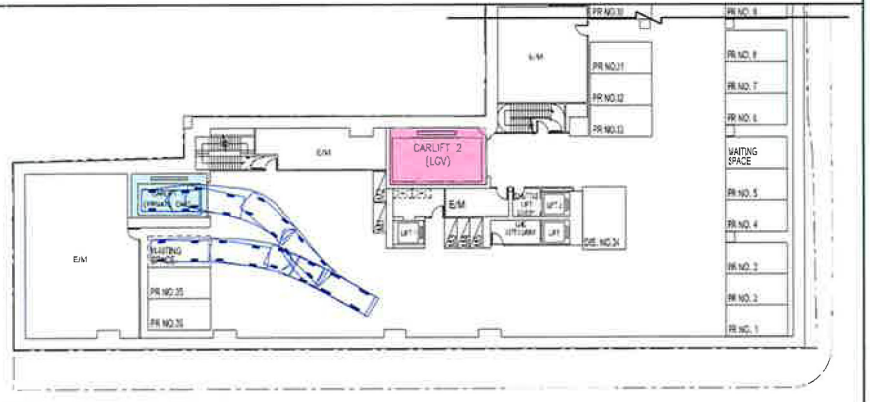
BASEMENT LEVEL 2 (PV ACCESS - IN)



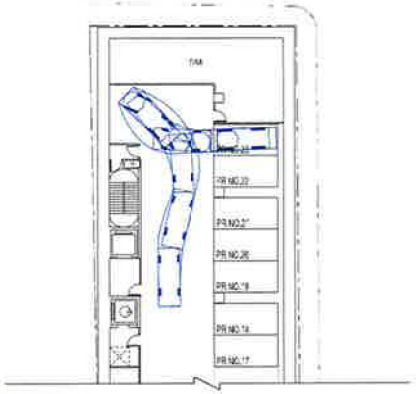
BASEMENT LEVEL 2 (PV ACCESS - OUT)



BASEMENT LEVEL 2 (PV WAITING SPACE - IN)



BASEMENT LEVEL 2 (PV WAITING SPACE - OUT)



BASEMENT LEVEL 2 (PV PARKING - IN)

LEGEND:

- PROPOSED CAR LIFT FOR PRIVATE CAR
- PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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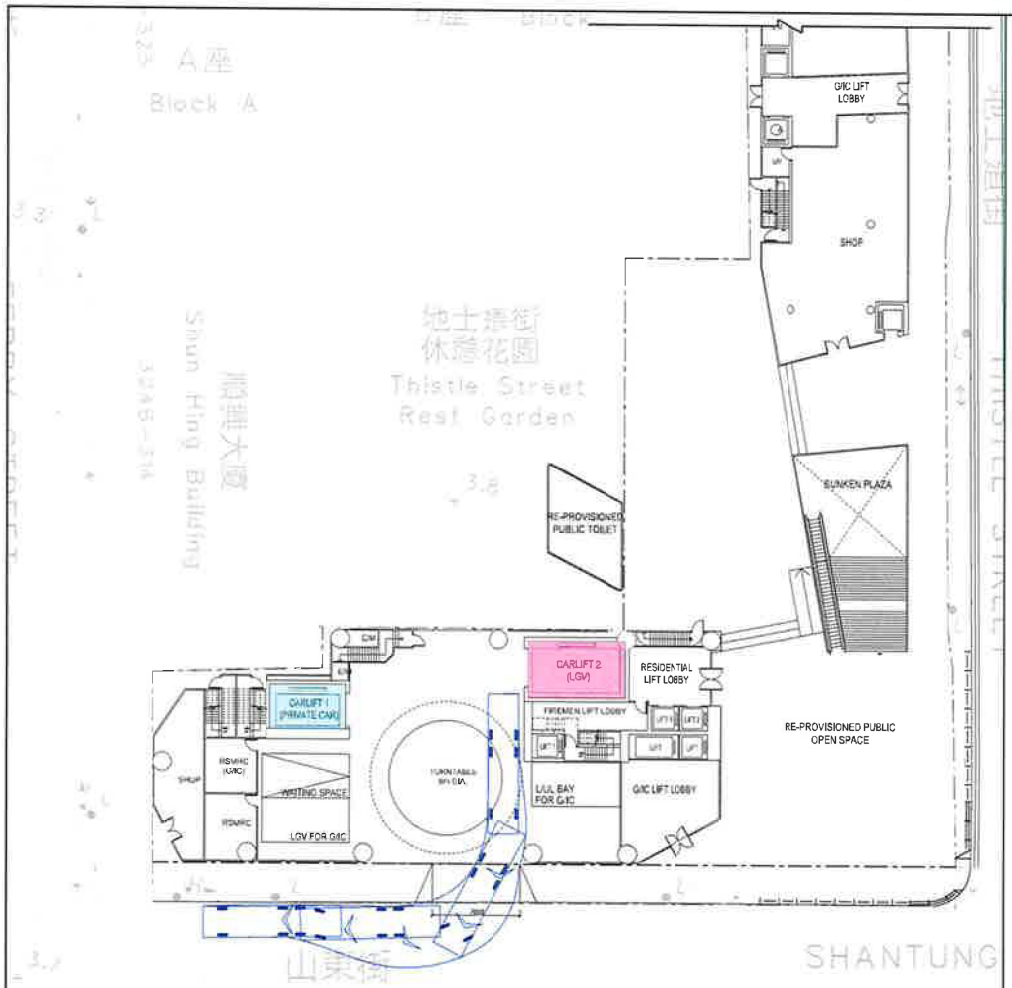
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

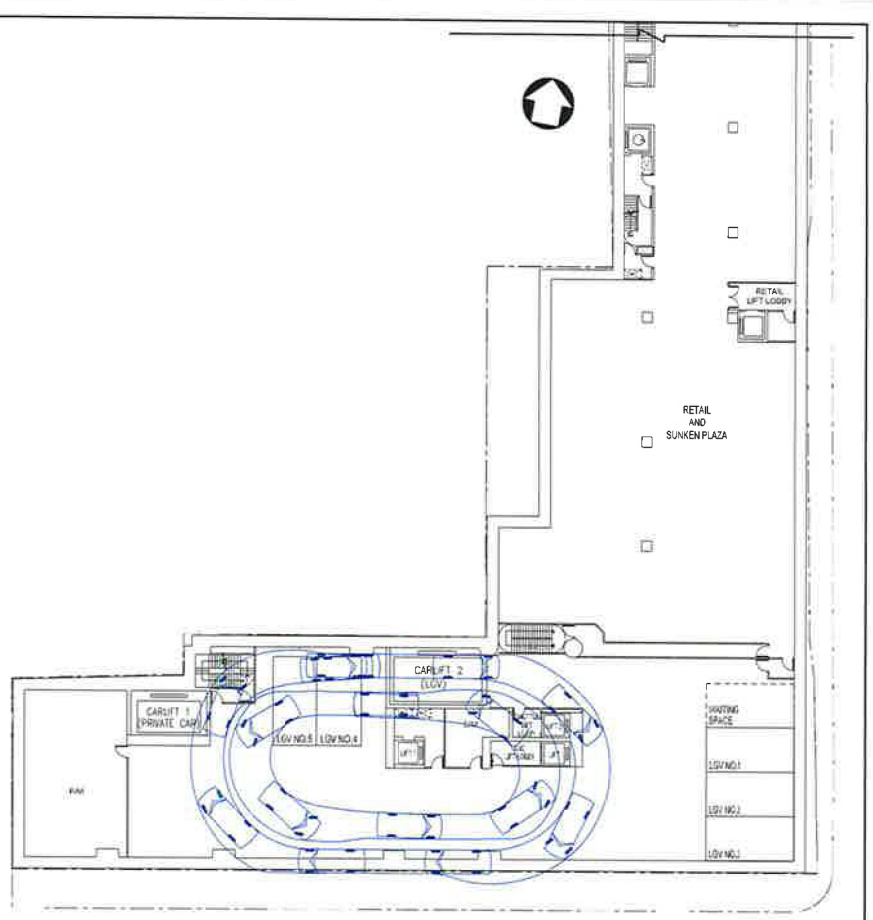
Title: LAYOUT OF NOTIONAL SCHEME - BASEMENT LEVEL 2 (SWEPT PATH ANALYSIS)

Scale at A3	Date	Figure No.
1:400	OCT 2020	2.7

PRINTED BY LCK0848 07/10/2020 10:32:28
FILENAME P:\Projects\15084_LJKL_Kwm_Consultancy\2306 CAD\2310 Drawings\Traffic\TIA\FIGURE 2.7 SP_R1.dgn
MODEL NAME Default



GROUND FLOOR (HGV - OUT)



BASEMENT LEVEL 1 (PV 2-WAY ACCESS)

LEGEND:

- PROPOSED CAR LIFT FOR PRIVATE CAR
- PROPOSED CAR LIFT FOR LIGHT GOODS VEHICLE

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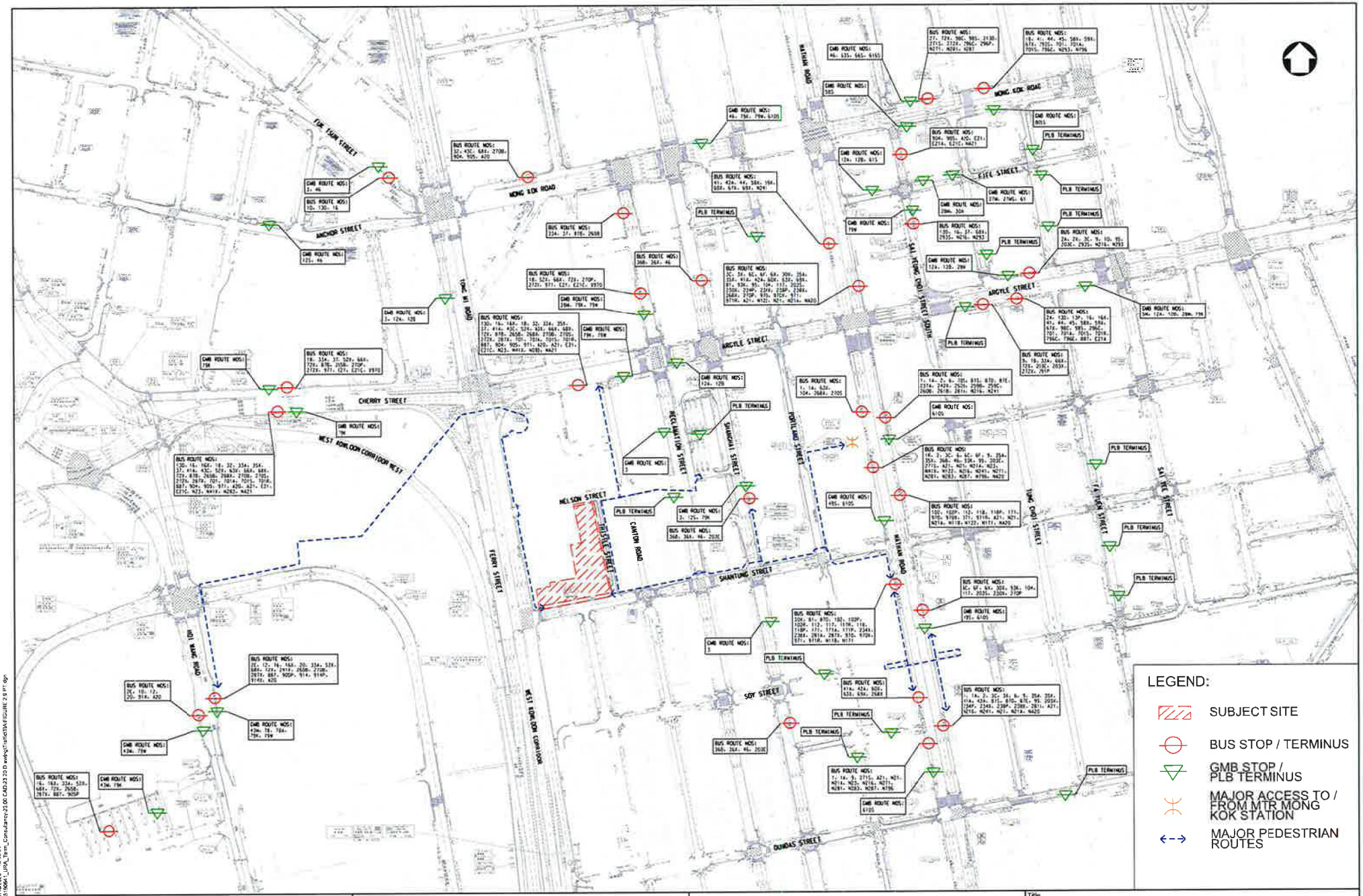
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: LAYOUT OF NOTIONAL SCHEME (JUSTIFICATION FOR HGV ACCESS AND RAMP SYSTEM)

Scale at A3	Date	Figure No.
1:400	OCT 2020	2.8



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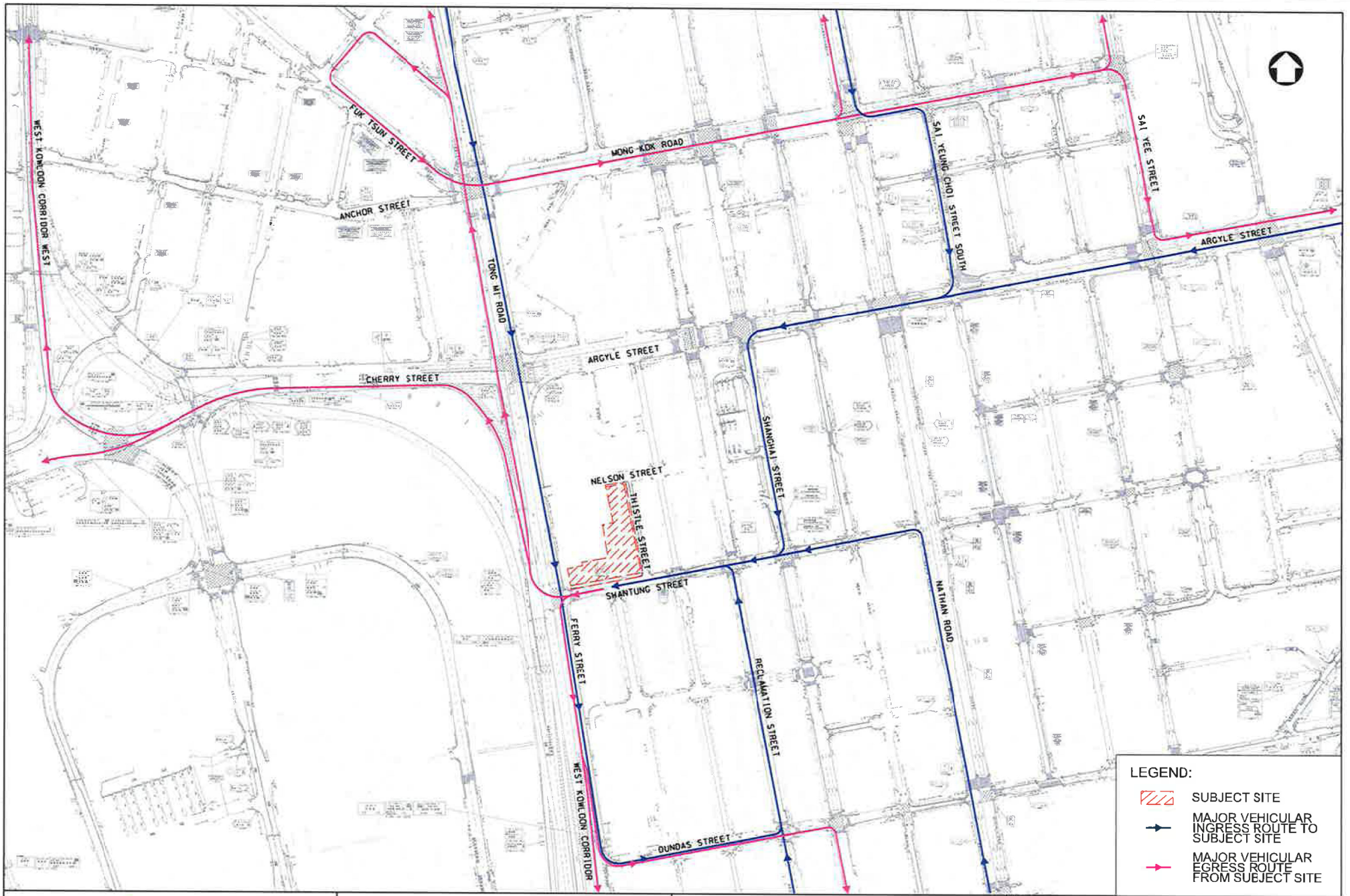
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title

PEDESTRIAN ACCESS AND
ADJACENT PUBLIC TRANSPORT NODES

Scale at A3	Date	Figure No.
N.T.S.	OCT 2020	2.9



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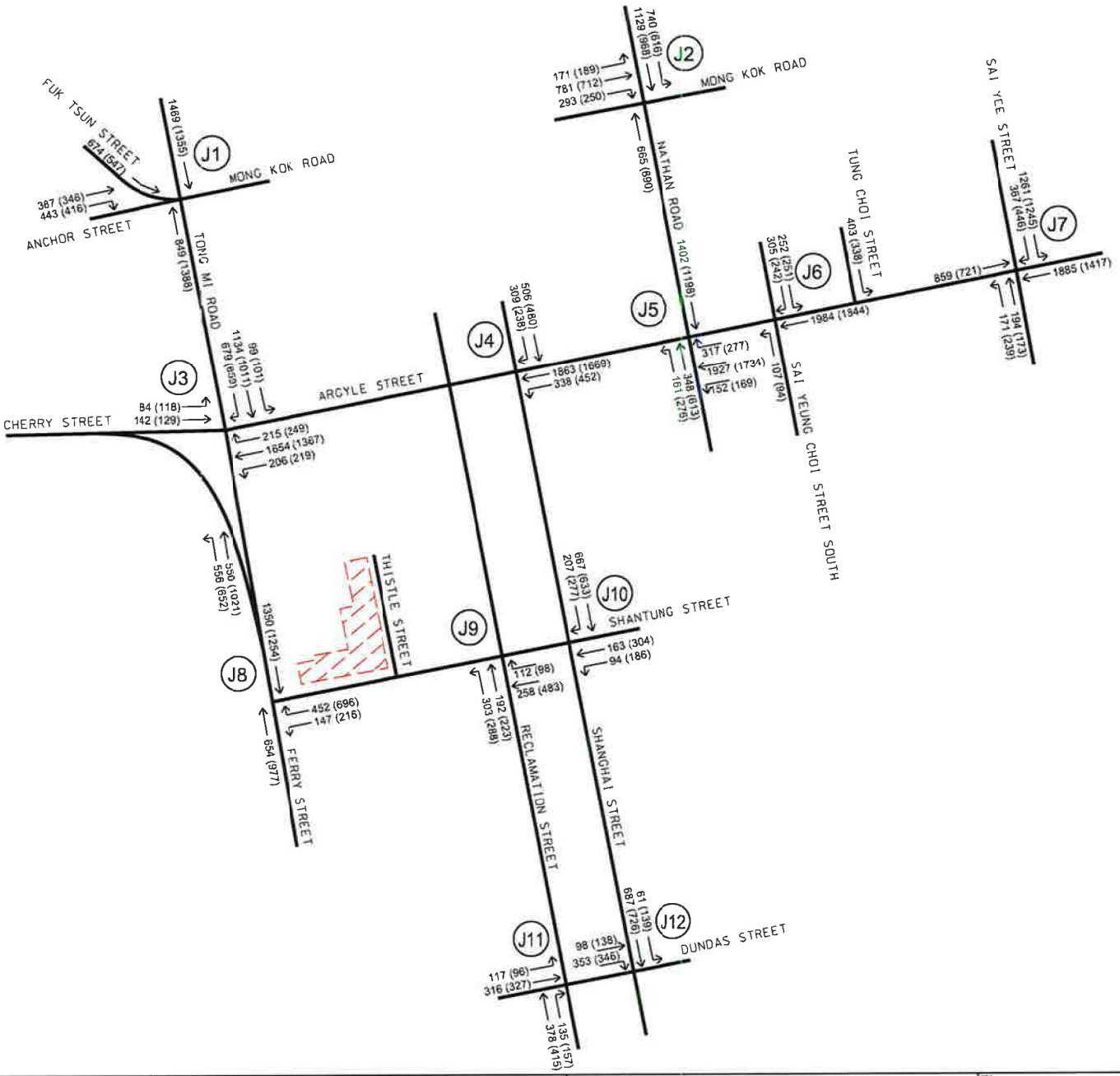
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: MAJOR VEHICULAR ACCESS ROUTE

Scale at A3	Date	Figure No.
N.T.S.	Oct 2020	3.1



LEGEND:

- J1 — JUNCTION INDEX
- 100(100) — AM(PM) PEAK VEHICULAR TRAFFIC FLOW (PCU/HR)
- SUBJECT SITE

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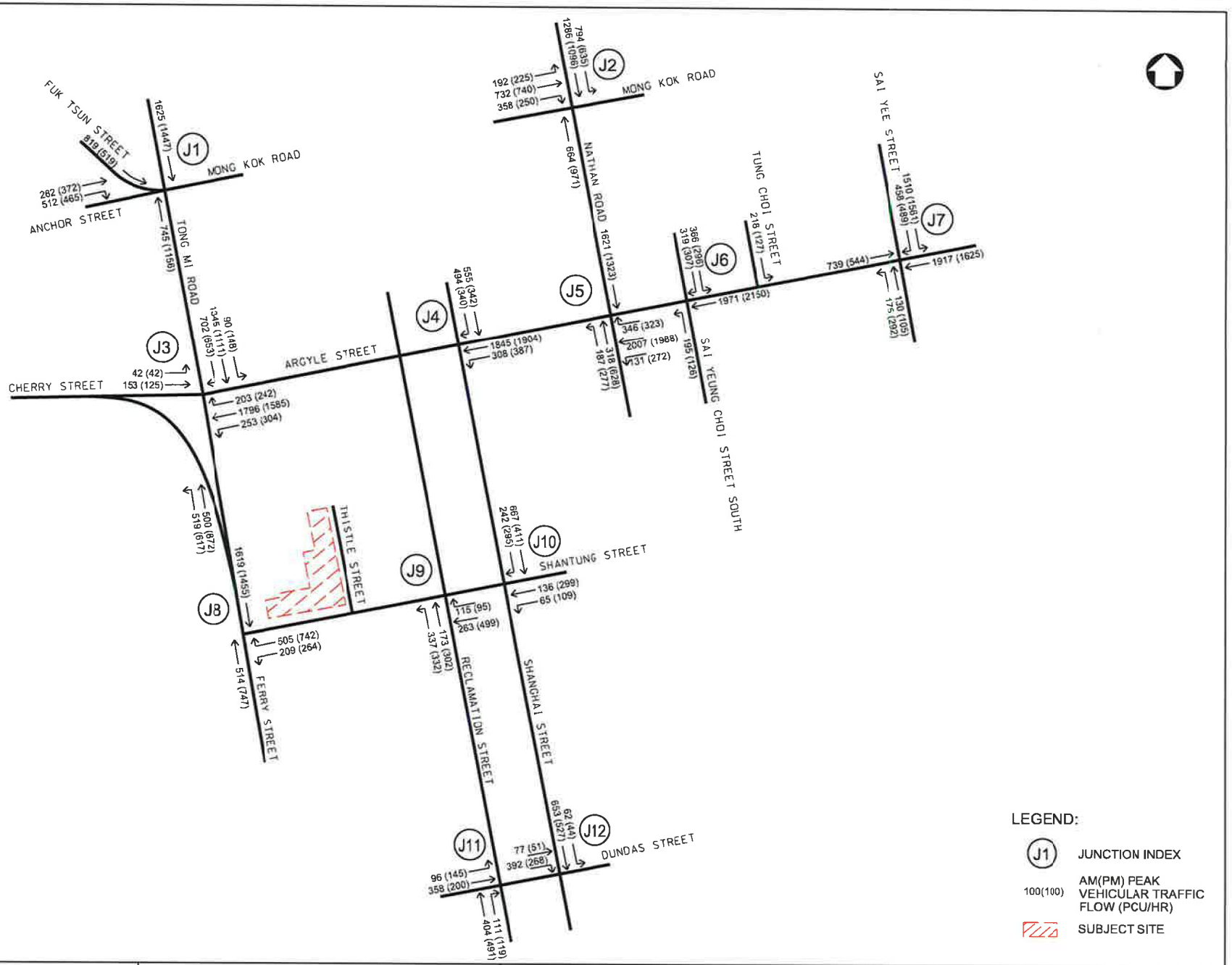
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: YEAR 2019 OBSERVED VEHICULAR TRAFFIC FLOW DIAGRAM

Scale at A3	Date	Figure No.
N.T.S.	OCT 2020	4.1



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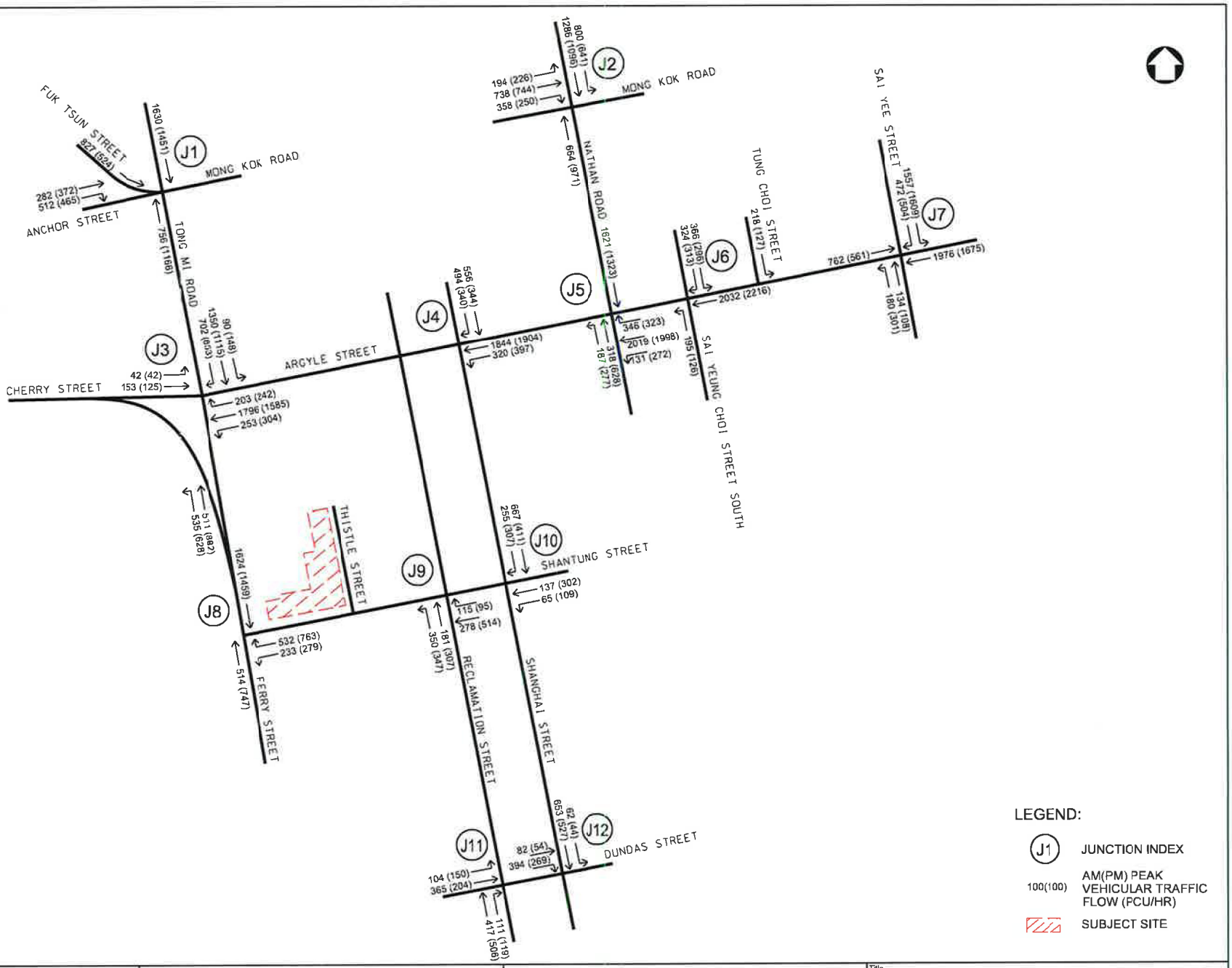
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
YEAR 2033 REFERENCE VEHICULAR TRAFFIC FLOW DIAGRAM

Scale at A3	Date	Figure No.
N.T.S.	OCT 2020	4.2



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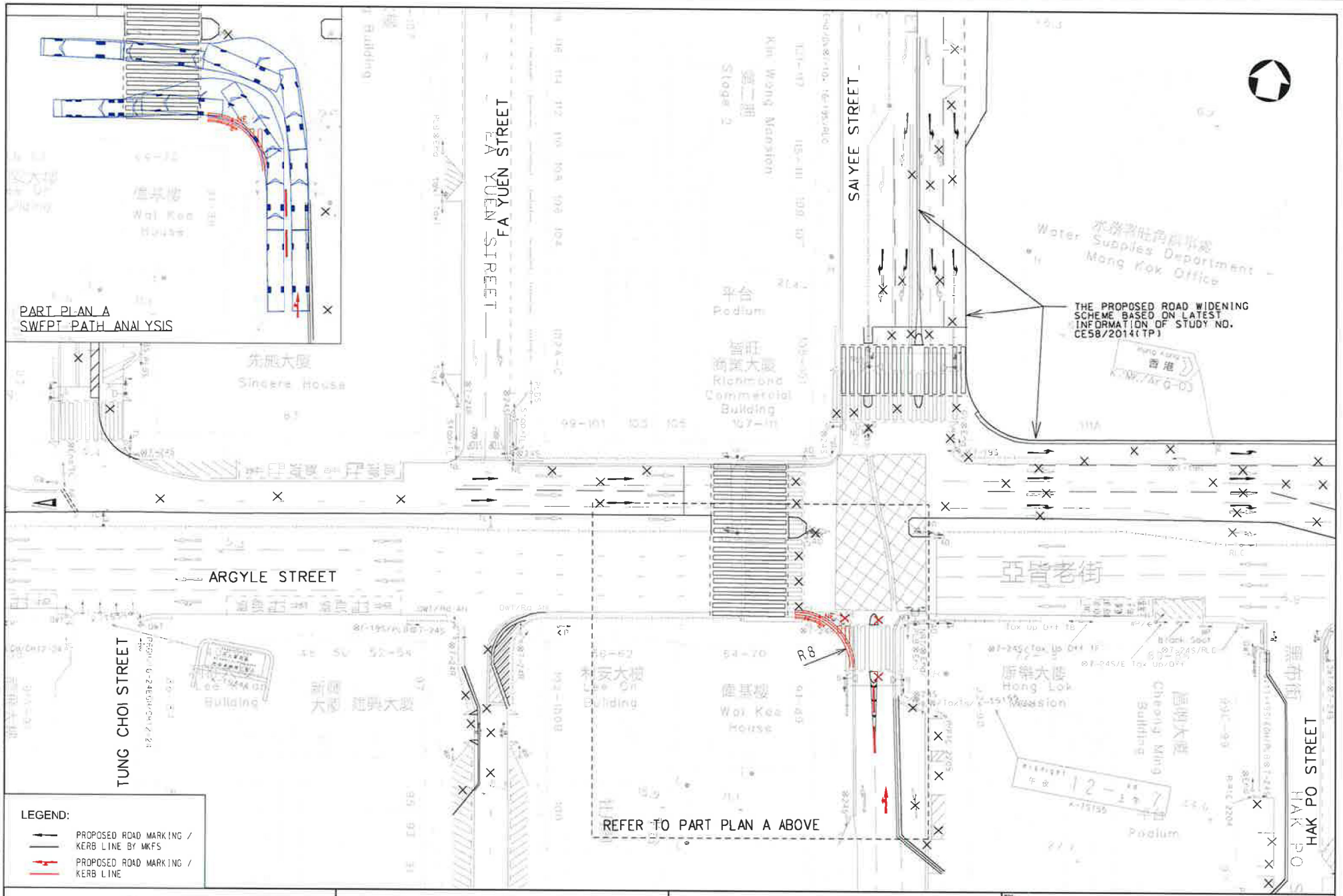
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: YEAR 2033 DESIGN VEHICULAR TRAFFIC FLOW DIAGRAM

Scale at A3	Date	Figure No.
N.T.S.	OCT 2020	4.3



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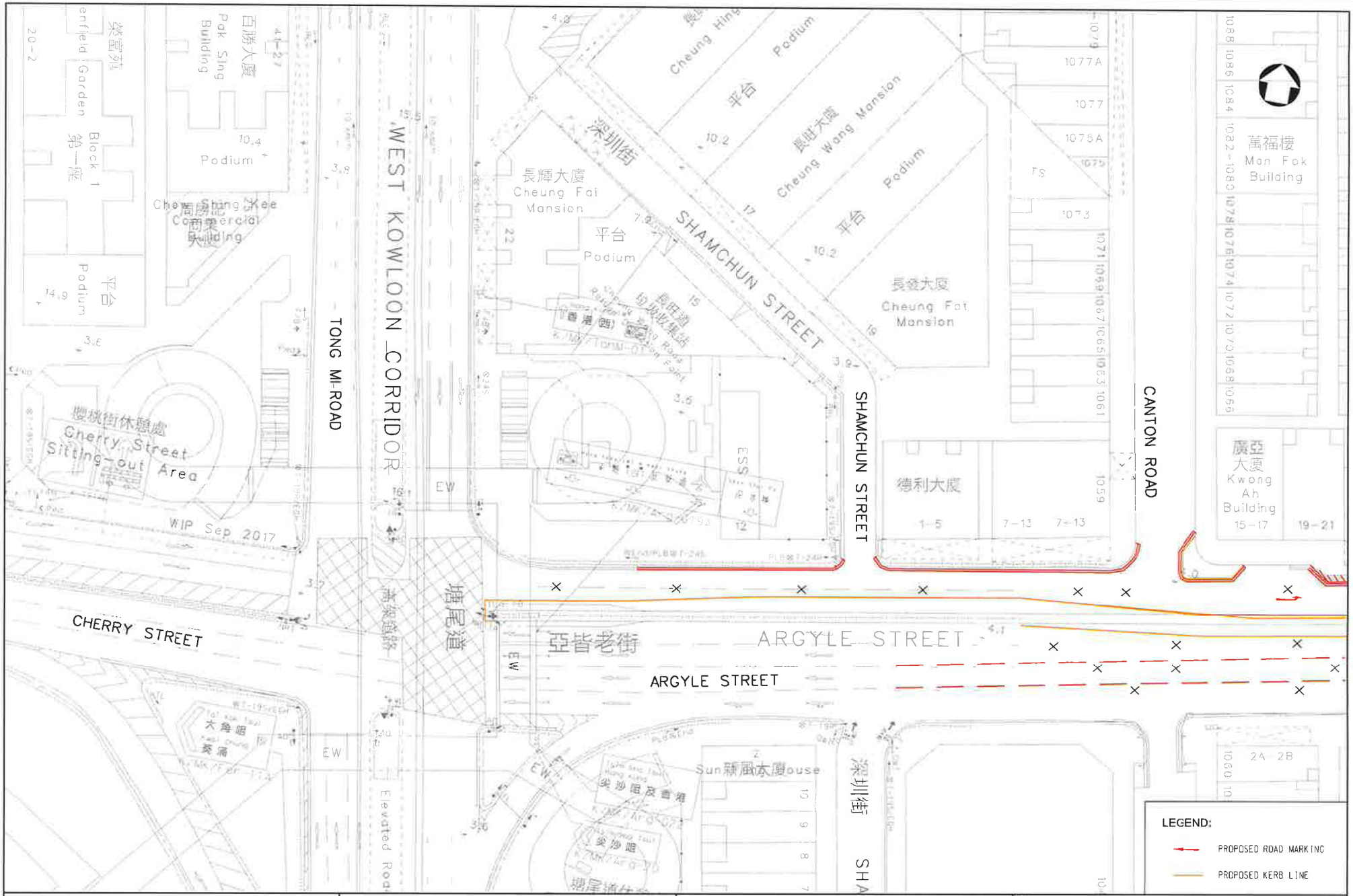
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
PROPOSED JUNCTION IMPROVEMENT SCHEME - J/O ARGYLE STREET / SAI YEE STREET (J7)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	5.1

Appendix A – Preliminary Junction Improvement Scheme by Other Projects



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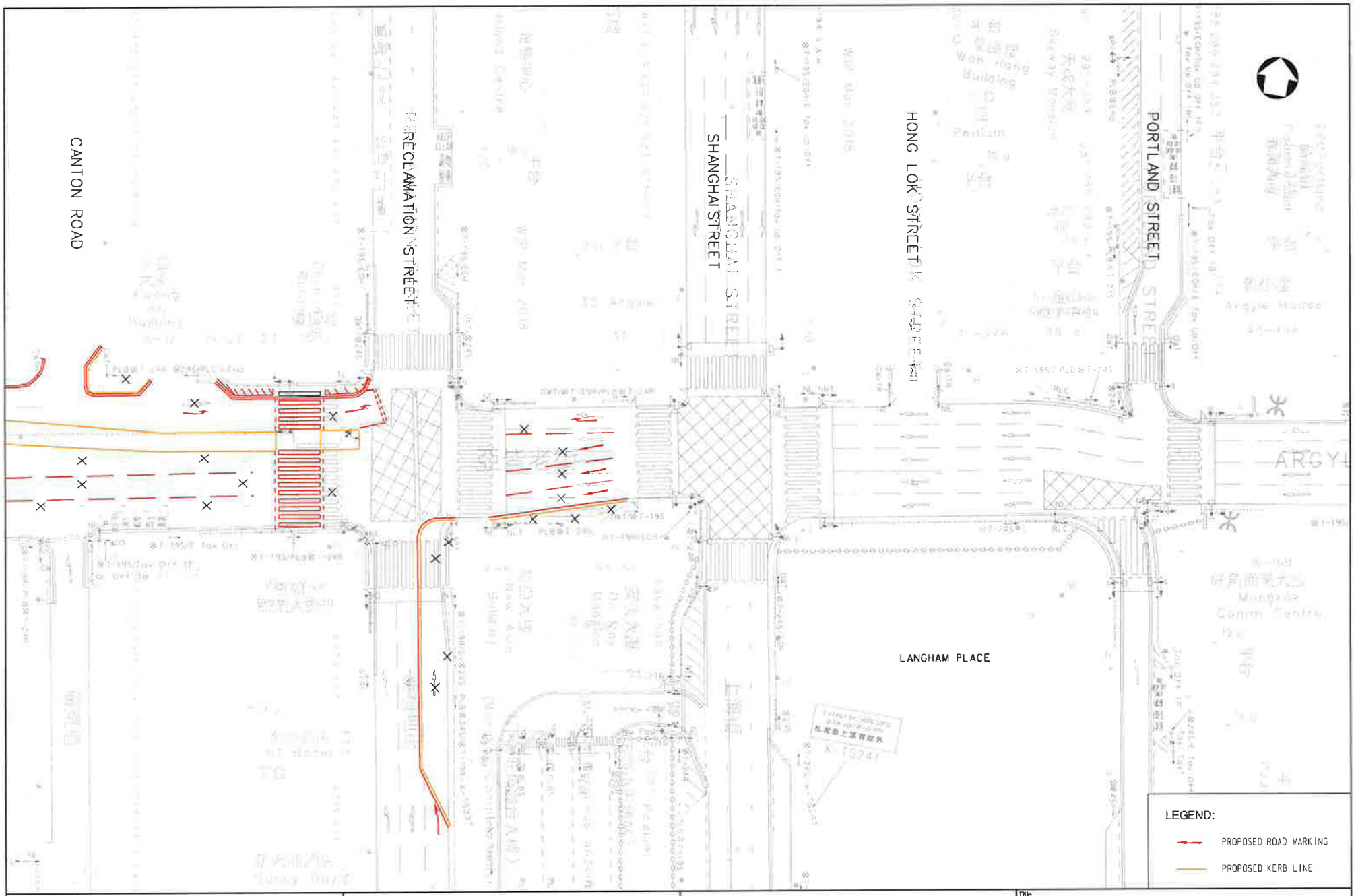
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title:
PRELIMINARY JUNCTION IMPROVEMENT SCHEME BY MKFS - J/O ARGYLE STREET / TONG MI ROAD / CHERRY STREET (J3)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.1



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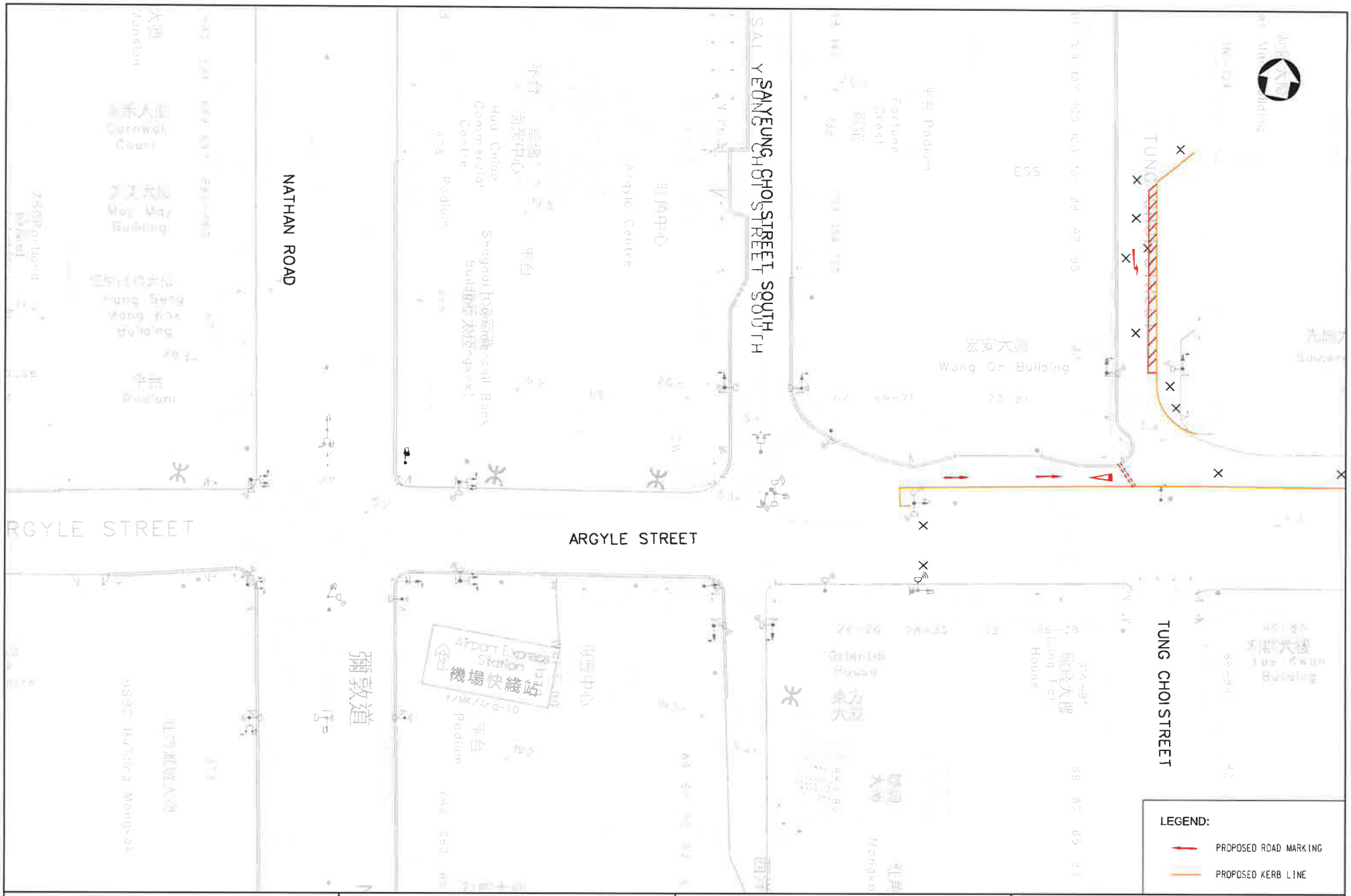
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
PRELIMINARY JUNCTION IMPROVEMENT SCHEME BY MKFS - J/O ARGYLE STREET / SHANGHAI STREET (J4)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.2



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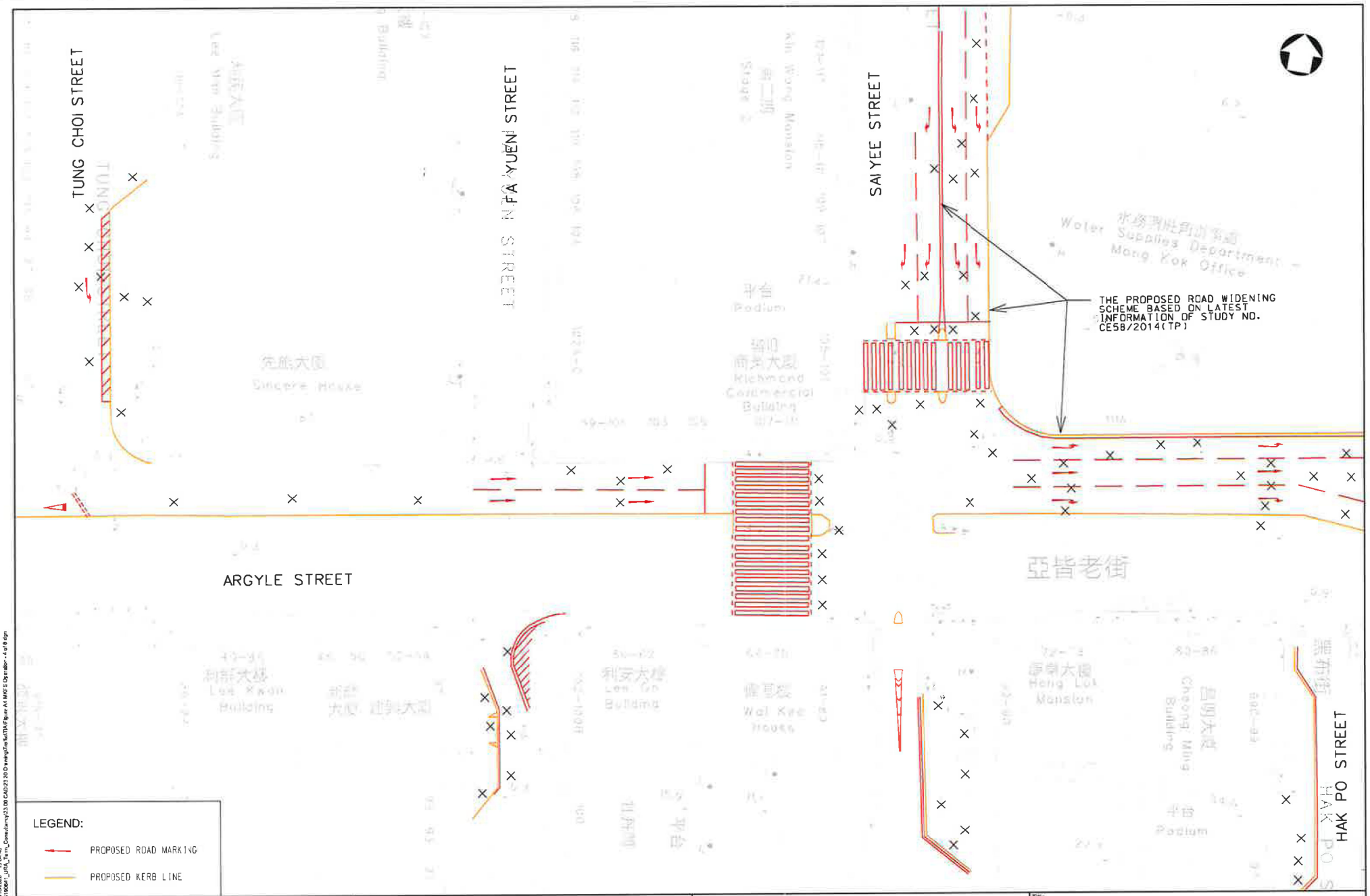
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: PRELIMINARY JUNCTION IMPROVEMENT SCHEME BY MKFS - J/O ARGYLE STREET / SAI YEUNG CHOI STREET SOUTH / TUNG CHOI STREET (J6)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.3



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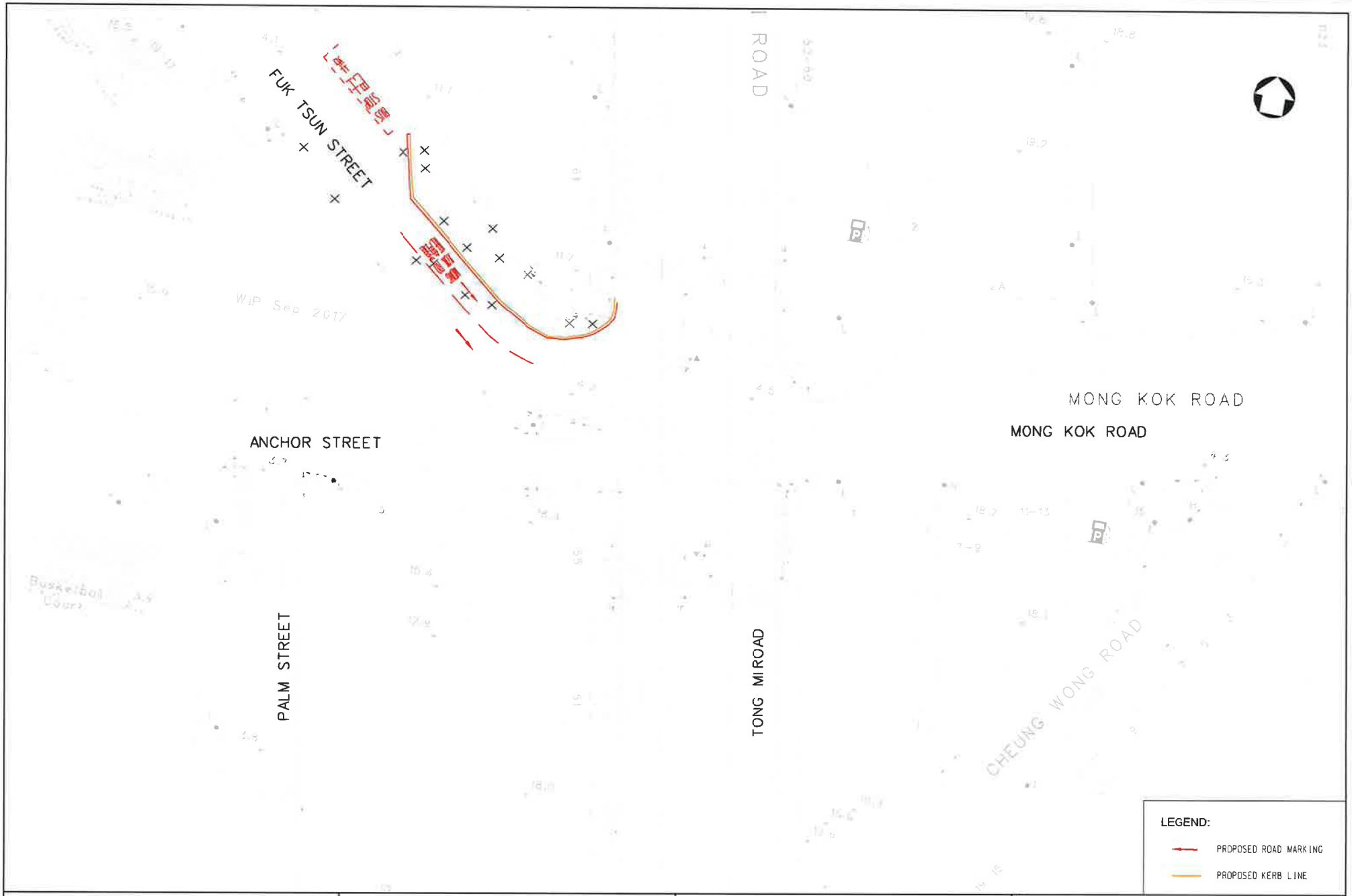
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
PRELIMINARY JUNCTION IMPROVEMENT SCHEME BY MKFS - J/O ARGYLE STREET / SAI YEE STREET (J7)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.4



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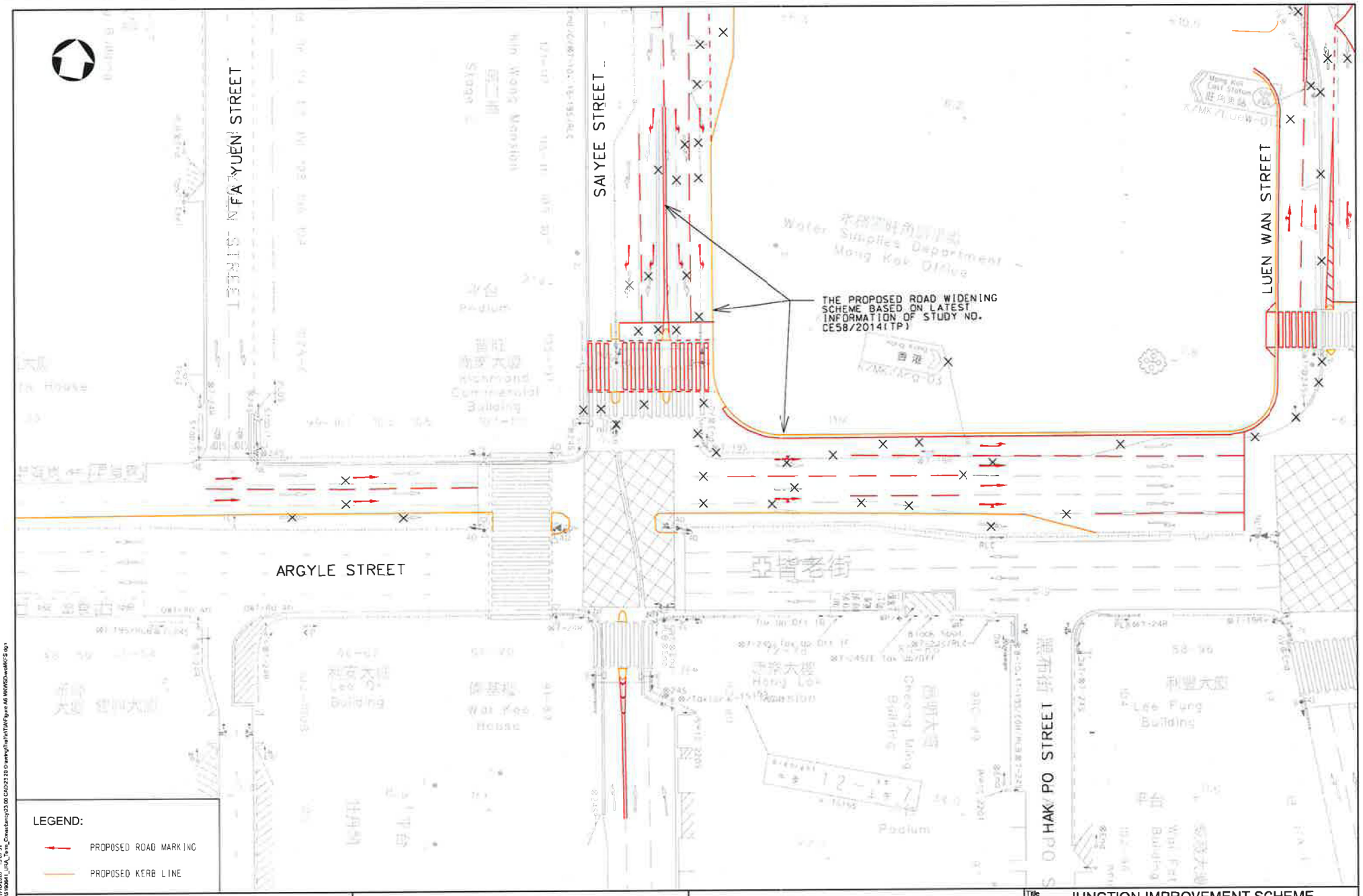
PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: PRELIMINARY JUNCTION IMPROVEMENT SCHEME BY MKFS - J/O MONG KOK ROAD / TONG MI ROAD / FUK TSUN STREET / ANCHOR STREET (J1)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.5



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URBAN RENEWAL AUTHORITY

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PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title
JUNCTION IMPROVEMENT SCHEME
PROPOSED BY REDEVELOPMENT AT
SAI YEE STREET & MONG KOK EAST STATION
- J/O ARGYLE STREET / SAI YEE STREET (J7)

Scale at A3	Date	Figure No.
1 : 500	OCT 2020	A.6

Appendix B – Junction Calculation Sheets

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

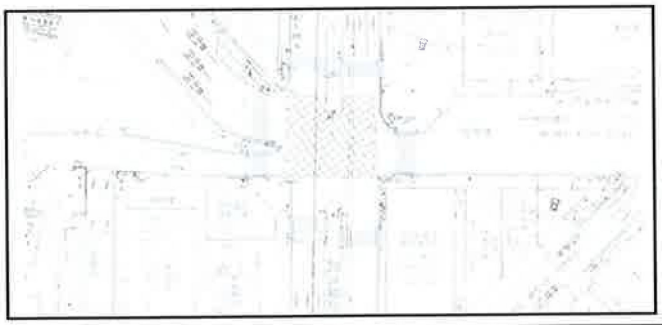
Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

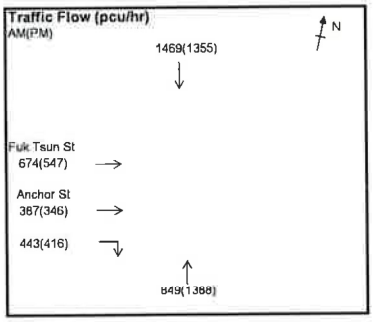
Design Year: 2019

Scheme : Year 2019 Observed Flows

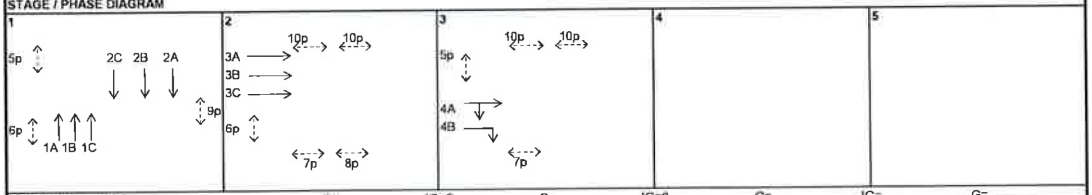
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



2B+3A+4A	G=	IG=7	G=	IG=5	G=	IG=8	G=	IG=	G=	
1B+3B+4A	G=	IG=7	G=	IG=5	G=	IG=8	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Tong Mi Road (NB)														
1A	1	3.00	Y	N			270		1915	0.141	441		1915	0.230
1B	1	3.00	N	N			289		2055	0.141	474		2055	0.231
1C	1	3.00	N	N			290		2055	0.141	473		2055	0.230
Tong Mi Road (SB)														
2A	1	3.30	Y	N			467		1945	0.240	431		1945	0.222
2B	1	3.30	N	N			501		2085	0.240	462		2085	0.222
2C	1	3.30	N	N			501		2085	0.240	462		2085	0.222
Fuk Tsun Street (EB)														
3A	2	4.20	Y	N			220		1630	0.135	178		1630	0.109
3B	2	4.20	N	N			234		1740	0.134	191		1740	0.110
3C	2	4.20	Y	N			220		1630	0.135	178		1630	0.109
Anchor Street (EB)														
4A	3	3.30	Y	N	18		433	11%	1925	0.225	397	13%	1925	0.206
4B	3	3.30	Y	N	15		397	100%	1770	0.224	365	100%	1770	0.206
5p	1,3		13GM +	13FG =	26	sec								
6p	1,2		7GM +	7FG =	14	sec								
7p	2,3		8GM +	8FG =	16	sec								
8p	2		8GM +	8FG =	16	sec								
9p	1		11GM +	11FG =	22	sec								
10p	2,3		13GM +	9FG =	22	sec								

Notes:

	AM Peak	2B+3A+4A	PM Peak	1B+3B+4A
Sum of Critical *y*	*Y*	0.600	*Y*	0.547
Lost Time *L* (sec)		17		17
Cycle Time *c* (sec)		130		130
Practical Y	*Ypr*	0.782	*Ypr*	0.782
Reserve Capacity	*RC*	30%	*RC*	43%

Date : 4/Mar/20 Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC·LAVALIN ATKINS

JOB NO. : 5190641

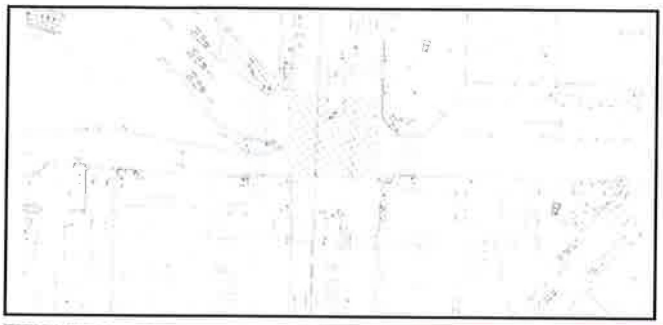
Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

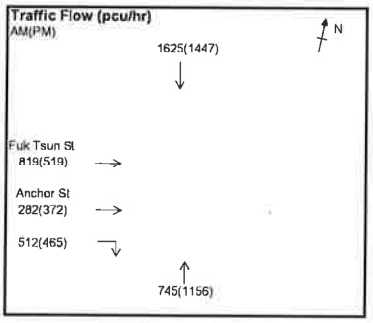
Design Year: 2033

Scheme : Year 2033 Reference Flows

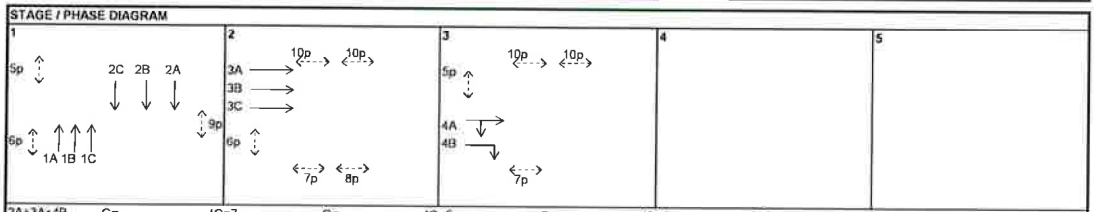
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



2A+3A+4B	G=	IG=7	G=	IG=5	G=	IG=8	G=	IG=	G=	
2B+3B+4A	G=	IG=7	G=	IG=5	G=	IG=8	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Tong Mi Road (NB)														
1A	1	3.00	Y	N			237		1915	0.124	367		1915	0.192
1B	1	3.00	N	N			254		2055	0.124	395		2055	0.192
1C	1	3.00	N	N			254		2055	0.124	394		2055	0.192
Tong Mi Road (SB)														
2A	1	3.30	Y	N			517		1945	**0.266**	460		1945	0.237
2B	1	3.30	N	N			554		2085	0.266	494		2085	**0.237**
2C	1	3.30	N	N			554		2085	0.266	493		2085	0.236
Fuk Tsun Street (EB)														
3A	2	4.20	Y	N			267		1630	**0.164**	169		1630	0.104
3B	2	4.20	N	N			285		1740	0.164	181		1740	**0.104**
3C	2	4.20	Y	N			267		1630	0.164	169		1630	0.104
Anchor Street (EB)														
4A	3	3.30	Y	N	18		410	31%	1895	0.216	436	15%	1920	0.227
4B	3	3.30	Y	N	15		384	100%	1770	0.217	401	100%	1770	0.227
5p	1,3		13GM +	13FG =	26	sec								
6p	1,2		7GM +	7FG =	14	sec								
7p	2,3		8GM +	8FG =	16	sec								
8p	2		8GM +	8FG =	16	sec								
9p	1		11GM +	11FG =	22	sec								
10p	2,3		13GM +	9FG =	22	sec								

Notes:

AM Peak	2A+3A+4B	PM Peak	2B+3B+4A
Sum of Critical *y* **Y**	**0.647**	Sum of Critical *y* **Y**	**0.568**
Lost Time *L* (sec)	17	Lost Time *L* (sec)	17
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.782	Practical *Y* ***Ypr***	0.782
Reserve Capacity ***RC***	21%	Reserve Capacity ***RC***	38%

Date : 4/Mar/20 Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

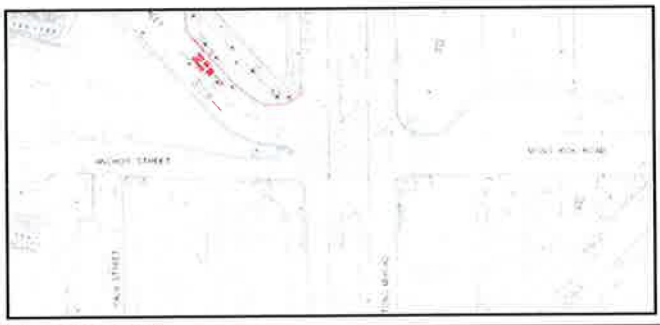
Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

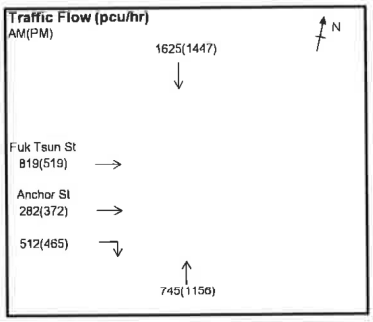
Design Year: 2033

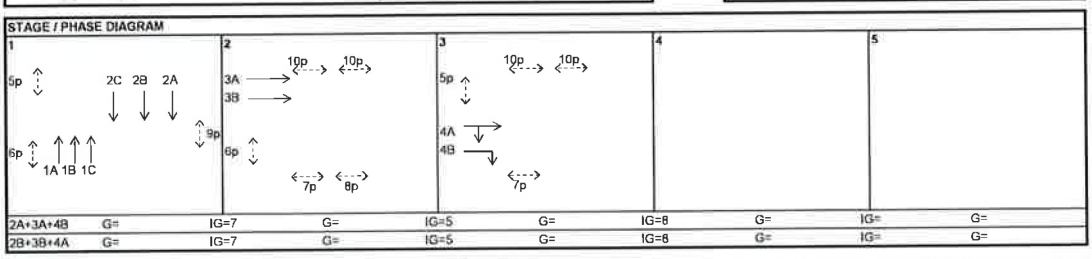
Scheme : Year 2033 Reference Flows - with MKFS

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Tong Mi Road (NB)														
1A	1	3.00	Y	N			237		1915	0.124	367		1915	0.192
1B	1	3.00	N	N			254		2055	0.124	395		2055	0.192
1C	1	3.00	N	N			254		2055	0.124	394		2055	0.192
Tong Mi Road (SB)														
2A	1	3.30	Y	N			517		1945	**0.266**	460		1945	0.237
2B	1	3.30	N	N			554		2085	0.266	494		2085	**0.237**
2C	1	3.30	N	N			554		2085	0.266	493		2085	0.236
Fuk Tsun Street (EB)														
3A	2	5.00	N	N			423		1805	**0.234**	268		1805	0.148
3B	2	5.00	Y	N			396		1690	0.234	251		1690	**0.149**
Anchor Street (EB)														
4A	3	3.30	Y	N	18		410	31%	1895	0.216	436	15%	1920	0.227
4B	3	3.30	Y	N	15		384	100%	1770	0.217	401	100%	1770	0.227
5p	1,3		13GM +	13FG =	26	sec								
6p	1,2		7GM +	7FG =	14	sec								
7p	2,3		8GM +	8FG =	16	sec								
8p	2		8GM +	8FG =	16	sec								
9p	1		11GM +	11FG =	22	sec								
10p	2,3		13GM +	9FG =	22	sec								

Notes:

AM Peak	2A+3A+4B	PM Peak	2B+3B+4A
Sum of Critical y **Y**	**0.717**	Sum of Critical y **Y**	**0.613**
Lost Time **L** (sec)	17	Lost Time **L** (sec)	17
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y **Ypr**	0.782	Practical Y **Ypr**	0.782
Reserve Capacity **RC**	9%	Reserve Capacity **RC**	28%

Date : 4/Mar/20 Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC·LAVALIN ATKINS

JOB NO. : 5190641

Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

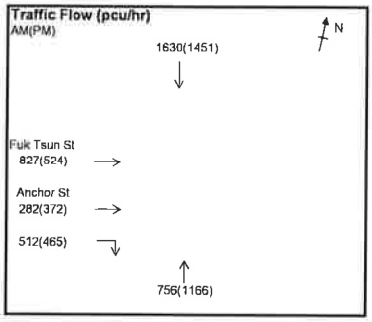
Design Year: 2033

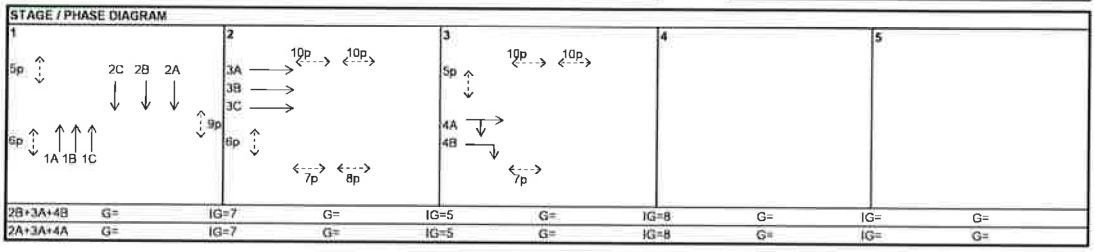
Scheme : Year 2033 Design Flows

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Tong Mi Road (NB)														
1A	1	3.00	Y	N			240		1915	0.125	371		1915	0.194
1B	1	3.00	N	N			258		2055	0.126	397		2055	0.193
1C	1	3.00	N	N			258		2055	0.126	398		2055	0.194
Tong Mi Road (SB)														
2A	1	3.30	Y	N			518		1945	0.266	462		1945	**0.238**
2B	1	3.30	N	N			556		2085	**0.267**	494		2085	0.237
2C	1	3.30	N	N			556		2085	0.267	495		2085	0.237
Fuk Tsun Street (EB)														
3A	2	4.20	Y	N			270		1630	**0.166**	171		1630	**0.105**
3B	2	4.20	N	N			287		1740	0.165	182		1740	0.105
3C	2	4.20	Y	N			270		1630	0.166	171		1630	0.105
Anchor Street (EB)														
4A	3	3.30	Y	N	18		410	31%	1895	0.216	436	15%	1920	0.227
4B	3	3.30	Y	N	15		384	100%	1770	0.217	401	100%	1770	0.227
5p	1,3		13GM +	13FG =	26	sec								
6p	1,2		7GM +	7FG =	14	sec								
7p	2,3		8GM +	8FG =	16	sec								
8p	2		8GM +	8FG =	16	sec								
9p	1		11GM +	11FG =	22	sec								
10p	2,3		13GM +	9FG =	22	sec								

Notes:

AM Peak	2B+3A+4B	PM Peak	2A+3A+4A
Sum of Critical *y* ***Y***	**0.649**	Sum of Critical *y* ***Y***	**0.570**
Lost Time ***L*** (sec)	17	Lost Time ***L*** (sec)	17
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical *Y* ***Ypr***	0.782	Practical *Y* ***Ypr***	0.782
Reserve Capacity ***RC***	20%	Reserve Capacity ***RC***	37%

Date : 4/Mar/20 Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC·LAVALIN ATKINS

JOB NO. : 5190641

Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

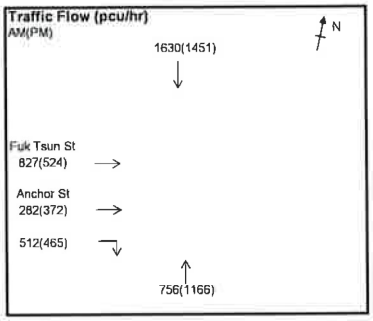
Design Year: 2033

Scheme : Year 2033 Design Flows - with MKFS

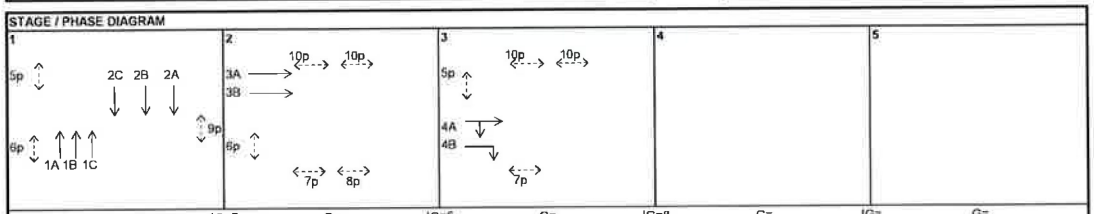
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



2B+3B+4B	G=		IG=7	G=		IG=5	G=		IG=8	G=		IG=	G=		
2A+3A+4A	G=		IG=7	G=		IG=5	G=		IG=8	G=		IG=	G=		

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Tong Mi Road (NB)														
1A	1	3.00	Y	N			240		1915	0.125	371		1915	0.194
1B	1	3.00	N	N			258		2055	0.126	397		2055	0.193
1C	1	3.00	N	N			258		2055	0.126	398		2055	0.194
Tong Mi Road (SB)														
2A	1	3.30	Y	N			518		1945	0.266	462		1945	**0.238**
2B	1	3.30	N	N			556		2085	**0.267**	494		2085	0.237
2C	1	3.30	N	N			556		2085	0.267	495		2085	0.237
Fuk Tsun Street (EB)														
3A	2	5.00	N	N			427		1805	0.237	271		1805	**0.150**
3B	2	5.00	Y	N			400		1690	**0.237**	253		1690	0.150
Anchor Street (EB)														
4A	3	3.30	Y	N	18		410	31%	1895	0.216	436	15%	1920	0.227
4B	3	3.30	Y	N	15		384	100%	1770	0.217	401	100%	1770	0.227
5p	1,3		13GM +	13FG =	26	sec								
6p	1,2		7GM +	7FG =	14	sec								
7p	2,3		8GM +	8FG =	16	sec								
8p	2		8GM +	8FG =	16	sec								
9p	1		11GM +	11FG =	22	sec								
10p	2,3		13GM +	9FG =	22	sec								

Notes:

AM Peak	2B+3B+4B	PM Peak	2A+3A+4A
Sum of Critical y **Y**	**0.720**	Sum of Critical y **Y**	**0.615**
Lost Time **L** (sec)	17	Lost Time **L** (sec)	17
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y **Ypr**	0.782	Practical Y **Ypr**	0.782
Reserve Capacity **RC**	9%	Reserve Capacity **RC**	27%

Date : 4/Mar/20 Junction : J1 - Tong Mi Road/ Mong Kok Road/ Fuk Tsun Street/ Anchor Street

ATKINS CHINA LIMITED

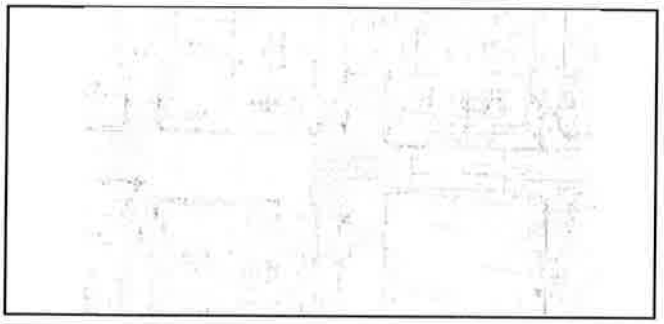
TRAFFIC SIGNAL CALCULATION SHEET

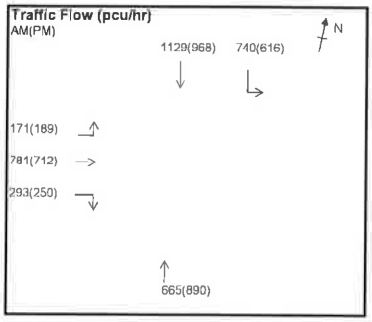
SNC-LAVALIN ATKINS

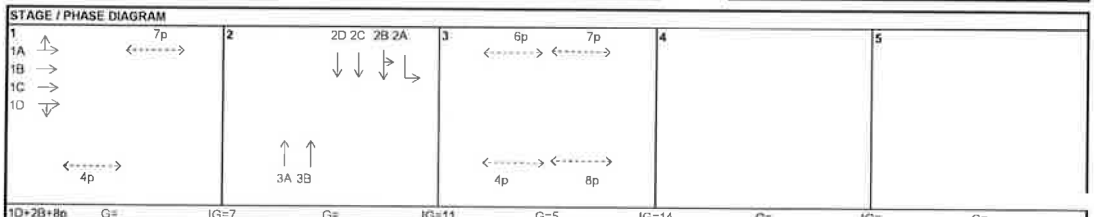
JOB NO. : 5190641

Junction : J2 - Nathan Road/ Mong Kok Road Design Year: 2019

Scheme : Year 2019 Observed Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Mong Kok Road (EB)														
1A	1	3.20	N	N	8		295	58%	1860	0.159	275	69%	1825	0.151
1B	1	3.20	N	N			328		2075	0.158	313		2075	0.151
1C	1	3.20	N	N			329		2075	0.159	313		2075	0.151
1D	1	3.20	N	N	20		293	100%	1545	0.190	250	100%	1545	0.162
Nathan Road (NB)														
3A	2	3.40	Y	N			321		1955	0.164	430		1955	**0.220**
3B	2	3.40	N	N			344		2095	0.164	460		2095	0.220
Nathan Road (SB)														
2A	2	3.10	Y	N	10		406	100%	1675	0.242	344	100%	1675	0.205
2B	2	3.10	N	N	13		461	72%	1900	**0.243**	392	69%	1905	0.206
2C	2	3.10	N	N			501		2065	0.243	424		2065	0.205
2D	2	3.10	N	N			501		2065	0.243	424		2065	0.205
4p	1,3		5GM+	8FG =	13	sec								
6p	3		5GM+	8FG =	13	sec								
7p	1,3		5GM+	11FG =	16	sec								
8p	3		5GM+	12FG =	17	sec								

Notes:
5p (western crossing) across Mong Kok Road is temporarily closed for footbridge construction works.

AM Peak	1D+2B+8p	PM Peak	1D+3A+8p
Sum of Critical *y* ***Y***	**0.432**	Sum of Critical *y* ***Y***	**0.382**
Lost Time ***L*** (sec)	35	Lost Time ***L*** (sec)	35
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical *Y* ***Ypr***	0.658	Practical *Y* ***Ypr***	0.658
Reserve Capacity ***RC***	**52%**	Reserve Capacity ***RC***	**72%**

Date : 4/Mar/20 Junction : J2 - Nathan Road/ Mong Kok Road

ATKINS CHINA LIMITED

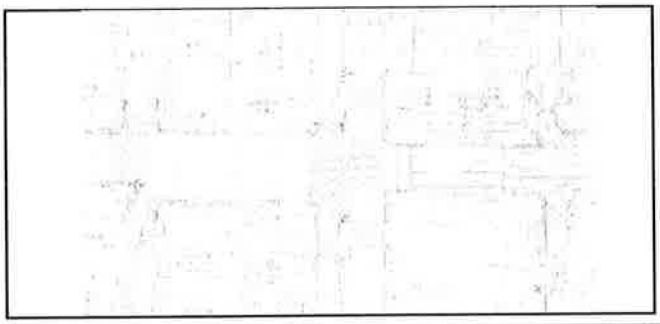
TRAFFIC SIGNAL CALCULATION SHEET

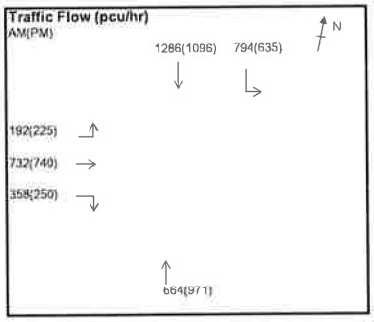
SNC-LAVALIN ATKINS

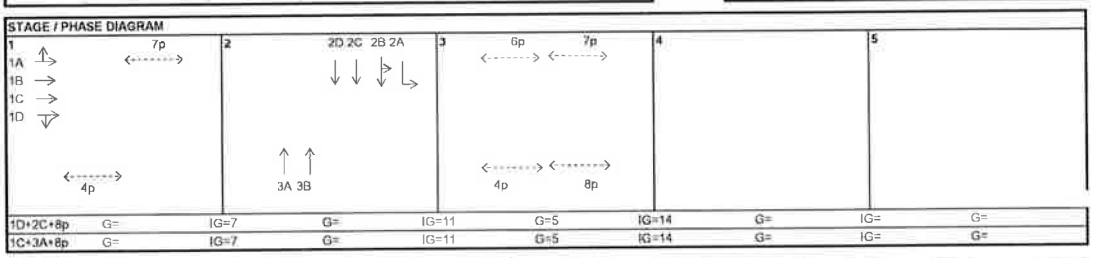
JOB NO. : 5190641

Junction : J2 - Nathan Road/ Mong Kok Road Design Year: 2033

Scheme : Year 2033 Reference Flows Designed by: KL Checked by: EC







1D+2C+8p	G=	IG=7	G=	IG=11	G=5	IG=14	G=	IG=	G=
1C+3A+8p	G=	IG=7	G=	IG=11	G=5	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Mong Kok Road (EB)														
1A	1	3.20	N	N	8		282	68%	1825	0.155	292	77%	1800	0.162
1B	1	3.20	N	N			321		2075	0.155	336		2075	0.162
1C	1	3.20	N	N			321		2075	0.155	337		2075	0.162
1D	1	3.20	N	N	20		358	100%	1545	0.232	250	100%	1545	0.162
Nathan Road (NB)														
3A	2	3.40	Y	N			321		1955	0.164	469		1955	**0.240**
3B	2	3.40	N	N			343		2095	0.164	502		2095	0.240
Nathan Road (SB)														
2A	2	3.10	Y	N	10		451	100%	1675	0.269	375	100%	1675	0.224
2B	2	3.10	N	N	13		515	67%	1910	0.270	431	60%	1925	0.224
2C	2	3.10	N	N			557		2065	**0.270**	463		2065	0.224
2D	2	3.10	N	N			557		2065	0.270	462		2065	0.224
4p	1,3		5GM +	8FG =	13	sec								
6p	3		5GM +	8FG =	13	sec								
7p	1,3		5GM +	11FG =	16	sec								
8p	3		5GM +	12FG –	17	sec								

Notes:
5p (western crossing) across Mong Kok Road is temporarily closed for footbridge construction works.
Junction arrangment is assumed to be unchange in the design year for conservative assessment results.

AM Peak	1D+2C+8p	PM Peak	1C+3A+8p
Sum of Critical *y* **Y**	**0.501**	Sum of Critical *y* **Y**	**0.402**
Lost Time *L* (sec)	35	Lost Time *L* (sec)	35
Cycle Time *c* (sec)	**130**	Cycle Time *c* (sec)	**130**
Practical Y *Ypr*	0.658	Practical Y *Ypr*	0.658
Reserve Capacity *RC*	**31%**	Reserve Capacity *RC*	**63%**

Date : 4/Mar/20 Junction : J2 - Nathan Road/ Mong Kok Road

ATKINS CHINA LIMITED

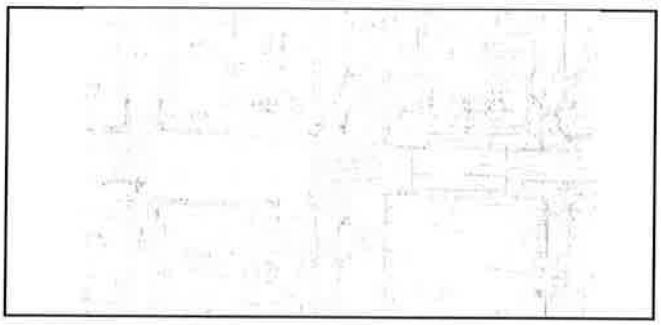
TRAFFIC SIGNAL CALCULATION SHEET

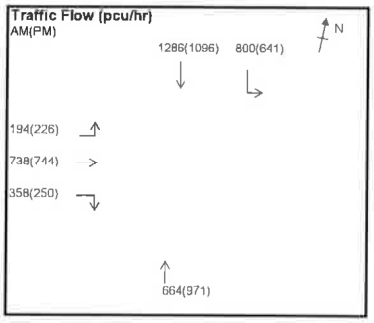
SNC-LAVALIN ATKINS

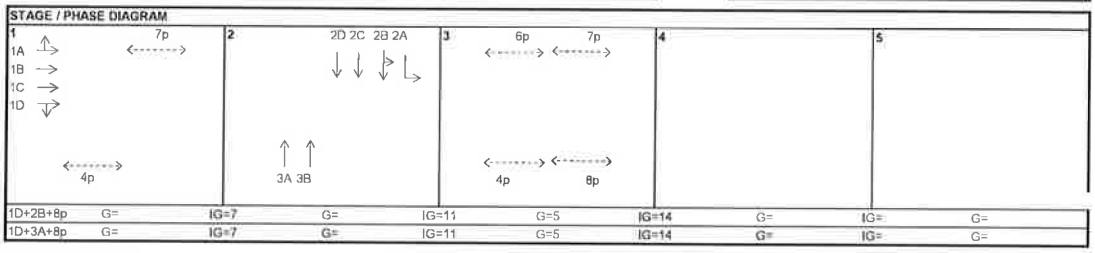
JOB NO. : 5190641

Junction : J2 - Nathan Road/ Mong Kok Road Design Year: 2033

Scheme : Year 2033 Design Flows Designed by: KL Checked by: EC







1D+2B+8p	G=	IG=7	G=	IG=11	G=5	IG=14	G=	IG=	G=
1D+3A+8p	G=	IG=7	G=	IG=11	G=5	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Mong Kok Road (EB)														
1A	1	3.20	N	N	8		285	68%	1825	0.156	293	77%	1800	0.163
1B	1	3.20	N	N			323		2075	0.156	337		2075	0.162
1C	1	3.20	N	N			324		2075	0.156	338		2075	0.163
1D	1	3.20	N	N	20		358	100%	1545	0.232	252	99%	1545	0.163
Nathan Road (NB)														
3A	2	3.40	Y	N			321		1955	0.164	469		1955	0.240
3B	2	3.40	N	N			343		2095	0.164	502		2095	0.240
Nathan Road (SB)														
2A	2	3.10	Y	N	10		463	100%	1675	0.270	376	100%	1675	0.224
2B	2	3.10	N	N	13		517	67%	1910	0.271	433	61%	1925	0.225
2C	2	3.10	N	N			558		2065	0.270	464		2065	0.225
2D	2	3.10	N	N			558		2065	0.270	464		2065	0.225
4p	1,3		5GM +	8FG =	13	sec								
6p	3		5GM +	8FG =	13	sec								
7p	1,3		5GM +	11FG =	16	sec								
8p	3		5GM +	12FG =	17	sec								

Notes:

5p (western crossing) across Mong Kok Road is temporarily closed for footbridge construction works.

Junction arrangment is assumed to be unchange in the design year for conservative assessment results.

AM Peak	1D+2B+8p	PM Peak	1D+3A+8p
Sum of Critical *y* **Y**	**0.502**	Sum of Critical *y* **Y**	**0.403**
Lost Time *L* (sec)	35	Lost Time *L* (sec)	35
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical Y ***Ypr***	0.658	Practical Y ***Ypr***	**0.658**
Reserve Capacity ***RC***	**31%**	Reserve Capacity ***RC***	**63%**

Date : 4/Mar/20 Junction : J2 - Nathan Road/ Mong Kok Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

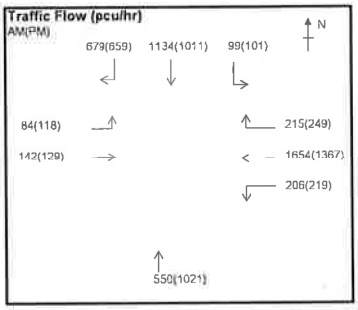
SNC·LAVALIN ATKINS

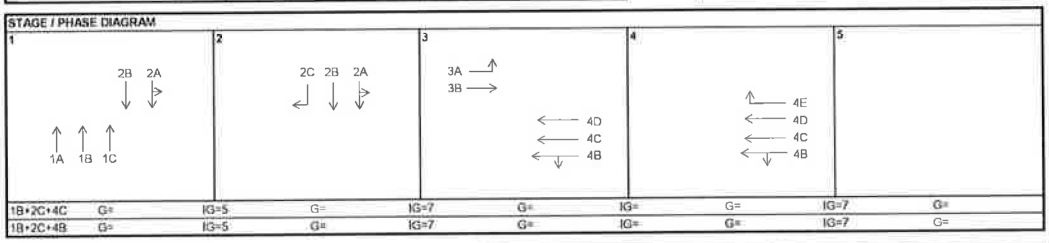
JOB NO. : 5190641

Junction : J3 - Argyle Street/ Tong Mi Road Design Year: 2019

Scheme : Year 2019 Observed Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Ferry Street (NB)														
1A	1	3.10	N	N			183		2065	0.089	340		2065	0.165
1B	1	3.10	N	N			184		2065	**0.089**	341		2065	**0.165**
1C	1	3.10	N	N			183		2065	0.089	340		2065	0.165
Tong Mi Road (SB)														
2A	1,2	3.20	Y	N	15		590	17%	1905	0.310	531	19%	1900	0.279
2B	1,2	3.20	N	N			643		2075	0.310	581		2075	0.280
2C	2	3.20	N	N	20		679	100%	1930	**0.352**	659	100%	1930	**0.341**
Cherry Street (EB)														
3A	3	3.30	Y	N	10		84	100%	1690	0.050	118	100%	1690	0.070
3B	3	3.30	N	N			142		2085	0.068	129		2085	0.062
Argyle Street (WB)														
4B	3,4	3.50	Y	N	38		605	34%	2030	0.298	515	43%	2020	0.255
4C	3,4	3.50	N	N			628		2105	0.298	536		2105	0.255
4D	3,4	3.50	N	N			627		2105	0.298	535		2105	0.254
4E	4	3.30	N	N	25		215	100%	1965	0.109	249	100%	1965	0.127

Notes:
4B with flared left turning, additional 20m carriageway
130 sec cycle time -> 27.7 cycles/hr
up to 3.3 pcu can be stored at flared lane per cycle
i.e. additional 91 pcu/hr for 4B

AM Peak	1B+2C+4C	PM Peak	1B+2C+4B
Sum of Critical *y* **Y**	**0.739**	Sum of Critical *y* **Y**	**0.761**
Lost Time *L* (sec)	16	Lost Time *L* (sec)	16
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.789	Practical *Y* ***Ypr***	0.789
Reserve Capacity ***RC***	7%	Reserve Capacity ***RC***	4%

Date : 4/Mar/20 Junction : J3 - Argyle Street/ Tong Mi Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5100641

Junction : J3 - Argyle Street/ Tong Mi Road

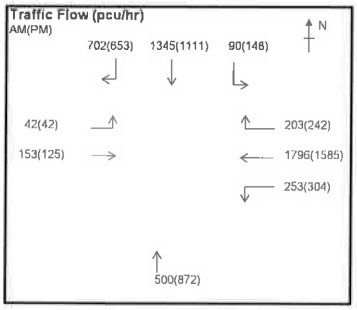
Design Year: 2019

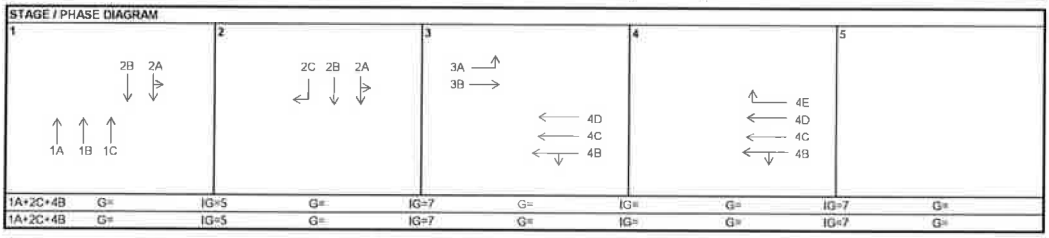
Scheme : Year 2033 Reference Flows

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Ferry Street (NB)														
1A	1	3.10	N	N			167		2065	**0.081**	291		2065	**0.141**
1B	1	3.10	N	N			166		2065	0.080	290		2065	0.140
1C	1	3.10	N	N			167		2065	0.081	**291**		2065	0.141
Tong Mi Road (SB)														
2A	1,2	3.20	Y	N	15		688	13%	1910	0.360	600	25%	1890	0.317
2B	1,2	3.20	N	N			747		2075	0.360	659		2075	0.318
2C	2	3.20	N	N	20		702	100%	1930	**0.364**	653	100%	1930	**0.338**
Cherry Street (EB)														
3A	3	3.30	Y	N	10		42	100%	1690	0.025	42	100%	1690	0.025
3B	3	3.30	N	N			153		2085	0.073	125		2085	0.060
Argyle Street (WB)														
4B	3,4	3.50	Y	N	38		666	38%	2025	0.329	612	50%	2015	0.304
4C	3,4	3.50	N	N			692		2105	0.329	639		2105	0.304
4D	3,4	3.50	N	N			691		2105	0.328	638		2105	0.303
4E	4	3.30	N	N	25		203	100%	1965	0.103	242	100%	1965	0.123

Notes:
4B with flared left turning, additional 20m carriageway
130 sec cycle time -> 27.7 cycles/hr
up to 3.3 pcu can be stored at flared lane per cycle
i.e. additional 91 pcu/hr for 4B

AM Peak	1A+2C+4B	PM Peak	1A+2C+4B
Sum of Critical *y* **Y**	**0.773**	Sum of Critical *y* **Y**	**0.783**
Lost Time *L* (sec)	16	Lost Time *L* (sec)	16
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.789	Practical *Y* ***Ypr***	0.789
Reserve Capacity ***RC***	**2%**	Reserve Capacity ***RC***	**1%**

Date : 4/Mar/20 Junction : J3 - Argyle Street/ Tong Mi Road

ATKINS CHINA LIMITED

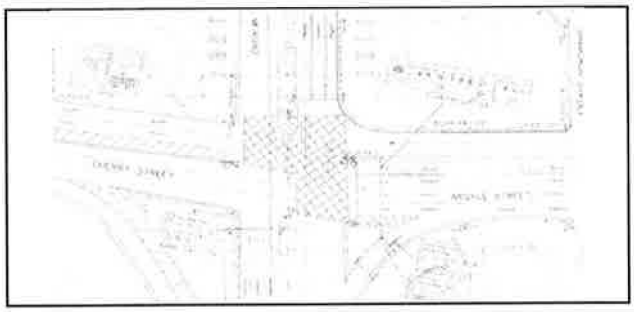
TRAFFIC SIGNAL CALCULATION SHEET

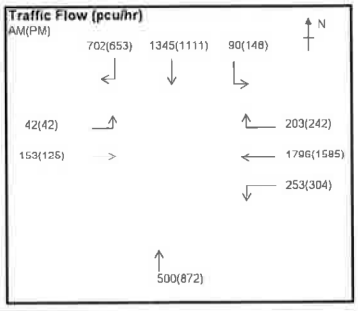
SNC-LAVALIN ATKINS

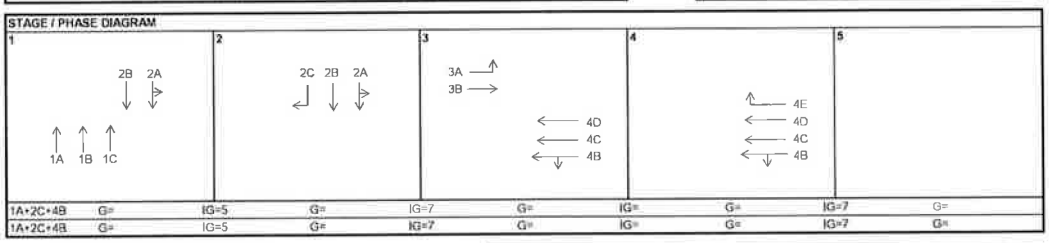
JOB NO. : 5190641

Junction : J3 - Argyle Street/ Tong Mi Road Design Year: 2033

Scheme : Year 2033 Reference Flows - with MKFS Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Ferry Street (NB)														
1A	1	3.10	N	N			167		2065	**0.081**	291		2065	**0.141**
1B	1	3.10	N	N			166		2065	0.080	290		2065	0.140
1C	1	3.10	N	N			167		2065	0.081	291		2065	0.141
Tong Mi Road (SB)														
2A	1,2	3.20	Y	N	13		687	13%	1905	**0.361**	598	25%	1880	0.318
2B	1,2	3.20	N	N			748		2075	0.360	661		2075	0.319
2C	2	3.20	N	N	20		702	100%	1930	**0.364**	653	100%	1930	**0.338**
Cherry Street (EB)														
3A	3	3.30	Y	N	10		42	100%	1690	0.025	42	100%	1690	0.025
3B	3	3.30	N	N			153		2085	0.073	125		2085	0.060
Argyle Street (WB)														
4B	3,4	3.50	Y	N	38		666	38%	2025	0.329	612	50%	2015	0.304
4C	3,4	3.50	N	N			692		2105	0.329	638		2105	0.304
4D	3,4	3.50	N	N			691		2105	0.328	638		2105	0.303
4E	4	3.30	N	N	25		203	100%	1965	0.103	242	100%	1965	0.123

Notes:
4B with flared left turning, additional 20m carriageway
130 sec cycle time -> 27.7 cycles/hr
up to 3.3 pcu can be stored at flared lane per cycle
i.e. additional 91 pcu/hr for 4B

AM Peak	1A+2C+4B	PM Peak	1A+2C+4B
Sum of Critical y **Y**	**0.773**	Sum of Critical y **Y**	**0.783**
Lost Time **L** (sec)	16	Lost Time **L** (sec)	16
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y ***Ypr***	0.789	Practical Y ***Ypr***	0.789
Reserve Capacity ***RC***	2%	Reserve Capacity ***RC***	1%

Date : 4/Mar/20 Junction : J3 - Argyle Street/ Tong Mi Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

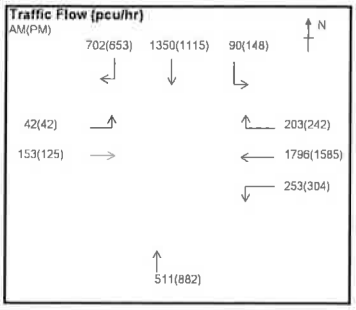
SNC-LAVALIN ATKINS

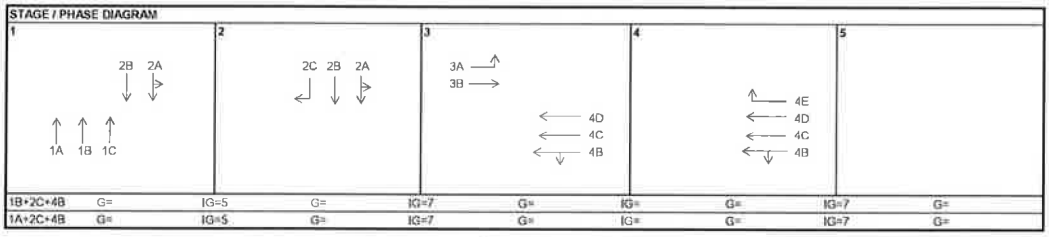
JOB NO. : 5190641

Junction : J3 - Argyle Street/ Tong Mi Road Design Year: 2019

Scheme : Year 2033 Design Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Ferry Street (NB)														
1A	1	3.10	N	N			170		2065	0.082	294		2065	**0.142**
1B	1	3.10	N	N			171		2065	**0.083**	294		2065	0.142
1C	1	3.10	N	N			170		2065	0.082	294		2065	0.142
Tong Mi Road (SB)														
2A	1,2	3.20	Y	N	15		690	13%	1910	0.361	602	25%	1890	0.319
2B	1,2	3.20	N	N			750		2075	0.361	661		2075	0.319
2C	2	3.20	N	N	20		702	100%	1930	**0.364**	653	100%	1930	**0.338**
Cherry Street (EB)														
3A	3	3.30	Y	N	10		42	100%	1690	0.025	42	100%	1690	0.025
3B	3	3.30	N	N			153		2085	0.073	125		2085	0.060
Argyle Street (WB)														
4B	3,4	3.50	Y	N	38		666	38%	2025	0.329	612	50%	2015	0.304
4C	3,4	3.50	N	N			692		2105	0.329	639		2105	0.304
4D	3,4	3.50	N	N			691		2105	0.328	638		2105	0.303
4E	4	3.30	N	N	25		203	100%	1965	0.103	242	100%	1965	0.123

Notes:
4B with flared left turning, additional 20m carriageway
130 sec cycle time -> 27.7 cycles/hr
up to 3.3 pcu can be stored at flared lane per cycle
i.e. additional 91 pcu/hr for 4B

AM Peak	1B+2C+4B	PM Peak	1A+2C+4B
Sum of Critical *y* **Y**	**0.775**	Sum of Critical *y* **Y**	**0.784**
Lost Time *L* (sec)	16	Lost Time *L* (sec)	16
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical Y ***Ypr***	0.789	Practical Y ***Ypr***	0.789
Reserve Capacity ***RC***	2%	Reserve Capacity ***RC***	1%

Date : 4/Mar/20 Junction : J3 - Argyle Street/ Tong Mi Road

ATKINS CHINA LIMITED

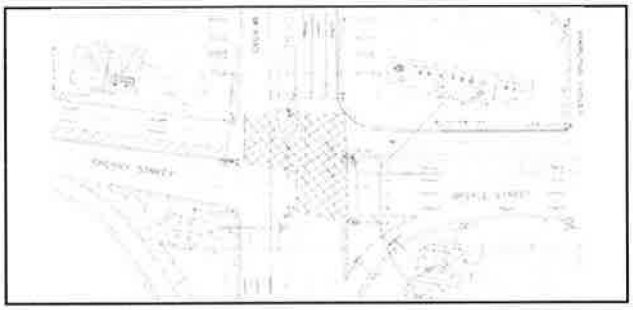
TRAFFIC SIGNAL CALCULATION SHEET

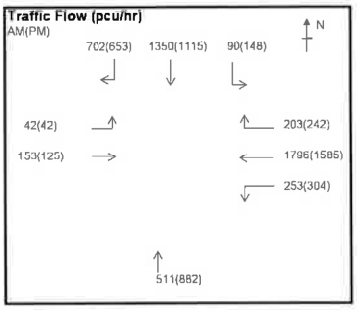
SNC-LAVALIN ATKINS

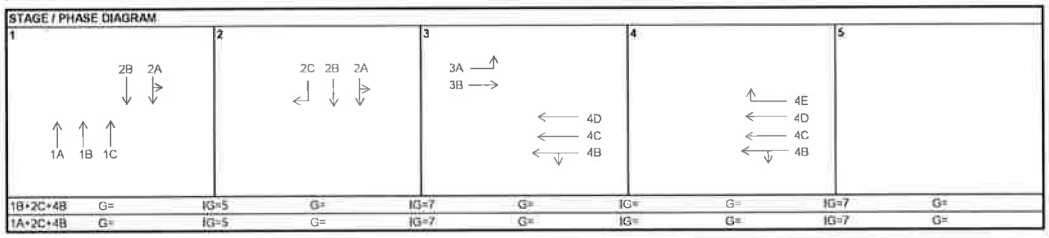
JOB NO. : 5190641

Junction : J3 - Argyle Street/ Tong Mi Road Design Year: 2033

Scheme : Year 2033 Design Flows - with MKFS Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Ferry Street (NB)														
1A	1	3.10	N	N			170		2065	0.082	294		2065	**0.142**
1B	1	3.10	N	N			171		2065	**0.083**	294		2065	0.142
1C	1	3.10	N	N			170		2065	0.082	294		2065	0.142
Tong Mi Road (SB)														
2A	1,2	3.20	Y	N	13		689	13%	1905	0.362	600	25%	1880	0.319
2B	1,2	3.20	N	N			751		2075	0.362	663		2075	0.320
2C	2	3.20	N	N	20		702	100%	1930	**0.364**	653	100%	1930	**0.338**
Cherry Street (EB)														
3A	3	3.30	Y	N	10		42	100%	1690	0.025	42	100%	1690	0.025
3B	3	3.30	N	N			153		2085	0.073	125		2085	0.060
Argyle Street (WB)														
4B	3,4	3.50	Y	N	38		666	38%	2025	0.329	612	50%	2015	0.304
4C	3,4	3.50	N	N			692		2105	0.329	639		2105	0.304
4D	3,4	3.50	N	N			691		2105	0.328	638		2105	0.303
4E	4	3.30	N	N	25		203	100%	1965	0.103	242	100%	1965	0.123

Notes:
4B with flared left turning, additional 20m carriageway
130 sec cycle time -> 27.7 cycles/hr
up to 3.3 pcu can be stored at flared lane per cycle
i.e. additional 91 pcu/hr for 4B

AM Peak	1B+2C+4B	PM Peak	1A+2C+4B
Sum of Critical *y* *Y*	**0.775**	Sum of Critical *y* *Y*	**0.784**
Lost Time *L* (sec)	16	Lost Time *L* (sec)	16
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* *Ypr*	0.789	Practical *Y* *Ypr*	0.789
Reserve Capacity *RC*	2%	Reserve Capacity *RC*	1%

Date : 4/Mar/20 Junction : J3 - Argyle Street/ Tong Mi Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5100641

Junction : J4 - Argyle Street/ Shanghai Street

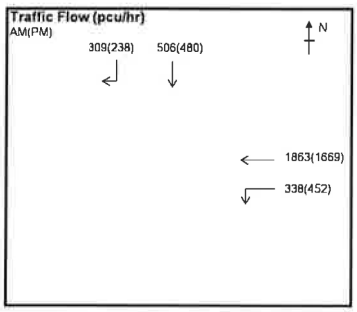
Design Year: 2019

Scheme : Year 2019 Observed Flows

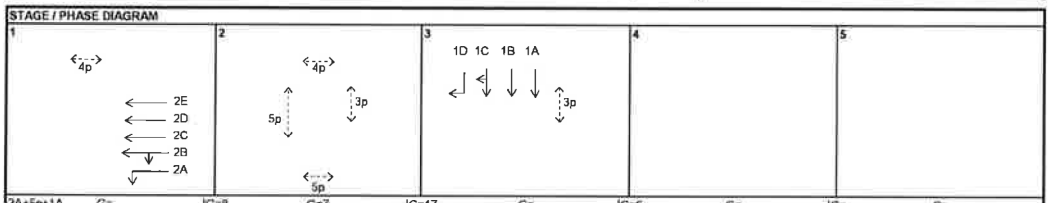
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



2A+5p+1A	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=
2B+5p+1A	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Argyle Street (WB)														
2A	1	3.40	Y	N	10		333	100%	1190	**0.280**	323	100%	1190	0.271
2B	1	3.40	N	N	13		409	1%	1465	0.279	390	33%	1410	**0.277**
2C	1	3.40	N	N			498		1780	0.280	492		1780	0.276
2D	1	3.40	N	N			498		1780	0.280	483		1780	0.271
2E	1	3.40	Y	N			463		1660	0.279	433		1660	0.261
Shanghai Street (SB)														
1A	3	3.10	Y	N			210		1925	**0.109**	184		1925	**0.096**
1B	3	3.10	N	N			225		2065	0.109	197		2065	0.095
1C	3	3.10	N	N	10		205	65%	1880	0.109	184	46%	1930	0.095
1D	3	3.10	Y	N	8		175	100%	1605	0.109	153	100%	1605	0.095
3p	2,3		8GM +	16FG =	24	sec								
4p	1,2		6GM +	12FG =	18	sec								
5p	2		7GM +	14FG =	21	sec								

Notes:

AM Peak	2A+5p+1A	PM Peak	2B+5p+1A
Sum of Critical y *Y*	0.389	Sum of Critical y *Y*	0.372
Lost Time *L* (sec)	36	Lost Time *L* (sec)	36
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y Ypr*	0.651	Practical *Y Ypr*	0.651
Reserve Capacity *RC*	67%	Reserve Capacity *RC*	75%

Date : 4/Mar/20 Junction : J4 - Argyle Street/ Shanghai Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

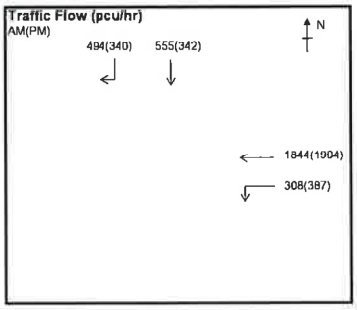
SNC-LAVALIN ATKINS

JOB NO. : 5190641

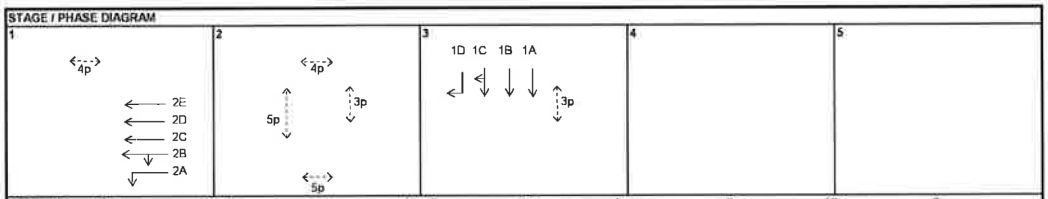
Junction : J4 - Argyle Street/ Shanghai Street Design Year: 2033

Scheme : Year 2033 Reference Flows Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



2E+5p+1C	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=	
2C+5p+1C	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
2A	1	3.40	Y	N	10		308	100%	1190	0.259	347	100%	1190	0.292
2B	1	3.40	N	N	13		404	0%	1465	0.276	427	9%	1450	0.294
2C	1	3.40	N	N			491		1780	0.276	525		1780	**0.295**
2D	1	3.40	N	N			491		1780	0.276	519		1780	0.292
2E	1	3.40	Y	N			458		1660	0.276	473		1660	0.285
Shanghai Street (SB)														
1A	3	3.10	Y	N			268		1925	0.139	165		1925	0.086
1B	3	3.10	N	N			287		2065	0.139	177		2065	0.086
1C	3	3.10	N	N	10		261	100%	1795	**0.145**	180	100%	1795	**0.100**
1D	3	3.10	Y	N	8		233	100%	1605	0.145	160	100%	1605	0.100
3p	2,3		8GM +	16FG =	24	sec								
4p	1,2		6GM +	12FG =	18	sec								
5p	2		7GM +	14FG =	21	sec								

Notes:

AM Peak	2E+5p+1C	PM Peak	2C+5p+1C
Sum of Critical y **Y**	**0.421**	Sum of Critical y **Y**	**0.395**
Lost Time **L** (sec)	36	Lost Time **L** (sec)	36
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y **Ypr**	0.651	Practical Y **Ypr**	0.651
Reserve Capacity **RC**	54%	Reserve Capacity **RC**	65%

Date : 4/Mar/20 Junction : J4 - Argyle Street/ Shanghai Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

Junction : J4 - Argyle Street/ Shanghai Street

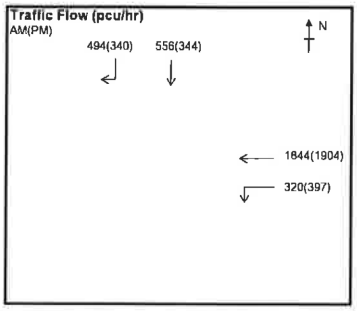
Design Year: 2033

Scheme : Year 2033 Design Flows

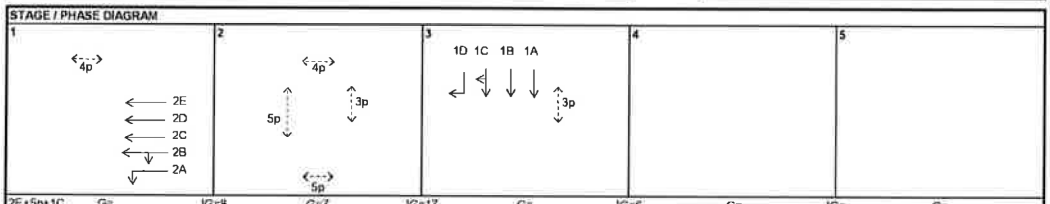
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



2E+5p+1C	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=
2C+5p+1C	G=	IG=8	G=7	IG=17	G=	IG=6	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Argyle Street (WB)														
2A	1	3.40	Y	N	10		320	100%	1190	0.269	349	100%	1190	0.293
2B	1	3.40	N	N	13		404	0%	1465	0.276	429	11%	1445	0.297
2C	1	3.40	N	N			491		1780	0.276	529		1780	**0.297**
2D	1	3.40	N	N			491		1780	0.276	521		1780	0.293
2E	1	3.40	Y	N			458		1660	0.276	473		1660	0.285
Shanghai Street (SB)														
1A	3	3.10	Y	N			268		1925	0.139	166		1925	0.086
1B	3	3.10	N	N			288		2065	0.139	178		2065	0.086
1C	3	3.10	N	N	10		261	100%	1795	**0.145**	180	100%	1795	**0.100**
1D	3	3.10	Y	N	8		233	100%	1605	0.145	160	100%	1605	0.100
3p	2,3		8GM +	16FG =	24	sec								
4p	1,2		6GM +	12FG =	18	sec								
5p	2		7GM +	14FG =	21	sec								

Notes:

AM Peak	2E+5p+1C	PM Peak	2C+5p+1C
Sum of Critical *y* ***Y***	**0.421**	Sum of Critical *y* ***Y***	**0.397**
Lost Time ***L*** (sec)	36	Lost Time ***L*** (sec)	36
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical Y ***Ypr***	0.651	Practical Y ***Ypr***	0.651
Reserve Capacity ***RC***	**55%**	Reserve Capacity ***RC***	**64%**

Date : 4/Mar/20 Junction : J4 - Argyle Street/ Shanghai Street

ATKINS CHINA LIMITED

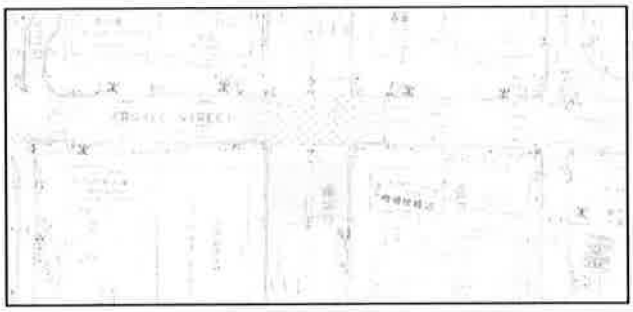
TRAFFIC SIGNAL CALCULATION SHEET

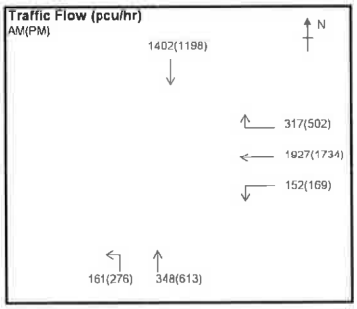
SNC-LAVALIN ATKINS

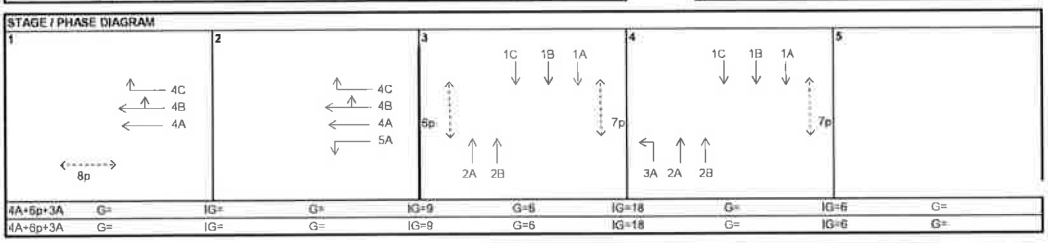
JOB NO. : 5190641

Junction : J5 - Argyle Street/ Nathan Road Design Year: 2019

Scheme : Year 2019 Observed Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Argyle Street (WB)														
5A	2	3.30	Y	N	10		152	100%	1690	0.090	169	100%	1690	0.100
4A	1,2	3.30	N	N			964		2085	**0.462**	867		2085	**0.416**
4B	1,2	3.30	N	N	13		963	0%	2085	0.462	867	0%	2085	0.416
4C	1,2	3.30	Y	N	10		317	100%	1690	0.188	502	100%	1690	0.297
Nathan Road (NB)														
3A	4	3.30	Y	N	13		161	100%	1735	**0.093**	276	100%	1735	**0.159**
2A	3,4	3.30	N	N			174		2085	0.083	307		2085	0.147
2B	3,4	3.30	N	N			174		2085	0.083	306		2085	0.147
Nathan Road (SB)														
1A	3,4	3.30	Y	N			446		1945	0.229	381		1945	0.196
1B	3,4	3.30	N	N			478		2085	0.229	409		2085	0.196
1C	3,4	3.30	N	N			478		2085	0.229	408		2085	0.196
6p	3		6GM +	15FG =	21	sec								
7p	3,4		6GM +	16FG =	22	sec								
8p	1		10GM +	12FG =	22	sec								

Notes:

AM Peak	4A+6p+3A	PM Peak	4A+6p+3A
Sum of Critical y **Y**	**0.555**	Sum of Critical y **Y**	**0.575**
Lost Time **L** (sec)	37	Lost Time **L** (sec)	37
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y **Ypr**	0.644	Practical Y **Ypr**	0.644
Reserve Capacity **RC**	**16%**	Reserve Capacity **RC**	**12%**

Date : 4/Mar/20 Junction : J5 - Argyle Street/ Nathan Road

ATKINS CHINA LIMITED

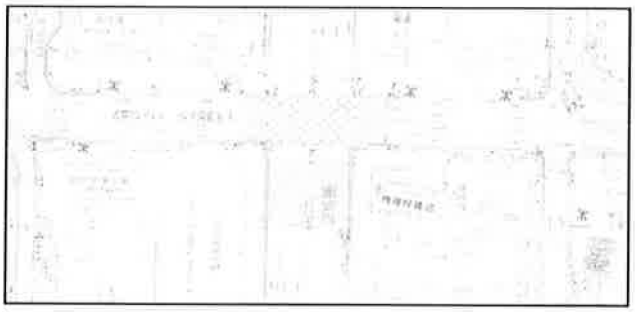
TRAFFIC SIGNAL CALCULATION SHEET

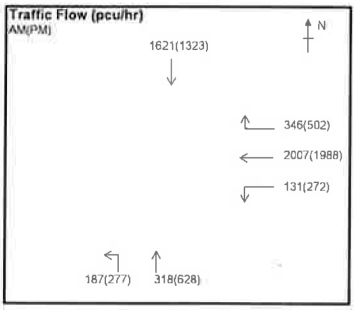
SNC·LAVALIN ATKINS

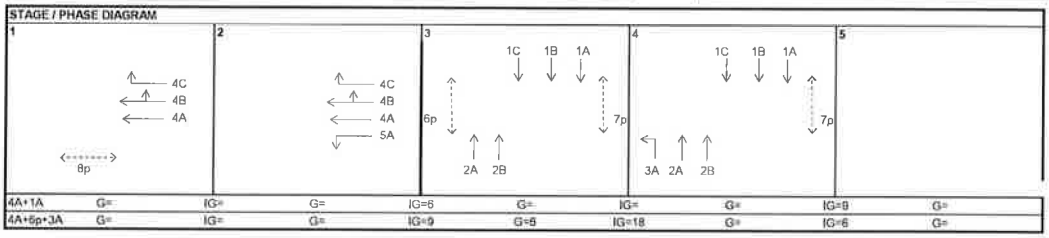
JOB NO. : 5190641

Junction : J5 - Argyle Street/ Nathan Road Design Year: 2033

Scheme : Year 2033 Reference Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Argyle Street (WB)														
5A	2	3.30	Y	N	10		131	100%	1690	0.078	272	100%	1690	0.161
4A	1,2	3.30	N	N			1004		2085	**0.482**	994		2085	**0.477**
4B	1,2	3.30	N	N	13		1003	0%	2085	0.481	994	0%	2085	0.477
4C	1,2	3.30	Y	N	10		346	100%	1690	0.205	502	100%	1690	0.297
Nathan Road (NB)														
3A	4	3.30	Y	N	13		187	100%	1735	0.108	277	100%	1735	**0.160**
2A	3,4	3.30	N	N			159		2085	0.076	314		2085	0.151
2B	3,4	3.30	N	N			159		2085	0.076	314		2085	0.151
Nathan Road (SB)														
1A	3,4	3.30	Y	N			516		1945	**0.265**	421		1945	0.216
1B	3,4	3.30	N	N			552		2085	0.265	451		2085	0.216
1C	3,4	3.30	N	N			553		2085	0.265	451		2085	0.216
6p	3		6GM +	15FG =	21	sec								
7p	3,4		6GM +	16FG =	22	sec								
8p	1		10GM +	12FG =	22	sec								

Notes:

AM Peak	4A+1A	PM Peak	4A+5p+3A
Sum of Critical y **Y**	**0.747**	Sum of Critical y **Y**	**0.636**
Lost Time **L** (sec)	13	Lost Time **L** (sec)	37
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical **Y** ***Ypr***	0.810	Practical **Y** ***Ypr***	0.644
Reserve Capacity ***RC***	8%	Reserve Capacity ***RC***	1%

Date : 4/Mar/20 Junction : J5 - Argyle Street/ Nathan Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

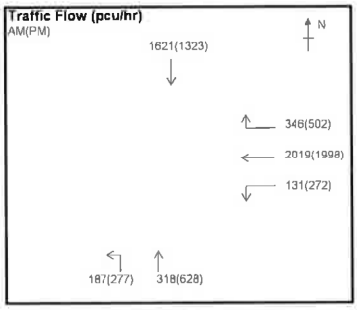
SNC-LAVALIN ATKINS

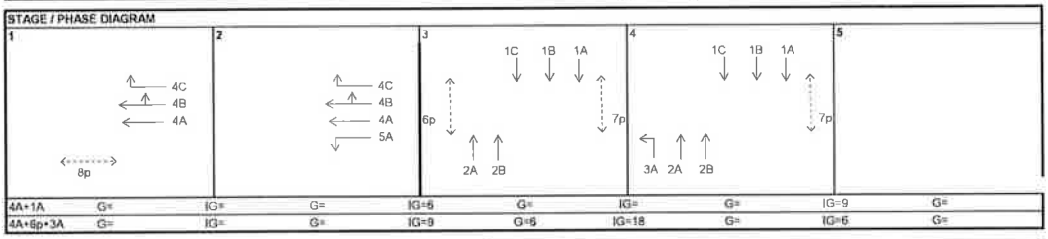
JOB NO. : 5190641

Junction : J5 - Argyle Street/ Nathan Road Design Year: 2033

Scheme : Year 2033 Design Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
5A	2	3.30	Y	N	10		131	100%	1690	0.078	272	100%	1690	0.161
4A	1,2	3.30	N	N			1010		2085	**0.484**	999		2085	**0.479**
4B	1,2	3.30	N	N	13		1009	0%	2085	0.484	999	0%	2085	0.479
4C	1,2	3.30	Y	N	10		346	100%	1690	0.205	502	100%	1690	0.297
Nathan Road (NB)														
3A	4	3.30	Y	N	13		187	100%	1735	0.108	277	100%	1735	**0.160**
2A	3,4	3.30	N	N			159		2085	0.076	314		2085	0.151
2B	3,4	3.30	N	N			159		2085	0.076	314		2085	0.151
Nathan Road (SB)														
1A	3,4	3.30	Y	N			516		1945	**0.265**	421		1945	0.216
1B	3,4	3.30	N	N			552		2085	0.265	451		2085	0.216
1C	3,4	3.30	N	N			553		2085	0.265	451		2085	0.216
6p	3		6GM +	15FG =	21	sec								
7p	3,4		6GM +	16FG =	22	sec								
8p	1		10GM +	12FG =	22	sec								

Notes:

AM Peak	4A+1A	PM Peak	4A+6p+3A
Sum of Critical y **Y**	**0.750**	Sum of Critical y **Y**	**0.639**
Lost Time **L** (sec)	13	Lost Time **L** (sec)	37
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y **Ypr**	0.810	Practical Y **Ypr**	0.644
Reserve Capacity **RC**	8%	Reserve Capacity **RC**	**1%**

Date : 4/Mar/20 Junction : J5 - Argyle Street/ Nathan Road

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

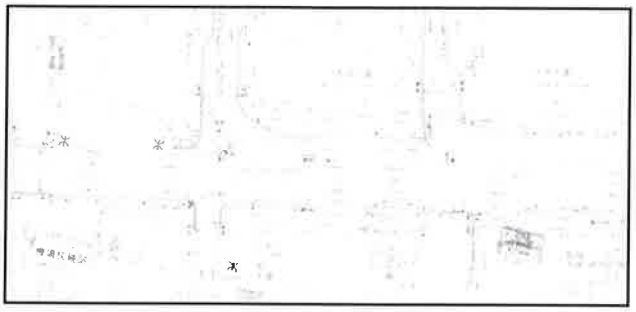
Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

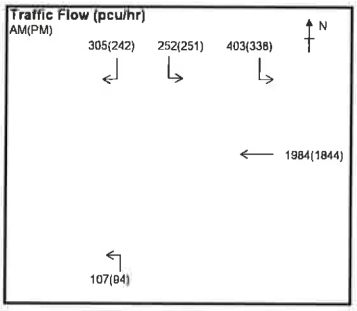
Design Year: 2019

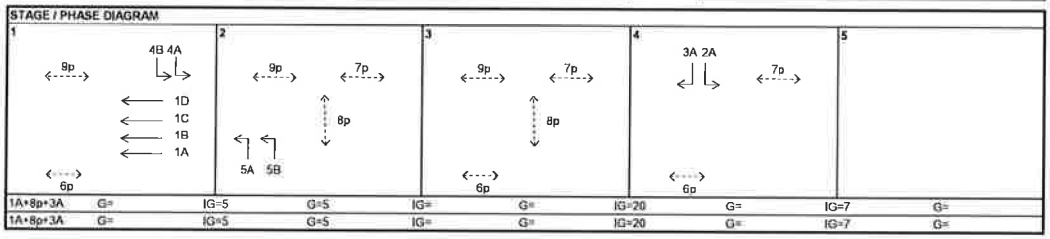
Scheme : Year 2019 Observed Flows

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Argyle Street (WB)														
1A	1	3.00	Y	N			447		1435	**0.312**	416		1435	**0.290**
1B	1	3.00	N	N			512		1645	0.312	476		1645	0.290
1C	1	3.00	N	N			512		1645	0.312	476		1645	0.290
1D	1	3.00	N	N			512		1645	0.312	476		1645	0.290
Tung Choi Street (SB)														
4A	1	3.50	N	N	13		207	100%	1840	0.113	173	100%	1840	0.094
4B	1	3.50	Y	N	15		196	100%	1750	0.112	165	100%	1750	0.094
Sai Yeung Choi Street South (NB)														
5A	2	3.50	Y	N	8		52	100%	1605	0.032	46	100%	1605	0.029
5B	2	3.50	Y	N	10		55	100%	1675	0.033	48	100%	1675	0.029
Sai Yeung Choi Street (SB)														
2A	4	4.60	Y	N	15		252	100%	1700	0.148	251	100%	1700	0.148
3A	4	4.00	Y	N	8		305	100%	1510	**0.202**	242	100%	1510	**0.160**
6p	1,3,4		5GM +	7FG =	12	sec								
7p	2,3,4		5GM +	10FG =	15	sec								
8p	2,3		5GM +	17FG =	22	sec								
9p	1,2,3		5GM +	13FG =	18	sec								

Notes:

AM Peak	1A+8p+3A	PM Peak	1A+8p+3A
Sum of Critical *y* **Y**	**0.514**	Sum of Critical *y* **Y**	**0.450**
Lost Time *L* (sec)	35	Lost Time *L* (sec)	35
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.658	Practical *Y* ***Ypr***	0.658
Reserve Capacity ***RC***	28%	Reserve Capacity ***RC***	46%

Date : 4/Mar/20 Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

ATKINS CHINA LIMITED

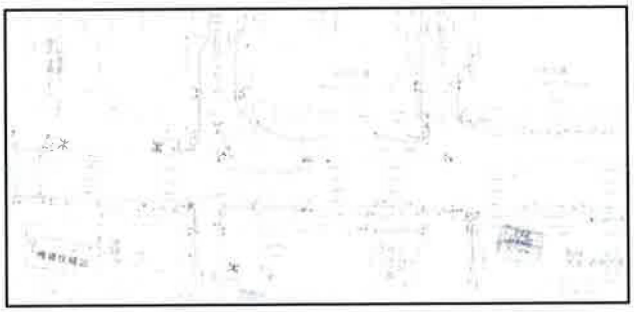
TRAFFIC SIGNAL CALCULATION SHEET

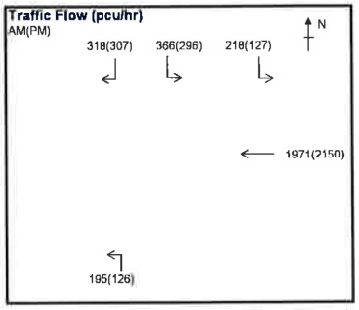
SNC-LAVALIN ATKINS

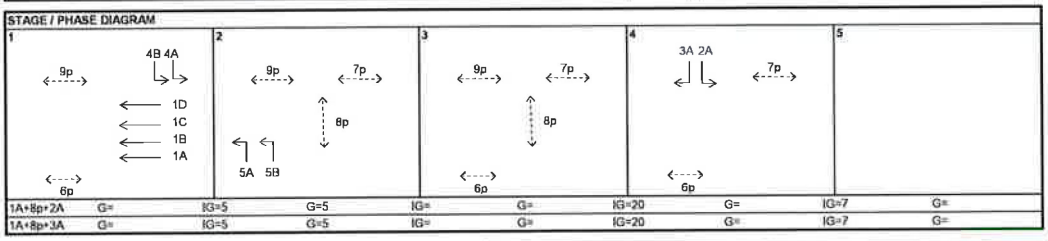
JOB NO. : 5190641

Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street Design Year: 2033

Scheme : Year 2033 Reference Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			444		1435	**0.310**	484		1435	**0.338**
1B	1	3.00	N	N			509		1645	0.310	555		1645	0.338
1C	1	3.00	N	N			509		1645	0.310	555		1645	0.338
1D	1	3.00	N	N			509		1645	0.310	555		1645	0.338
Tung Choi Street (SB)														
4A	1	3.50	N	N	13		112	100%	1840	0.061	65	100%	1840	0.035
4B	1	3.50	Y	N	15		106	100%	1750	0.061	62	100%	1750	0.035
Sai Yeung Choi Street South (NB)														
5A	2	3.50	Y	N	8		95	100%	1605	0.059	62	100%	1605	0.039
5B	2	3.50	Y	N	10		100	100%	1675	0.060	64	100%	1675	0.038
Sai Yeung Choi Street (SB)														
2A	4	4.60	Y	N	15		366	100%	1700	**0.215**	296	100%	1700	0.174
3A	4	4.00	Y	N	8		318	100%	1510	0.211	307	100%	1510	**0.203**
6p	1,3,4		5GM +	7FG =	12	sec								
7p	2,3,4		5GM +	10FG =	15	sec								
8p	2,3		5GM +	17FG =	22	sec								
9p	1,2,3		5GM +	13FG =	18	sec								

Notes:

AM Peak	1A+8p+2A	PM Peak	1A+8p+3A
Sum of Critical y **Y**	**0.525**	Sum of Critical y **Y**	**0.541**
Lost Time **L** (sec)	35	Lost Time **L** (sec)	35
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical **Y Ypr**	0.658	Practical **Y Ypr**	0.658
Reserve Capacity **RC**	**25%**	Reserve Capacity **RC**	**22%**

Date : 4/Mar/20 Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

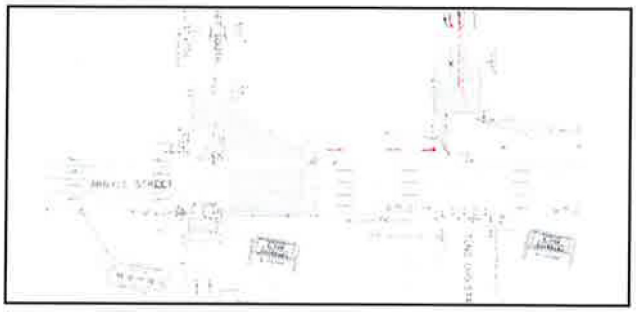
Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

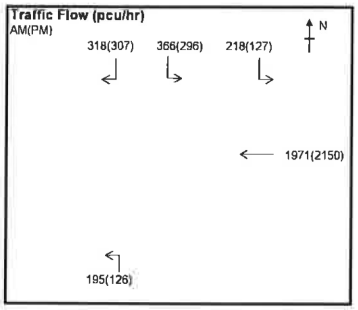
Design Year: 2033

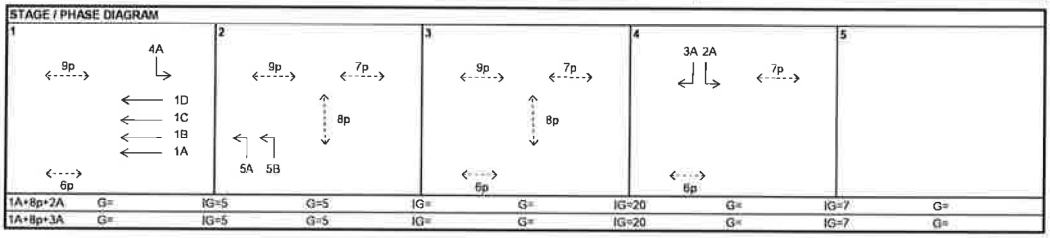
Scheme : Year 2033 Reference Flows - with MKFS

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			444		1435	**0.310**	484		1435	**0.338**
1B	1	3.00	N	N			509		1645	0.310	555		1645	0.338
1C	1	3.00	N	N			509		1645	0.310	555		1645	0.338
1D	1	3.00	N	N			509		1645	0.310	555		1645	0.338
Tung Choi Street (SB)														
4A	1	5.00	Y	N	15		218	100%	1925	0.113	127	100%	1925	0.066
Sai Yeung Choi Street South (NB)														
5A	2	3.50	Y	N	8		95	100%	1605	0.059	62	100%	1605	0.039
5B	2	3.50	Y	N	10		100	100%	1675	0.060	64	100%	1675	0.038
Sai Yeung Choi Street (SB)														
2A	4	4.60	Y	N	15		366	100%	1700	**0.215**	296	100%	1700	0.174
3A	4	4.00	Y	N	8		318	100%	1510	0.211	307	100%	1510	**0.203**
6p	1,3,4		5GM +	7FG =	12	sec								
7p	2,3,4		5GM +	10FG =	15	sec								
8p	2,3		5GM +	17FG =	22	sec								
9p	1,2,3		5GM +	13FG =	18	sec								

Notes:

AM Peak	1A+8p+2A	PM Peak	1A+8p+3A
Sum of Critical *y* **Y**	**0.520**	Sum of Critical *y* **Y**	**0.541**
Lost Time *L* (sec)	35	Lost Time *L* (sec)	35
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.658	Practical *Y* ***Ypr***	0.658
Reserve Capacity ***RC***	26%	Reserve Capacity ***RC***	22%

Date : 4/Mar/20 Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

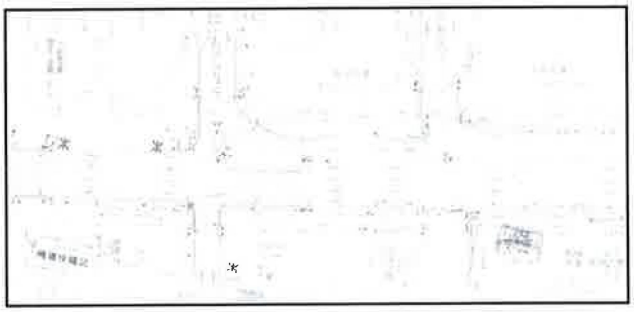
Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

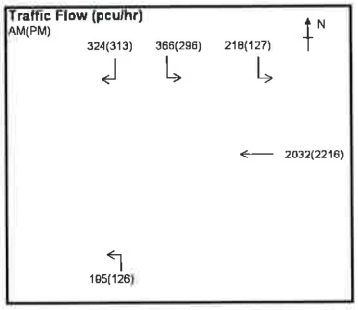
Design Year: 2033

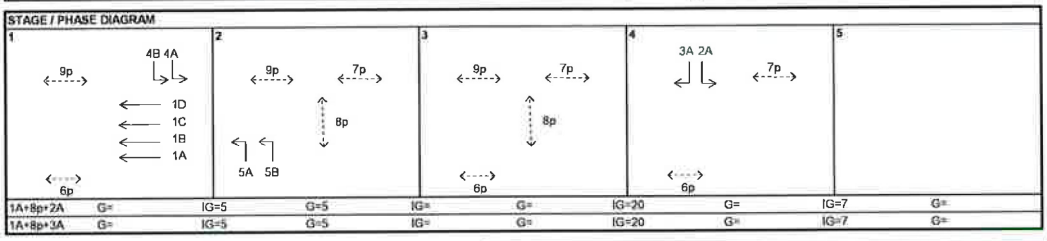
Scheme : Year 2033 Design Flows

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Argyle Street (WB)														
1A	1	3.00	Y	N			458		1435	**0.319**	499		1435	**0.348**
1B	1	3.00	N	N			525		1645	0.319	572		1645	0.348
1C	1	3.00	N	N			525		1645	0.319	572		1645	0.348
1D	1	3.00	N	N			525		1645	0.319	572		1645	0.348
Tung Choi Street (SB)														
4A	1	3.50	N	N	13		112	100%	1840	0.061	65	100%	1840	0.035
4B	1	3.50	Y	N	15		106	100%	1750	0.061	62	100%	1750	0.035
Sai Yeung Choi Street South (NB)														
5A	2	3.50	Y	N	8		95	100%	1605	0.059	62	100%	1605	0.039
5B	2	3.50	Y	N	10		100	100%	1675	0.060	64	100%	1675	0.038
Sai Yeung Choi Street (SB)														
2A	4	4.60	Y	N	15		366	100%	1700	**0.215**	296	100%	1700	0.174
3A	4	4.00	Y	N	8		324	100%	1510	0.215	313	100%	1510	**0.207**
6p	1,3,4		5GM +	7FG =	12	sec								
7p	2,3,4		5GM +	10FG =	15	sec								
8p	2,3		5GM +	17FG =	22	sec								
9p	1,2,3		5GM +	13FG =	18	sec								

Notes:

AM Peak	1A+8p+2A	PM Peak	1A+8p+3A
Sum of Critical *y* **Y**	**0.534**	Sum of Critical *y* **Y**	**0.555**
Lost Time *L* (sec)	35	Lost Time *L* (sec)	35
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.658	Practical *Y* ***Ypr***	0.658
Reserve Capacity ***RC***	23%	Reserve Capacity ***RC***	18%

Date : 4/Mar/20 Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

ATKINS CHINA LIMITED

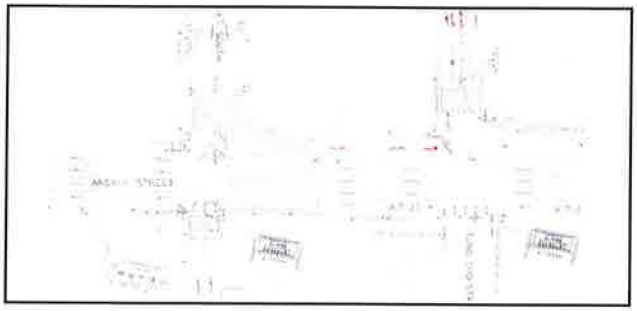
TRAFFIC SIGNAL CALCULATION SHEET

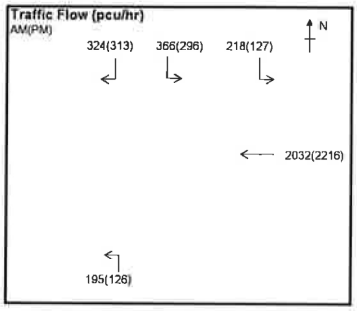
SNC-LAVALIN ATKINS

JOB NO. : 5190641

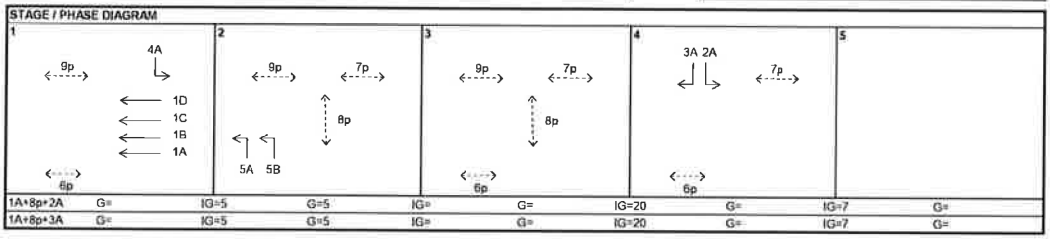
Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street Design Year: 2033

Scheme : Year 2033 Design Flows - with MKFS Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



1A+8p+2A	G=	IG=5	G=5	IG=	G=	IG=20	G=	IG=7	G=	
1A+8p+3A	G=	IG=5	G=5	IG=	G=	IG=20	G=	IG=7	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Argyle Street (WB)														
1A	1	3.00	Y	N			458		1435	**0.319**	499		1435	**0.348**
1B	1	3.00	N	N			525		1645	0.319	572		1645	0.348
1C	1	3.00	N	N			525		1645	0.319	572		1645	0.348
1D	1	3.00	N	N			525		1645	0.319	572		1645	0.348
Tung Choi Street (SB)														
4A	1	5.00	Y	N	15		218	100%	1925	0.113	127	100%	1925	0.066
Sai Yeung Choi Street South (NB)														
5A	2	3.50	Y	N	8		95	100%	1605	0.059	62	100%	1605	0.039
5B	2	3.50	Y	N	10		100	100%	1675	0.060	64	100%	1675	0.038
Sai Yeung Choi Street (SB)														
2A	4	4.60	Y	N	15		366	100%	1700	**0.215**	296	100%	1700	0.174
3A	4	4.00	Y	N	8		324	100%	1510	0.215	313	100%	1510	**0.207**
6p	1,3,4		5GM +	7FG =	12	sec								
7p	2,3,4		5GM +	10FG =	15	sec								
8p	2,3		5GM +	17FG =	22	sec								
9p	1,2,3		5GM +	13FG =	18	sec								

Notes:

AM Peak	1A+8p+2A	PM Peak	1A+8p+3A
Sum of Critical *y* ***Y***	**0.534**	Sum of Critical *y* ***Y***	**0.555**
Lost Time ***L*** (sec)	35	Lost Time ***L*** (sec)	35
Cycle Time ***c*** (sec)	130	Cycle Time ***c*** (sec)	130
Practical *Y* ***Ypr***	0.658	Practical *Y* ***Ypr***	0.658
Reserve Capacity ***RC***	**23%**	Reserve Capacity ***RC***	**18%**

Date : 4/Mar/20 Junction : J6 - Argyle Street/ Sai Yeung Choi Street/ Tung Choi Street

ATKINS CHINA LIMITED

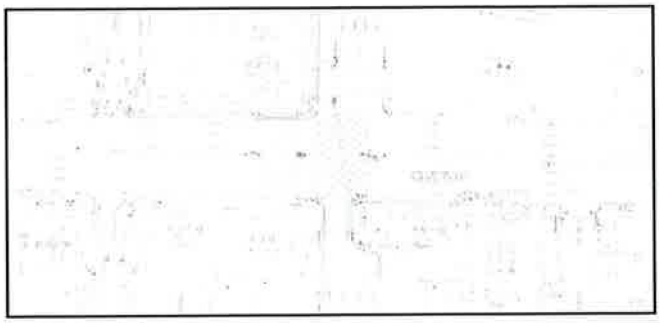
TRAFFIC SIGNAL CALCULATION SHEET

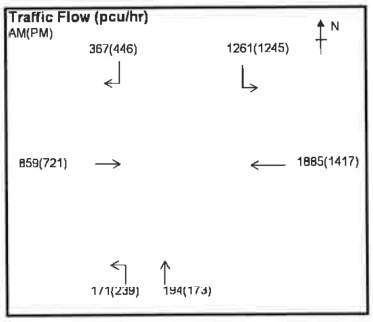
SNC·LAVALIN ATKINS

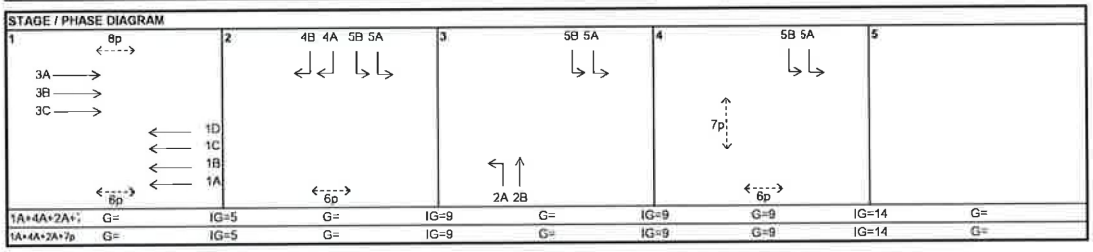
JOB NO. : 5190641

Junction : J7 - Argyle Street/ Sai Yee Street Design Year: 2019

Scheme : Year 2019 Observed Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			468		1630	**0.287**	352		1630	**0.216**
1B	1	3.00	N	N			501		1745	0.287	377		1745	0.216
1C	1	3.00	N	N			501		1745	0.287	377		1745	0.216
1D	1	3.00	N	N			414		1440	0.287	311		1440	0.216
Argyle Street (EB)														
3A	1	3.20	Y	N			273		1935	0.141	229		1935	0.118
3B	1	3.20	N	N			293		2075	0.141	246		2075	0.119
3C	1	3.20	N	N			293		2075	0.141	246		2075	0.119
Sai Yee Street (SB)														
5A	2,3,4	2.90	Y	N	10		567	100%	1490	0.381	560	100%	1490	0.376
5B	2,3,4	2.90	N	N	13		694	100%	1825	0.380	685	100%	1825	0.375
4A	2	2.90	N	N	18		196	100%	1695	**0.116**	238	100%	1695	**0.140**
4B	2	2.90	N	N	15		171	100%	1485	0.115	208	100%	1485	0.140
Sai Yee Street (NB)														
2A	3	3.50	Y	N	10		171	100%	1710	**0.100**	239	100%	1710	**0.140**
2B	3	3.50	N	N			194		2105	0.092	173		2105	0.082
6p	1,2,4		6GM +	6FG =	10	sec								
7p	4		9GM +	12FG =	21	sec								
8p	1		13GM +	11FG =	24	sec								

Notes:

AM Peak	1A+4A+2A+7p	PM Peak	1A+4A+2A+7p
Sum of Critical y **Y**	**0.503**	Sum of Critical y **Y**	**0.496**
Lost Time **L** (sec)	43	Lost Time **L** (sec)	43
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y *Ypr*	0.602	Practical Y *Ypr*	0.602
Reserve Capacity ***RC***	20%	Reserve Capacity ***RC***	21%

Date : 4/Mar/20 Junction : J7 - Argyle Street/ Sai Yee Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

Junction : J7 - Argyle Street/ Sai Yee Street

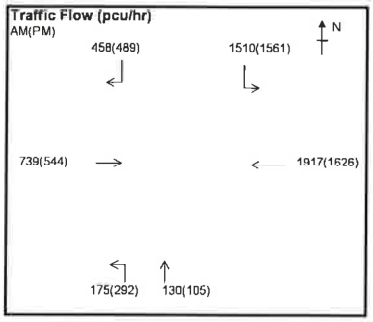
Design Year: 2033

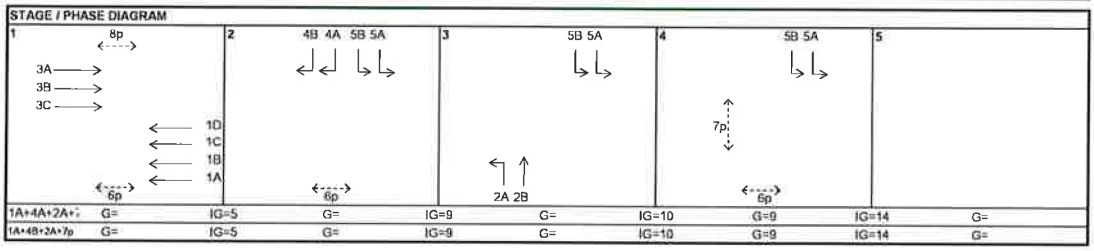
Scheme : Year 2033 Refernece Flows

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			476		1630	**0.292**	404		1630	**0.248**
1B	1	3.00	N	N			510		1745	0.292	433		1745	0.248
1C	1	3.00	N	N			510		1745	0.292	433		1745	0.248
1D	1	3.00	N	N			421		1440	0.292	357		1440	0.248
Argyle Street (EB)														
3A	1	3.70	Y	N			357		1985	0.180	263		1985	0.132
3B	1	3.70	N	N			382		2125	0.180	281		2125	0.132
Sai Yee Street (SB)														
5A	2,3,4	3.30	Y	N	15		724	100%	1770	0.409	749	100%	1770	0.423
5B	2,3,4	3.30	N	N	18		786	100%	1920	0.409	812	100%	1920	0.423
4A	2	3.20	N	N	18		244	100%	1720	**0.142**	260	100%	1720	0.151
4B	2	3.20	N	N	15		214	100%	1510	**0.142**	229	100%	1510	**0.152**
Sai Yee Street (NB)														
2A	3	3.50	Y	N	10		175	100%	1710	**0.102**	292	100%	1710	**0.171**
2B	3	3.50	N	N			130		2105	0.062	105		2105	0.050
6p	1,2,4		8GM +	8FG =	16	sec								
7p	4		13GM +	12FG =	25	sec								
8p	1		7GM +	6FG =	13	sec								

Notes:

AM Peak	1A+4A+2A+7p	PM Peak	1A+4B+2A+7p
Sum of Critical *y* **Y**	**0.536**	Sum of Critical *y* **Y**	**0.570**
Lost Time *L* (sec)	44	Lost Time *L* (sec)	44
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical Y ***Ypr***	0.595	Practical Y ***Ypr***	0.595
Reserve Capacity ***RC***	**11%**	Reserve Capacity ***RC***	**4%**

Date : 4/Mar/20 Junction : J7 - Argyle Street/ Sai Yee Street

ATKINS CHINA LIMITED

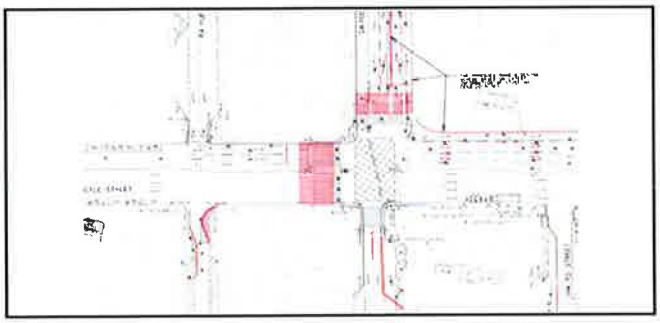
TRAFFIC SIGNAL CALCULATION SHEET

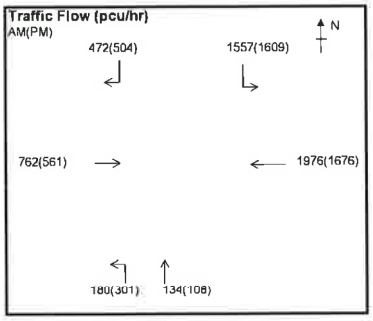
SNC-LAVALIN ATKINS

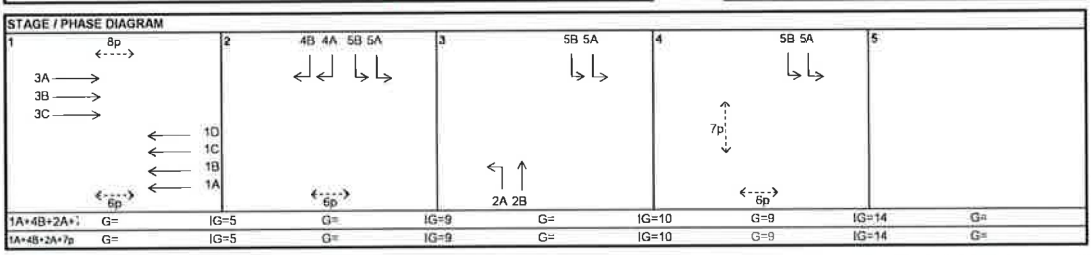
JOB NO. : 5190641

Junction : J7 - Argyle Street/ Sai Yee Street Design Year: 2033

Scheme : Year 2033 Design Flows Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			491		1630	**0.301**	416		1630	**0.255**
1B	1	3.00	N	N			526		1745	0.301	446		1745	0.255
1C	1	3.00	N	N			526		1745	0.301	446		1745	0.255
1D	1	3.00	N	N			434		1440	0.301	368		1440	0.255
Argyle Street (EB)														
3A	1	3.70	Y	N			368		1985	0.185	271		1985	0.137
3B	1	3.70	N	N			394		2125	0.185	290		2125	0.136
Sai Yee Street (SB)														
5A	2,3,4	3.30	Y	N	15		747	100%	1770	0.422	772	100%	1770	0.436
5B	2,3,4	3.30	N	N	18		810	100%	1920	0.422	837	100%	1920	0.436
4A	2	3.20	N	N	18		251	100%	1720	0.146	268	100%	1720	0.156
4B	2	3.20	N	N	15		221	100%	1510	**0.146**	236	100%	1510	**0.156**
Sai Yee Street (NB)														
2A	3	3.50	Y	N	10		180	100%	1710	**0.105**	301	100%	1710	**0.176**
2B	3	3.50	N	N			134		2105	0.064	108		2105	0.051
8p	1,2,4		8GM +	8FG =	16	sec								
7p	4		13GM +	12FG =	25	sec								
8p	1		7GM +	6FG =	13	sec								

Notes:

AM Peak	1A+4B+2A+7p	PM Peak	1A+4B+2A+7p
Sum of Critical y **Y**	**0.553**	Sum of Critical y **Y**	**0.588**
Lost Time **L** (sec)	44	Lost Time **L** (sec)	44
Cycle Time **c** (sec)	130	Cycle Time **c** (sec)	130
Practical Y ***Ypr***	0.595	Practical Y ***Ypr***	0.595
Reserve Capacity ***RC***	8%	Reserve Capacity ***RC***	1%

Date : 4/Mar/20 Junction : J7 - Argyle Street/ Sai Yee Street

ATKINS CHINA LIMITED

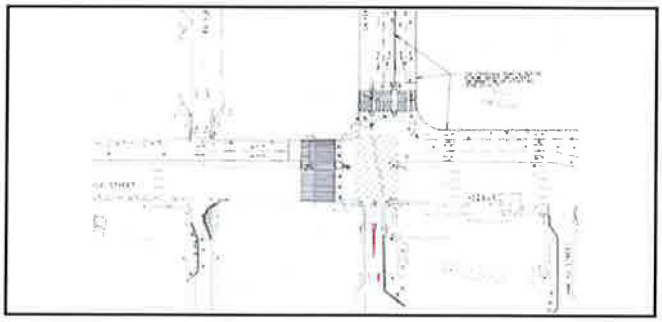
TRAFFIC SIGNAL CALCULATION SHEET

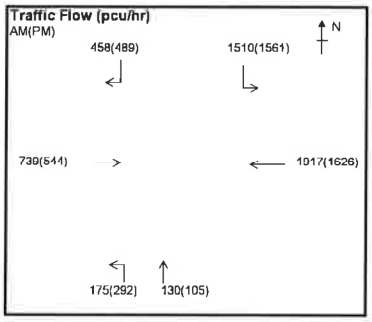
SNC·LAVALIN ATKINS

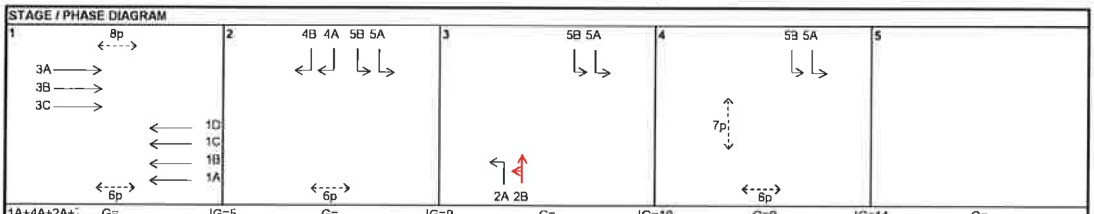
JOB NO. : 5190641

Junction : J7 - Argyle Street/ Sai Yee Street Design Year: 2033

Scheme : Year 2033 Reference Flows - w/ Improvement Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Argyle Street (WB)														
1A	1	3.00	Y	N			476		1630	**0.292**	404		1630	**0.248**
1B	1	3.00	N	N			510		1745	0.292	433		1745	0.248
1C	1	3.00	N	N			510		1745	0.292	433		1745	0.248
1D	1	3.00	N	N			421		1440	0.292	357		1440	0.248
Argyle Street (EB)														
3A	1	3.70	Y	N			357		1985	0.180	263		1985	0.132
3B	1	3.70	N	N			382		2125	0.180	281		2125	0.132
Sai Yee Street (SB)														
5A	2,3,4	3.30	Y	N	15		724	100%	1770	0.409	749	100%	1770	0.423
5B	2,3,4	3.30	N	N	18		786	100%	1920	0.409	812	100%	1920	0.423
4A	2	3.20	N	N	18		244	100%	1720	**0.142**	260	100%	1720	0.151
4B	2	3.20	N	N	15		214	100%	1510	0.142	229	100%	1510	**0.152**
Sai Yee Street (NB)														
2A	3	3.50	Y	N	10		139	100%	1710	**0.081**	184	100%	1710	**0.108**
2B	3	3.50	N	N	13		166	22%	2050	0.081	213	51%	1985	0.107
6p	1,2,4		8GM +	8FG =	16	sec								
7p	4		13GM +	12FG =	25	sec								
8p	1		7GM +	6FG =	13	sec								

Notes:

AM Peak	1A+4A+2A+7p	PM Peak	1A+4B+2A+7p
Sum of Critical *y* **Y**	**0.515**	Sum of Critical *y* **Y**	**0.507**
Lost Time *L* (sec)	44	Lost Time *L* (sec)	44
Cycle Time *c* (sec)	130	Cycle Time *c* (sec)	130
Practical *Y* ***Ypr***	0.595	Practical *Y* ***Ypr***	0.595
Reserve Capacity ***RC***	16%	Reserve Capacity ***RC***	17%

Date : 4/Mar/20 Junction : J7 - Argyle Street/ Sai Yee Street

ATKINS CHINA LIMITED

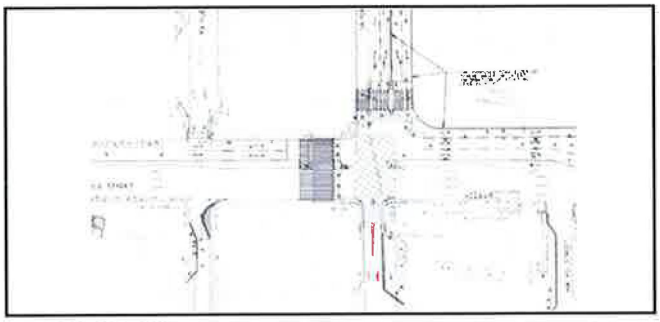
TRAFFIC SIGNAL CALCULATION SHEET

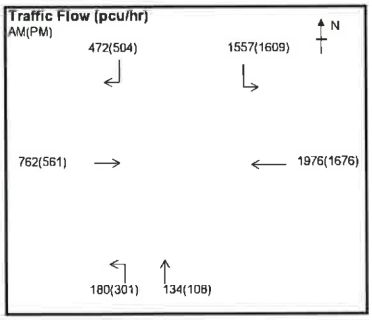
SNC-LAVALIN ATKINS

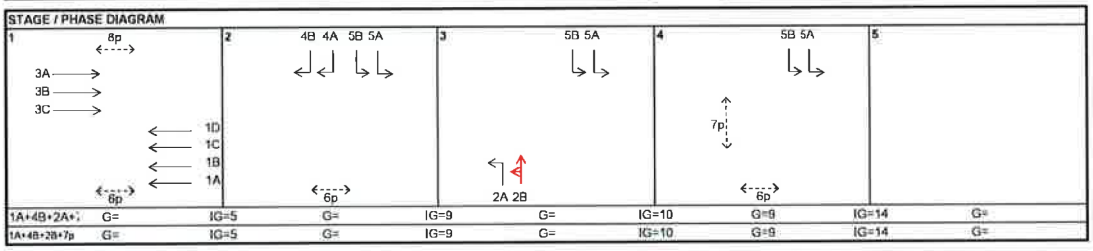
JOB NO. : 5190641

Junction : J7 - Argyle Street/ Sai Yee Street Design Year: 2033

Scheme : Year 2033 Design Flows - w/ Improvement Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Argyle Street (WB)														
1A	1	3.00	Y	N			491		1630	**0.301**	416		1630	**0.255**
1B	1	3.00	N	N			526		1745	0.301	446		1745	0.255
1C	1	3.00	N	N			526		1745	0.301	446		1745	0.255
1D	1	3.00	N	N			434		1440	0.301	368		1440	0.255
Argyle Street (EB)														
3A	1	3.70	Y	N			368		1985	0.185	271		1985	0.137
3B	1	3.70	N	N			394		2125	0.185	290		2125	0.136
Sai Yee Street (SB)														
5A	2,3,4	3.30	Y	N	15		747	100%	1770	0.422	772	100%	1770	0.436
5B	2,3,4	3.30	N	N	18		810	100%	1920	0.422	837	100%	1920	0.436
4A	2	3.20	N	N	18		251	100%	1720	0.146	268	100%	1720	0.156
4B	2	3.20	N	N	15		221	100%	1510	**0.146**	236	100%	1510	**0.156**
Sai Yee Street (NB)														
2A	3	3.50	Y	N	10		143	100%	1710	**0.084**	189	100%	1710	0.111
2B	3	3.50	N	N	13		171	22%	2050	0.083	220	51%	1985	**0.111**
6p	1,2,4		8GM +	8FG =	10	sec								
7p	4		13GM +	12FG =	25	sec								
8p	1		7GM +	6FG =	13	sec								

Notes:

	AM Peak	1A+4B+2A+7p	PM Peak	1A+4B+2B+7p
Sum of Critical y	**Y**	**0.531**		**0.523**
Lost Time	**L** (sec)	44		44
Cycle Time	**c** (sec)	130		130
Practical Y	**Ypr**	0.585		0.595
Reserve Capacity	**RC**	12%		14%

Date : 4/Mar/20 Junction : J7 - Argyle Street/ Sai Yee Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC·LAVALIN ATKINS

JOB NO. : 5190641

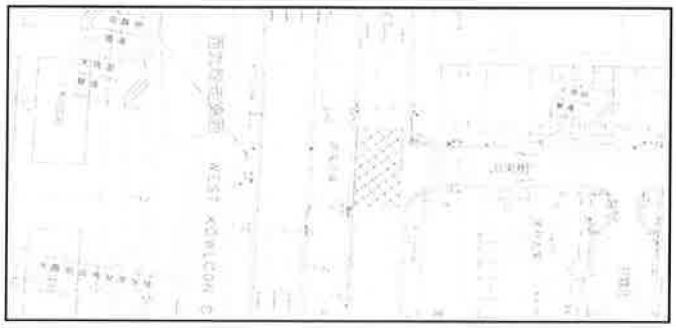
Junction : J8 - Ferry Street/ Shantung Street

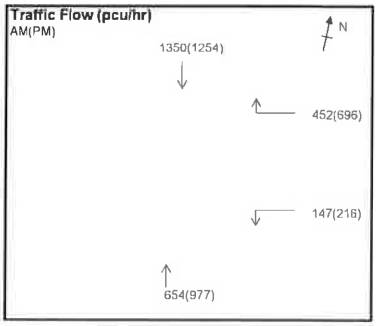
Design Year: 2019

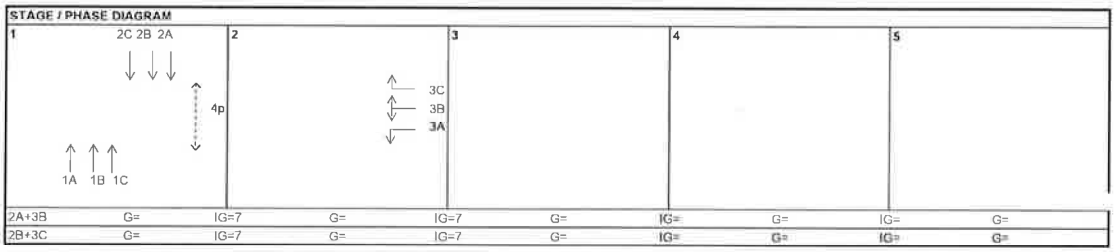
Scheme : Year 2019 Observed Flow

Designed by: KL

Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Ferry Street (SB)														
2A	1	3.50	Y	N			430		1965	**0.219**	399		1965	0.203
2B	1	3.50	N	N			460		2105	0.219	428		2105	**0.203**
2C	1	3.50	N	N			460		2105	0.219	427		2105	0.203
Ferry Street (NB)														
1A	1	3.30	Y	N			208		1945	0.107	311		1945	0.160
1B	1	3.30	N	N			223		2085	0.107	333		2085	0.160
1C	1	3.30	N	N			223		2085	0.107	333		2085	0.160
Shantung Street (WB)														
3A	2	3.20	Y	N	13		147	100%	1035	0.142	216	100%	1035	0.209
3B	2	3.20	N	N	15/17.5		253	0% / 100%	1340	**0.189**	389	0% / 100%	1340	0.290
3C	2	3.20	Y	N	15		199	100%	1055	0.189	307	100%	1055	**0.291**
4p	1		8GM +	11FG =	19	sec								

Notes:

AM Peak	2A+3B	PM Peak	2B+3C
Sum of Critical y *Y*	**0.408**	Sum of Critical y *Y*	**0.494**
Lost Time *L* (sec)	12	Lost Time *L* (sec)	**12**
Cycle Time c (sec)	65	Cycle Time c (sec)	**108**
Practical *Y Ypr*	0.734	Practical *Y Ypr*	**0.800**
Reserve Capacity *RC*	**80%**	Reserve Capacity *RC*	**62%**

Date : 28/Sep/20 Junction : J8 - Ferry Street/ Shantung Street

ATKINS CHINA LIMITED

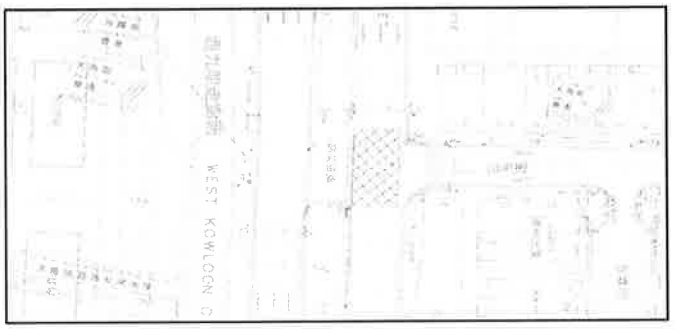
TRAFFIC SIGNAL CALCULATION SHEET

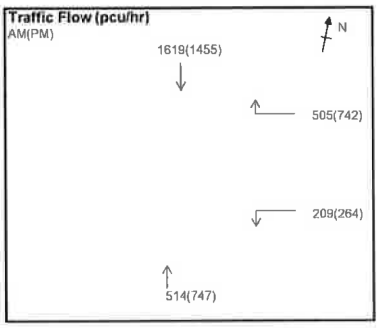
SNC-LAVALIN ATKINS

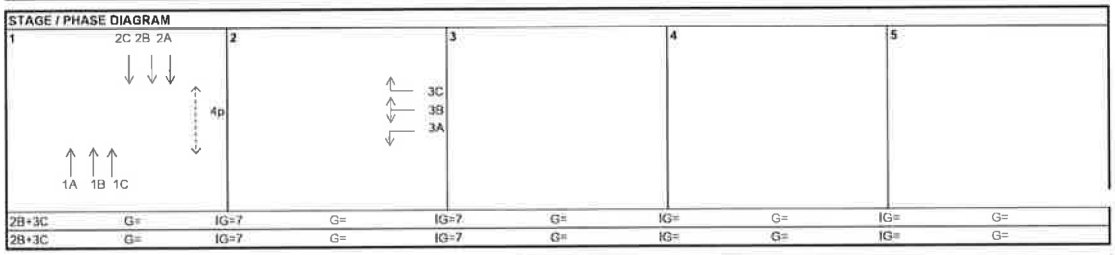
JOB NO. : 5190641

Junction : J8 - Ferry Street/ Shantung Street Design Year: 2033

Scheme : Year 2033 Reference Flow Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Ferry Street (SB)														
2A	1	3.50	Y	N			515		1965	0.262	463		1965	0.236
2B	1	3.50	N	N			552		2105	**0.262**	496		2105	**0.236**
2C	1	3.50	N	N			552		2105	0.262	496		2105	0.236
Ferry Street (NB)														
1A	1	3.30	Y	N			163		1945	0.084	238		1945	0.122
1B	1	3.30	N	N			176		2085	0.084	254		2085	0.122
1C	1	3.30	N	N			175		2085	0.084	255		2085	0.122
Shantung Street (WB)														
3A	2	3.20	Y	N	13		209	100%	1035	0.202	264	100%	1035	0.255
3B	2	3.20	N	N	15/17.5		282	0% / 100%	1340	0.210	415	0% / 100%	1340	0.310
3C	2	3.20	Y	N	15		223	100%	1055	**0.211**	327	100%	1055	**0.310**
4p	1		8GM +	11FG =	19	sec								

Notes:

AM Peak	2B+3C	PM Peak	2B+3C
Sum of Critical y **Y**	**0.474**	Sum of Critical y **Y**	**0.546**
Lost Time **L** (sec)	12	Lost Time **L** (sec)	12
Cycle Time **c** (sec)	65	Cycle Time **c** (sec)	108
Practical Y **Ypr**	0.734	Practical Y **Ypr**	0.800
Reserve Capacity **RC**	**55%**	Reserve Capacity **RC**	**47%**

Date : 28/Sep/20 Junction : J8 - Ferry Street/ Shantung Street

ATKINS CHINA LIMITED

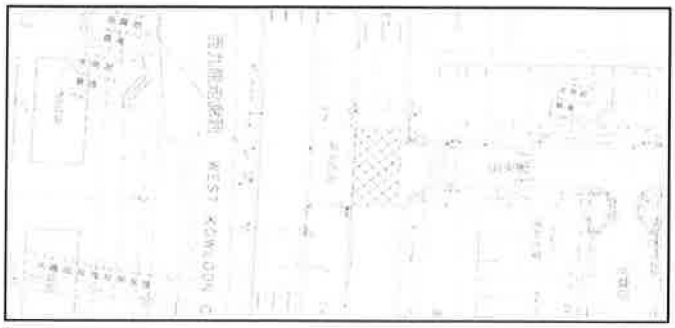
TRAFFIC SIGNAL CALCULATION SHEET

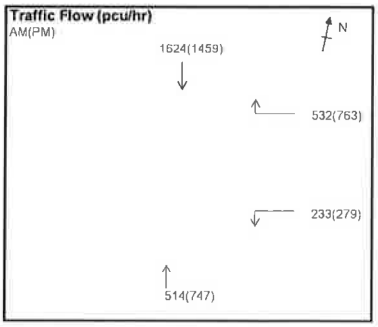
SNC-LAVALIN ATKINS

JOB NO. : 5190641

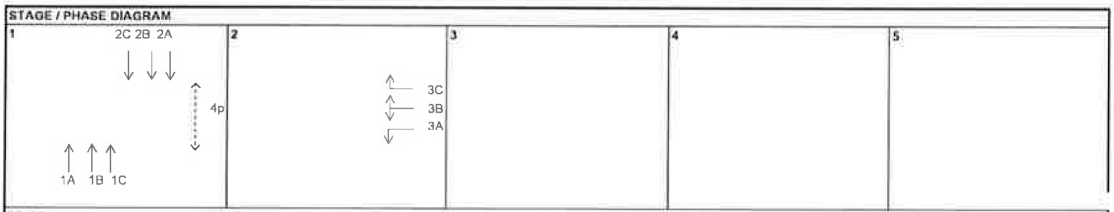
Junction : J8 - Ferry Street/ Shantung Street Design Year: 2033

Scheme : Year 2033 Design Flow Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



2C+3A	G=	IG=7	G=	IG=7	G=	IG=	G=	IG=	G=	
2B+3B	G=	IG=7	G=	IG=7	G=	IG=	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Ferry Street (SB)														
2A	1	3.50	Y	N			517		1965	0.263	464		1965	0.236
2B	1	3.50	N	N			553		2105	0.263	498		2105	0.237
2C	1	3.50	N	N			554		2105	**0.263**	497		2105	0.236
Ferry Street (NB)														
1A	1	3.30	Y	N			163		1945	0.084	238		1945	0.122
1B	1	3.30	N	N			176		2085	0.084	254		2085	0.122
1C	1	3.30	N	N			175		2085	0.084	255		2085	0.122
Shantung Street (WB)														
3A	2	3.20	Y	N	13		231	100%	1035	0.223	279	100%	1035	0.270
3B	2	3.20	N	N	15/17.5		299	1% / 99%	1340	0.223	427	0% / 100%	1340	**0.319**
3C	2	3.20	Y	N	15		235	100%	1055	0.223	336	100%	1055	0.318
4p	1		8GM +	11FG =	19	sec								

Notes:	AM Peak	2C+3A	PM Peak	2B+3B
	Sum of Critical y **Y**	**0.486**	Sum of Critical y **Y**	**0.555**
	Lost Time **L** (sec)	12	Lost Time **L** (sec)	12
	Cycle Time **c** (sec)	65	Cycle Time **c** (sec)	108
	Practical Y **Ypr**	0.734	Practical Y **Ypr**	0.800
	Reserve Capacity **RC**	**51%**	Reserve Capacity **RC**	**44%**

Date : 28/Sep/20 Junction : J8 - Ferry Street/ Shantung Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

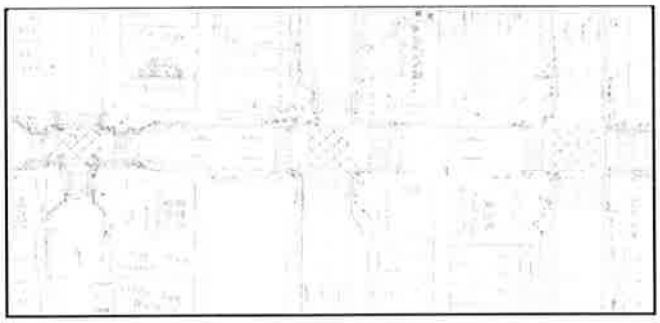
Junction : J9 - Reclamation Street/ Shantung Street

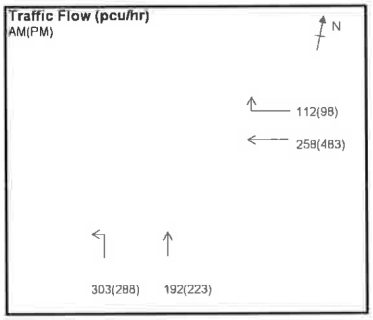
Design Year: 2019

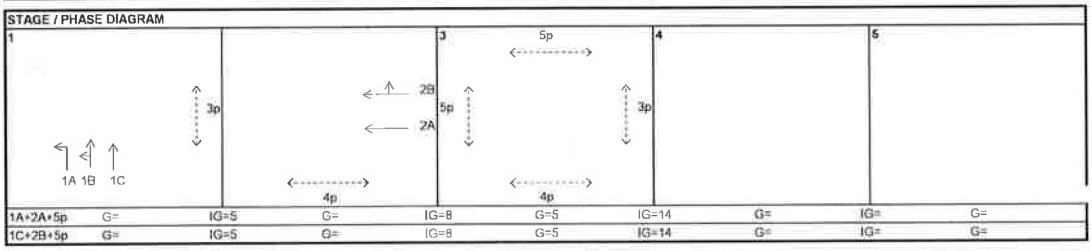
Scheme : Year 2019 Observed Flow

Designed by: KL

Checked by: EC







1A+2A+5p	G=	IG=5	G=	IG=8	G=5	IG=14	G=	IG=	G=
1C+2B+5p	G=	IG=5	G=	IG=8	G=5	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Reclaimation Street (NB)														
1A	1	3.30	Y	N	8		96	100%	810	**0.119**	98	100%	810	0.121
1B	1	3.30	N	N	10		215	96%	1820	0.118	224	85%	1850	0.121
1C	1	3.30	Y	N			184		1555	0.118	189		1555	**0.122**
Shantung Street (WB)														
2A	2	4.60	Y	N			155		830	**0.187**	238		830	0.287
2B	2	4.60	Y	N	10		215	52%	1155	0.186	343	29%	1195	**0.287**
3p	1.3		5GM +	10FG =	15	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		5GM +	11FG =	16	sec								

Notes:

AM Peak	1A+2A+5p	PM Peak	1C+2B+5p
Sum of Critical *y* **Y**	**0.305**	Sum of Critical *y* **Y**	**0.409**
Lost Time *L* (sec)	30	Lost Time *L* (sec)	30
Cycle Time *c* (sec)	90	Cycle Time *c* (sec)	108
Practical Y *Ypr*	0.600	Practical Y *Ypr*	0.650
Reserve Capacity *RC*	**97%**	Reserve Capacity *RC*	**59%**

Date : 4/Mar/20 Junction : J9 - Reclamation Street/ Shantung Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

Junction : J9 - Reclamation Street/ Shantung Street

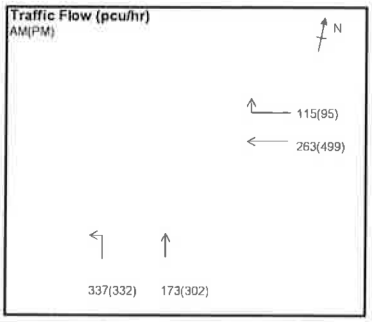
Design Year: 2033

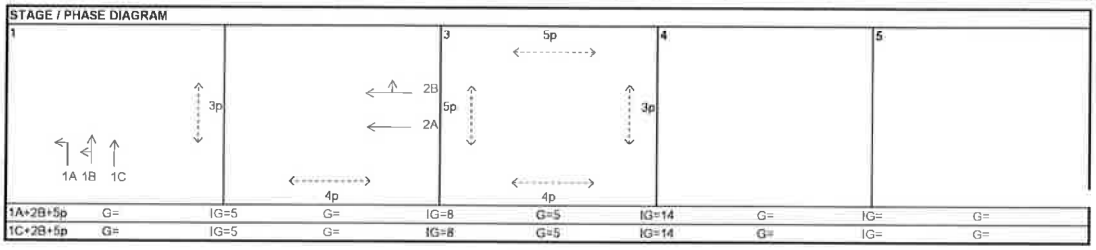
Scheme : Year 2033 Reference Flow

Designed by: KL

Checked by: EC







1A+2B+5p	G=	IG=5	G=	IG=8	G=5	IG=14	G=	IG=	G=
1C+2B+5p	G=	IG=5	G=	IG=8	G=5	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Reclaimation Street (NB)														
1A	1	3.30	Y	N	8		104	100%	810	**0.128**	121	100%	810	0.149
1B	1	3.30	N	N	10		**233**	100%	1815	0.128	280	75%	1875	0.149
1C	1	3.30	Y	N			173		1555	0.111	233		1555	**0.150**
Shantung Street (WB)														
2A	2	4.60	Y	N			158		830	0.190	243		830	0.293
2B	2	4.60	Y	N	10		220	52%	1155	**0.190**	351	27%	1195	**0.294**
3p	1,3		5GM +	10FG =	15	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		5GM +	11FG =	16	sec								

Notes:

AM Peak	1A+2B+5p	PM Peak	1C+2B+5p
Sum of Critical *y* **Y**	**0.319**	Sum of Critical *y* **Y**	**0.444**
Lost Time *L* (sec)	30	Lost Time *L* (sec)	**30**
Cycle Time *c* (sec)	**90**	Cycle Time *c* (sec)	108
Practical Y ***Ypr***	0.600	Practical Y ***Ypr***	0.550
Reserve Capacity ***RC***	**88%**	Reserve Capacity ***RC***	**47%**

Date : 4/Mar/20 Junction : J9 - Reclamation Street/ Shantung Street

ATKINS CHINA LIMITED

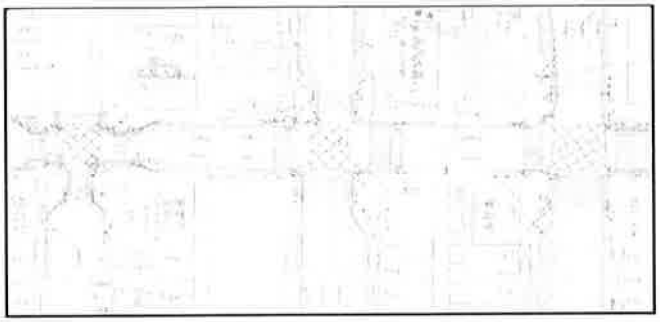
TRAFFIC SIGNAL CALCULATION SHEET

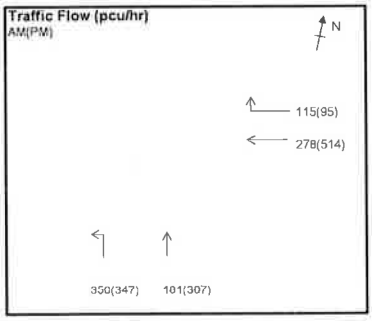
SNC-LAVALIN ATKINS

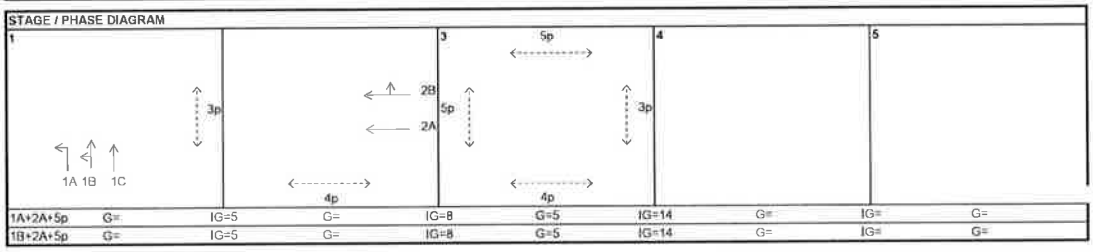
JOB NO. : 5190641

Junction : J9 - Reclamation Street/ Shantung Street Design Year: 2033

Scheme : Year 2033 Design Flow Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Reclaimation Street (NB)														
1A	1	3.30	Y	N	8		108	100%	810	**0.133**	125	100%	810	0.154
1B	1	3.30	N	N	10		**242**	100%	1815	0.133	289	77%	1870	**0.155**
1C	1	3.30	Y	N			181		1555	0.116	240		1555	0.154
Shantung Street (WB)														
2A	2	4.60	Y	N			164		830	**0.198**	249		830	**0.300**
2B	2	4.60	Y	N	10		229	50%	1160	0.197	360	26%	1200	0.300
3p	1,3		5GM +	10FG =	15	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		5GM +	11FG =	16	sec								

Notes:

AM Peak	1A+2A+5p	PM Peak	1B+2A+5p
Sum of Critical *y* **Y**	**0.331**	Sum of Critical *y* **Y**	**0.455**
Lost Time *L* (sec)	30	Lost Time *L* (sec)	30
Cycle Time *c* (sec)	90	Cycle Time *c* (sec)	108
Practical *Y* ***Ypr***	0.600	Practical *Y* ***Ypr***	0.650
Reserve Capacity ***RC***	**81%**	Reserve Capacity ***RC***	**43%**

Date : 4/Mar/20 Junction : J9 - Reclamation Street/ Shantung Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

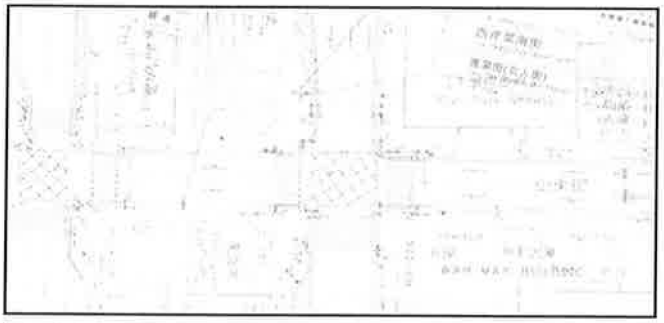
Junction : J10 - Shanghai Street/ Shantung Street

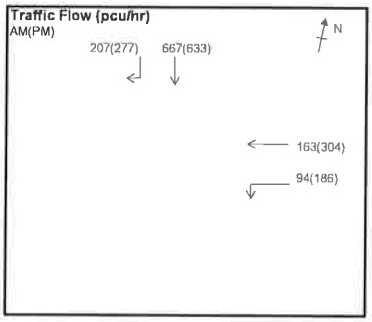
Design Year: 2019

Scheme : Year 2019 Observed Flow

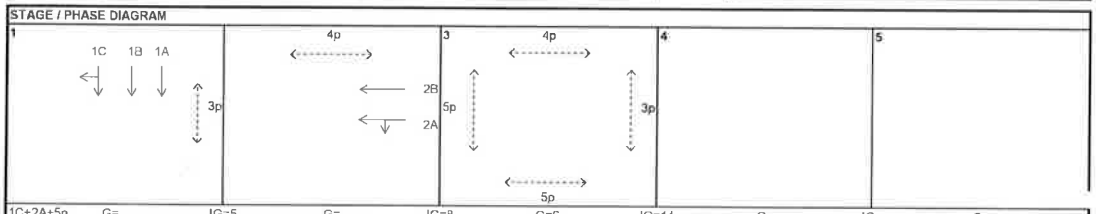
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



1C+2A+5p	G=	IG=5	G=	IG=8	G=6	IG=14	G=	IG=	G=	
1C+2A+5p	G=	IG=5	G=	IG=8	G=6	IG=14	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Shanghai Street (SB)														
1A	1	3.30	Y	N			294		1945	0.151	306		1945	0.157
1B	1	3.30	N	N			316		2085	0.152	327		2085	0.157
1C	1	3.30	Y	N	10		264	78%	1740	**0.152**	277	100%	1690	**0.164**
Shantung Street (WB)														
2A	2	4.60	Y	N	8		165	57%	1865	**0.088**	314	59%	1855	**0.169**
2B	2	4.60	Y	N			92		1040	0.088	176		1040	0.169
3p	1,3		6GM +	11FG =	17	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		6GM +	11FG =	17	sec								

Notes:

AM Peak	1C+2A+5p	PM Peak	1C+2A+5p
Sum of Critical *y* **Y**	**0.240**	Sum of Critical *y* **Y**	**0.333**
Lost Time *L* (sec)	**31**	Lost Time *L* (sec)	31
Cycle Time *c* (sec)	90	Cycle Time *c* (sec)	108
Practical *Y* ***Ypr***	0.590	Practical *Y* ***Ypr***	0.642
Reserve Capacity ***RC***	**146%**	Reserve Capacity ***RC***	**93%**

Date : 4/Mar/20 Junction : J10 - Shanghai Street/ Shantung Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

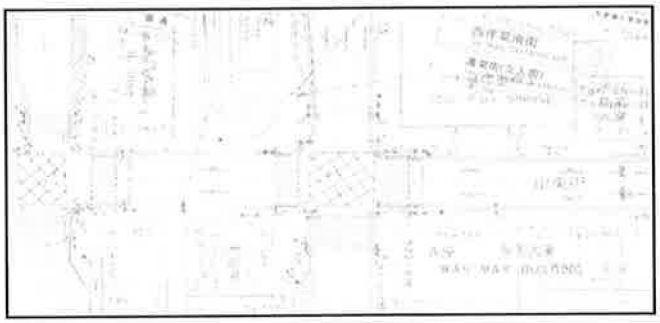
Junction : J10 - Shanghai Street/ Shantung Street

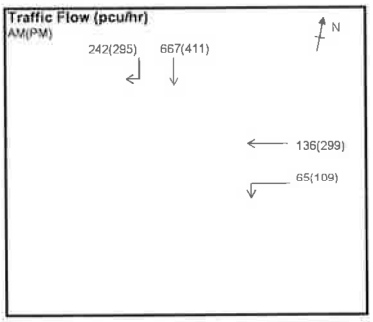
Design Year: 2033

Scheme : Year 2033 Reference Flow

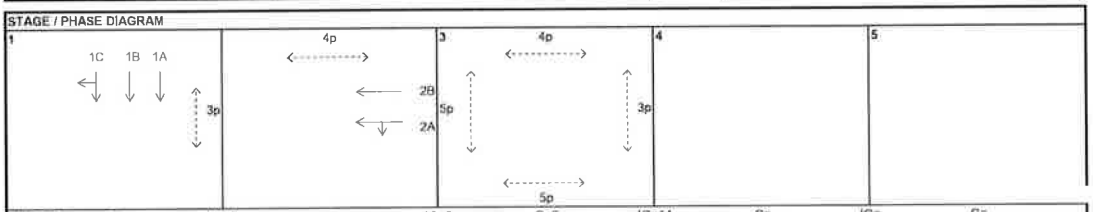
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



1A+2A+5p	G=	IG=5	G=	IG=8	G=5	IG=14	G=	IG=	G=
1C+2A+5p	G=	IG=5	G=	IG=8	G=6	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Shanghai Street (SB)														
1A	1	3.30	Y	N			308		1945	**0.158**	198		1945	0.102
1B	1	3.30	N	N			330		2085	0.158	213		2085	0.102
1C	1	3.30	Y	N	10		271	89%	1715	0.158	295	100%	1690	**0.175**
Shantung Street (WB)														
2A	2	4.60	Y	N	8		130	50%	1885	**0.069**	265	41%	1915	**0.138**
2B	2	4.60	Y	N			71		1040	0.068	143		1040	0.138
3p	1,3		6GM +	11FG =	17	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		6GM +	11FG =	17	sec								

Notes:

AM Peak	1A+2A+5p	PM Peak	1C+2A+5p
Sum of Critical y **Y**	**0.227**	Sum of Critical y **Y**	**0.313**
Lost Time **L** (sec)	31	Lost Time **L** (sec)	31
Cycle Time **c** (sec)	90	Cycle Time **c** (sec)	108
Practical Y **Ypr**	0.590	Practical Y **Ypr**	0.642
Reserve Capacity **RC**	**160%**	Reserve Capacity **RC**	**105%**

Date : 4/Mar/20 Junction : J10 - Shanghai Street/ Shantung Street

ATKINS CHINA LIMITED

TRAFFIC SIGNAL CALCULATION SHEET

SNC-LAVALIN ATKINS

JOB NO. : 5190641

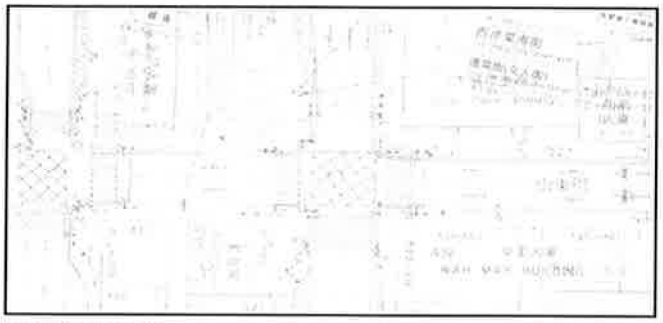
Junction : J10 - Shanghai Street/ Shantung Street

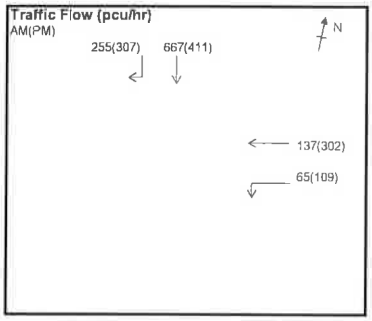
Design Year: 2033

Scheme : Year 2033 Design Flow

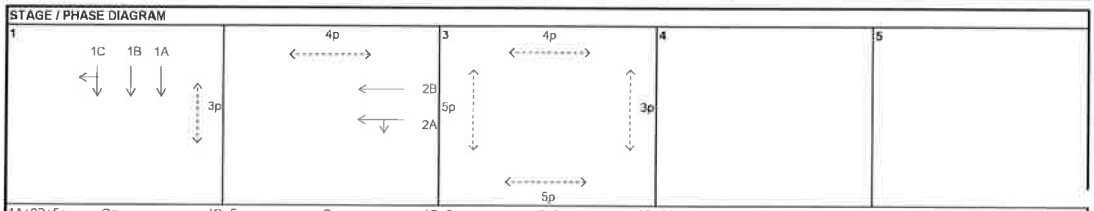
Designed by: KL

Checked by: EC





STAGE / PHASE DIAGRAM



1A+2B+5p	G=	IG=5	G=	IG=8	G=6	IG=14	G=	IG=	G=	
1C+2A+5p	G=	IG=5	G=	IG=8	G=6	IG=14	G=	IG=	G=	

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak: Design Flow q (pcu/hr)	AM Peak: Proportion turning (%) f	AM Peak: Saturation flow S (pcu/hr)	AM Peak: Flow factor y	PM Peak: Design Flow q (pcu/hr)	PM Peak: Proportion turning (%) f	PM Peak: Saturation flow S (pcu/hr)	PM Peak: Flow factor y
Shanghai Street (SB)														
1A	1	3.30	Y	N			313		1945	**0.161**	198		1945	0.102
1B	1	3.30	N	N			335		2085	0.161	213		2085	0.102
1C	1	3.30	Y	N	10		274	93%	1705	0.161	307	100%	1690	**0.182**
Shantung Street (WB)														
2A	2	4.60	Y	N	8		130	50%	1885	0.069	267	41%	1920	**0.139**
2B	2	4.60	Y	N			72		1040	**0.069**	144		1040	0.138
3p	1,3		6GM +	11FG =	17	sec								
4p	2,3		6GM +	11FG =	17	sec								
5p	3		6GM +	11FG =	17	sec								

Notes:

	AM Peak	1A+2B+5p	PM Peak	1C+2A+5p
	Sum of Critical y **Y**	**0.230**	Sum of Critical y **Y**	**0.320**
	Lost Time **L** (sec)	31	Lost Time **L** (sec)	31
	Cycle Time **c** (sec)	90	Cycle Time **c** (sec)	108
	Practical Y **Ypr**	0.590	Practical Y **Ypr**	0.642
	Reserve Capacity **RC**	**157%**	Reserve Capacity **RC**	**100%**

Date : 4/Mar/20 Junction : J10 - Shanghai Street/ Shantung Street

ATKINS CHINA LIMITED

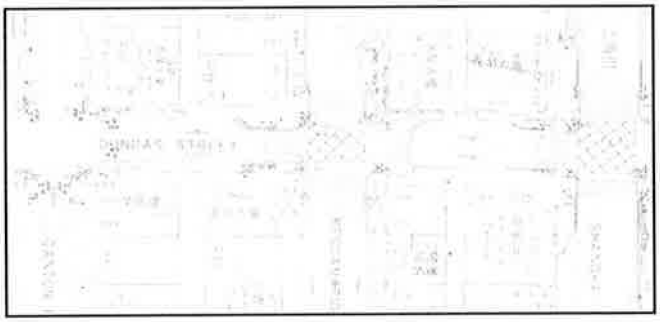
TRAFFIC SIGNAL CALCULATION SHEET

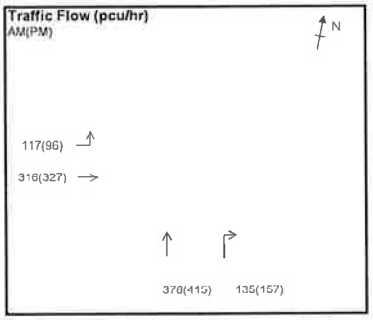
SNC-LAVALIN ATKINS

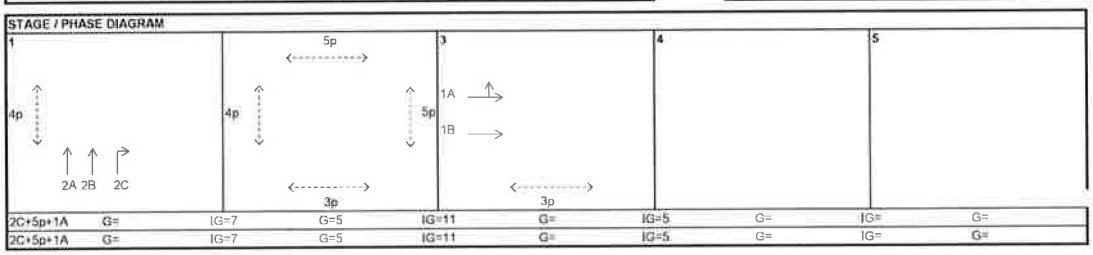
JOB NO. : 5190641

Junction : J11 - Reclamation Street/ Dundas Street Design Year: 2019

Scheme : Year 2019 Observed Flow Designed by: KL Checked by: EC







Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Reclaimation Street (NB)														
2A	1	3.40	Y	N			120		980	0.122	132		980	0.135
2B	1	3.40	N	N			258		2095	0.123	283		2095	0.135
2C	1	3.40	Y	N	10		135	100%	850	**0.159**	157	100%	850	**0.185**
Dundas Street (EB)														
1A	2	3.30	Y	N	10		200	59%	895	**0.223**	197	49%	905	**0.218**
1B	2	3.30	N	N			233		1045	0.223	226		1045	0.216
3p	2,3		6GM +	10FG =	16	sec								
4p	1,2		5GM +	7FG =	12	sec								
5p	2		5GM +	9FG =	14	sec								

Notes:

AM Peak	2C+5p+1A	PM Peak	2C+5p+1A
Sum of Critical y **Y**	**0.382**	Sum of Critical y **Y**	**0.402**
Lost Time **L** (sec)	26	Lost Time **L** (sec)	26
Cycle Time **c** (sec)	90	Cycle Time **c** (sec)	**108**
Practical Y **Ypr**	0.640	Practical Y **Ypr**	0.683
Reserve Capacity **RC**	**67%**	Reserve Capacity **RC**	**70%**

Date : 4/Mar/20 Junction : J11 - Reclamation Street/ Dundas Street

ATKINS CHINA LIMITED

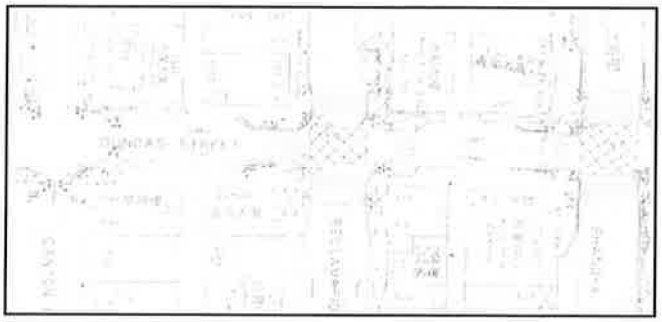
TRAFFIC SIGNAL CALCULATION SHEET

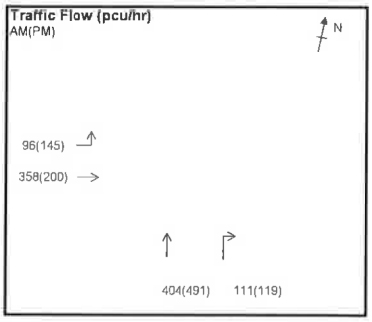
SNC-LAVALIN ATKINS

JOB NO. : 5190641

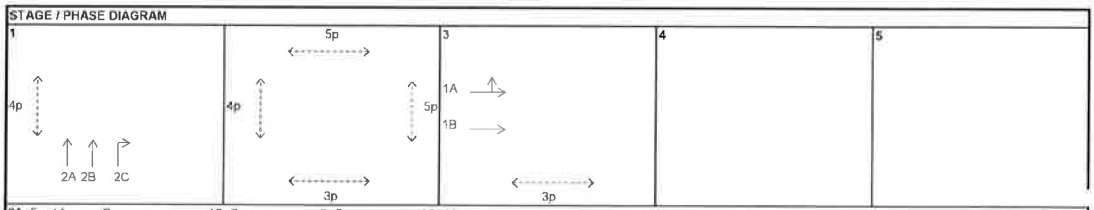
Junction : J11 - Reclamation Street/ Dundas Street Design Year: 2033

Scheme : Year 2033 Reference Flow Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



2A+5p+1A	G=	IG=7	G=5	IG=11	G=	IG=5	G=	IG=	G=
2B+5p+1B	G=	IG=7	G=5	IG=11	G=	IG=5	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) w	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) r	Gradient in % g	AM Peak Design Flow q (pcu/hr)	AM Peak Proportion turning (%) f	AM Peak Saturation flow S (pcu/hr)	AM Peak Flow factor y	PM Peak Design Flow q (pcu/hr)	PM Peak Proportion turning (%) f	PM Peak Saturation flow S (pcu/hr)	PM Peak Flow factor y
Reclaimation Street (NB)														
2A	1	3.40	Y	N			129		980	**0.132**	156		980	0.159
2B	1	3.40	N	N			275		2095	0.131	335		2095	**0.160**
2C	1	3.40	Y	N	10		111	100%	850	0.131	119	100%	850	0.140
Dundas Street (EB)														
1A	2	3.30	Y	N	10		212	45%	910	**0.233**	155	94%	855	0.181
1B	2	3.30	N	N			242		1045	0.232	190		1045	**0.182**
3p	2,3		6GM +	10FG =	16	sec								
4p	1,2		5GM +	7FG =	12	sec								
5p	2		5GM +	9FG =	14	sec								

Notes:

AM Peak	2A+5p+1A	PM Peak	2B+5p+1B
Sum of Critical *y* **Y**	**0.365**	Sum of Critical *y* **Y**	**0.342**
Lost Time **L** (sec)	26	Lost Time **L** (sec)	26
Cycle Time **c** (sec)	90	Cycle Time **c** (sec)	108
Practical Y *Ypr*	0.640	Practical Y *Ypr*	0.683
Reserve Capacity *RC*	**76%**	Reserve Capacity *RC*	**100%**

Date : 4/Mar/20 Junction : J11 - Reclamation Street/ Dundas Street

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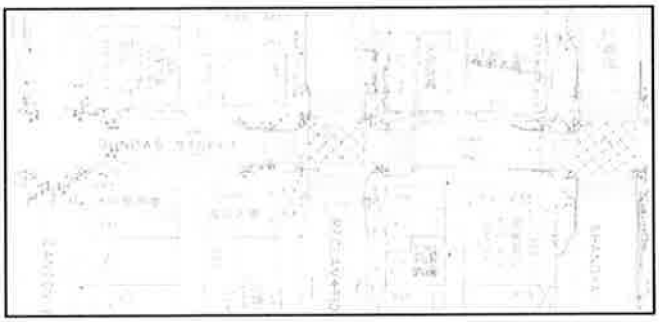
TRAFFIC SIGNAL CALCULATION SHEET

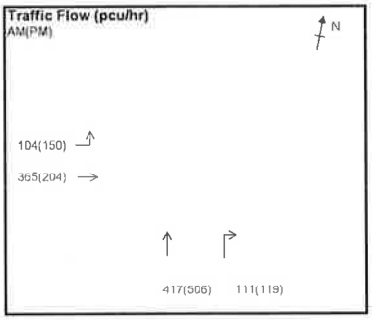
SNC-LAVALIN ATKINS

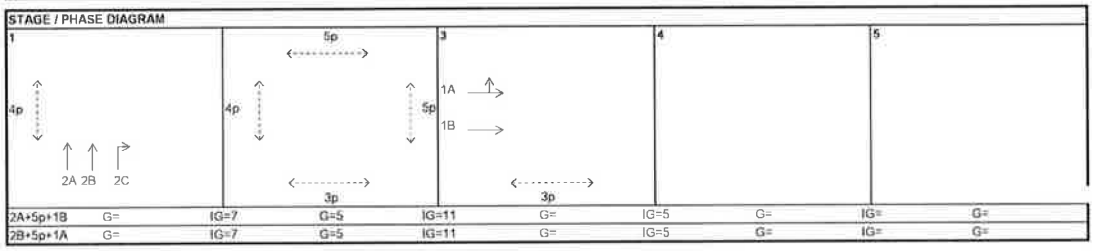
JOB NO. : 5190641

Junction : J11 - Reclamation Street/ Dundas Street Design Year: 2033

Scheme : Year 2033 Design Flow Designed by: KL Checked by: EC







2A+5p+1B	G=	IG=7	G=5	IG=11	G=	IG=5	G=	IG=	G=
2B+5p+1A	G=	IG=7	G=5	IG=11	G=	IG=5	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Reclaimation Street (NB)														
2A	1	3.40	Y	N			133		980	**0.136**	161		980	0.164
2B	1	3.40	N	N			284		2095	0.136	345		2095	**0.165**
2C	1	3.40	Y	N	10		111	100%	850	0.131	119	100%	850	0.140
Dundas Street (EB)														
1A	2	3.30	Y	N	10		218	48%	910	0.240	159	94%	850	**0.187**
1B	2	3.30	N	N			251		1045	**0.240**	195		1045	0.187
3p	2,3		6GM +	10FG =	16	sec								
4p	1,2		5GM +	7FG =	12	sec								
5p	2		5GM +	9FG =	14	sec								

Notes:

AM Peak	2A+5p+1B	PM Peak	2B+5p+1A
Sum of Critical *y* **Y**	**0.375**	Sum of Critical *y* **Y**	**0.351**
Lost Time *L* (sec)	26	Lost Time *L* (sec)	26
Cycle Time **c** (sec)	90	**Cycle Time c (sec)**	**108**
Practical *Y* ***Ypr***	0.640	Practical *Y* ***Ypr***	0.683
Reserve Capacity ***RC***	**71%**	Reserve Capacity ***RC***	**94%**

Date : 4/Mar/20 Junction : J11 - Reclamation Street/ Dundas Street

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TRAFFIC SIGNAL CALCULATION SHEET

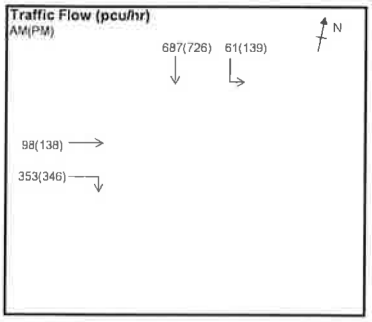
SNC-LAVALIN ATKINS

JOB NO. : 5190641

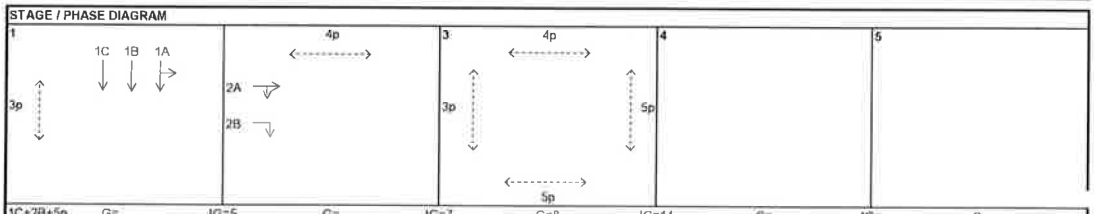
Junction : J12 - Shanghai Street/ Dundas Street Design Year: 2019

Scheme : Year 2019 Observed Flow Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



1C+2B+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=
1C+2A+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Shanghai Street (SB)														
1A	1	3.60	Y	N	8		272	22%	1890	0.144	306	45%	1810	0.169
1B	1	3.60	N	N			305		2115	0.144	358		2115	0.169
1C	1	3.60	Y	N			171		1185	**0.144**	201		1185	**0.170**
Dundas Street (EB)														
2A	2	3.60	Y	N	10		226	57%	910	0.248	245	44%	925	**0.265**
2B	2	3.60	Y	N	8		225	100%	905	**0.249**	239	100%	905	0.264
3p	1,3		10GM +	7FG =	17	sec								
4p	2,3		8GM +	10FG =	18	sec								
5p	3		8GM +	10FG =	18	sec								

Notes:

AM Peak	1C+2B+5p	PM Peak	1C+2A+5p
Sum of Critical *y* **Y**	**0.393**	Sum of Critical *y* **Y**	**0.434**
Lost Time **L** (sec)	32	Lost Time **L** (sec)	32
Cycle Time **c** (sec)	90	Cycle Time **c** (sec)	108
Practical **Y** ***Ypr***	0.580	Practical **Y** ***Ypr***	0.633
Reserve Capacity ***RC***	**48%**	Reserve Capacity ***RC***	**46%**

Date : 4/Mar/20 Junction : J12 - Shanghai Street/ Dundas Street

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TRAFFIC SIGNAL CALCULATION SHEET

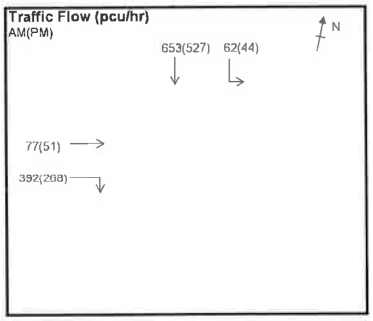
SNC-LAVALIN ATKINS

JOB NO. : 5190641

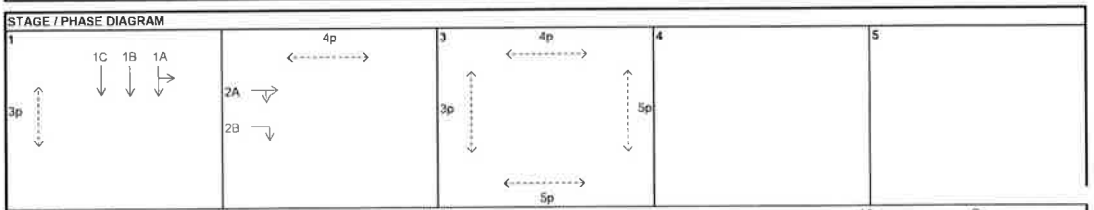
Junction : J12 - Shanghai Street/ Dundas Street Design Year: 2033

Scheme : Year 2033 Reference Flow Designed by: KL Checked by: EC





STAGE / PHASE DIAGRAM



1B+2B+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=
1B+2A+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak: Design Flow *q* (pcu/hr)	AM Peak: Proportion turning (%) *f*	AM Peak: Saturation flow *S* (pcu/hr)	AM Peak: Flow factor *y*	PM Peak: Design Flow *q* (pcu/hr)	PM Peak: Proportion turning (%) *f*	PM Peak: Saturation flow *S* (pcu/hr)	PM Peak: Flow factor *y*
Shanghai Street (SB)														
1A	1	3.60	Y	N	8		260	24%	1885	0.138	208	21%	1895	0.110
1B	1	3.60	N	N			292		2115	**0.138**	233		2115	**0.110**
1C	1	3.60	Y	N			163		1185	0.138	130		1185	0.110
Dundas Street (EB)														
2A	2	3.60	Y	N	10		233	67%	895	0.260	159	68%	895	**0.178**
2B	2	3.60	Y	N	8		236	100%	905	**0.261**	160	100%	905	0.177
3p	1,3		10GM +	7FG =	17	sec								
4p	2,3		8GM +	10FG =	18	sec								
5p	3		8GM +	10FG =	18	sec								

Notes:

AM Peak	1B+2B+5p	PM Peak	1B+2A+5p
Sum of Critical *y* **Y**	**0.399**	Sum of Critical *y* **Y**	**0.288**
Lost Time *L* (sec)	32	Lost Time *L* (sec)	32
Cycle Time *c* (sec)	90	Cycle Time *c* (sec)	108
Practical *Y* ***Ypr***	0.586	Practical *Y* ***Ypr***	0.633
Reserve Capacity ***RC***	**45%**	Reserve Capacity ***RC***	**120%**

Date : 4/Mar/20 Junction : J12 - Shanghai Street/ Dundas Street

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TRAFFIC SIGNAL CALCULATION SHEET

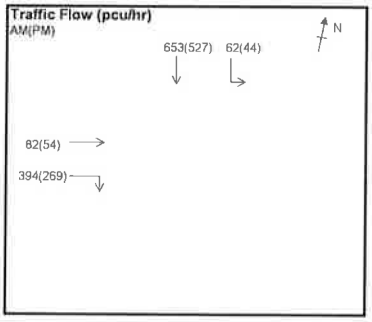
SNC-LAVALIN ATKINS

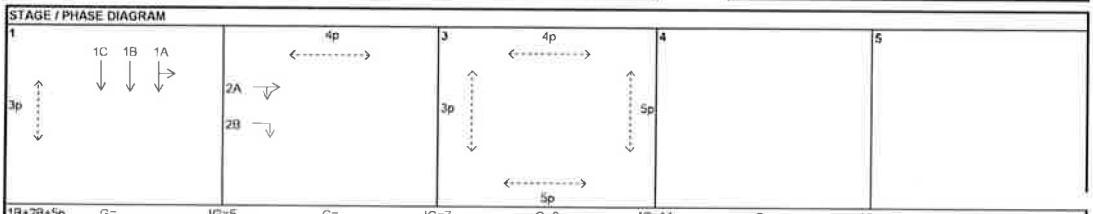
JOB NO. : 5190641

Junction : J12 - Shanghai Street/ Dundas Street Design Year: 2033

Scheme : Year 2033 Design Flow Designed by: KL Checked by: EC







1B+2B+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=
1B+2B+5p	G=	IG=5	G=	IG=7	G=8	IG=14	G=	IG=	G=

Capacity Calculations

Phase	Stage	Lane Width (m) *w*	Nearside lane? (Y/N)	Opposed turn? (Y/N)	Radius for turning (m) *r*	Gradient in % *g*	AM Peak Design Flow *q* (pcu/hr)	AM Peak Proportion turning (%) *f*	AM Peak Saturation flow *S* (pcu/hr)	AM Peak Flow factor *y*	PM Peak Design Flow *q* (pcu/hr)	PM Peak Proportion turning (%) *f*	PM Peak Saturation flow *S* (pcu/hr)	PM Peak Flow factor *y*
Shanghai Street (SB)														
1A	1	3.60	Y	N	8		260	24%	1885	0.138	208	21%	1895	0.110
1B	1	3.60	N	N			292		2115	**0.138**	233		2115	**0.110**
1C	1	3.60	Y	N			183		1185	0.138	130		1185	0.110
Dundas Street (EB)														
2A	2	3.60	Y	N	10		**237**	65%	900	0.263	161	66%	900	0.179
2B	2	3.60	Y	N	8		239	100%	905	**0.264**	162	100%	905	**0.179**
3p	1,3		10GM +	7FG =	17	sec								
4p	2,3		8GM +	10FG =	18	sec								
5p	3		8GM +	10FG =	18	sec								

Notes:

AM Peak	1B+2B+5p	PM Peak	1B+2B+5p
Sum of Critical *y* **Y**	**0.401**	Sum of Critical *y* **Y**	**0.289**
Lost Time *L* (sec)	32	Lost Time *L* (sec)	32
Cycle Time *c* (sec)	**90**	Cycle Time *c* (sec)	108
Practical Y ***Ypr***	0.560	Practical Y ***Ypr***	0.633
Reserve Capacity ***RC***	**44%**	Reserve Capacity ***RC***	**119%**

Date : 4/Mar/20 Junction : J12 - Shanghai Street/ Dundas Street

ATKINS CHINA LIMITED

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Appendix 6

Environmental Assessment (EA) Report

Urban Renewal Authority
Development Scheme
Shantung Street / Thistle Street
(YTM-012)

Environmental Assessment Report

(V2.0)

October 2020

Approved By 

(Project Manager: K.S. Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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1 INTRODUCTION

Background

1.1. The Urban Renewal Authority (URA) has proposed Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). This Environmental Assessment (EA) is to support the submission of a draft Development Scheme Plan (DSP) with its planning proposal to the Town Planning Board (TPB) for consideration.

1.2. Cinotech Consultants Limited was commissioned by URA to carry out an Environmental Assessment (EA) to assess and envisage any potential environmental impact on the implementation of the proposed development and to recommend mitigation measures as necessary.

Purpose and Scope of Report

1.3. This EA is prepared to assess the potential environmental impact/benefit associated with the implementation of the Scheme in supporting the submission of the draft DSP to TPB's consideration. It has been undertaken with reference to the guidance for environmental considerations provided in Chapter 9 "Environment" of the Hong Kong Planning Standards and Guidelines (HKPSG).

1.4. This EA presents the study of the potential environmental impacts of the following aspects:

- Air Quality
- Noise
- Waste Management
- Land Contamination

1.5. Drainage Impact, Sewerage Impact and Water Supply Impact will be assessed in separate reports.

2 DESCRIPTION OF THE ENVIRONMENT

2.1. The site is located between Nelson Street, Thistle Street, Shantung Street and Ferry Street. It is currently zoned as "Residential (Group A)" (R(A)) and "Open Space" (O) on the Approved Mong Kok Outline Zoning Plan No. S/K3/32. The Scheme comprises 2 clusters of dilapidated buildings and part of existing LCSD's Thistle Street Rest Garden ("Rest Garden"). The location of the site is shown in **Figure 1-1**. The gross site area is about 2,796 m^2 and net site area is about 1,660 m^2, subject to site survey.

2.2. The site is currently occupied by two clusters of dilapidated buildings, one facing Shantung Street, and one at the junction of Nelson Street and Thistle Street, as well as part of existing LCSD Rest Garden.

2.3. The site is surrounded by residential buildings on all sides. On-street wet market activities are found along the section of Nelson Street to the immediate north of the site. The Rest Garden is located to the immediate west of the site. Part of the western side of the site is close to Ferry Street and the West Kowloon Corridor (an elevated road).

3 THE PROPOSED DEVELOPMENT

3.1 The Scheme area is proposed to be rezoned to "R(A)" to redevelop the area for high-density residential development, with commercial uses always permitted on the lowest three floors of a building or in a purpose-designed non-residential portion of a building. Under current notional design, the proposed development is planned to develop 2 composite buildings and a sunken plaza. It includes a composite building (Tower Block) on the southern side of 25 residential storeys (about 300 units) and a 7 storey podium for club house, podium garden, G/IC facilities and retail uses. A GIC/retail block (Low Block) of 6 storeys (above ground) for retail shops and G/IC is located on the northern side of the site. A 2-storey basement ancillary car park will be provided for loading/unloading bays and private car parking spaces. About 780 m^2 of LCSD's Rest Garden (the affected POS) is included in the Scheme and will be re-configured to create a new entrance at the corner of Shantung Street and Thistle Street to enhance its accessibility and visibility from the main pedestrian routes. An additional sunken plaza of about 200 m^2 with open space and retail shops will be provided within the Scheme to create an interesting square for public enjoyment. The proposed Gross Floor Area ("GFA") includes about 12,450 m^2 for domestic use, about 2,490 m^2 for non-domestic commercial uses, and about 2,850 m^2 of non-domestic GFA will be reserved for GIC provision in the Scheme. The notional layout plan of the proposed development is shown in **Appendix 3-1**. The notional design is subject to change in detailed design stage.

4 AIR QUALITY IMPACT ASSESSMENT

Introduction

4.1 The purpose of this chapter is to demonstrate that the proposed development will not impose adverse air quality impact to the surrounding area during the construction phase and the air sensitive receivers (ASRs) of the proposed development will not receive insurmountable air quality impact from the surrounding area during operation phase according to the notional layout plan.

4.2 This chapter assessed the potential air quality impact from the following aspects: (i) Construction Phase - the potential air quality impact generated from the construction activities of the proposed development to the surroundings; (ii) Operation Phase - road traffic emission to the proposed developments in the Scheme. It also recommends appropriate mitigation measures to the potential impacts if any.

Background Air Quality

4.3 PATH-2016 is a macro-scale air quality model developed by EPD to predict future air quality over the whole Pearl River Delta region including Hong Kong. For the purpose of this assessment, the predicted values from PATH-2016 are adopted as the background air quality. The PATH grid corresponding to the Scheme is (39, 33) (**Figure 4-1**). **Table 4-1** gives the predicted background air quality for Year 2016 to Year 2020.

Table 4-1 Background Air Quality of Grid (39, 33) of PATH-2016

Pollutant	Averaging Time	AQOs [$\mu g/m^3$] [i]	PATH Model Concentration [$\mu g/m^3$]				
			Year 2016	Year 2017	Year 2018	Year 2019	Year 2020
RSP [PM_{10}]	24-hour (10th Max)	100 (9)	83	81	80	79	78
	Annual	50	38	37	37	36	36
FSP [$PM_{2.5}$]	24-hour (10th Max)	75 (9)	62	61	60	59	59
	Annual	35	27	26	26	26	25
NO_2	1-hour (19th Max)	200	177	168	163	156	149
	Annual	40	49	46	43	40	37

Note:
(i) The numbers in brackets () refer to number of exceedance allowed per year.
(ii) FSP concentrations were obtained from RSP concentration.

4.4 The key pollutant to be assessed are RSP, FSP and NO_2 concentration. The PATH background's RSP, FSP and NO_2 concentrations show a decreasing trend from Year 2016 to Year 2020 (**Table 4-1**), and it is likely to continue to reduce after Year 2020. The RSP, FSP and hourly NO_2 concentrations comply with the AQO. The predicted annual NO_2 concentrations exceed the criteria for years 2016-2018, and gradually comply with AQO in later years.

Construction Phase Air Quality Impact Assessment

4.5 Major dust emitting construction activities will be the demolition of existing structures, excavation for basement construction, foundation works and construction activities (e.g. the construction of superstructure). Fugitive dust would be generated. The concerned air pollutants during the construction phase are the Respirable Suspended Particulates (RSP) and Fine Suspended Particulates (FSP) arising from the construction work of the proposed development.

4.6 Dust control measures under the Air Pollution Control (Construction Dust) Regulation (Cap. 311R) and good site practice shall be implemented to mitigate dust impact arising from demolition work by preventing dust generation and/or by screening, suppressing and removing dust generated. The measures including but not limited to the followings: -

- Hoarding of not less than 2.4 m high from ground level, except for a site entrance or exit, shall be provided along the entire portion of site boundary adjoins a road, street, service lane or other area accessible to the public
- Enclose the whole wall of the building to a height of at least 1m higher than the highest level of the structure to be demolished with impervious dust screens or sheeting on façade abutting or fronting upon a street
- Existing structures are proposed to be demolished by non-percussive equipment such as hydraulic crusher to reduce dust emission; no blasting will be involved.
- Water or a dust suppression chemical shall be sprayed immediate prior to, during and immediately after demolition/excavation works
- Cover stockpile or dusty materials with tarpaulin to prevent wind erosion
- Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads or streets
- Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the construction site
- Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle
- Store cement bags in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags
- Maintain a reasonable height when dropping excavated materials to limit dust generation
- Limit vehicle speed within site to 10 km/h and confine vehicle movement in haul road

- Minimize exposed earth after completion of work in a certain area by hydroseeding, vegetating or soil compacting
- Cover materials on trucks before leaving the site to prevent dropping or being blown away by wind
- Regular maintenance of plant equipment to prevent black smoke emission
- Throttle down or switch off unused machines or machine in intermittent use

4.7 As effective mitigations measures have been proposed to demolition (e.g. using of non-percussive equipment with enclosure), excavation (e.g. covering and watering), superstructure works (e.g. enclosure), transportation as well as general construction works, no significant dust impact on the surrounding air sensitive receivers (ASRs) is expected with proper implementation of mitigation measures. No quantitative construction dust assessment is considered necessary.

4.8 Operation of Powered Mechanical Equipment (PME) during demolition/construction work would emit gaseous air pollutants such as nitrogen dioxide (NO_2) via fuel burning. According to Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, only approved or exempted Non-Road Mobile Machinery (NRMM) with a proper label are allowed to be used in specified activities and locations including construction sites. Supportive information and documents (e.g. third-party emission certificates, model and serial numbers of machines and engines, etc.) for each NRMM would be provided to EPD to prove that the concerned NRMM is in line with the prescribed emission standards. Since the number of PME expected to be used on-site will be limited and much less than vehicles travelled on surrounding roads (e.g. West Kowloon Corridor), no significant impact is anticipated.

Operation Phase Air Quality Impact Assessment

Air Sensitive Receivers

4.9 During operation phase, no major emission is anticipated from the residential and commercial component of the proposed development. On the other hand, the residential flats, shops and G/IC areas of the Scheme are ASRs that should be assessed.

4.10 The residential flats in the Scheme rely on openable windows for ventilation; the shops and G/IC in the Podium of the Tower Block and in the Low Block would rely on air-conditioning with fresh air intake. Therefore, façades of the Residential Tower, and the potential location of fresh air in-take locations for the Podium of the Tower Block and the Low Block should be assessed. It should be noted that the re-provisioned Public Open Space (re-provisioned POS) is not intended for active recreational uses, and the facilities would not encourage long stay of the pedestrian. Therefore, the re-provisioned POS is not considered as ASRs and no assessment points is provided. The locations of the assessment points are illustrated in **Figure 4-2** and listed in **Table 4-2**.

4.11 Although not considered as ASR in the current assessment, it should be noted that the basement carpark in the Scheme shall follow the air quality requirement and the design consideration stipulated in ProPECC 2/96.

Table 4-2 Summary of the Assessment Points (Air Quality)

Locations	ID	Assessment Height (mAG)
Façade of the Low Block	L-01, L-02, L-03, L-04, L-05, L-06, L-07, L-08	1.5, 5, 10, 15, 20, 30, 32, 34, 36, 38, 40
Façade of the Podium of the Residential Tower (Tower Block)	P-01, P-02, P-03, P-04, P-05, P-06, P-07, P-08, P-09, P-10, P-11	1.5, 5, 10, 15, 20, 30, 32, 34, 36, 38, 40
Façade of the Residential Tower (Tower Block)	T-01, T-02, T-03, T-04, T-05, T-06, T-07, T-08, T-09, T-10, T-11	38.75, 41.9, 45.05, 48.2, 51.35, 54.5 (First 6 residential floors)

Assessment Year

4.12 The proposed development is planned to be completed by Year 2030, the assessment year for traffic air quality impact shall be predicted based on the worst scenario within 15 years after the completion of the proposed development, sensitivity test for traffic emission has been done for traffic data of Years 2030 & 2045 with emission factor for Years 2030 & 2040 (no available information beyond 2040 in EMFAC) respectively. As the traffic emission factors has a declining trend every year, and the traffic flow has an increasing trend, using the traffic flow of 2045 with emission factor of 2040 will produce a representative worst scenario for any give year in between 2040-2045.

4.13 The traffic flow forecast and speed fraction for Years 2030 & 2045 has been provided by traffic consultant. The predicted traffic flow has been submitted to the Transport Department (TD) for agreement with the methodology. TD's endorsement of Traffic Forecast is enclosed in **Appendix 4-1**.

4.14 Based on this methodology, the total traffic emission of Year 2030 is found to be much worse than Year 2045. Considering the significant changes in total traffic emission between the two scenarios (120.19 kg/day in Year 2030 vs 87.35 kg/day in Year 2045), the growth rate of traffic flow is found to be much slower than the declination rate of the emission factor. As such, it can be assumed that traffic emission will continue to drop from Year 2030 to Year 2045, and a significant increase in traffic emission between Year 2031 to Year 2039 is not anticipated. Therefore, Year 2030 is the worst-case scenario thus chosen as assessment year. The result of sensitivity test is enclosed in **Appendix 4-2**. The methodology of the sensitivity test is explained in the following paragraphs.

Methodology

For AERMOD, AERMET, & CALINE4

4.15 The hourly meteorological data from PATH model and the hourly stability classes calculated by PCRAMMET has be adopted. The PCRAMMET model can estimate the stability class based on the existing meteorological data for CALINE4 (for traffic emission). As CALINE4 imposes the limitation of wind speed on each of the stability class, the adopted stability class has been shifted toward class 3 or 4 if necessary, as the wind speed is more reliable than the estimation from PCRAMMET.

4.16 The hourly data from PATH Model has been prepared into on-site data as AERMET input. The output meteorological data form AERMET was later be used by AERMOD (for non-road traffic emission). The input mixing height data was restricted to between 121m and 1667m, which were the observed extreme values by the Hong Kong Observatory in year 2010. To avoid the occurrence of calm hours in the model, a minimum wind speed of 1.0m/s was adopted and any wind direction <0.1° was replaced by 360°.

4.17 The surface characteristics of the AERMET input were prepared following the recommendations in "AERMOD Implementation Guide" revised in August 2015 by USEPA. The Albedo and Bowen ratio adopted are the average values based on the land use of the 10km × 10km region centred on the study area. The surface roughness lengths were determined based on the land use of 1km upwind in sector widths no smaller than 30 degrees. The surface roughness, Albedo and Bowen of different land use are adopted with referenced to Table 4-2 to Table 4-6 of User's Guide for the AERMOD Meteorological Preprocessor (AERMET).

For Road Traffic Emission factor from EMFAC v4.2

4.18 Hong Kong Observatory's hourly temperature and relative humidity at King's Park during year 2019 has be adopted for determining the road traffic emission factor. Meteorological data at King's Park is representative as it is located at core of developed area, similar to the Subject Site.

Methodology – Road Traffic Emission Factors & Sensitivity Test

4.19 The latest version of EMFAC – HK V4.2 which was issued by EPD in late 2019 will be adopted to compile the traffic emission inventory. "Emfac Mode", which can provide RUN emission per vehicle kilometre travelled (in g/VKT) and START emission per trip (in g/trip) under which different temperature, relative humidity and traffic speed shall be selected for the assessment. As a conservative approach, the highest START emission across various soak time will be adopted. The START emission will be converted into emission/VKT using the trip/VKT ratio from EMFAC v4.2 of the corresponding year and combine with the RUN emission. Therefore, a set of emission factors (NOx, NO_2, RSP & FSP) for vehicles emission with cold start and another set of emission factors for vehicles emission without cold start will be obtained.

4.20 In this assessment, the road has been categorized into 2 road types as summarized in **Table 4-3**. For road with cold start (Type 1), both RUN emission and START emission will be included. For road without cold start (Type 2), only RUN emission will be adopted. It should be noted that, Franchised Buses (FBSD & FBDD) are not expected to perform cold start on normal public roads. Therefore, the START emission for FBSD & FBDD will not be included in the determination of road traffic emission. The list of road sections, including cold start availability, are listed in **Appendix 4-3**.

Table 4-3 Road Types within the Study Area

Road Type	Description
Type 1	Roads with cold start
Type 2	Roads without cold start

4.21 For mapping the corresponding emission factor to each road section without underestimation or overestimation, the yearly temperature and relative humidity from Hong Kong Observatory has been broken into 4 seasons, namely Q1: Dec – Feb, Q2: Mar-May, Q3: Jun-Aug, & Q4: Sep – Nov. Daily profiles for each season with the lowest hourly temperature and relative humidity in that season (**Table 4-4**) has been adopted to identify the corresponding hourly emission factors for each road section. Then, the hourly road traffic emission of each road section can be calculated by multiplying the vehicle counts, road length and the corresponding emission factor.

4.22 Finally, sensitivity testing has been conducted by comparing the daily road traffic emissions under 4 seasons of different years (year 2030, and year 2045 with emission factor of year 2040) and the year with the highest 4 seasons averaged daily emission has been adopted as the assessment year.

Table 4-4 Diurnal Temperature and Relative Humidity Profile for each Seasons

	Q1		Q2		Q3		Q4	
Hour	**Temp (°C)**	**RH (%)**	**Temp (°C)**	**RH (%)**	**Temp (°C)**	**RH (%)**	**Temp (°C)**	**RH (%)**
1	11	23	15	68	23	64	18	28
2	11	24	15	67	23	62	18	27
3	11	24	15	66	23	62	18	28
4	11	26	15	69	23	62	17	31
5	11	25	15	68	23	67	17	29
6	11	28	15	66	23	67	17	31
7	11	29	15	60	24	68	16	32
8	11	27	16	56	25	62	16	29
9	11	27	16	51	24	58	17	30
10	14	24	16	44	24	56	19	32
11	14	21	16	39	25	61	20	30
12	14	19	17	39	26	59	21	30
13	13	20	17	42	25	56	21	31
14	13	21	16	44	24	58	22	33
15	13	19	16	43	25	54	22	32
16	13	20	17	50	25	58	21	34
17	13	18	17	50	25	57	20	33
18	13	22	16	52	25	56	19	34
19	13	19	16	54	24	60	19	36
20	14	19	17	59	24	62	19	37
21	14	21	17	58	25	73	19	37
22	14	23	16	64	26	70	19	37
23	14	23	16	70	25	66	19	33
24	14	24	15	68	25	63	18	32

[1] The hourly temperature and relative humidity at King's Park during year 2019 has been adopted.
[2] Temperature and Relative Humidity are rounded to integer.

Methodology – CALINE4

4.23 The total hourly road traffic emission of each road section will be divided by the total hourly vehicle count and the road length (in Mile) to obtain the hourly fleets averaged emission factors (emission/Vehicle Mile Travelled, in g/VMT).

4.24 The hourly fleets averaged emission factors in each season together with the hourly traffic flow of each link (road section) were then utilized in CALINE4 to simulate the dispersion of the vehicle exhaust pollutants from the surrounding open road network.

4.25 The surface roughness adopted in CALINE4 is 370cm according to EPD's recommendation for urban area. The molecular weight for NO_x & NO_2 in CALINE4 is 46.

4.26 Emissions factors and traffic flow adopted in the Caline4 model are provided in **Appendix 4-4.**

Methodology – Industrial Chimney

4.27 There is no active industrial chimney identified within 500m assessment area. Only inactive chimney, i.e. at Tung Chun Commercial Centre, has been identified within the assessment area.

Methodology – Major emission sources within 4 km

4.28 The major emission source within 4 km include: the hotelling marine vessels of Ocean Terminal ~2.0km in south direction.

4.29 For the Ocean Terminal, the emission inventory for two hotelling ocean vessels (OGV1a, OGV1b, OGV1c, OGV1d, OGV2a, OGV2b, OGV2c, OGV2d) from Table 5 in Appendix 3.6 of the approved EIA Report (AEIAR-179/2013) has been adopted directly, with one of the hotelling vessels operating during 8:00-20:00 and the other one operating 24 hours non-stop.

4.30 Considering that the marine emission sources and the subject Site are separated by large distance (~ 2km), and the source strengths of the RSP are at an order of magnitude lower than the NOx, only NOx emissions from those marine emission sources are considered "major" and will be assessed in the current assessment. The adopted emission factors for the major emission sources within 4km (marine emission) are listed in **Table 4-5** and detailed in **Appendix 4-3**.

Table 4-5 Marine Emission adopted in the Current Study

Source	ID	Easting (m)	Northing (m)	Source Strength, NOx (g/s)	Emission Height, mPD	Operation hour	Remark
Ocean Terminal	OGV1a	835175.41	817276.31	3.24	50	8:00-20:00 (need revised)	4 emission sources per vessel
	OGV1b						
	OGV1c						
	OGV1D						
	OGV2a	835170.51	817393.30	3.64		24 hours	
	OGV2b						
	OGV2c						
	OGV2D						

Cumulative Pollutant Concentration

4.31 The cumulative pollutant concentration at each of the assessment point has been calculated by summing the background concentration (from PATH-2016), the traffic emission (from CALINE4), and other emissions (from AERMOD).

4.32 The Ozone Limiting Method (OLM) has been adopted for the conversion of NOx to NO2 based on the hourly O3 concentrations predicted by PATH-2016 in the corresponding grid.

4.33 For all vehicle emissions, the calculated initial vehicle NO_2 based on NO_2 emission factor of Emfac v4.2 will be adopted. The NO_2/NO_x conversion will be calculated as follows:

$$[NO_2]_{pred} = [NO_2]_{init} + MIN \{[NO_x]_{pred} - [NO_2]_{init}, \text{ or } (46/48) \times [O_3]_{PATH}\}$$

4.34 For all non-vehicular emissions, initial NO_2/NO_x ratios reported in the Heathrow Airport EIA report are adopted, which is 10%.

$$[NO_2]_{pred} = 0.1 \times [NO_x]_{pred} + MIN \{0.9 \times [NO_x]_{pred}, \text{ or } (46/48) \times [O_3]_{PATH}\}$$

4.35 As OLM will be performed separately for vehicular and non-vehicular emission. The cumulative NO_2 concentration at each ASR is considered conservative.

Results and Discussion

4.36 The detailed results are listed in **Appendix 4-6**. The summary of the Annual Averaged NO_2 concentration is provided in **Appendix 4-7**.

4.37 The key pollution concentrations (Annual Averaged & Daily Averaged of RSP, Annual Average & Daily Averaged of FSP, and Annual Averaged & Hourly Averaged NO_2) at all ASRs at or above 36m above ground (mAG) complied with the AQOs.

4.38 Under current notional design, the predicted air quality at all residential flats comply with the AQOs. For the fresh air in-take for the podium of the Tower Block and the Low Block, they would be designed to be located at or above 36 mAG to comply with the AQOs. Subject to the CE in C's approval of the draft DSP, URA/ future joint venture partner should explore and implement all practicable design in order to ensure all of the openable windows for ventilation and fresh air intakes comply with the AQO criteria at the detailed design stage.

4.39 It should be noted that the exceedance is mainly due to the high NO_2 background concentration of the available year (in YEAR 2020 - 37 $\mu g/m^3$; AQO: 40 $\mu g/m^3$) as only predicted concentration up to Year 2020 is available. Considering the decreasing tendency of the Annual Averaged NO_2 concentration (**Table 4-1**), it is expected that the actual Annual Averaged NO_2 concentration at the assessment year (Year 2030) should be much lower, thus the limitation for the openable windows for ventilation and/or fresh air intakes will be lessened accordingly.

Conclusion

4.40 The air quality impact arising from the proposed development to the surrounding area and air quality impact from the surrounding area to the proposed development has been assessed.

4.41 During construction phase, the key air pollutant sources are the dust emitted during construction activities. With implementation of mitigation measures and good site practice, no adverse air quality impact is anticipated.

4.42 No major emission will be produced from the proposed development during operation phase. The current notional design demonstrated that the predicted air quality at all proposed residential flats comply with the AQOs. The fresh air intake of the podia would be placed at or above 36 mAG to ensure compliance with AQOs. The air quality upon completion of the Scheme will be similar to, if not better than, the existing situation and no insurmountable air quality impact is anticipated.

5 NOISE IMPACT ASSESSMENT

Introduction

5.1 The purpose of this chapter is to demonstrate the noise sensitive receivers (NSRs) of the proposed development within the Scheme comply with the noise criteria of The Hong Kong Planning Standards and Guidelines (HKPSG).

5.2 The potential noise impact from the following aspects have been assessed: (i) Construction noise - the potential noise impact generated from the construction activities of the proposed development to the surroundings; (ii) Traffic noise - the potential noise impact generated from the nearby road networks to the proposed development during operation phase; (iii) Fixed noise - the potential noise impact generated from the surrounding fixed noise sources to the proposed development.

5.3 Effective mitigation measures and recommendations will be proposed when necessary to mitigate the excessive noise level to comply the relevant criteria for the current notional design. If the draft DSP is approved by CE in C, a detailed design of the proposed development will be carried out and if the block layout is changed and subject to requirement by relevant government departments, a revised noise impact assessment would be carried out to demonstrate the noise compliance.

Standards and Guidelines

Road Traffic Noise

5.4 HKPSG provides guidance on acceptable road traffic noise levels at the openable windows of various types of noise sensitive buildings. The relevant criteria are shown in **Table 5-1**.

Table 5-1 HKPSG Road Traffic Noise Planning Criteria

Uses	**Road Traffic Noise $L_{10,(1hr)}$ dB(A)**
Domestic Premises	**70**
Hotel and Hostels	70
Offices	70
Educational institutions	65
Hospital & Clinics	55
Places of public worship and courts of law	65

Note: The above criteria apply to noise sensitive uses which rely on opened window for ventilation.

Fixed Noise Sources

5.5 Acceptable Noise Levels (ANL) shown in Table 2 of the *Technical Memorandum for the Assessment of Noise from Places Other than Domestic Premises, Public Places or Construction Sites* (IND-TM). According to IND-TM, the ANLs for different Area Sensitivity Ratings (ASRs) are given in **Table 5-2**.

Table 5-2 Acceptable Noise Levels for Fixed Noise Impact (ANLs), dB(A), $L_{eq, (30mins)}$

Time Period	ASR A	ASR B	ASR C
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

5.6 The Scheme is located in the urban area of Mong Kok West. According to TD's updated Annual Traffic Census (ATC2018), the sum of West Kowloon Corridor and Ferry Street to the west of the Scheme is with daily traffic more than 30,000. Therefore, the region near the West Kowloon Corridor and Ferry Street is considered directly affected by Influencing Factor (IF) while the eastern side of the proposed site is considered indirectly affected; the ASR of the site and the neighbourhood would be classified as "C". The criteria for existing noise source would be 70 dB(A) for day and evening time and 60 dB(A) for night time.

5.7 For planned fixed noise source, HKPSG suggests noise criteria of 5dB(A) below the appropriate ANLs. As the site and the surrounding area are subject to traffic noise impact from West Kowloon Corridor (an urban truck road, Street No. 3705 in ATC2018) and Ferry Street (a primary distributor, Street No. 3893 in ATC2018), it is expected that the prevailing background noise level would be higher than ANL for both daytime and night-time, thus ANL has been adopted as the planned fixed noise sources criterion. The planning criteria would be 65 dB(A) for day and evening time and 55 dB(A) for night time. The noise criteria for both existing and planned fixed noise sources are listed in **Table 5-3**.

Table 5-3 Noise Criteria for the Fixed Noise impact, dB(A), Leq, (30mins)

Time Period	For Existing Fixed Noise Sources	For Planned Fixed Noise Sources
Day (0700 to 1900 hours)	70	65
Evening (1900 to 2300 hours)		
Night (2300 to 0700 hours)	60	55

Construction Noise Impact Assessment

5.8 The use of powered mechanical equipment (PME) will generate construction noise impact to the nearby NSRs. The major noise emitting activities will be the demolition of existing structures and foundation works of future development.

5.9 As the site is situated in a well-developed urban area, the number of PME that it can accommodate is limited, however, the noise from construction activities may still be an impact if the construction works are not planned and arranged properly.

5.10 The "Practice Note for Professional *Persons* Environmental Consultative Committee" (ProPECC) "Noise from Construction Activities –Non-statutory Controls" (PN 2/93) suggests assessment criteria relating to construction noise and some practical noise abatement measures to reduce the construction noise.

5.11 To minimize noise generation, non-percussive equipment such as hydraulic crusher is proposed for demolishing existing building and structure. Also, adoption of non-percussive piling method for foundation work is also recommended. As these activities would only last for a short period of time, significant noise impact on sensitive receivers is not expected with proper implementation of mitigation measures:

- Adopt good site practice, such as throttle down or switch off equipment unused or intermittently used between works
- Regular maintenance of equipment to prevent noise emission due to impairment
- Position mobile noisy equipment in locations away from nearby NSRs and point the noise sources to directions away from NSRs
- Make good use of other structures for noise screening
- Use of quiet plants and working methods to mitigate at source
- Use of mobile noise barriers/enclosures along the path of noise propagation
- Schedule work to minimize concurrent activity and duration of impact

5.12 With the aforementioned noise mitigation measures implemented during the construction phase, no adverse noise impact arising from the construction activities is expected.

Operation Noise Impact Assessment

Representative Noise Sensitive Receivers during Operation Phase

5.13 All flats of the residential tower (the Tower Block) were identified as NSRs according to the nature of use. Commercial & retail area, clubhouse and GIC facilities in the podium of the Tower Block and the Low Block will be provided with air-conditioning system and will not rely on openable windows for ventilation, and thus the noise standard is not applicable. The noise assessment points were located 1.2m above the slab level and 1m away from the façade. All potential windows locations of all residential flats are covered. Their locations of the noise assessment points are listed in **Table 5-4** and illustrated in **Figures 5-2**.

Table 5-4 Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment

Tower	Flat	NSR ID				
Residential Tower	1	N1_B1A	N1_B1B	N1_L1A	N1_L1B	
	2	N2_B1A	N2_B1B	N2_B1C	N2_B2	N2_L1
	3	N3_L1	N3_B1			
	4	N4_B1	N4_B2A	N4_B2B	N4_L1	
	5	N5_L1	N5_B1			
	6	N6_B1	N6_L1			
	7	N7_L1	N7_B1			
	8	N8_B1	N8_L1			
	9	N9_L1	N9_B1			
	10	N10_L1	N10_B1	N10_B2A	N10_B2B	
	11	N11_B1A	N11_B1B	N11_L1A	N11_L1B	
	12	N12_L1	N12_B1A	N12_B1B		

Note: Only residential flats require openable windows for ventilation in the current scheme
The vertical extend of the assessment points are from 1/F to 25/F

5.14 The representative NSRs of the proposed residential developments and in the surrounding have been identified. The existing fixed noise source(s) in the surroundings and the planned fixed noise sources of the proposed development has been reviewed. The locations of representative NSRs are listed in **Table 5-5** and the location of the identified fixed noise sources are shown in **Figures 5-5 & 5-6**.

Table 5-5 Representative Noise Sensitive Receivers for Fixed Noise Impact Assessment

NSR ID	Description
NSR1	Bedroom of Flat 10
NSR2	Living Room of Flat 2
NSR3a / NSR3b	Shun Hing Building

NSR ID	Description
NSR4	Shun King Building Block B
NSR5	20 Thistle Street
NSR6	Tak Lei House
NSR7	24 Shantung Street

Assessment Methodology

Road Traffic Noise

5.15 An in-house noise model (MARC) was used to predict the traffic noise levels arising from the road network. It adopts the methodology provided in the UK Department of Transport's *Calculation of Road Traffic Noise* (CRTN) 1988, which is stipulated in Chapter 9, Section 4.2.7 of the HKPSG for assessing road traffic noise impact. Road traffic noise levels are presented in terms of noise levels exceeded for 10% of the one-hour period for the hour having the peak traffic flow [L_{10} (1-hour) dB(A)].

5.16 The assessment was based on the projected peak hour flows for the worst year within 15 years after completion of the Project in Year 2030. Based on the traffic forecast provided by the traffic consultant, the PM peak hour flows in Year 2045 will be the maximum projected peak hour traffic flow within 15 years from the completion of the Project. The major roads within 300m from the boundary of the Project have been included in the assessment and are shown in **Appendix 5-1**.

5.17 Two scenarios have been considered in the traffic noise impact assessment. The first one is a base scenario which only includes careful disposition of layout such as the building orientation and setback. The second scenario is a mitigated scenario with incorporation of noise mitigation instruments in the development, such as acoustic windows, etc on top of the base scenario.

Fixed Noise Sources

5.18 Site visits have been organized to identify major fixed noise sources in the neighbourhood of the site on 3rd October 2019. The sources are anticipated to have fixed noise impact on the site, which has been assessed according to standard acoustics principles and technique. Calculations are based on the following standard formula:

$$SPL = SWL - DC + FC - VC$$

where

SPL – Sound Pressure Levels at receiver, in dB(A)

SWL – Sound Power Levels of Fixed Noise Sources, in dB(A)

DC – Distance Correction, in dB by $DC = 20 \times \log_{10}(D) + 8$, D is the slant distance between the NSR and noise source location in metres

FC – Façade Correction of 3 dB

VC – Screening Correction of 5 dB reduction in case of no direct view situation

5.19 The sound power levels in Appendix III of EPD's *Good Practices on Ventilation System Noise Control* (hereafter "Good Practices") have been used for the assessment.

Impact Identification and Assessment

Road Traffic Noise

5.20 The peak hour traffic flow of individual roads in the assessment year (Year 2045) is listed in **Appendix 5-1**. The predicted traffic flow has been submitted to the Transport Department (TD) for agreement with the methodology. TD's endorsement on the traffic forecast is enclosed in **Appendix 4-1**.

5.21 Although the overall traffic flow of PM peak hour is higher than AM hour, the traffic flow in the nearby road sections (Ferry Street, Road ID 11 & 12) are higher in AM peak hour, the traffic noise at both AM peak hour and PM peak hour were calculated and the highest noise level has been adopted.

a) Base Scenario: Careful Building Setback, Building Disposition and Orientation, Podium Design

5.22 In the base scenario, the Scheme has adopted a design with a setback of about 10m from the road kerb of Ferry Street has been adopted for the proposed residential tower in order to reduce the traffic noise impact from Ferry Street and West Kowloon Corridor. The proposed 7-storey podium (including podium garden) would act as a noise barrier for lower levels. No acoustic window, acoustic balcony or acoustic fin is included in this scenario.

5.23 The detailed results of base case are presented in **Appendix 5-2**. This Base Scenario results in 103/300 (34.3%) flats complying with the noise criteria of 70 dB(A). The maximum exceedance is 7 dB, i.e. 77 dB(A), at the bedroom of Flat 10, which is located closest to Ferry Street.

b) Mitigated Scenario: With Acoustic Measures

5.24 Given the Base Scenario has already adopted design means to achieve noise protection including building setback, building disposition and Orientation, as well as podium design, at-receiver mitigation measures are considered in order to further minimize the traffic noise impact on the proposed residential units. Subject to detailed design, three types of mitigation measures are proposed in this mitigated scenario:

i. Type I: Acoustic Balcony (Noise Reduction: -2 dB(A))

This type of acoustic balcony is less complex and has a depth of more than 1m deep, solid parapet of about 1.2m high, and its ceiling is lined with absorptive material.

ii. Type II: Top-hung Window (Noise Reduction: -5 dB(A))

The design of a top-hung window with a horizontal fin on the bottom of the window coupled with Micro-perforated absorbers (MPA) on the inner side of the window and a pelmet in the indoor area behind the top-hung window, can effectively resist noise from entering domestic premises directly and hence minimize the impact caused to the residents. The design is similar to the type adopted in Hong Tsuen Road Residential Development at Sai Kung (Park Mediterranean). The ratio of vertical distance from opening of the top-hung window to the length of the horizontal acoustic fin (aspect ratio) will be less than the aspect ratio (0.55) of the acoustic window in Park Mediterranean.

Locations of these mitigation measures are shown in **Figure 5-3** and listed in **Appendix 5-3**. Section drawings of the typical Acoustic Windows and/or balcony are illustrated in **Figures 5-4a – 5-4c**.

5.25 The detailed predicted noise levels in the mitigated scenario are presented in **Appendix 5-4**. Given specific noise reduction at different assessment points, the mitigated compliance rate by flat has been increased to 93.7% (281/300 flat), with residual maximum traffic noise level of 72dB(A).

Table 5-6 Summary of Traffic Noise Impact Assessment

	Unmitigated	Mitigated
Total Number of Flat	300	300
Number of Flats Complied	103	281
Compliance Rate by Flat	34.3%	93.7%

5.26 Mitigation measures have been proposed as far as practicable based on the current notional design. Other mitigation measures such as preventing noise sensitive use for the most affected areas and/or avoid openable windows directly facing the major roads should be considered in later detailed design stage of the Scheme to achieve a higher compliance rate.

Existing Fixed Noise Sources

5.27 According to the site visit in October 2019, some existing fixed noise sources were identified. The major fixed noise source, the exhaust ventilation fans of the commercial mall in Olympian City 3 is facing to the residential flat of the proposed development. The identified fixed noise source at Olympian City 3, can be seen from the west facing windows of the proposed residential flats, including the representative NSR (NSR1). As the operation hours of Olympian City 3 commercial mall are 10:00 - 22:00, the exhaust ventilation fans do not operate at night time. The noise criteria of 70 dB(A) for day and evening time is adopted as the fixed noise source impact criteria. The location of the surrounding fixed noise sources and the nearest planning noise sensitive receivers are illustrated in **Figure 5-5 and 5-6**.

5.28 According to EPD's Good Practices, the typical sound power level (SWL) of a fan with volume flowrate of 170,000 m^3/hr under static pressure of 750 Pa is 113 dB(A) (the highest SWL in Table 7c of Appendix III in Good Practices). The fixed noise source is 118m away from the nearest assessment point of the Proposed Development (NSR1). Considering the distance correction and façade correction, the sound pressure level at NSR1 is 67 dB(A) (113-49+3), which is lower than the noise criteria for day time and evening time of HKPSG for Air Sensitive Rating of C (70dB(A)). Therefore, no adverse fixed noise impact is expected on the nearest NSR of the proposed development due to the existing fixed noise source.

Planned Fixed Noise Sources

5.29 Central air ventilation will be provided for commercial & retail area, clubhouse, GIC facilities and basement carpark of the Scheme, the associated HVAC system may cause noise impact to surrounding NSRs. The potential planned fixed noise sources of the Scheme are the large exhaust fans and the outdoor units of air conditioner. Although the large exhaust fans are usually located indoor enclosed within the air ducts, the fan noise will transmit via the ventilation pipe and emit at the duct exhaust.

5.30 In the proposed development, the commercial/retail area and the GIC facilities will be closed outside operation hours and the associated HVAC system are expected to stop during night time. Besides, the expected ventilation requirement of the basement carpark during night-time is expected to be very low thus the primary exhaust fan is unlikely required. Due to the relatively small size of the served zones, Variable Refrigerant Volume (VRV) system is

preferred over chiller plants and/or water-cooling tower as VRV provide flexible cooling capacity with high efficiency over large range of loading.

5.31 The detailed configuration, design and models of the cooling and exhaust system are not yet decided in the current stage. For assessment purpose, a rough estimation of cooling requirement and air exhaust rated has been made. The noise level of the fixed noise sources adopted in the assessment are obtained from either catalogue of market available model (for VRV), or EPD's Good Practices (for ventilation fans). The estimated cooling load for the non-residential portion of Tower Block is ~96kW, whereas the estimated cooling load requirement for the Low Block is ~134kW. The estimated ventilation rate requirement is ~2800 m^3/hr for the non-residential portion of Tower Block; ~3800 m^3/hr for the Low Block; and ~13300 m^3/hr for the basement carpark.

5.32 One large exhaust fan for each of the Tower Block, Low Block, and basement carpark has been adopted in the assessment. As EPD's Good Practices only provide a range of SWL for general reference, for conservative assessment, the SWL at 750 Pa, which is considered on high side, has been adopted. A single VRV for each of the Tower Block and Low Block have been assumed. The reference models are listed in the **Table 5-7** and their specification are provided in **Appendix 5-5**. The tonality, impulsiveness and intermittent correction are not considered in the calculation as those characteristics are not expected for carefully designed, selected and installed components. The planned locations of the fixed noise sources are illustrated in **Figure 5-6**.

Table 5-7 List of Potential Planned Fixed Noise Sources

Location	Reference Plant	Quantity	SWL/SPL, dB(A)		Total SWL/SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68
Low Block, Plant Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m^3/hr @ 750 Pa	1	SWL[2]	99	99
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m^3/hr @ 750 Pa	1	SWL[2]	99	103
	Fan with 17000 m^3/hr @ 750 Pa	1	SWL[2]	101	

[1] The SPL are based on the value listed in the product catalogue. The SPL are measured at 1m.

[2] The SWL are reference to Table 7c in EPD's *Good Practices on Ventilation System Noise Control.*

5.33 The assessment result shows that under unmitigated scenario, the SPL at NSRs arising from the planned fixed noise source of the project would be 75 dB(A) maximum (at NSR4) due to

its proximity to exhaust point, which exceed the noise criteria. The detailed calculation can be found in **Appendix 5-5**.

5.34 As the exceedance is mainly contributed by the ventilation fans, in-line silencer is proposed for reducing fan noise. According to Table 2 of EPD's Good Practices, silencer is a practical solution for reducing fan noise in ductwork by 10dB or more. Therefore, a 10dB reduction is applied to the fan's noise in mitigated scenario for assessment purpose. The assessment results show that with silencers installed in the exhaust ducts, the SPL at all NSRs is reduced to 65 dB(A) or below, which comply with day and evening criteria.

5.35 The current assessment bases on a preliminary design and the final configuration subject to detailed design. The current assessment only considers the day/evening situation, with no tonality, impulsiveness and intermittent corrections. In case the SWL of the adopted fixed noise sources are higher, tonality characteristic is expected, and/or night-time operation is required; additional mitigation measures, such as adopting quieter plants and/or acoustic louvres, should be considered. Considering acoustic louvers with noise reduction of 15 dB or higher are available in market, no insurmountable fixed noise impact is anticipated even in the worst scenario. To ensure the compliance in the final design, the project proponent (URA) should incorporate the fixed source noise planning criteria to the tender document of this Project.

5.36 As the predicted SPL at all NSRs comply with day and evening criteria with the implementation of the proposed mitigation measures, no adverse fixed noise impact is anticipated from the planned fixed noise sources of the current Scheme if the proposed mitigation measures are implemented properly.

Conclusion

5.37 The overall noise impact during the construction phase is considered insignificant. Mitigation measures shall be implemented in accordance with ProPECC PN 2/93 during construction to minimize construction noise impact on the nearby NSRs.

5.38 Traffic noise impact has been taken into consideration when designing the notional layout of the residential tower with about 10m set back from Ferry Street in the west direction. In the base scenario where measures including building setback, careful building design and orientation to minimise openable windows facing Ferry Street, use of podium design to shield from noise source are adopted, the result shows that only 34.3% of flats complies with the 70 dB(A) traffic noise assessment criteria as demonstrated, with maximum residual noise exceedance up to 7 dB. In the mitigated scenario, at-receiver mitigation measures are also adopted to improve the noise compliance. Two types of mitigation measures (Type I: acoustic balcony; Type II: acoustic windows) are considered, the compliance rate by flat has been largely increased to 93.7%, with residual maximum traffic noise level reduced to 2 dB.

5.39 The above results demonstrated that the current notional design with the application of the proposed mitigation measures can largely reduce the traffic noise impact and reach over 90% of traffic noise compliance rate at this highly constraint site. Given the Scheme is at planning stage and is subject to CE in C's approval, detailed design, including the use of more mitigation measures such as acoustic fins, will only be carried out after the approval of the Scheme and the current notional design of the proposed development is subject to change at detailed design stage.

5.40 The noise level at the NSRs of the proposed development due to the fixed noise sources in the surroundings have been assessed based on reasonable assumptions on the noise. It is anticipated with the mitigation measures already applied by the developers themselves and the operation time of those existing fixed plants, no adverse fixed noise impact is expected on the nearest NSRs of the proposed development.

5.41 The noise level at the NSRs in the surroundings due to the planned fixed noise sources in the Scheme have been assessed based on the current notional design, with reasonable assumptions and market available product. No adverse fixed noise impact is anticipated from the planned fixed noise sources of the current Scheme if the proposed mitigation measures are implemented properly. To ensure the compliance in the final design, the project proponent (URA) should incorporate the fixed source noise planning criteria to the tender document of this Project.

6 WASTE MANAGEMENT

Legislations and Requirements

6.1 In general, sustainable approaches to waste management should be adopted to produce less waste and reuse or recover value from waste.

6.2 The following legislations/guidelines related to the handling, treatment and disposal of waste in Hong Kong are listed:

- Waste Disposal Ordinance (Cap. 354) (WDO)
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)
- Land (Miscellaneous Provisions) Ordinance (Cap. 28)
- The Buildings Department's Practice Note for Authorized Persons and Registered Structural Engineers (PNAP) No. 243
- ETWB TC(W) 19/2005 Environmental Management on Construction Sites
- DEVB TC(W) No. 06/2010 Trip Ticket System for Disposal of Construction and Demolition Materials
- Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
- Air Pollution Control Ordinance (Control of Asbestos (sections 51 to 84))
- ProPECC PN2/97 Handling of Asbestos Containing Materials in Buildings
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Wastes

6.3 Waste collection and disposal is covered by the Waste Disposal Ordinance (Cap. 354) (WDO). This provides a licensing system for the disposal of certain wastes and for the control of certain wastes by regulation. All wastes should be properly stored and disposed in accordance with relevant waste management regulations and guidelines.

6.4 Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) outlines the requirement for chemical waste handling and disposal.

6.5 Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N), construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert materials. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert materials, and construction waste delivered to a public fill reception facility for disposal must consist entirely of inert materials.

6.6 Land (Miscellaneous Provisions) Ordinance (Cap. 28) provides control over placing and maintaining of C&D materials on unleased land. If the occupier does not hold the relevant license, the Department of Lands will take action accordingly.

6.7 The Buildings Department's Practice Note for Authorized Persons and Registered Structural Engineers (PNAP) No. 243 – Construction and Demolition Waste outlines the requirement of waste management for on-site sorting of all Construction and Demolition (C&D) materials prior to disposal. This circular also promulgates the policy to implement a trip-ticket system in Public Works Programme (PWP) contracts for the proper disposal of C&D materials at public filling facilities or landfills.

6.8 The ETWB TC(W) No. 19/2005 – Environmental Management on Construction Sites details the waste management method in the form of avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal.

6.9 The DEVB TC(W) No. 06/2010 details the trip ticket system for disposal of construction and demolition materials.

Waste Management for Construction Phase

Waste Types

6.10 The demolition and construction activities to be carried out for the proposed development would generate a variety of waste that can be divided into distinct categories based on their composition and ultimate method of disposal. The identified waste types include:

- Construction and demolition (C&D) materials, comprising inert and non-inert materials, from the demolition and construction works;
- Potential asbestos containing materials
- Chemical waste from any maintenance of construction plant and equipment; and
- General refuse from the workforce.

Inert and non-inert C&D Materials

6.11 Inert C&D Material (or public fills) includes construction debris, soil, rock and concrete, should be re-used on-site as filling materials or off-site as public fill at public fills reception facilities. Non-inert C&D Material (or C&D waste) includes metal from the existing structures, wood from formwork, equipment parts, and materials and equipment wrappings, etc. should be re-used or recycled as far as possible. Equipment parts, which mostly consist of metal and will corrode without specific working condition and/or routine treatment, are also considered as non-insert C&D materials as they are suitable for recycle/reuse but not suitable for backfill and/or land reclamation.

6.12 As the Scheme involves demolition of existing buildings and construction of 2 floors of basement, there will be generation of inert C&D materials during construction. It is estimated that about 26,000 m^3 excavated materials would be generated and about 4,000 m^3 would be suitable for backfilling during site formation stage. It is also estimated that about 16,000 m^3 C&D materials will be generated during the demolition work.

6.13 To account the quantity of C&D materials to be generated from construction of the new building, C&D materials generation rate of 0.1 m^3 per m^2 of GFA constructed is adopted in accordance with the "Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)". The total GFA of the proposed development from the Project will be 17,790m^2, including the proposed GIC facilities with non-domestic GFA of 2,850 m^2. An existing public toilet of 43 m^2 will be re-provisioned outside the Scheme boundary. The C&D materials will be generated from superstructure construction is approximately 1,779 m^3.

6.14 The volume of non-inert C&D material, such as maintenance and packaging waste being generated by the Scheme will be subject to specific construction procedures and site practices. The estimated amount of non-inert C&D material generated during site clearance and construction of superstructure works would be minimal with careful design, planning, good site management and control of ordering procedures etc. The non-inert C&D materials generated should be reused or recycled as much as possible before disposed off-site. For example, the wood from formwork can be re-used (on-site or offsite) and the metal recovered can be sent to recycle. A 10% of offsite reuse/recycle rate has been adopted in the preliminary estimation.

6.15 The estimated quantities of inert and non-inert C&D material generated from the construction of the proposed development are presented in **Table 6-1**.

Table 6-1 Estimated Quantities of C&D materials to be Generated, Reused and Disposed of the Proposed Development

Construction Activities	C&D material (m^3)	Inert C&D material to be Reused On-site (m^3)	Inert C&D material to be Reuse/Recycle Off-site (m^3)	C&D material to be disposed of (m^3)	
				Inert	Non-inert
Excavation	26,000	4,000	-	22,000	-
Demolition of existing buildings	16,000	-	160 (a,b)	14,400 (a)	1,440 (a,b)
Superstructure construction	1,779	-	18 (a,b)	1,601 (a)	160 (a,b)
Total	**43,779**	**4,000**	**178**	**38,001**	**1,600**

Note:
(a) Approximately ratio for (inert waste) : (non-inert waste) is approximate 9:1 according to "Monitoring of Solid Waste in Hong Kong, 2017" by EPD
(b) Non-inert C&D materials should be reused or recycled as much as possible before disposed off-site, estimated to be 10% of the generation.

6.16 It is estimated that about 9% of C&D material to be reused on-site; and about 0.4% of C&D material to be recycle off-site. It is proposed to disposal the rest of inert C&D Waste to the Fill Bank at Tseung Kwan O Area 137. The remaining non-recyclable non-inert C&D Waste is not suitable for public fill and requires disposal to licensed landfill facilities. It is proposed to disposal the non-recyclable non-inert C&D Waste to the South East New Territories (SENT) Landfill.

6.17 According to the current estimation, the total amount of C&D waste should be lower than 50,000m^3. In addition, the Scheme is not expected to import fill material in excess of 50,000m^3, thus Construction and Demolition Material Management Plan (C&DMMP) is not required. As the detailed design of the foundation works and building construction is not yet available at this stage, the preliminary estimation of the amount of inert C&D materials arising from the Scheme should be reviewed in the Environmental Management Plan (EMP) in accordance with ETWB TCW 19/2005 Environmental Management on Construction Sites prepared by the Contractor, and should be submitted to Architect/Engineer prior to the commencement of construction works.

Chemical Waste

6.18 Chemical waste, such as cleaning fluids, solvents, spent lubricants and fuel for equipment or waste battery, may be generated. Since the scale of the works is small, the quantity of chemical waste generated would be minimal. It is expected that the approximate quantity of the lubrication oil is about 100L/month and hence approximately 6 m^3 of chemical waste will be generated during construction period of 60 months (general assumption of construction time for URA redevelopment projects adopted). A licensed collector should be employed to handle and dispose of the chemical waste. Furthermore, the chemical waste should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste. The Works Contractor should register as a Chemical Waste Producer under the WDO.

6.19 Since the existing structures were mostly built in 1960s and 1970s, asbestos containing materials may be present at the existing structures which would be demolished. Asbestos investigation would be carried out before the commencement of demolition works. Asbestos investigation and asbestos abatement plan will be made in accordance with Air Pollution Control Ordinance, Waste Disposal (Chemical Waste) (General) Regulation and other Codes of Practice listed in Appendix III in ProPECC PN2/97 Handling of Asbestos Containing Materials in Buildings if any asbestos is found in the Site.

6.20 In addition, other chemical waste, if any, to be generated during the demolition works will be handled and disposed of in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste. For asbestos wastes, if any, will be handled and disposed of in accordance with the Code of Practice on the Handling, Transportation and Disposal of Asbestos Wastes.

6.21 With the implementation of proper chemical waste management measures listed in **Section 6.32**, the impact is anticipated to be insignificant.

General Refuse

6.22 General refuse such as food scraps, waste paper, empty containers, etc., would be generated from construction workforce during construction phase.

6.23 The maximum number of construction workers to be employed will be approximately 100 workers per day. The daily arising of general refuse from the construction workforce can be estimated based on a generation rate of 0.65kg per worker per day, the estimated quantity of the general refuse is 65kg (= 100 workers x 0.65kg/worker/day).

6.24 Such refuse should be properly managed so intentional or accidental release to the surrounding environment does not occur. If the general refuse is recyclable, such as paper, plastics and aluminum materials, the reuse and recycling of such waste is encouraged. Effective collection of site wastes such as providing enclosed bins or compaction units would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problem. Waste storage areas should be well maintained and cleaned regularly.

6.25 With the implementation of good waste management practices as suggested at the site, adverse environmental impacts are not expected to arise from the storage, handling and transportation of general refuse generated by construction workers.

Mitigation Measures

6.26 Prior to the commencement of the construction works, the contractor will identify the types and amount of waste generated and its associated mitigation measures according to the requirements as stipulated in ETWB TCW No. 19/2005.

C&D Waste

6.27 In general, minimization/reuse/recycling of C&D materials (i.e. both inert and non-inert C&D materials) should be considered prior to disposal. Waste minimization measures with reference to Buildings Department's Practice Note for Authorized Persons and Registered Structural Engineers (PNAP) No. 243 should be adopted during construction phase, measures may include:

- On-site sorting of C&D materials;
- Recycling of construction materials for on-site use;
- Avoidance and minimization to reduce the potential quantity of C&D materials generated;
- Reuse of materials as practical as possible;
- Recovery and Recycling as practical as possible;
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

6.28 The Contractor should adopt good housekeeping practices such as waste segregation prior to disposal. Stockpiling and segregating areas should be provided at site. Effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.

6.29 During inclement weather (e.g. heavy rainstorm), the stockpile should be covered by tarpaulin or other water-resistant fabric. This can prevent dust and waste from being blown away by wind or washed into watercourses/drainage system.

General Refuse

6.30 General refuse should be stored in enclosed bins or compaction units separate from C&D materials. 3-color recycle bins for the collection of recyclable municipal waste should also be provided. A reputable waste collector should be employed by the Contractor to remove or recycle general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of "wind-blown" light materials.

Chemical Waste

6.31 If chemical waste is produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector.

6.32 Provided that good site practices are strictly followed, there would be no adverse impacts related to waste management during construction phase.

Waste Management for Operation Phase

6.33 Domestic wastes will be expected as the major type of waste from the redevelopment, including food residues, plastic and metal products, and paper. No chemical or hazardous waste is anticipated. Wastes generated will be collected and disposed of on a regular basis. Building management will be arranged by the future owners to manage the development including waste disposal.

6.34 As the domestic waste will be collected (at a refuse collection point) and regularly disposed of at landfill or regularly sent to recyclers, waste recycling would be carried out during operation phase. Adverse impacts due to waste management will not be anticipated.

Conclusion

6.35 A variety of wastes including inert C&D material, C&D waste, chemical waste and general refuse would be generated during the construction phase and domestic waste would be generated during operation phase. Provided that the wastes generated would be managed with appropriate measures, no adverse environmental impacts arising from the handling, storage, transportation or disposal of the wastes generated during the construction and operation stage of the Scheme would be envisaged.

7 PRELIMINARY LAND CONTAMINATION ASSESSMENT

Introduction

7.1 This chapter identifies and evaluates any potential land contamination impact within the scheme boundary of the proposed development. Preliminary assessment has been conducted with reference to the applicable legislation and guidelines.

Legislations, Standards & Guidelines

7.2 Legislations and guidelines related to land contamination are given below:

- Environmental Impact Assessment Ordinance (Cap. 499), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annex 19;
- Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C);
- Dangerous Goods Ordinance (Cap 295);
- Practice Guide for Investigation and Remediation of Contaminated Land (PG);
- Guidance Note for Contaminated Land Assessment and Remediation; and
- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management.

Potential Land Contamination Impact

7.3 According to Guidance *Note for Contaminated Land Assessment and Remediation* and EIAO-TM Annex 19, the following industrial uses may result in land contamination:

- oil installations including oil depots and petrol filling stations
- gas works
- power plants
- shipyards/boatyards
- chemical manufacturing/processing plants
- steel mills/metal workshops
- car repairing and dismantling workshops
- dumping ground and landfill
- scrap yards

Assessment Methodology

7.4 In order to identify and evaluate the potential land contamination associated with the Scheme, a desktop study has been conducted to review the historical and current land uses. Historical aerial photographs from Lands Department have been reviewed. Site appraisals have been carried out to identify any contamination hotspots and the site condition of the industrial operations, if any. Records from Environmental Protection Department (EPD) and Fire

Services Department (FSD) shall also be reviewed to identify any accidents, fires, explosions, spillage and any pollution incidents occurred at the site.

Impact Assessment and Evaluation

Historical and Current Land Uses of Site

7.5 Historical aerial photographs covering the site were obtained from Lands Department to evaluate any land use changes associated with potential contamination implication within the scheme boundary. The earliest aerial photo available from Lands Department is dated 1963. The list of aerial photos reviewed is shown in **Table 7-1** and the related aerial photos are provided in **Appendix 7-1** for reference.

Table 7-1 List of Aerial Photos Reviewed

Year	Photo No.	Descriptions
1963	4929	The area is developed and low-rise buildings can be seen within the Scheme area
1975	11299	No significant changes can be seen in the Scheme area
1983	47465	Demolished of buildings and construction of Rest Garden can be observed at the Scheme area
1992	A30380	No significant changes can be seen in the Scheme area
2004	CW60256	No significant changes can be seen in the Scheme area
2015	CW114679	No significant changes can be seen in the Scheme area
2019	E054129C	No significant changes can be seen in the Scheme area

7.6 As shown in available historical aerial photos, the scheme and its adjoining areas are built-up area with clusters of buildings. Existing buildings within the Scheme were completed between 1958 and 1973. The existing LCSD Rest Garden, which was previously occupied by large building, was completed in 1980s. In general, area within the scheme boundary did not experience much landscape alternation since 1980s.

7.7 Site appraisal was carried out on 24th Feb 2020 to identify the latest land use and any contamination hotspots within the scheme boundary. The site walkover checklist and photos of the inspection can be found in **Appendix 7-2** and **Appendix 7-3** respectively. There are shops at the ground floor of the residential buildings at Shantung Street, Thistle Street and Nelson Street. The shops along Nelson Street are mainly for selling of groceries which from part of the adjoining wet market, no land contamination issue is anticipated. A few shops along Shantung Street are selling electric hardware/engineering parts. Besides, a recycle shop is found at Thistle Street. Despite the nature of businesses of these shops may involve storage of chemical or machines with lubrication/fuel which may pose land contamination issues, these shops are having concrete flooring and thus the risk of land contamination is minimal, if not none. Upon the Scheme to be approved by CE in C and the URA acquired the properties

in the Scheme, site inspection at these shops can be conducted, if necessary, to ascertain any contamination issue.

7.8 The General Building Plans of the existing buildings within the site boundary has been reviewed and no record of underground oil tanks has been found. Therefore, the only potential land contaminate sources are from the existing recyclers and hardware shops. No other industrial activity that has risk of land contamination was identified at the site.

Enquiries with Government Departments

7.9 Information was requested from Fire Services Department (FSD) and Environmental Protection Department (EPD) on the history of operation and land use of the site. The EPD was consulted with regard to any records of chemical waste producer (CWP). The FSD was consulted with regard to any records of dangerous good license(s). Both departments were inquired on any reported accidents or spillage/leakage incidents within the project area. Both EPD & FSD confirmed that neither records of dangerous good license nor incidents of spillage/leakage of dangerous goods have been found in the project site and in the vicinity. The correspondences from FSD and EPD are documented in **Appendix 7-4**.

Conclusion

7.10 Based on reviews of historical aerial photos, site appraisals and government records, it is concluded that the potential of land contamination issues within the scheme boundary is very low. It is considered that no detailed land contamination assessment nor remediation works would be required. Nevertheless, in case any land contamination issue is identified at later stage, further land contamination assessment will be conducted to ascertain the issue and necessary remediation measures will be carried out, if required.

8 CONCLUSION

8.1 An Environmental Assessment has been carried out to evaluate the potential environmental benefits and/or impacts likely to arise from the draft DSP of the Scheme. The key environmental issues associated with the Scheme are construction dust impact, construction noise impact and waste management during the construction phase and potential air quality and noise impact during the operational phase.

8.2 With the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation and the adoption of good site practice, no adverse air quality impact associated with the construction works is expected.

8.3 Air emission is not anticipated from the proposed development during operation phase. According to the model prediction, the air quality at all proposed residential flats comply with the AQOs. The air sensitive use (fresh air intake) of the non-residential uses should be placed at or above 36 mAG. The air quality upon completion of the Scheme will be similar to, if not better than, the existing situation and no insurmountable air quality impact is anticipated.

8.4 Construction noise impact is considered insignificant with proper implementation of the recommended mitigation measures.

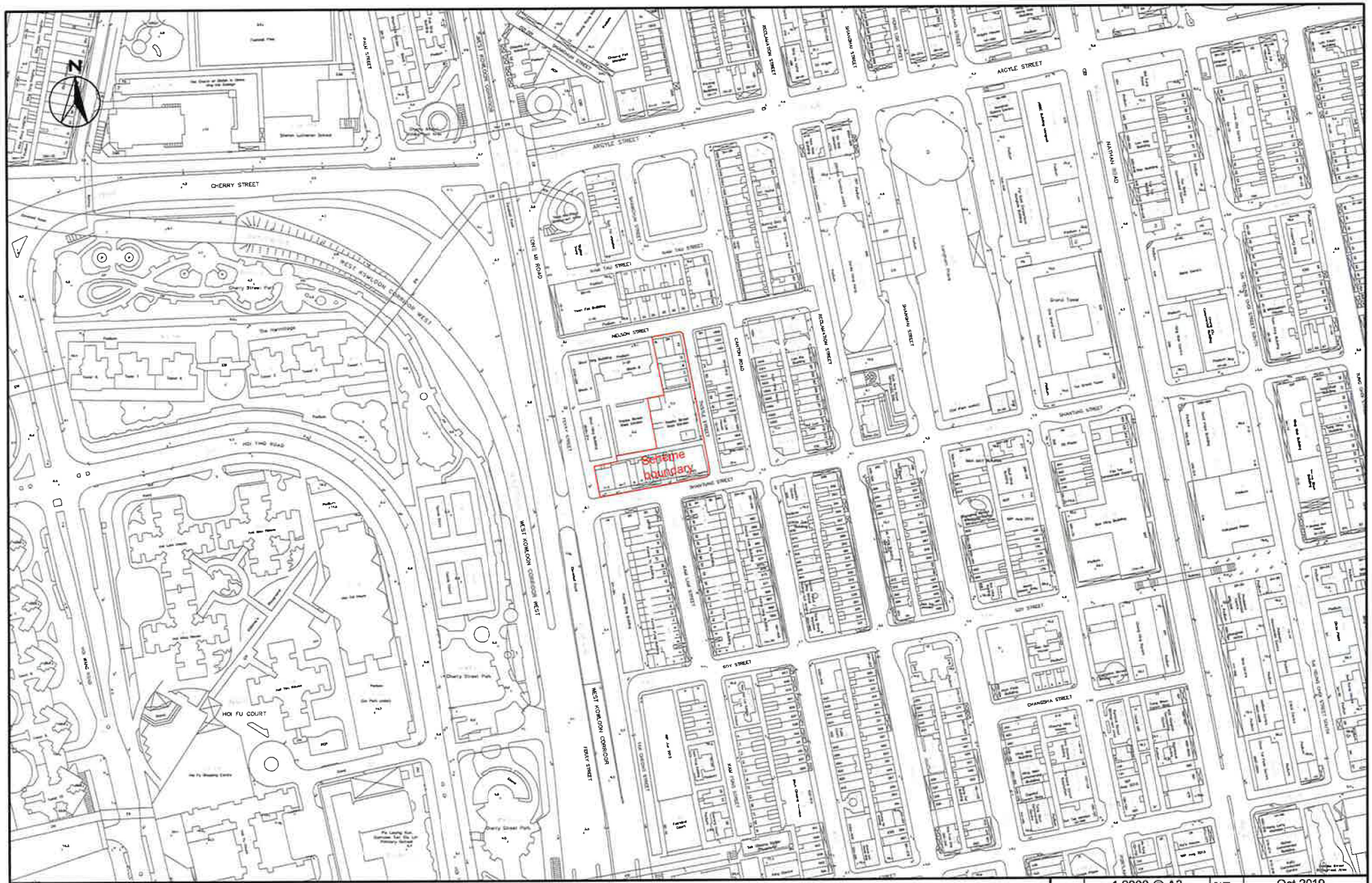
8.5 Traffic noise impact during operation phase have been taken into consideration. A noise compliance of 93.7% of flats can be achieved in the notional design by adopting careful design in building disposition and at-receiver mitigation measures such as acoustic windows and acoustic balcony.

8.6 The noise impact from the fixed noise sources in the surroundings and the planed fixed noise sources in the proposed development has been assessed based on reasonable assumptions. No adverse noise impact from fixed plant noise sources is anticipated during operation phase if the proposed mitigation measures are implemented properly.

8.7 A variety of wastes including inert C&D material, C&D waste, chemical waste and general refuse would be generated during the construction phase and domestic waste during operation phase. Provided that the wastes generated would be managed with appropriate measures, no adverse environmental impacts arising from the handling, storage, transportation or disposal of the wastes generated during the operation of the Scheme would be envisaged.

8.8 Based on reviews of historical aerial photos, site appraisals and government records, it is concluded that the chance of land contamination within the scheme boundary is very low. It is considered that no detailed land contamination assessment nor remediation works is required. Nevertheless, in case any land contamination issue is identified at later stage, further land contamination assessment will be conducted to ascertain the issue and necessary remediation measures will be carried out, if required.

FIGURES



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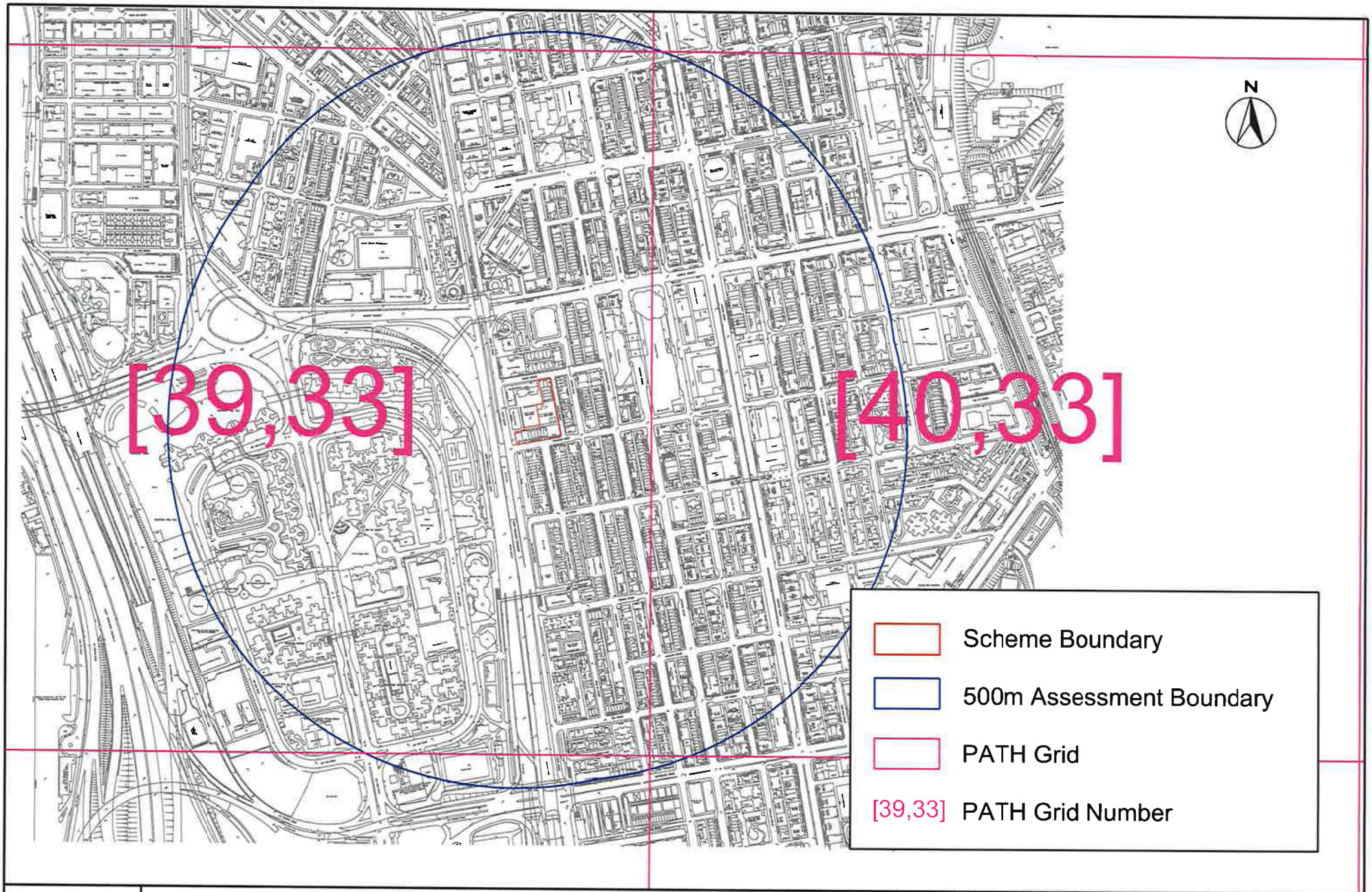
Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Project Site Location

SCALE	1:2000 @ A3	DATE	Oct 2019
CHECK	KW	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	1-1
		REV	-



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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Assessment Boundary (Air Quality)

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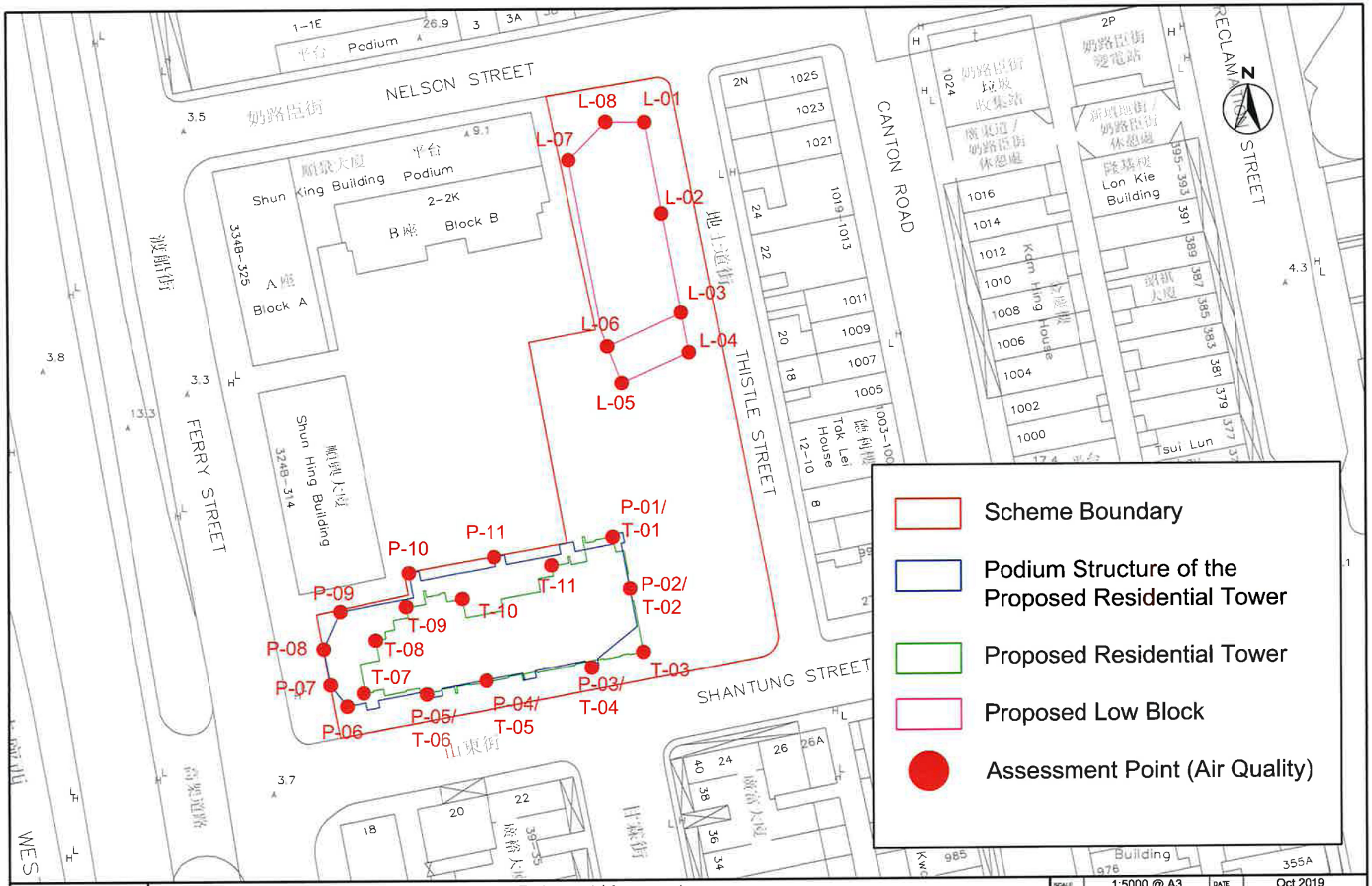
CHECK	KW	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	4-1
		REV	-



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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Assessment Points (Air Quality)

SCALE	1:5000 @ A3	DATE	Oct 2019
CHECK	KW	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	4-2
		REV	-



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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Study Area for Noise Impact Assessment

SCALE	1:1000 @ A3	DATE	Oct 2019
CHECK	KW	DRAWN	SY
JOB No.	IA 19021	DRAWING No.	5-1
		REV	-



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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Representative Assessment Point for Traffic Noise Impact Assessment

SCALE	1:125 @ A3	DATE	Oct 2019
CHECK	KW	DRAWN	SY
JOB No.	IA 19021	DRAWING No	5-2
		REV	-



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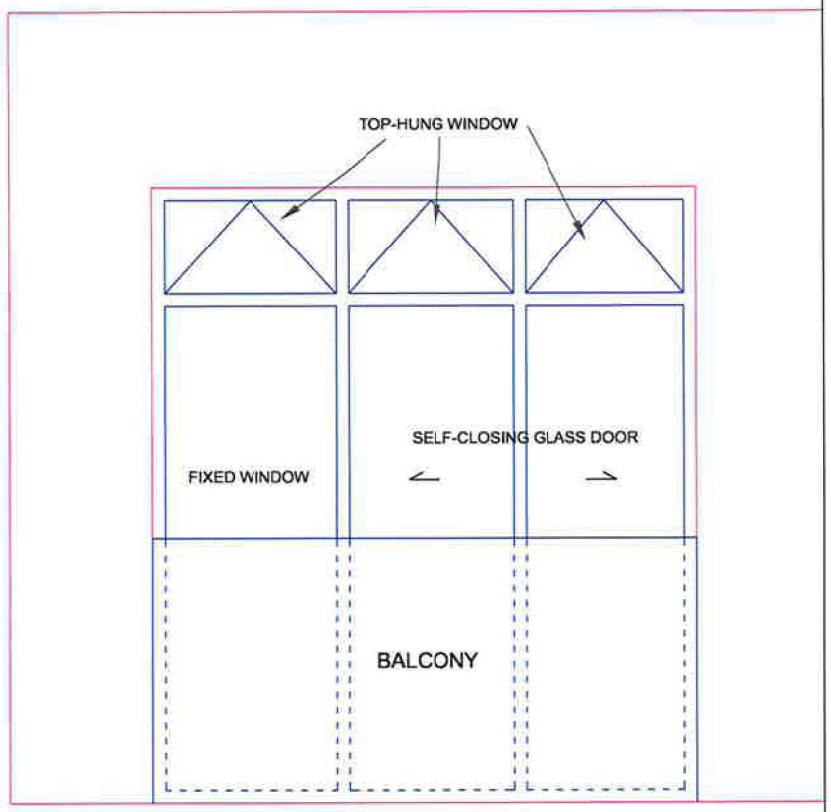
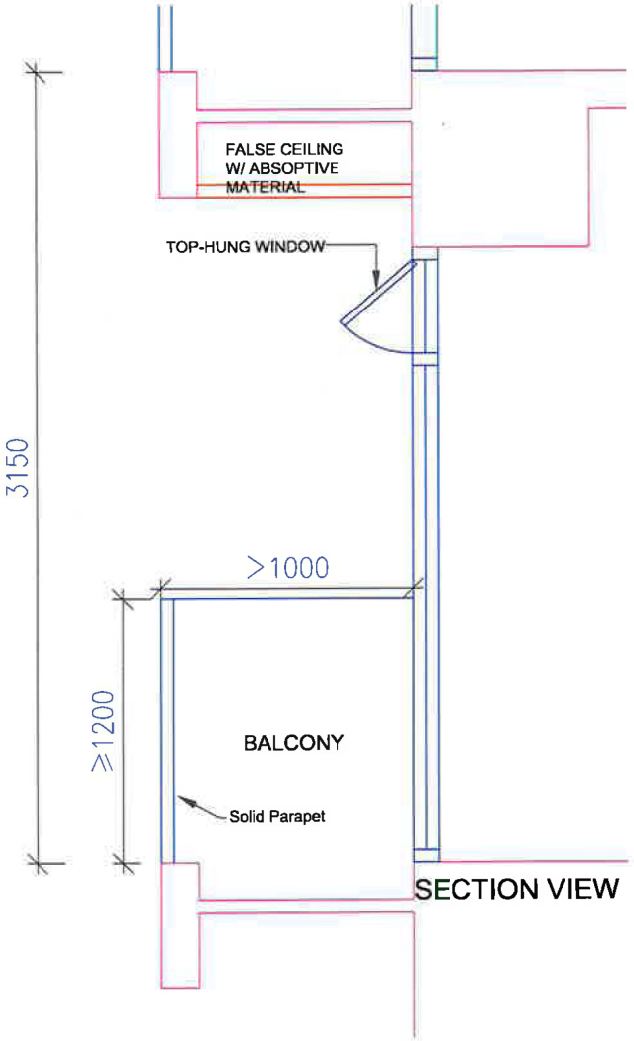
Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Proposed Mitigation Measures

SCALE	1:125 @ A3	DATE	Feb 2020
CHECK	JM	DRAWN	CC
JOB No.	IA 19021	DRAWING No	5-3
		REV	-



ELEVATION VIEW



SECTION VIEW

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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Typical Section for Acoustic Balcony

SCALE	1:20 @ A3	DATE	Feb 2020
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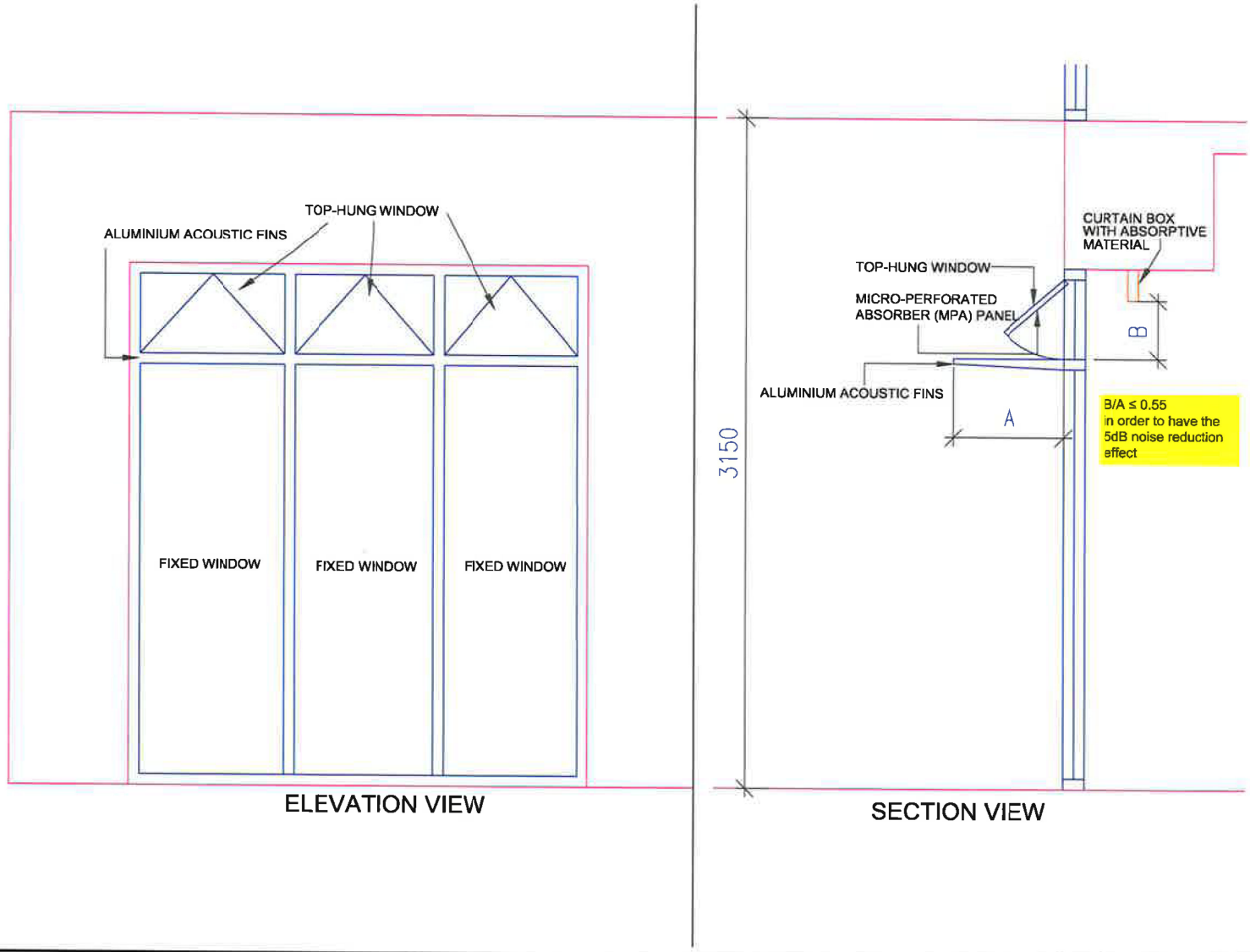
JOB No.	IA 19021	DRAWING No.	5-4a
		REV	-



ELEVATION VIEW

SECTION VIEW

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Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Typical Section for Acoustic Window (Top-hung type)

SCALE	1:20 @ A3	DATE	Feb 2020
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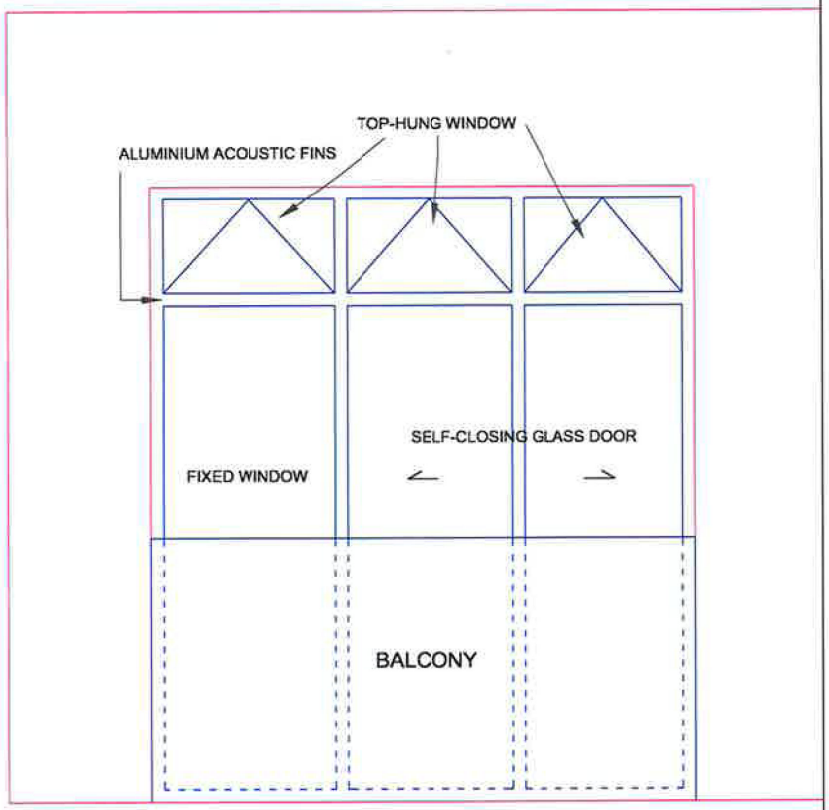
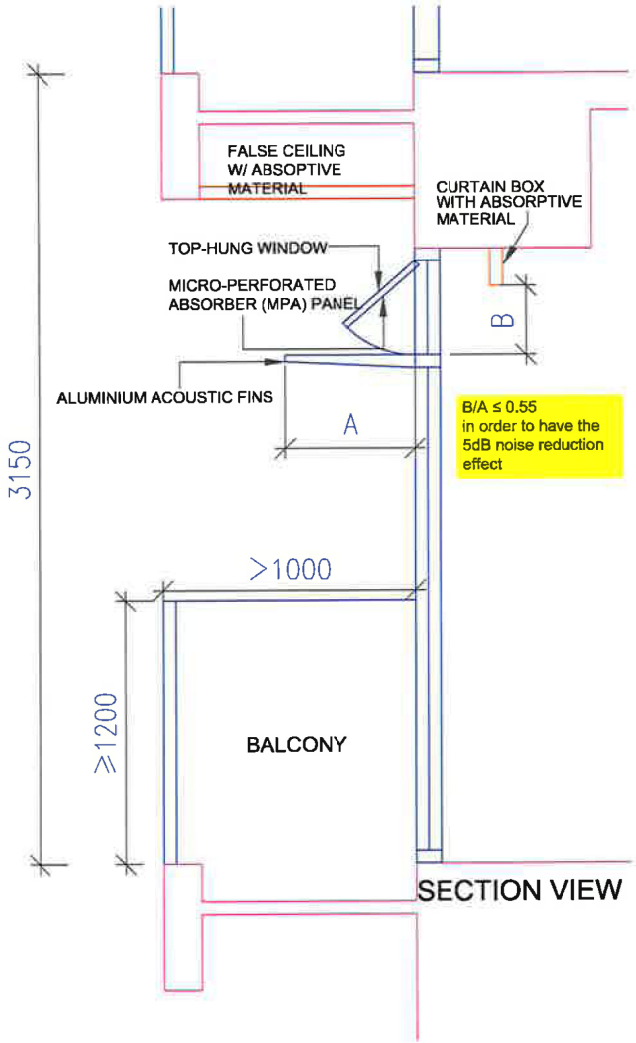
JOB No.	IA 19021	DRAWING No.	5-4b
		REV	-



ELEVATION VIEW



SECTION VIEW

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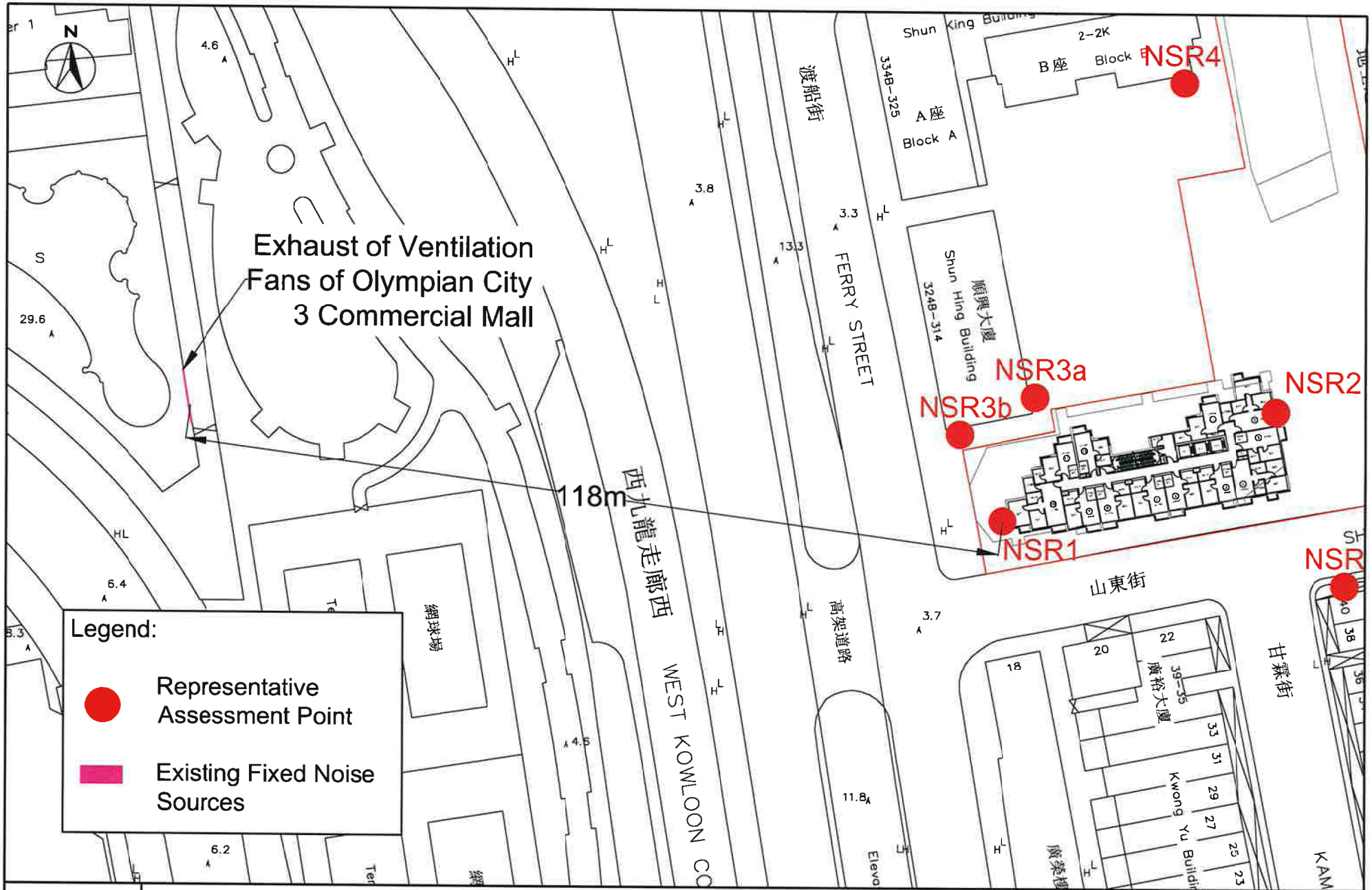
Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Typical Section for Acoustic Window with Balcony

SCALE	1:20 @ A3	DATE	Feb 2020
CHECK	JM	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	5-4c
		REV	-



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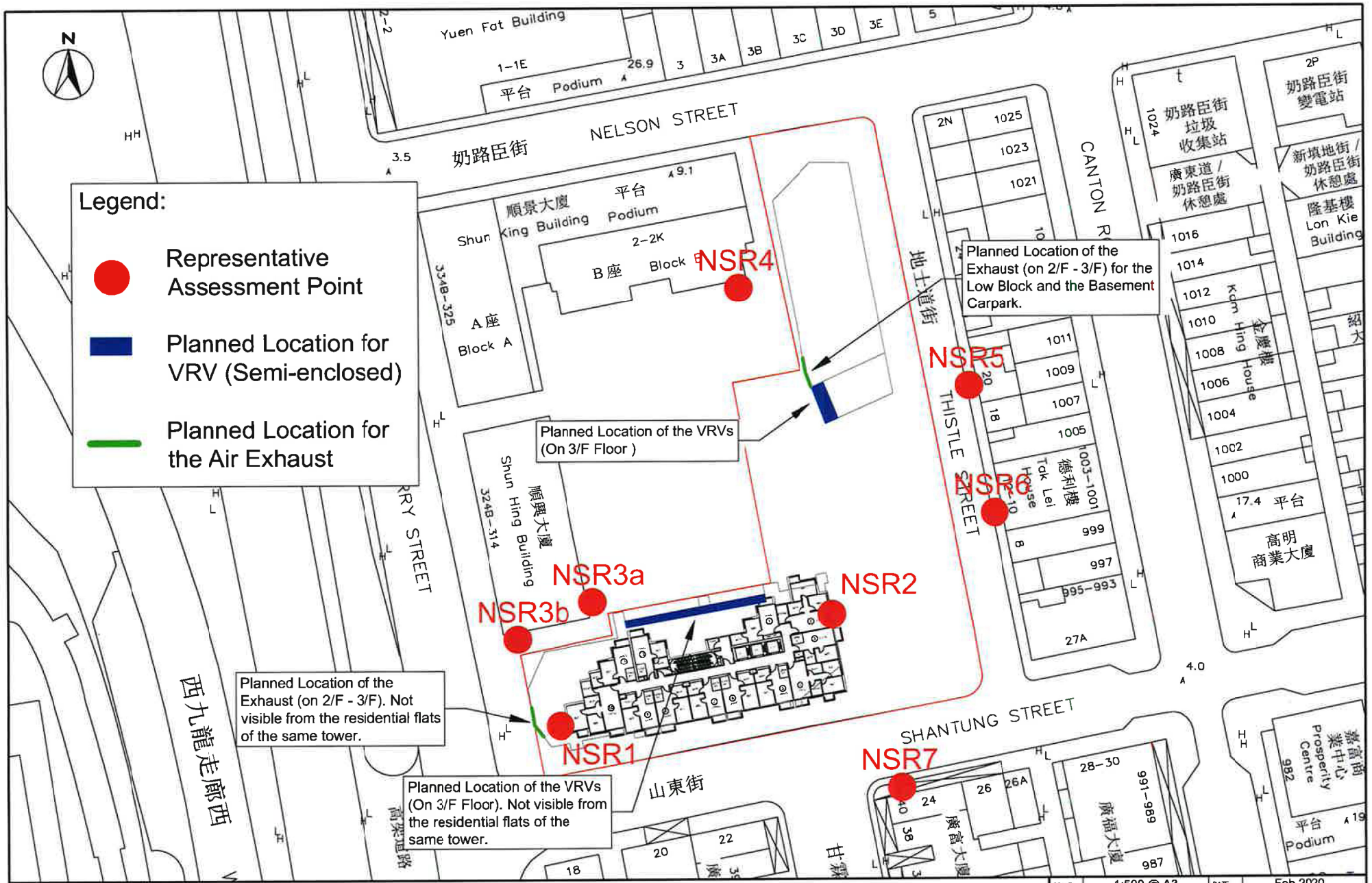
Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Existing Fixed Noise Sources

SCALE	1:500 @ A3	DATE	Feb 2020
CHECK	KC	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	5-5
		REV	-



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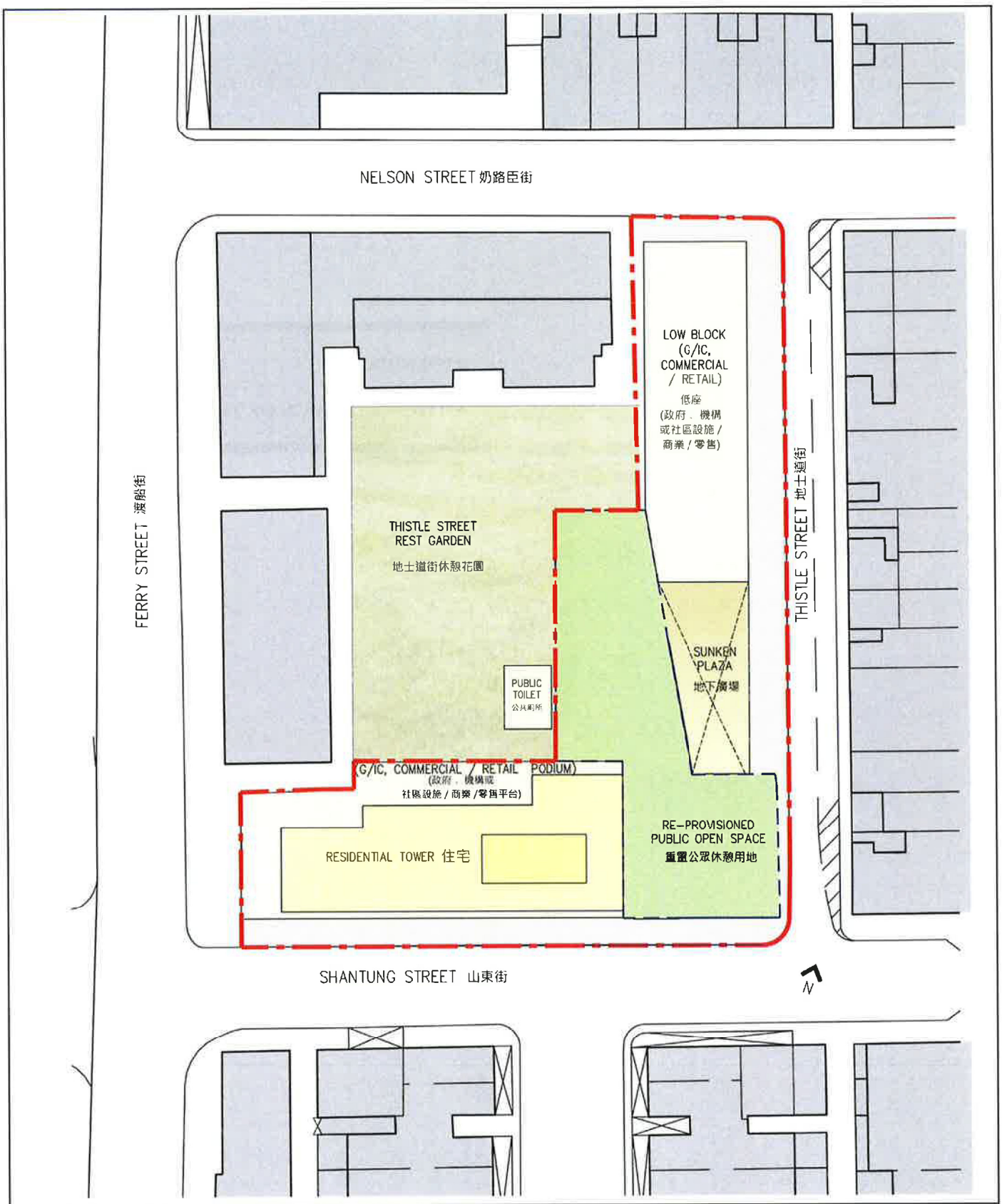
Environmental Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Planned Fixed Noise Sources

SCALE	1:500 @ A3	DATE	Feb 2020
CHECK	JM	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	5-6
		REV	-

APPENDIX 3-1

NOTIONAL DESIGN OF THE SCHEME



THE SCHEME

(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Block Plan

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

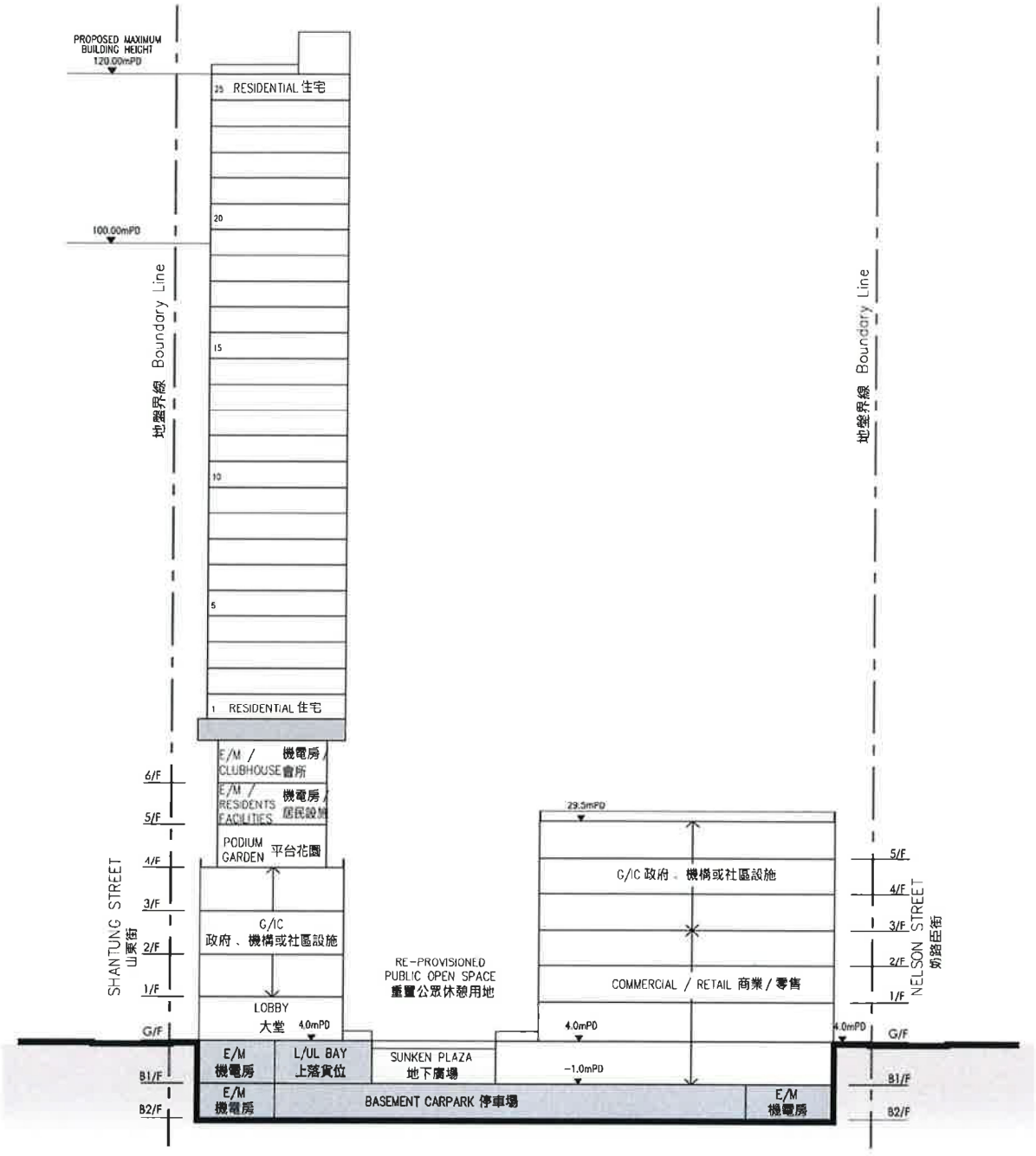
SCALE 1 : 600 (A4)

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012



KEY PLAN



(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Section A-A

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012

APPENDIX 4-1

ENDORSEMENT OF TRAFFIC FORECAST FROM TRANSPORT DEPARTMENT

From: Hang Hei YIP
To: Chung, Elsa
Cc: Kwan, Mable; Kwan, Mike; Li, Yee-ting
Subject: RE: Methodology of Traffic Forecast for Environmental Assessment Study (EAS) - YTM-012
Date: Thursday, February 20, 2020 6:09:12 PM

Dear Miss Chung,

As per your letter ref. 5190641/18.30/OC002/JY/EC/ dated 22 Nov 2019 and your responses below regarding the captioned subject, I have no further comment for your traffic forecast methodology from traffic engineering viewpoints.

Regards,
Tony Yip
EK/MY, TEK, TD
2399 2509

From: "Chung, Elsa" <Elsa.Chung@atkinsglobal.com>
To: Hang Hei YIP <hangheiyip@td.gov.hk>
Cc: "Li, Yee-ting" <YTLi@ura.org.hk>, "Kwan, Mable" <MMPKwan@ura.org.hk>, "Kwan, Mike" <MYFKwan@ura.org.hk>
Date: 20/02/2020 05:33 PM
Subject: RE: Methodology of Traffic Forecast for Environmental Assessment Study (EAS) - YTM-012

Dear Tony,

Further to your comments on the technical note for the captioned study in the below email, please find our responses as follows:

1) Please provide the growth factor adopted in your traffic projection.

The annual growth rate of +0.22%, same as the one adopted in the TIA, have been applied to the traffic forecast to project the design year traffic flow.

2) Please list out the planned developments in your traffic forecast.

The planned developments within the local area have been considered in the traffic forecast and which is summarised in the table below.

Developments	Development Component	Parameters
URA Projects		
Pine Street / Oak Street	Residential	About 142 Flats
	Retail	959 m^2
Ash Street	Residential	About 69 Flats
	Retail	About 390 m^2

Reclamation Street/ Shantung Street	Residential	About 322 Flats
	Retail	About 2,085 m^2
Oak Street/ Ivy Street	Residential	About 115 Flats
	Retail	About 998 m^2
Government Project		
Redevelopment of Government Sites at Sai Yee Street	Retail	About 17,872 m^2
	Office	About 107,260 m^2
	Public Transport Interchange	60 bays for PLB 20 bays for L/UL facilities for cross-boundary (X-B) coaches
	Public Car Park	80 spaces (10 spaces for MGVs / HGVs)

Elsa Chung
Principal Traffic Engineer, Highways & Transportation Infrastructure
Asia Pacific
Engineering, Design and Project Management

2972 1227

13/F Wharf T&T Centre, Harbour City, TST Kowloon, Hong Kong

Company

From: Hang Hei YIP <hangheiyip@td.gov.hk>
Sent: Wednesday, February 19, 2020 6:23 PM
To: Chung, Elsa <Elsa.Chung@atkinsglobal.com>
Subject: Methodology of Traffic Forecast for Environmental Assessment Study (EAS) - YTM-012

Dear Miss Chung,

Further to your letter ref. 5190641/18.30/OC002/JY/EC/ dated 22 Nov 2019 regarding the captioned subject, please clarify the following for my consideration:

1) Please provide the growth factor adopted in your traffic projection.
2) Please list out the planned developments in your traffic forecast.

Regards,
Tony Yip
EK/MY, TEK, TD
2399 2509

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APPENDIX 4-2

SENSITIVITY TEST FOR AIR QUALITY IMPACT ASSESSMENT YEAR

Result of Sensitively Test (Traffic Emission)

Scenario	Traffic: Year 2030 Emfac: Year 2030	Traffic: Year 2045 Emfac: Year 2040
Quarter	**NOx Emission (kg/day)**	
Q1 (Dec - Feb)	132.41	97.32
Q2 (Mar - May)	120.64	87.75
Q3 (Jun - Aug)	105.08	75.46
Q4 (Sep - Nov)	122.65	88.87
Average	**120.19**	**87.35**

Note:

[1] The NOx Emissions were calculated by the emission factor of EMFAC-HK v4.2 (EMFAC mode), traffic flow data, traffic speed, cold start availability and road length from traffic consultant.

[2] The latest availabe assessment year in EMFAC-HK v4.2 is year 2040. Considering the growing traffic flow and the declining emission factor, the use of year 2045's traffic flow with year 2040's emission factor will produce a higher traffic emission than that of years 2040 & 2045.

APPENDIX 4-3

LIST OF ROAD SECTIONS INCLUDED IN THE AIR QUALITY IMPACT ASSESSMENT

Road Section List

* Road sections with cold start are indicated as 1
Road sections without cold start are indicated as 0

Road ID	Road Name	Travel Direction	Road Length (m)	At grade / Flyover	Speed Limit (km/hr)	Cold Start*
1	West Kowloon Corridor (down ramp)	SB	123	Flyover	50	0
2	West Kowloon Corridor (elevated Rd)	SB	642	Flyover	70	0
3	West Kowloon Corridor (elevated Rd)	SB	318	Flyover	70	0
4	West Kowloon Corridor (elevated Rd)	NB	318	Flyover	70	0
5	West Kowloon Corridor	NB	62	At grade	70	0
6	West Kowloon Corridor West (elevated Rd)	NB	628	Flyover	70	0
7	Tong Mi Rd	SB	79	At grade	50	1
8	Tong Mi Rd	SB	139	At grade	50	1
9	Tong Mi Rd	SB	163	At grade	50	1
10	Tong Mi Rd	SB	111	At grade	50	1
11	Ferry St	SB	95	At grade	50	1
12	Ferry St	SB	113	At grade	50	1
13	Ferry St	SB	81	At grade	50	1
14	Ferry St	SB	171	At grade	50	1
15	Ferry St	SB	92	At grade	50	1
16	Ferry St	NB	319	At grade	50	0
17	Ferry St (slip Rd)	NB	320	At grade	50	0
18	West Kowloon Corridor	SB	62	At grade	70	0
19	Canton Rd	NB	159	At grade	50	1
20	Argyle St	EB	51	At grade	50	1
21	Ferry St	NB	113	At grade	50	1
22	Ferry St	NB	206	At grade	50	1
23	Tong Mi Rd	NB	162	At grade	50	1
24	Tong Mi Rd	NB	85	At grade	50	1
25	Tong Mi Rd	NB	91	At grade	50	1
26	Larch St	NB	93	At grade	50	1
27	Fir St	NB	59	At grade	50	1
28	Fir St	NB	58	At grade	50	1
29	Fir St	SB	57	At grade	50	1
30	Fuk Tsun St	SB	63	At grade	50	1
31	Fuk Tsun St	SB	44	At grade	50	1
32	Fuk Tsun St	SB	123	At grade	50	1
33	Fuk Tsun St	NB	36	At grade	50	1
34	Ivy St	WB	50	At grade	50	1
35	Beech St	NB	161	At grade	50	1
36	Pine St	NB	106	At grade	50	1
37	Oak St	SB	106	At grade	50	1
38	Oak St	SB	156	At grade	50	1
39	Ash St	NB	87	At grade	50	1
40	Palm St	NB	147	At grade	50	1
41	Anchor St	EB	101	At grade	50	1
42	Anchor St	EB	58	At grade	50	1
43	Anchor St	EB	67	At grade	50	1
44	Anchor St	EB	62	At grade	50	1
45	Tai Kok Tsui Road	SB	71	At grade	50	1
46	Cherry St	EB	100	At grade	50	0

Road Section List

* Road sections with cold start are indicated as 1
Road sections without cold start are indicated as 0

Road ID	Road Name	Travel Direction	Road Length (m)	At grade / Flyover	Speed Limit (km/hr)	Cold Start*
47	Cherry St	EB	173	At grade	50	1
48	Cherry St	EB	64	At grade	50	1
49	Cherry St	WB	294	At grade	50	1
50	Cherry St	WB	60	At grade	50	0
51	Cherry St	NB	69	At grade	50	0
52	Cherry St	EB	96	At grade	50	0
53	Cherry St	SB	74	At grade	50	0
54	Cherry St	WB	103	At grade	50	1
55	Cherry St	EB	58	At grade	50	0
56	West Kowloon Corridor West (up ramp)	NB	44	Flyover	50	0
57	Hoi Wang Rd	SB	148	At grade	50	1
58	Hoi Wang Rd	NB	154	At grade	50	1
59	Hoi Ting Rd	WB	252	At grade	50	1
60	Hoi Ting Rd	EB	258	At grade	50	1
61	Hoi Ting Rd	SB	188	At grade	50	1
62	Hoi Ting Rd	NB	175	At grade	50	1
63	Hoi Wang Rd	SB	466	At grade	50	1
64	Hoi Wang Rd	NB	464	At grade	50	1
65	Hoi Ting Rd	EB	353	At grade	50	1
66	Hoi Ting Rd	WB	342	At grade	50	1
67	Hoi Ting Rd	SB	343	At grade	50	1
68	Hoi Ting Rd	NB	334	At grade	50	1
69	Canton Rd	NB	80	At grade	50	1
70	Canton Rd	SB	126	At grade	50	1
71	Canton Rd	NB	126	At grade	50	1
72	Canton Rd	NB	104	At grade	50	1
73	Canton Rd	NB	95	At grade	50	1
74	Thistle St	NB	95	At grade	50	1
75	Kam Lam St	SB	106	At grade	50	1
76	Canton Rd	NB	106	At grade	50	1
77	Canton Rd	NB	137	At grade	50	1
78	Canton Rd	NB	92	At grade	50	1
79	Canton Rd	SB	73	At grade	50	1
80	Canton Rd	NB	86	At grade	50	1
81	Reclaimation St	SB	75	At grade	50	1
82	Reclaimation St	NB	162	At grade	50	1
83	Reclaimation St	NB	107	At grade	50	1
84	Reclaimation St	NB	95	At grade	50	1
85	Reclaimation St	NB	106	At grade	50	1
86	Reclaimation St	NB	137	At grade	50	1
87	Reclaimation St	NB	92	At grade	50	1
88	Reclaimation St	NB	73	At grade	50	1
89	Reclaimation St	NB	81	At grade	50	1
90	Shanghai St	SB	66	At grade	50	1
91	Shanghai St	SB	132	At grade	50	1
92	Shanghai St	SB	172	At grade	50	1
93	Shanghai St	SB	203	At grade	50	1
94	Shanghai St	SB	106	At grade	50	1
95	Shanghai St	SB	56	At grade	50	1
96	Shanghai St	SB	81	At grade	50	1
97	Shanghai St	SB	91	At grade	50	1
98	Shanghai St	SB	74	At grade	50	1

Road Section List

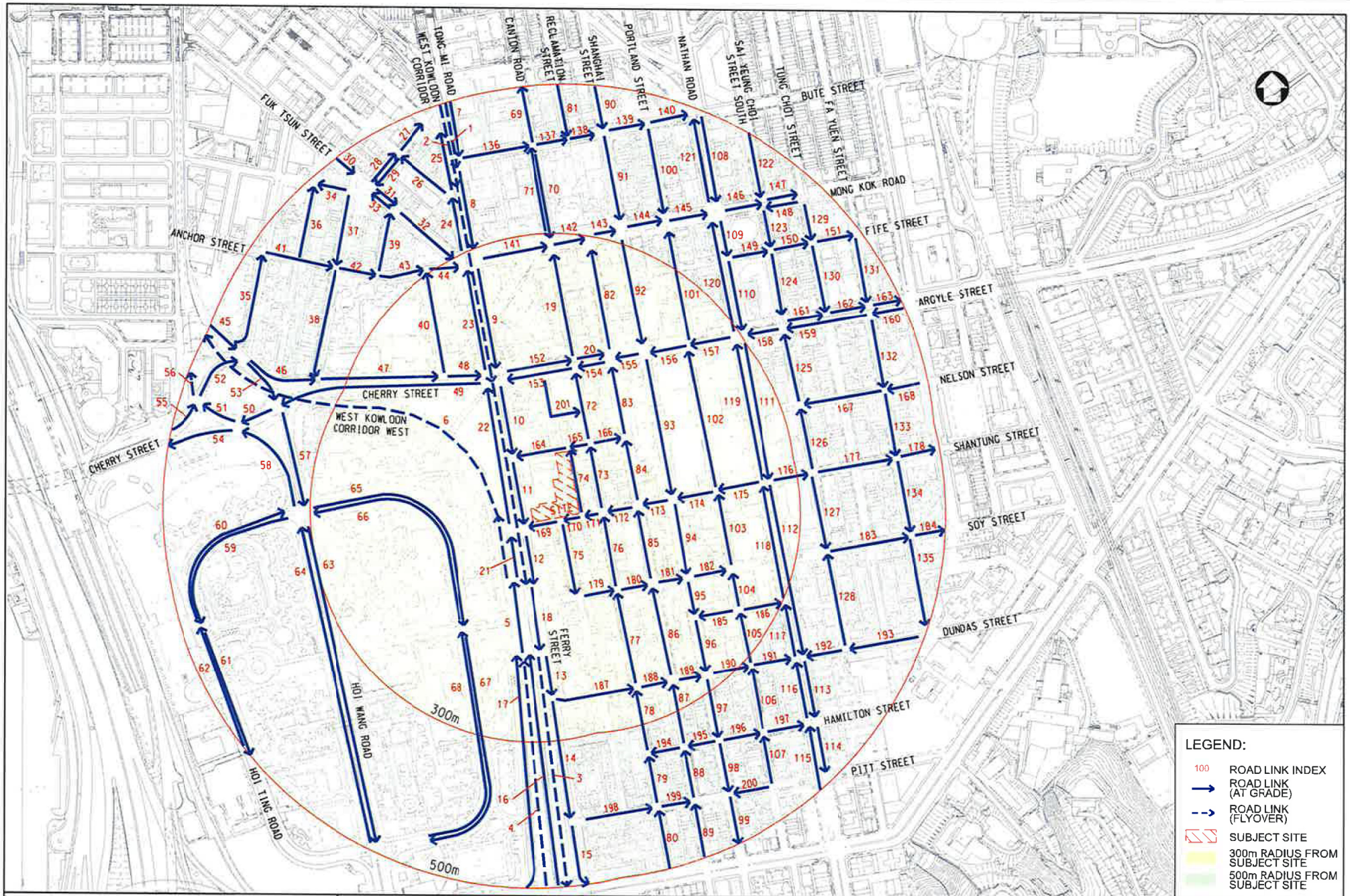
* Road sections with cold start are indicated as 1
Road sections without cold start are indicated as 0

Road ID	Road Name	Travel Direction	Road Length (m)	At grade / Flyover	Speed Limit (km/hr)	Cold Start*
99	Shanghai St	SB	69	At grade	50	1
100	Portland St	SB	132	At grade	50	1
101	Portland St	NB	173	At grade	50	1
102	Portland St	NB	204	At grade	50	1
103	Portland St	NB	108	At grade	50	1
104	Portland St	NB	59	At grade	50	1
105	Portland St	NB	78	At grade	50	1
106	Portland St	NB	91	At grade	50	1
107	Portland St	NB	74	At grade	50	1
108	Nathan Rd	SB	141	At grade	50	1
109	Nathan Rd	SB	64	At grade	50	1
110	Nathan Rd	SB	108	At grade	50	1
111	Nathan Rd	SB	201	At grade	50	1
112	Nathan Rd	SB	244	At grade	50	1
113	Nathan Rd	SB	91	At grade	50	1
114	Nathan Rd	SB	68	At grade	50	1
115	Nathan Rd	NB	92	At grade	50	1
116	Nathan Rd	NB	90	At grade	50	1
117	Nathan Rd	NB	78	At grade	50	1
118	Nathan Rd	NB	167	At grade	50	1
119	Nathan Rd	NB	201	At grade	50	1
120	Nathan Rd	NB	172	At grade	50	1
121	Nathan Rd	NB	139	At grade	50	1
122	Sai Yeung Choi St S	SB	95	At grade	50	1
123	Sai Yeung Choi St S	SB	58	At grade	50	1
124	Sai Yeung Choi St S	SB	98	At grade	50	1
125	Sai Yeung Choi St S	NB	108	At grade	50	1
126	Sai Yeung Choi St S	NB	94	At grade	50	1
127	Sai Yeung Choi St S	SB	106	At grade	50	1
128	Sai Yeung Choi St S	NB	137	At grade	50	1
129	Tung Choi St	SB	59	At grade	50	1
130	Tung Choi St	SB	99	At grade	50	1
131	Fa Yuen St	SB	97	At grade	50	1
132	Fa Yuen St	SB	107	At grade	50	1
133	Fa Yuen St	SB	94	At grade	50	1
134	Fa Yuen St	SB	107	At grade	50	1
135	Fa Yuen St	SB	132	At grade	50	1
136	Bute St	EB	100	At grade	50	1
137	Bute St	EB	50	At grade	50	1
138	Bute St	EB	49	At grade	50	1
139	Bute St	EB	60	At grade	50	1
140	Bute St	EB	63	At grade	50	1
141	Mong Kok Road	EB	113	At grade	50	1
142	Mong Kok Road	EB	51	At grade	50	1
143	Mong Kok Road	EB	46	At grade	50	1
144	Mong Kok Road	EB	61	At grade	50	1
145	Mong Kok Road	EB	74	At grade	50	1
146	Mong Kok Road	EB	62	At grade	50	1
147	Mong Kok Road	EB	53	At grade	50	1
148	Mong Kok Road	WB	53	At grade	50	1
149	Fife St	EB	60	At grade	50	0
150	Fife St	EB	57	At grade	50	1

Road Section List

* Road sections with cold start are indicated as 1
Road sections without cold start are indicated as 0

Road ID	Road Name	Travel Direction	Road Length (m)	At grade / Flyover	Speed Limit (km/hr)	Cold Start*
151	Fife St	EB	59	At grade	50	1
152	Argyle St	EB	113	At grade	50	1
153	Argyle St	WB	113	At grade	50	1
154	Argyle St	WB	50	At grade	50	1
155	Argyle St	WB	48	At grade	50	1
156	Argyle St	WB	58	At grade	50	1
157	Argyle St	WB	72	At grade	50	1
158	Argyle St	WB	61	At grade	50	0
159	Argyle St	WB	120	At grade	50	1
160	Argyle St	WB	48	At grade	50	1
161	Argyle St	EB	57	At grade	50	1
162	Argyle St	EB	58	At grade	50	1
163	Argyle St	EB	47	At grade	50	0
164	Nelson St	WB	80	At grade	50	1
165	Nelson St	WB	27	At grade	50	1
166	Nelson St	EB	49	At grade	50	1
167	Nelson St	WB	117	At grade	50	1
168	Nelson St	WB	61	At grade	50	1
169	Shantung St	WB	72	At grade	50	1
170	Shantung St	WB	29	At grade	50	1
171	Shantung St	WB	27	At grade	50	1
172	Shantung St	WB	50	At grade	50	1
173	Shantung St	WB	48	At grade	50	1
174	Shantung St	WB	61	At grade	50	1
175	Shantung St	WB	62	At grade	50	1
176	Shantung St	EB	58	At grade	50	1
177	Shantung St	EB	116	At grade	50	1
178	Shantung St	EB	59	At grade	50	1
179	Soy St	EB	57	At grade	50	1
180	Soy St	EB	50	At grade	50	1
181	Soy St	EB	48	At grade	50	1
182	Soy St	EB	61	At grade	50	1
183	Soy St	EB	115	At grade	50	1
184	Soy St	EB	48	At grade	50	1
185	Changsha St	WB	61	At grade	50	1
186	Changsha St	EB	62	At grade	50	1
187	Dundas St	EB	115	At grade	50	1
188	Dundas St	EB	50	At grade	50	1
189	Dundas St	EB	48	At grade	50	1
190	Dundas St	EB	62	At grade	50	1
191	Dundas St	EB	62	At grade	50	1
192	Dundas St	WB	57	At grade	50	1
193	Dundas St	WB	111	At grade	50	1
194	Hamilton St	WB	50	At grade	50	1
195	Hamilton St	WB	48	At grade	50	1
196	Hamilton St	EB	60	At grade	50	1
197	Hamilton St	EB	74	At grade	50	1
198	Pitt St	EB	118	At grade	50	1
199	Pitt St	EB	50	At grade	50	1
200	Pitt St	WB	59	At grade	50	1
201	Shamchun St & Nam Tau St	SB	91	At grade	50	1



URBAN RENEWAL AUTHORITY 市區重建局

SNC·LAVALIN ATKINS Member of the SNC-Lavalin Group

PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: INDEX PLAN

Scale at A3	Date	Figure No.
N.T.S.	Sep 2019	2.1

APPENDIX 4-4

CALINE4 INPUT

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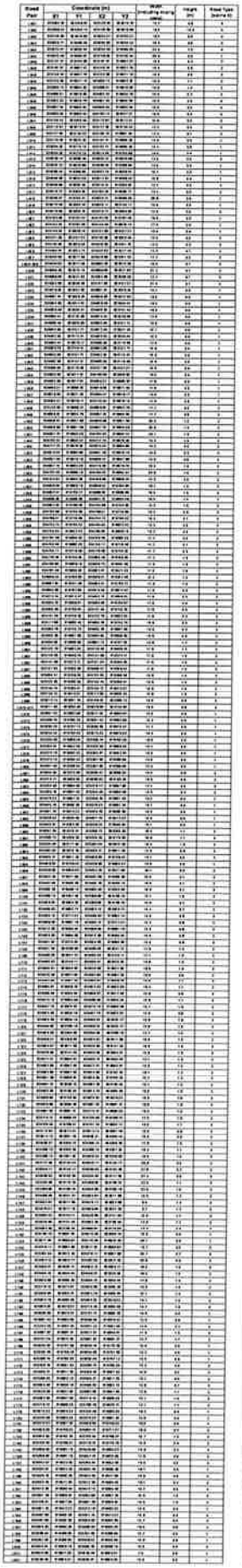

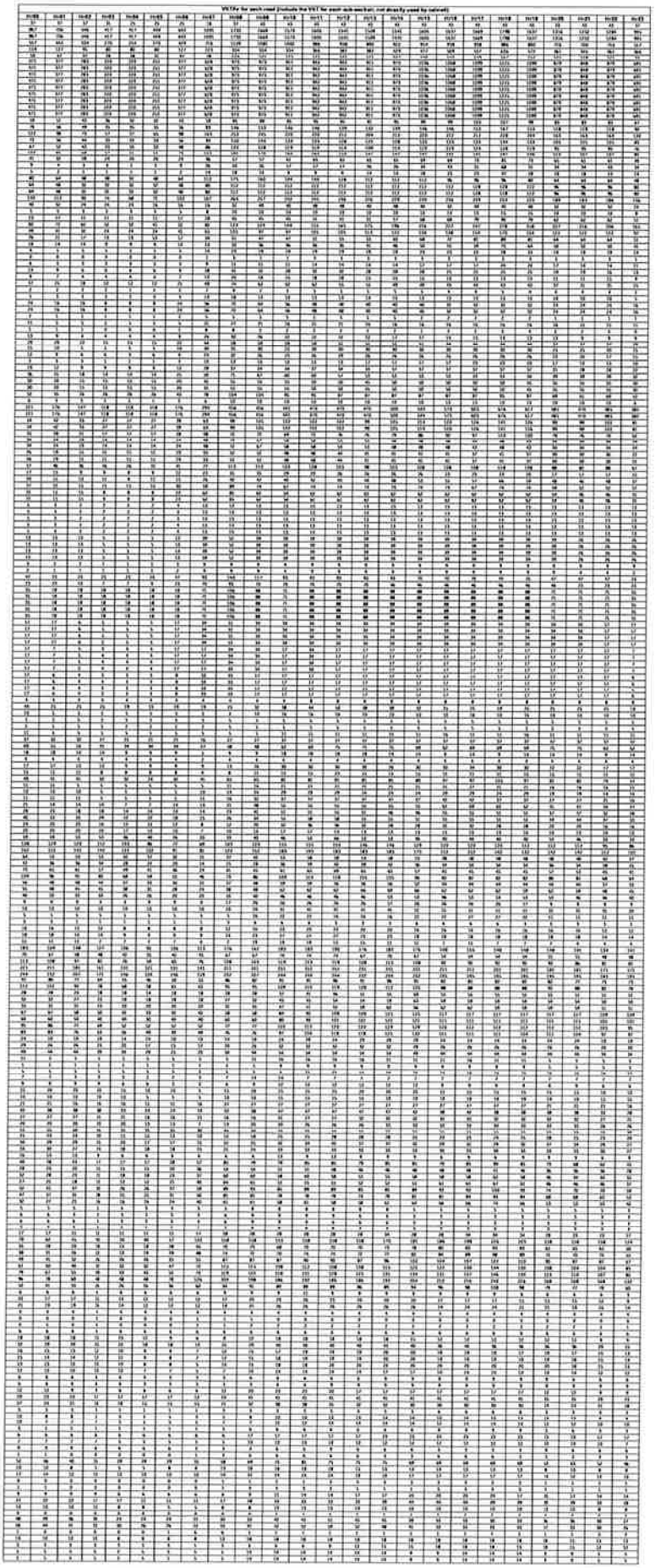

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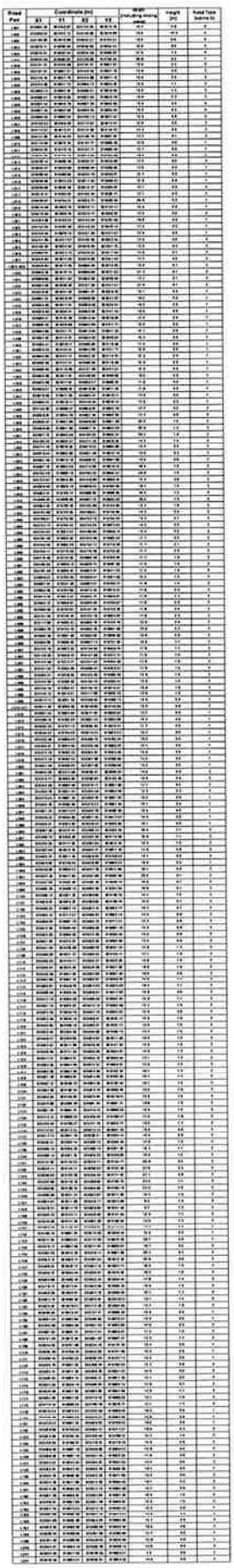

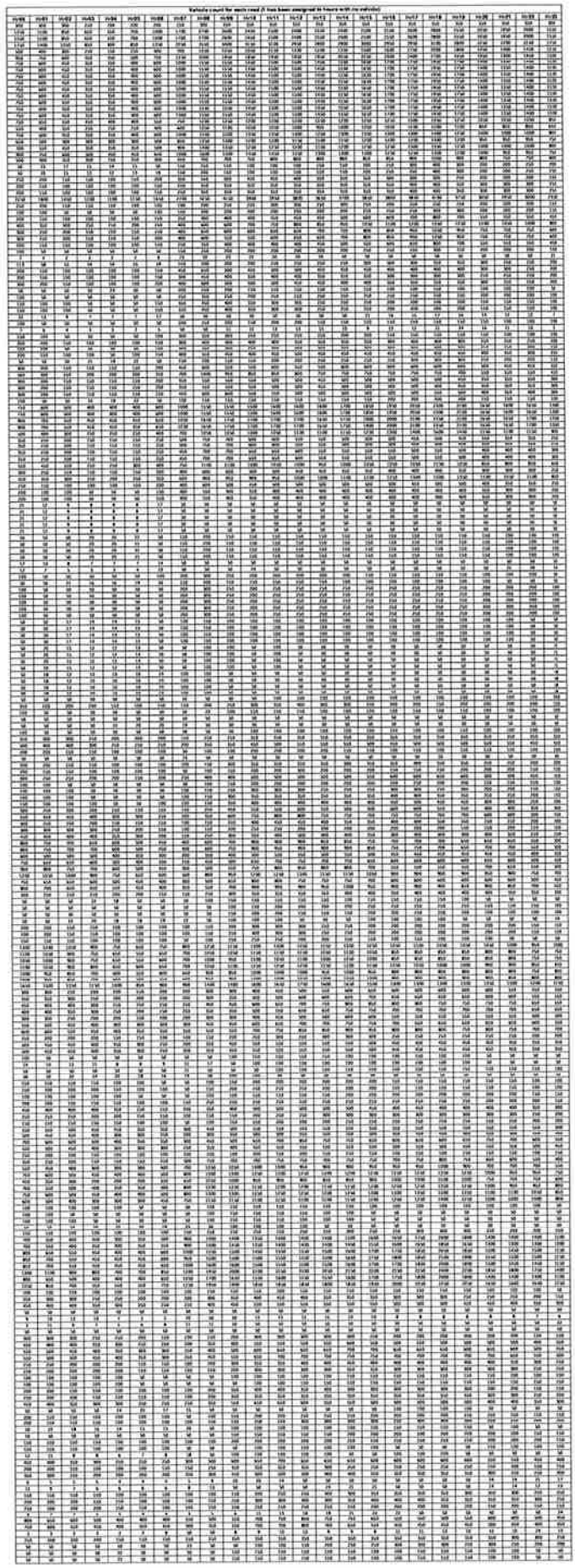

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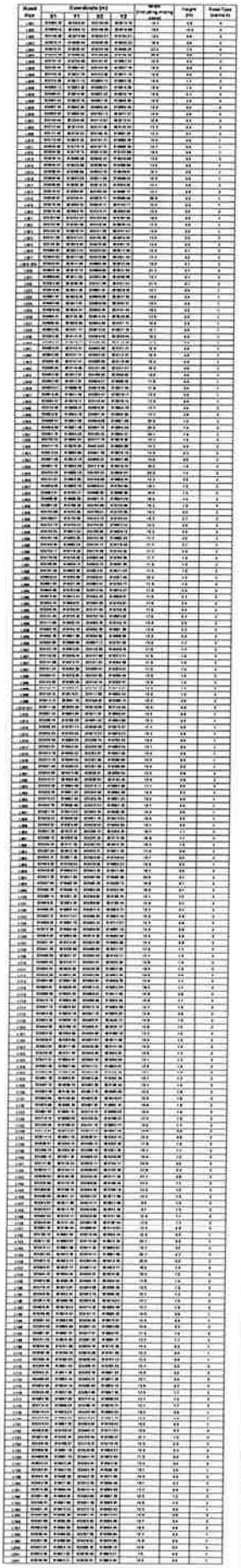

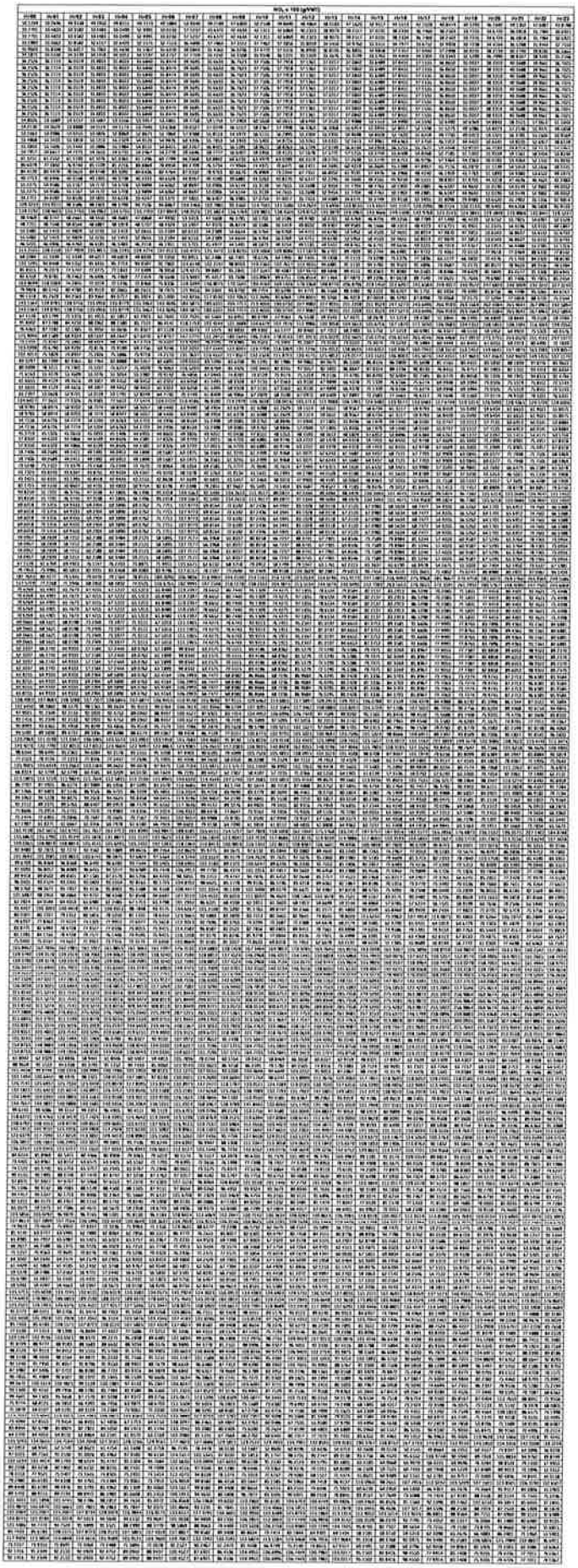

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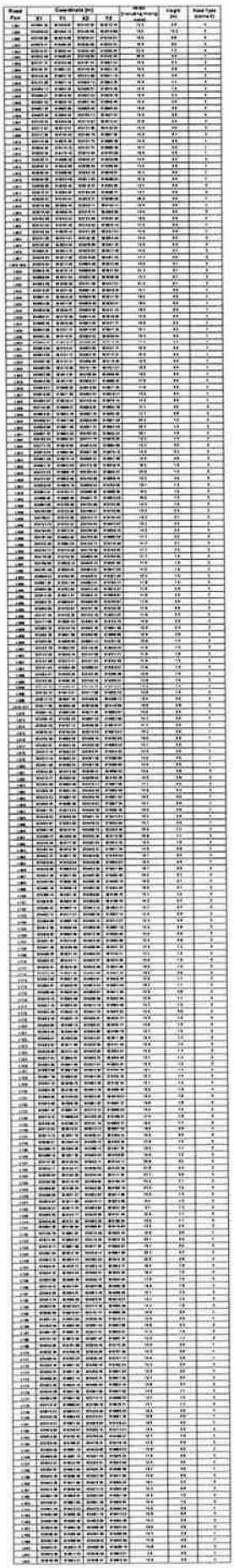

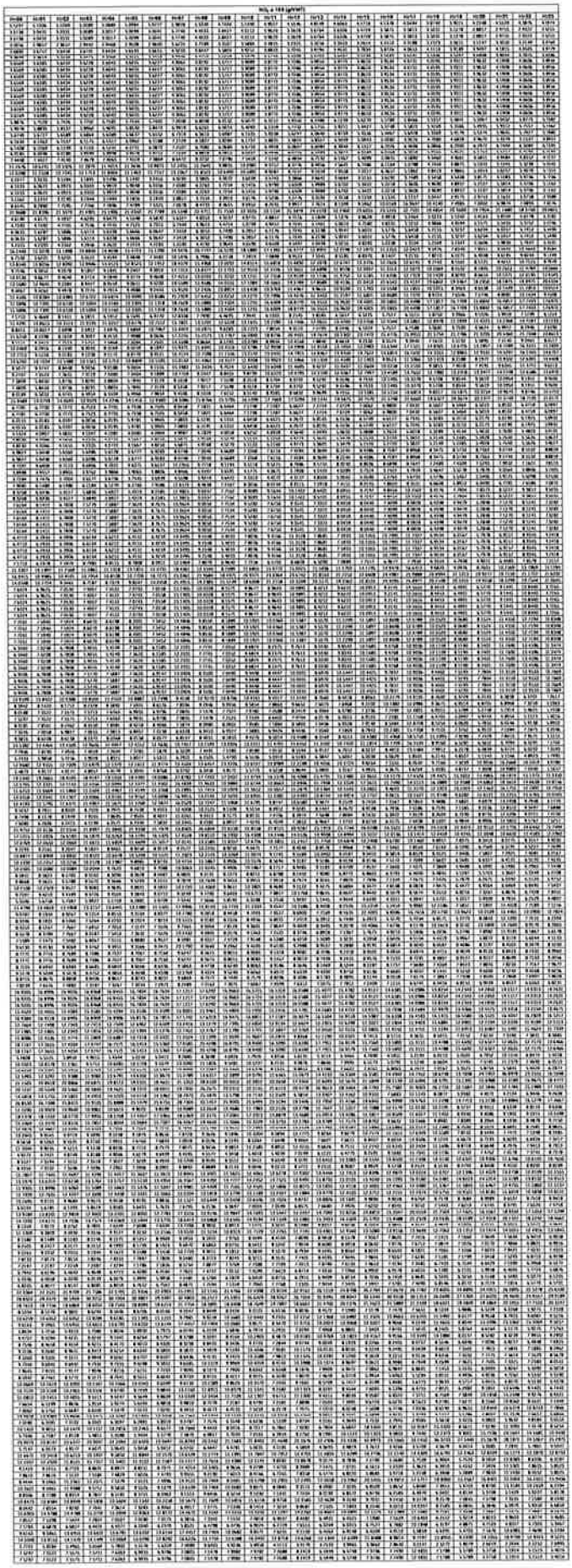

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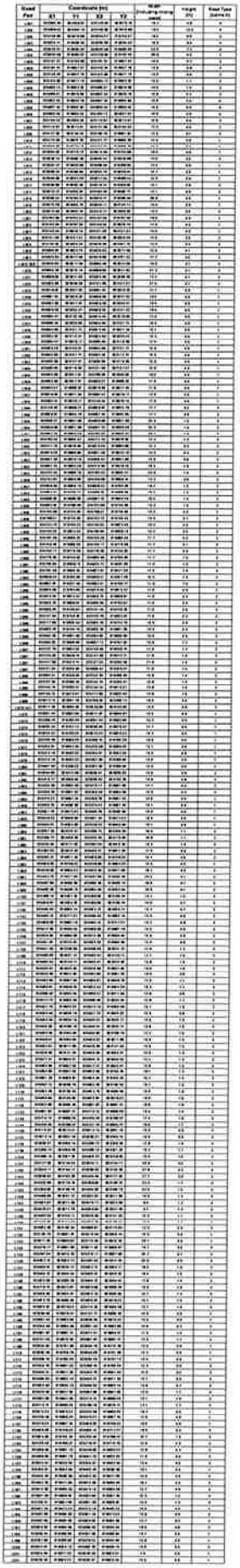

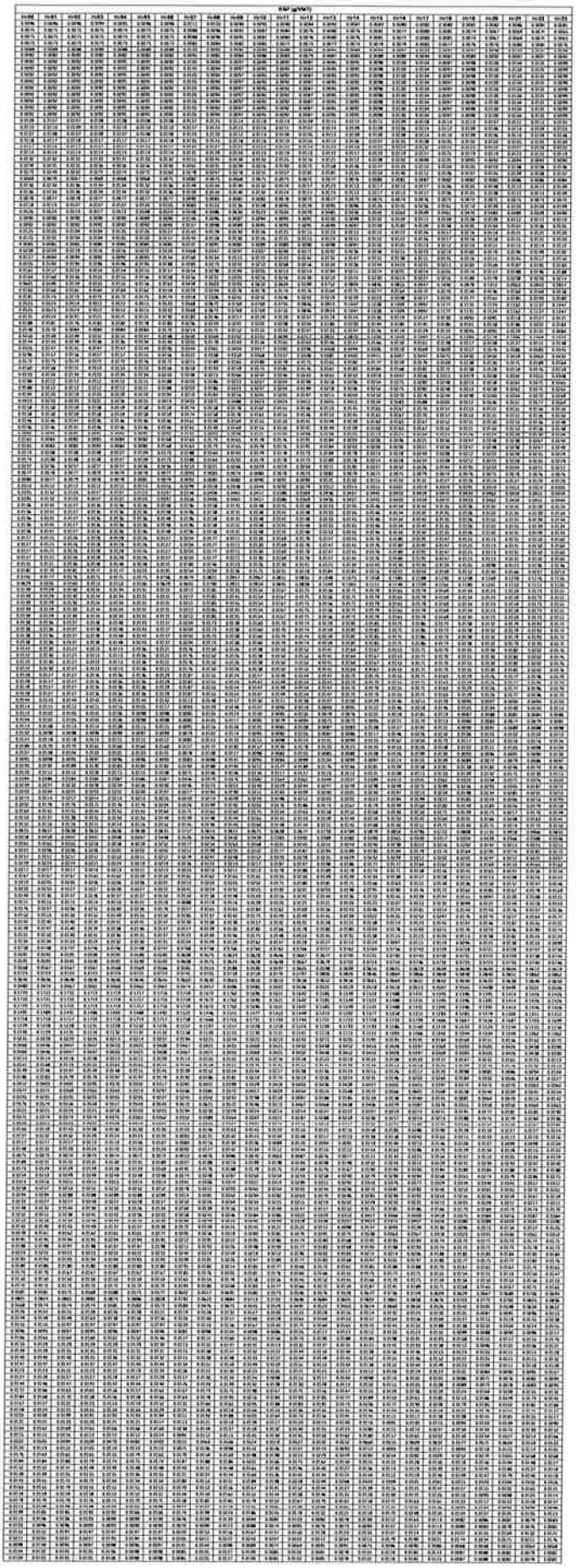

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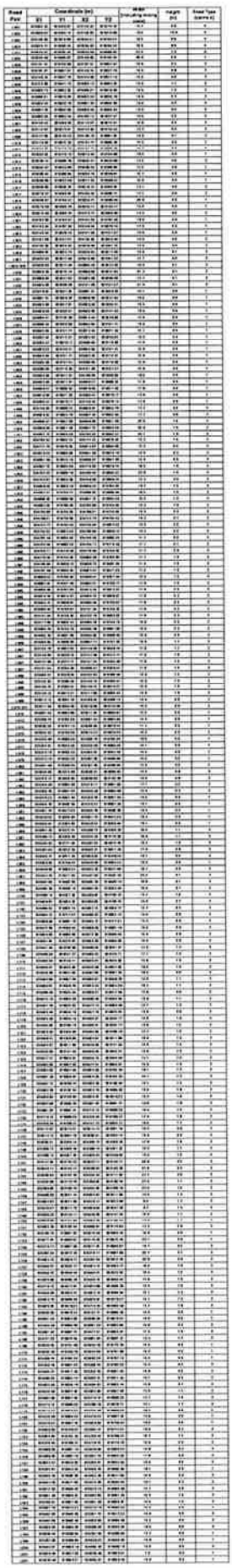

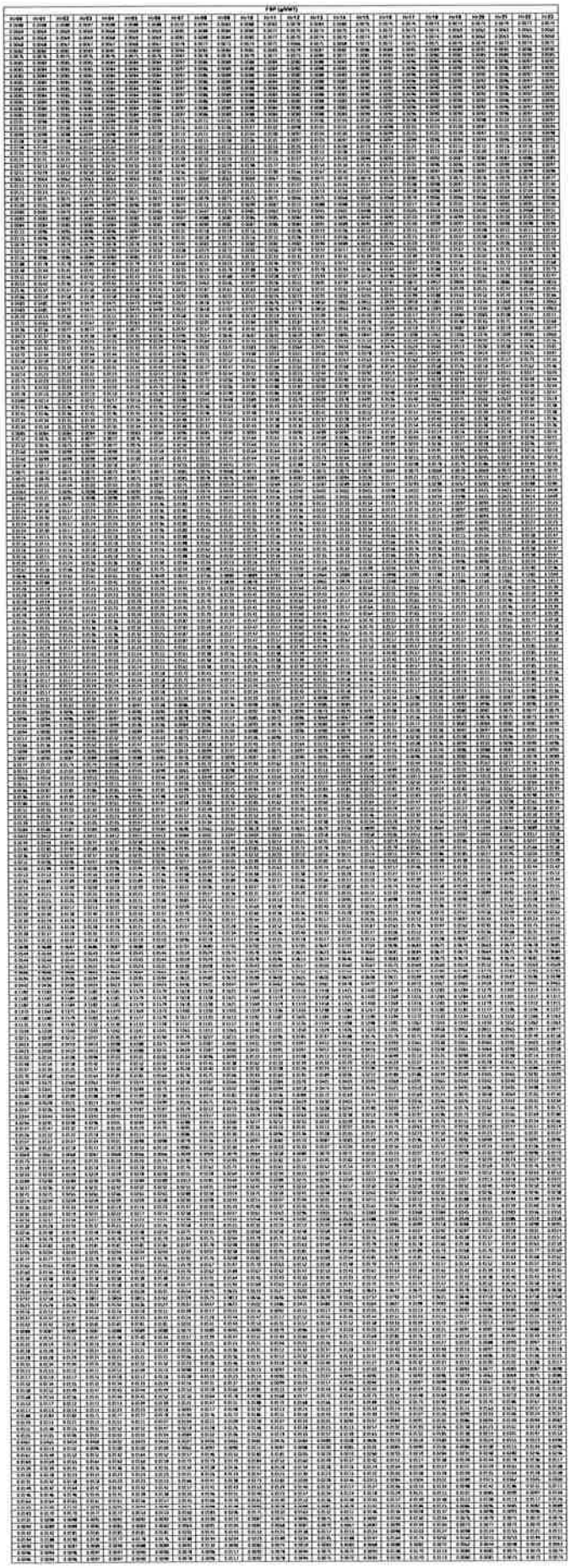

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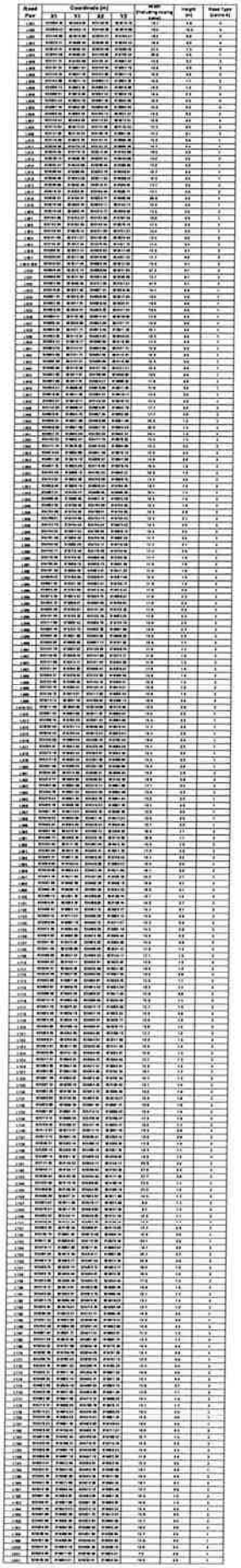

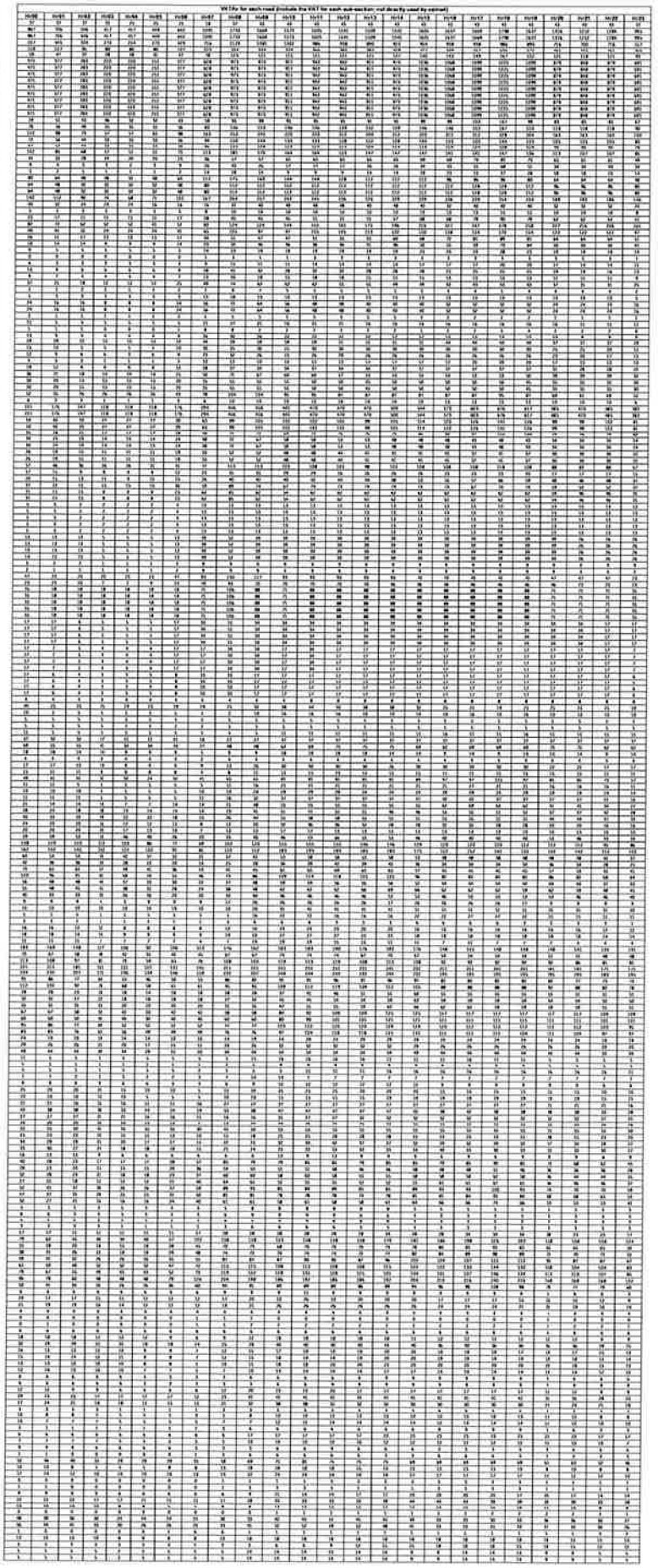

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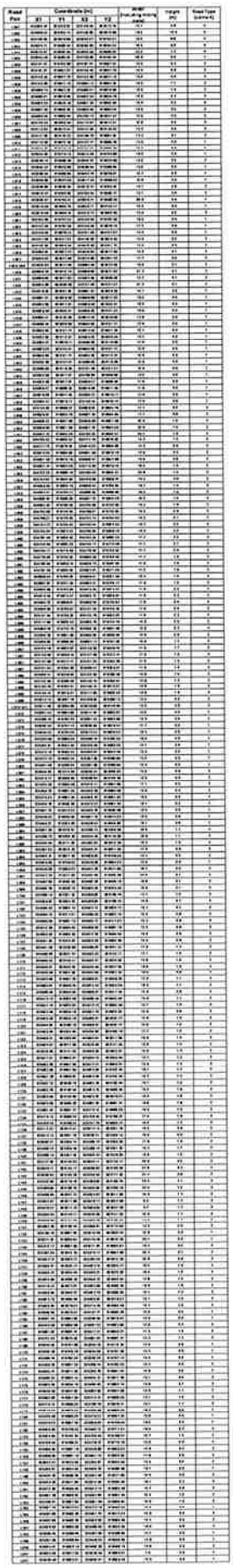

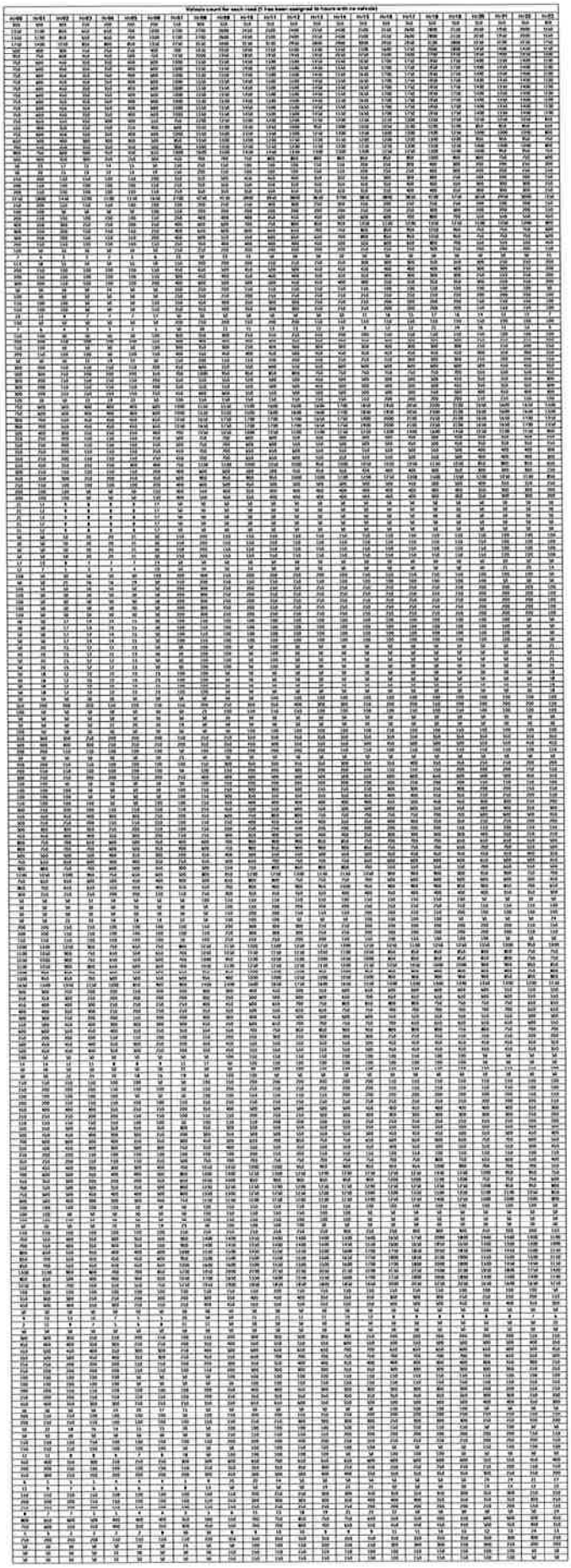

Caline4 input for 2030 Q2

Road Link	Coordinate (m)				Width (including median) (m)	Height (m)	Road Type (Caline4)
	X1	Y1	X2	Y2			
1	100001.0	100001.0	100100.0	100001.0	10.0	0.0	1
2	100100.0	100001.0	100200.0	100001.0	10.0	0.0	1
3	100200.0	100001.0	100300.0	100001.0	10.0	0.0	1
4	100300.0	100001.0

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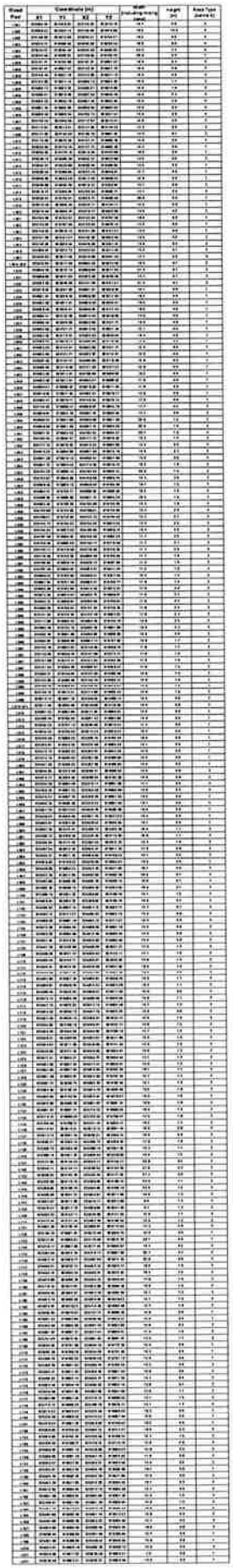

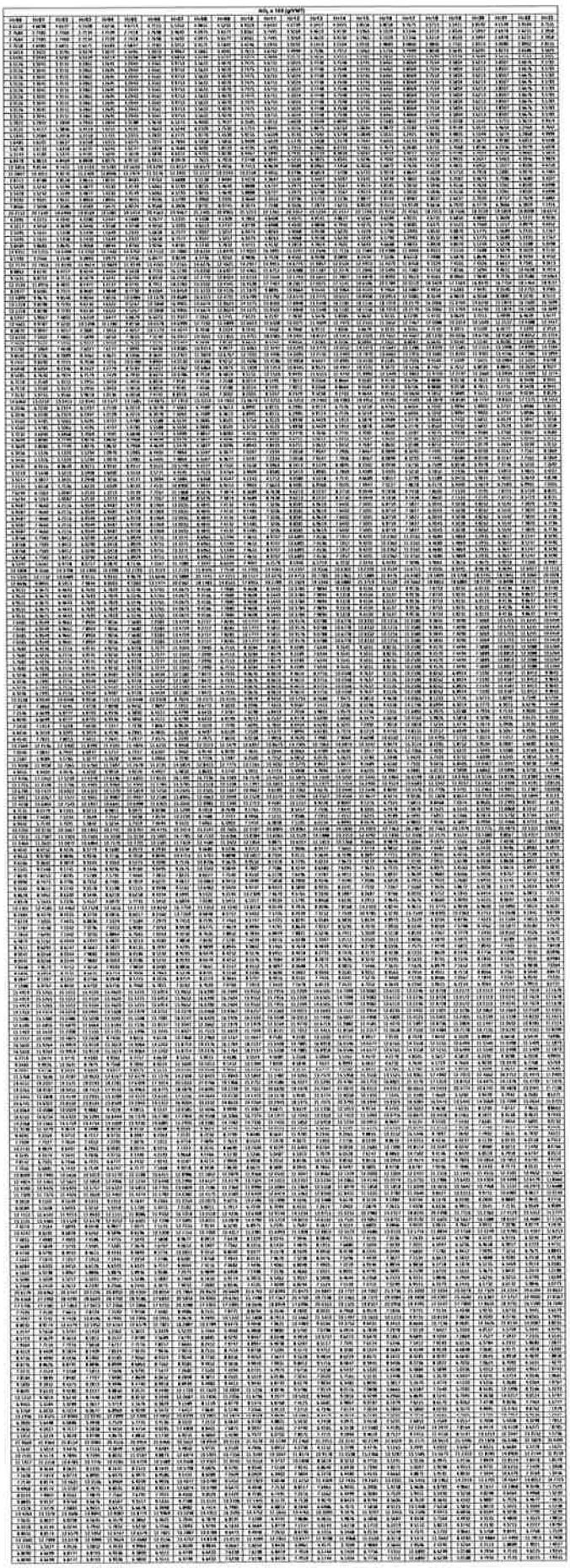

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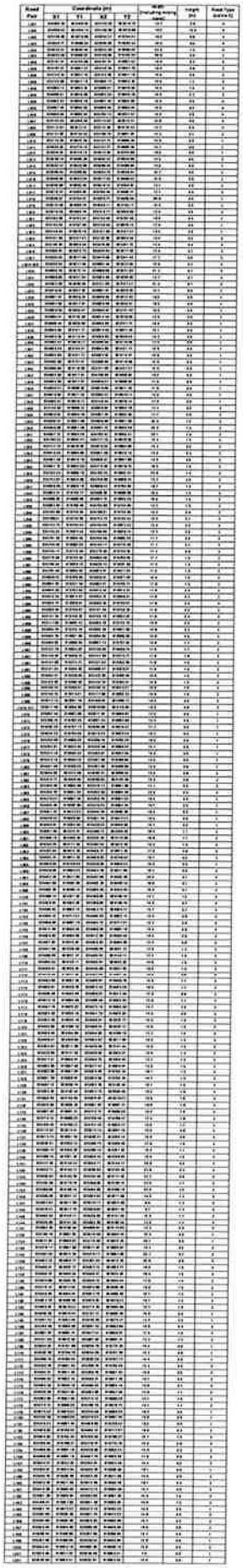

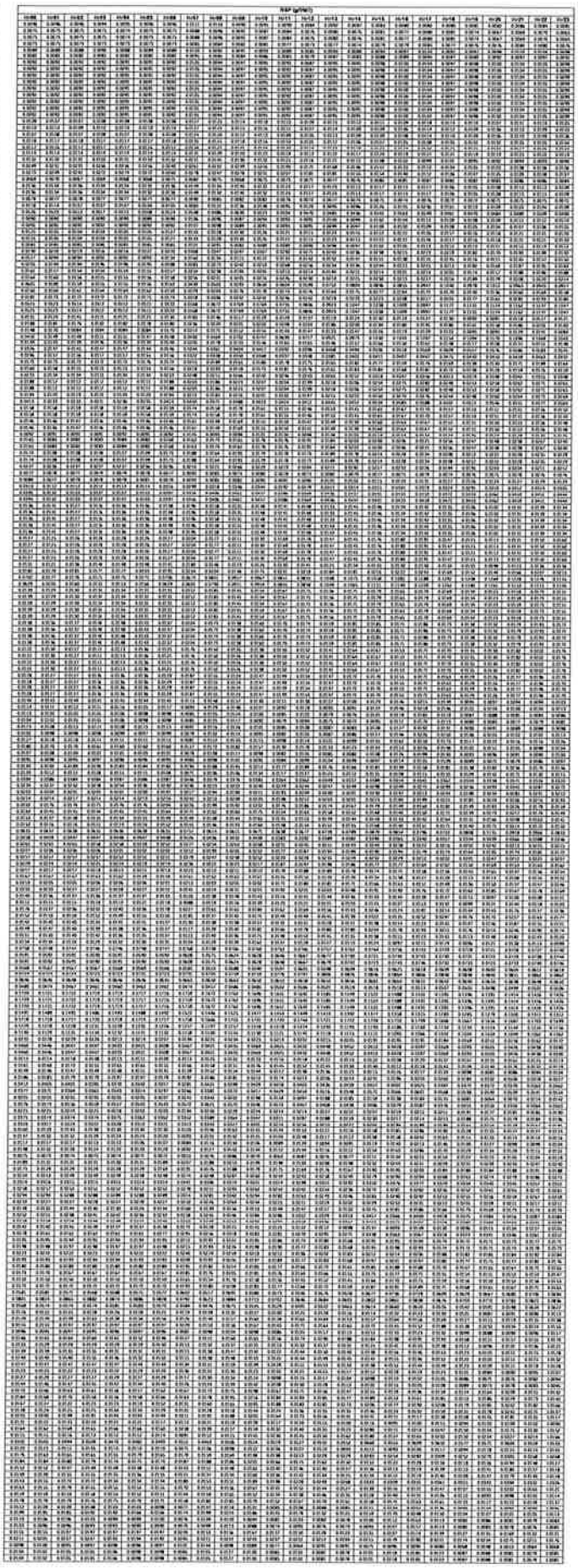

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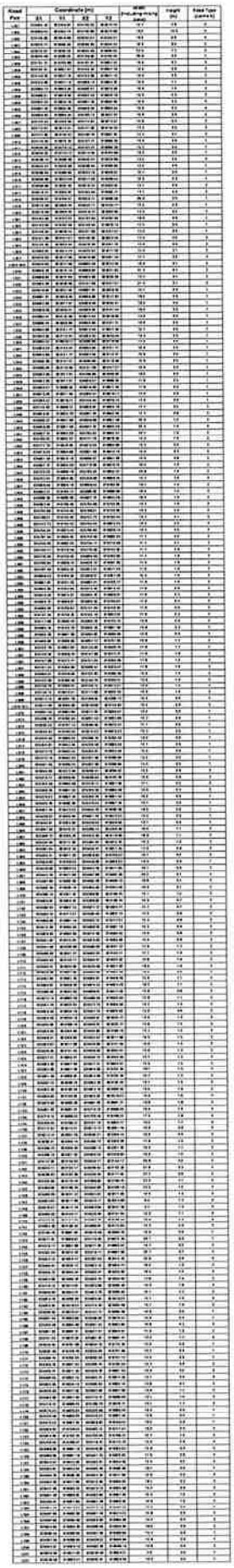

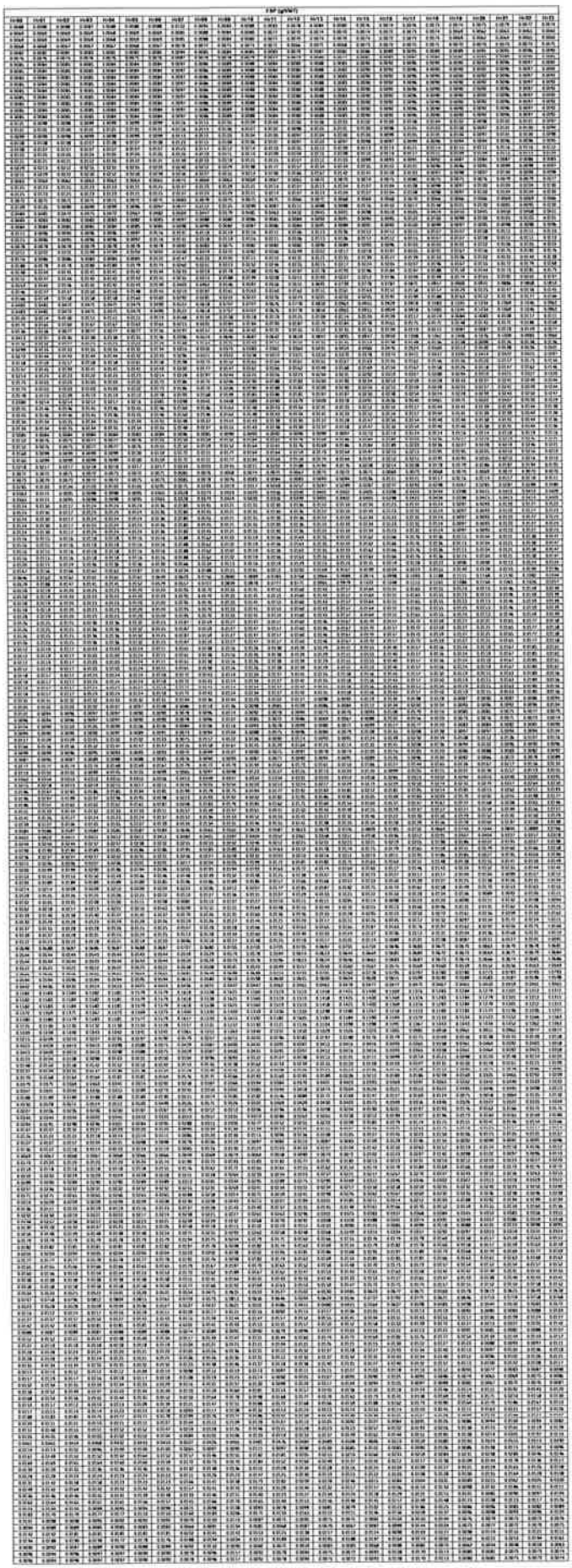

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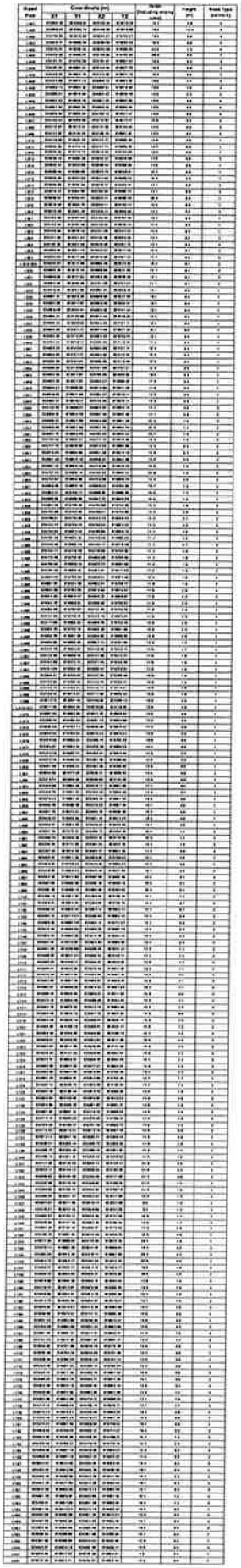

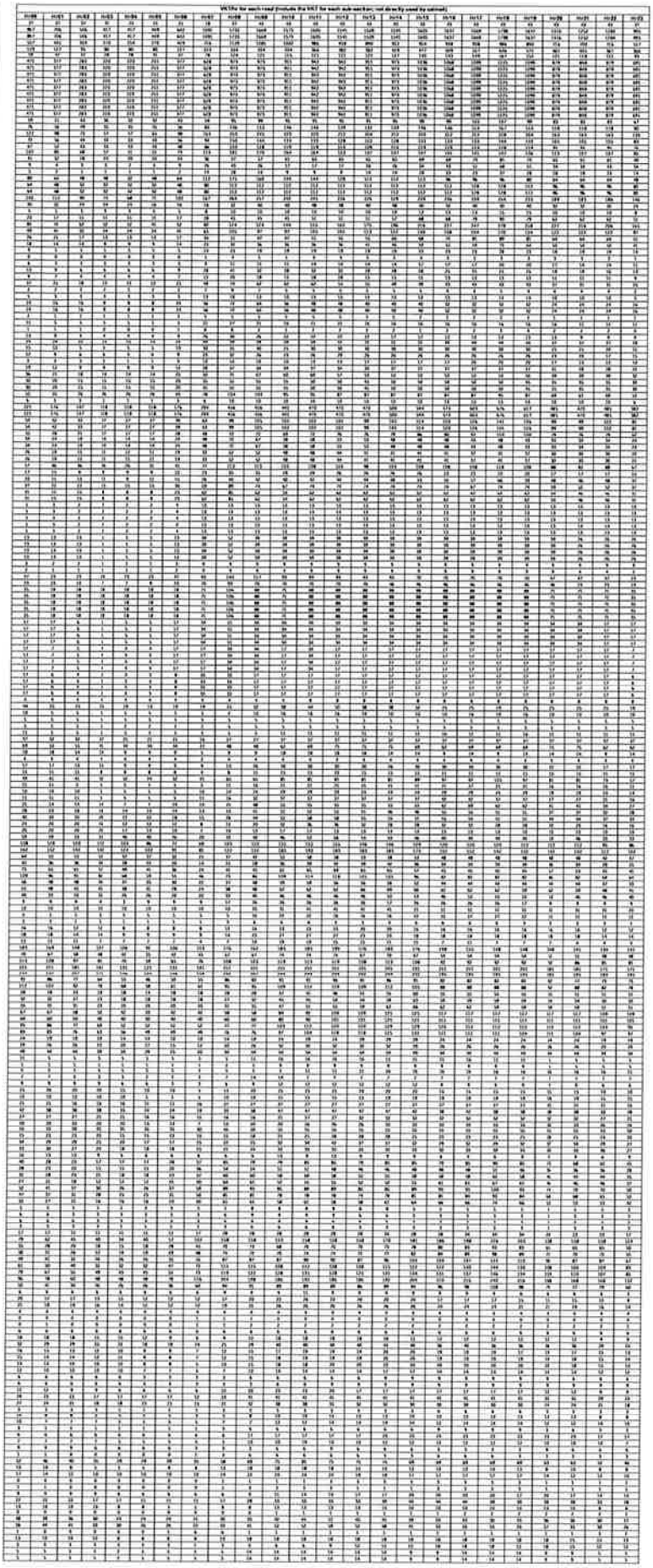

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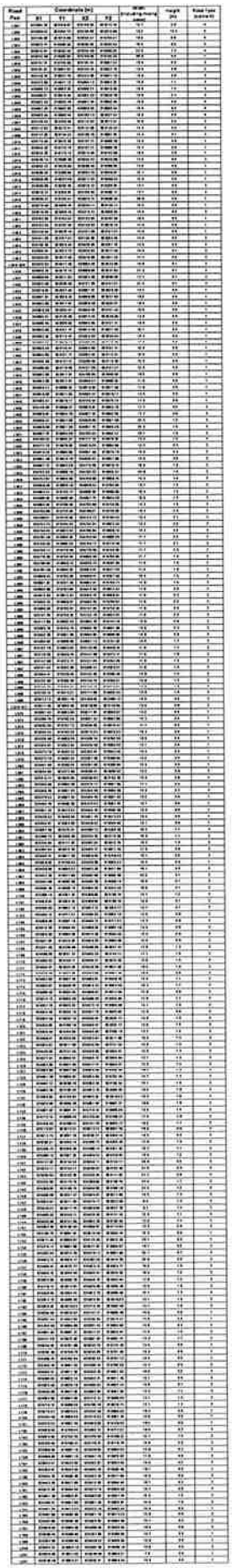

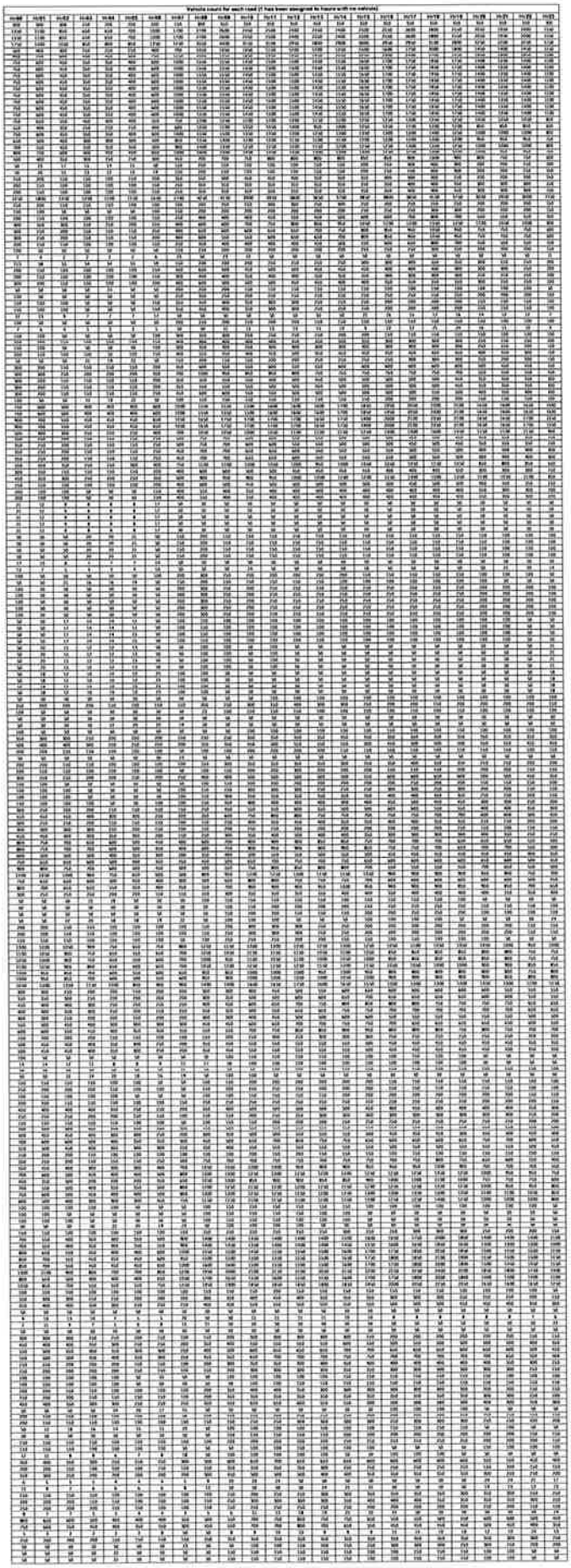

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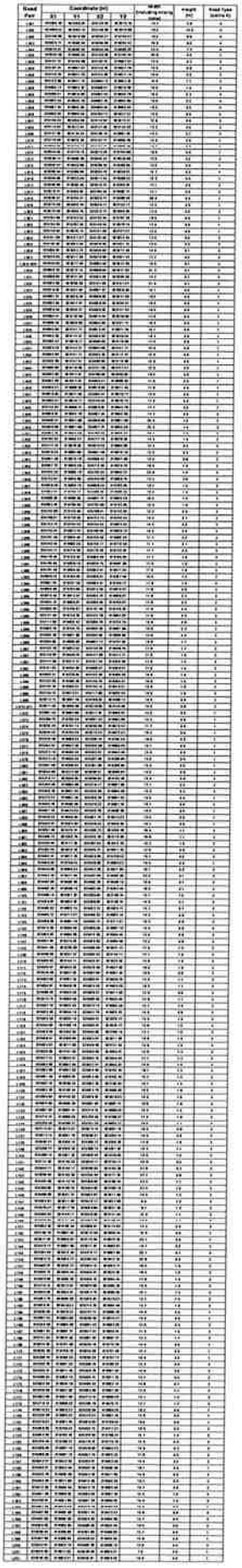

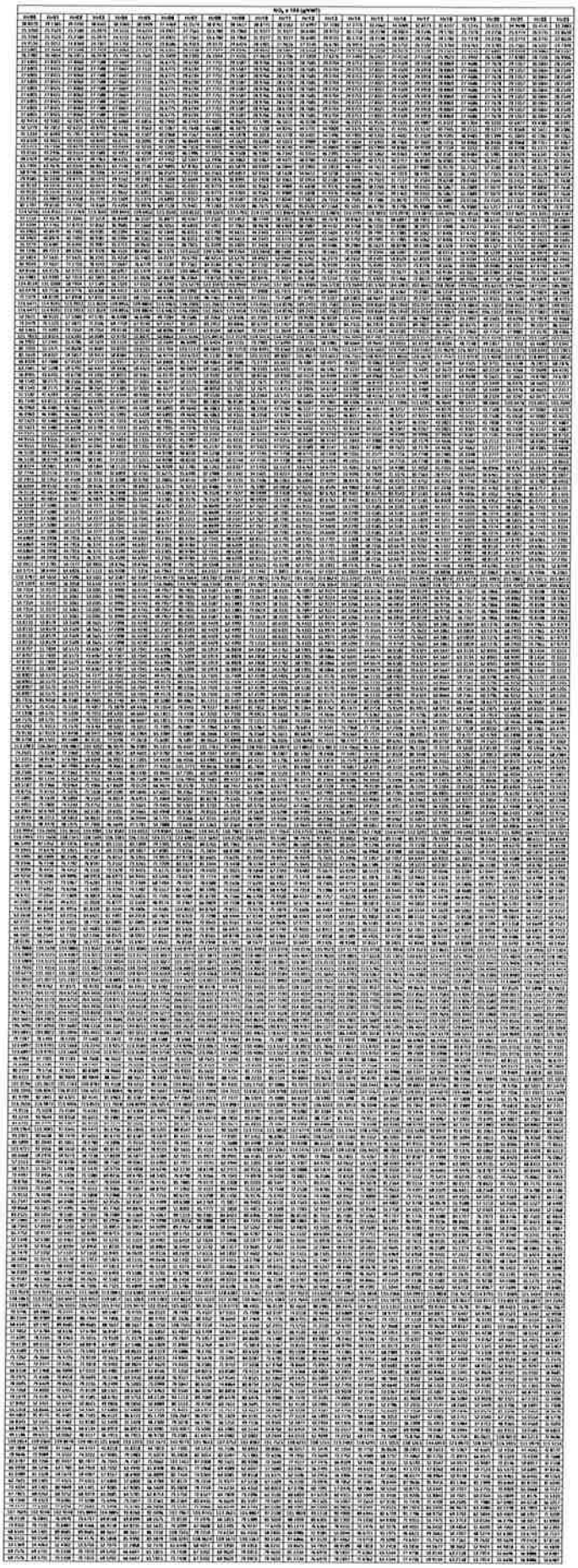

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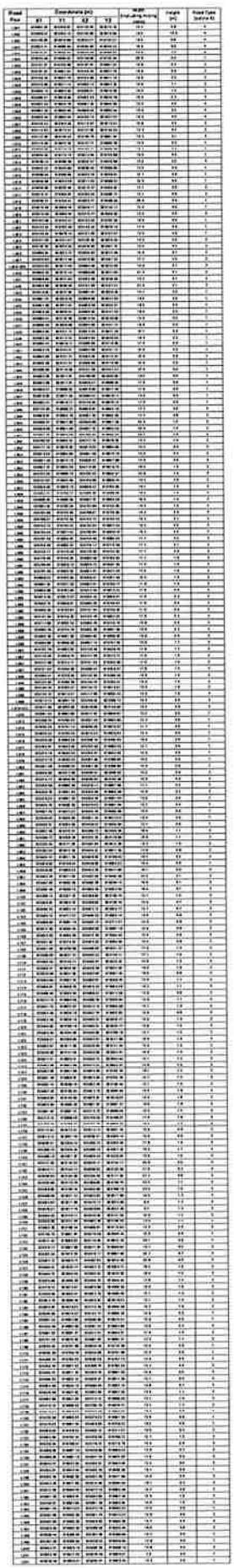

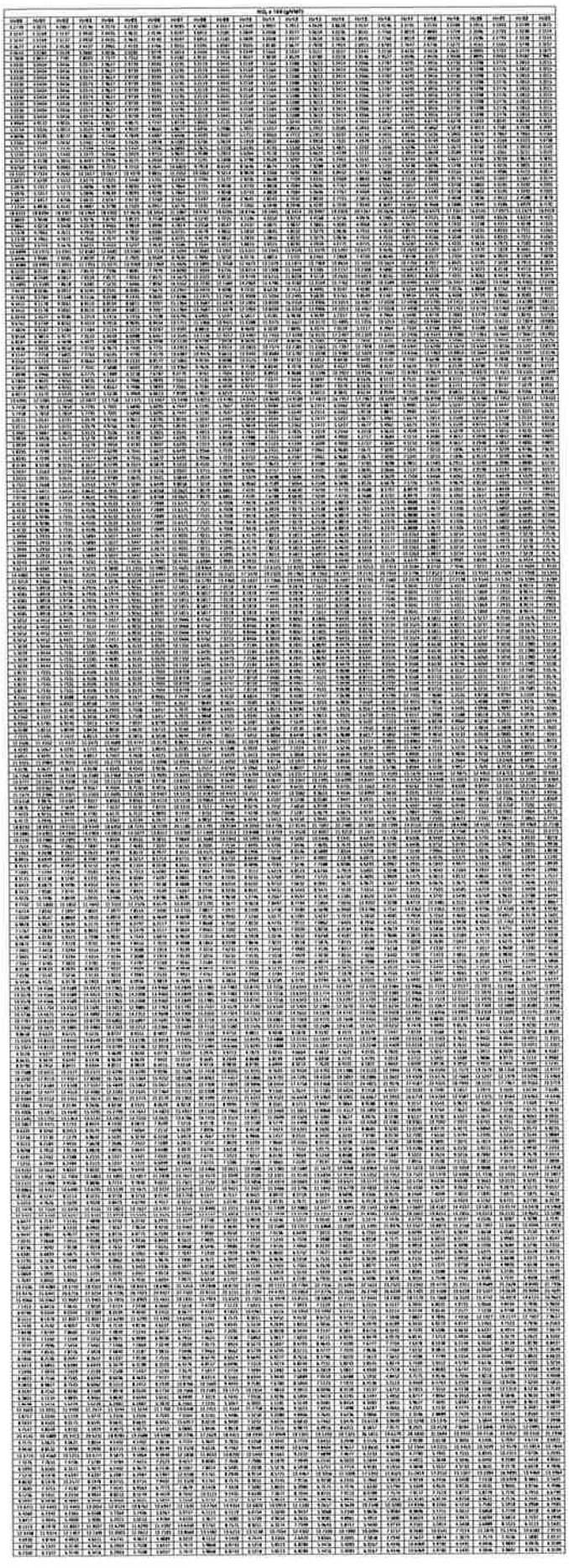

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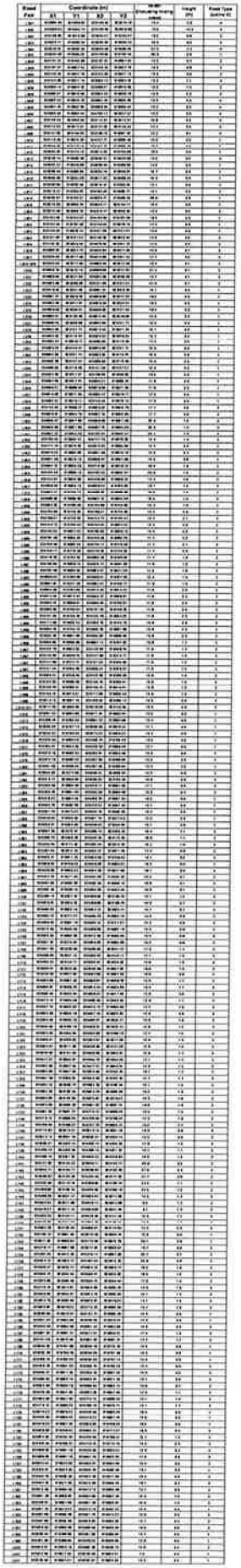

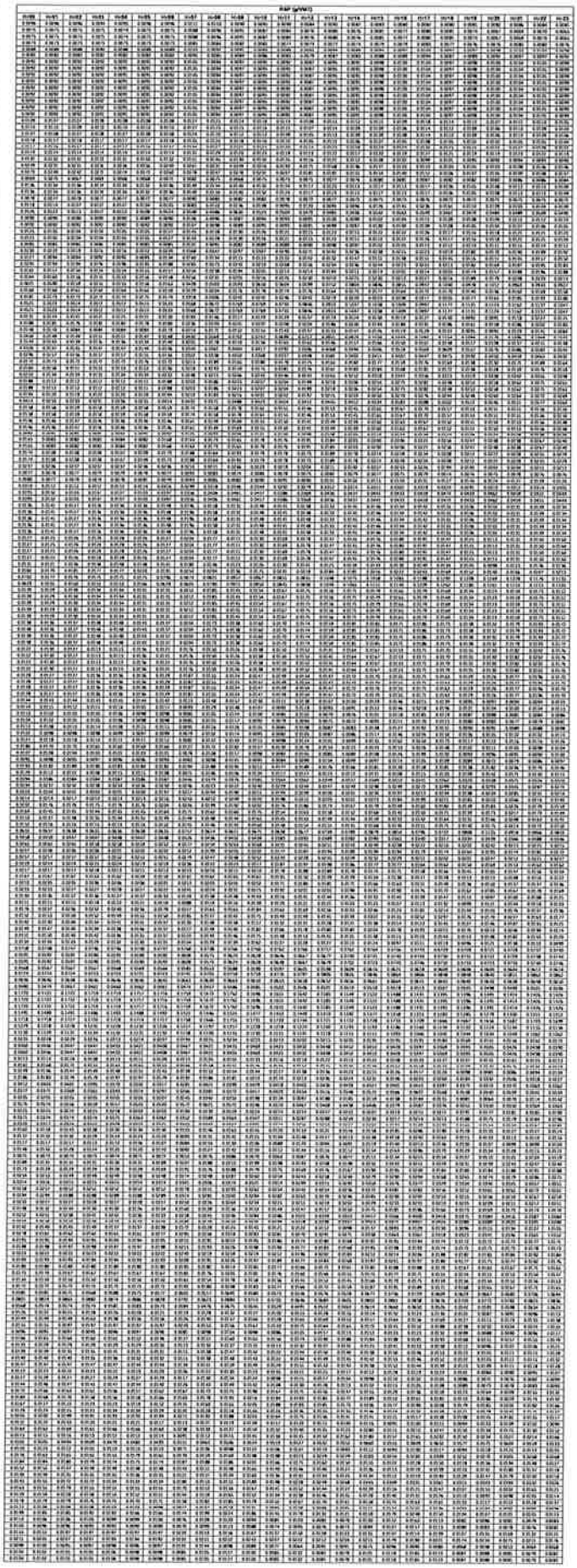

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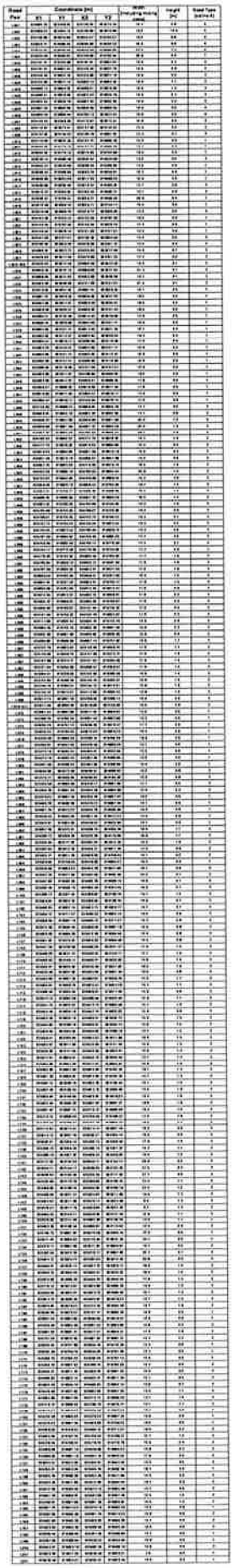

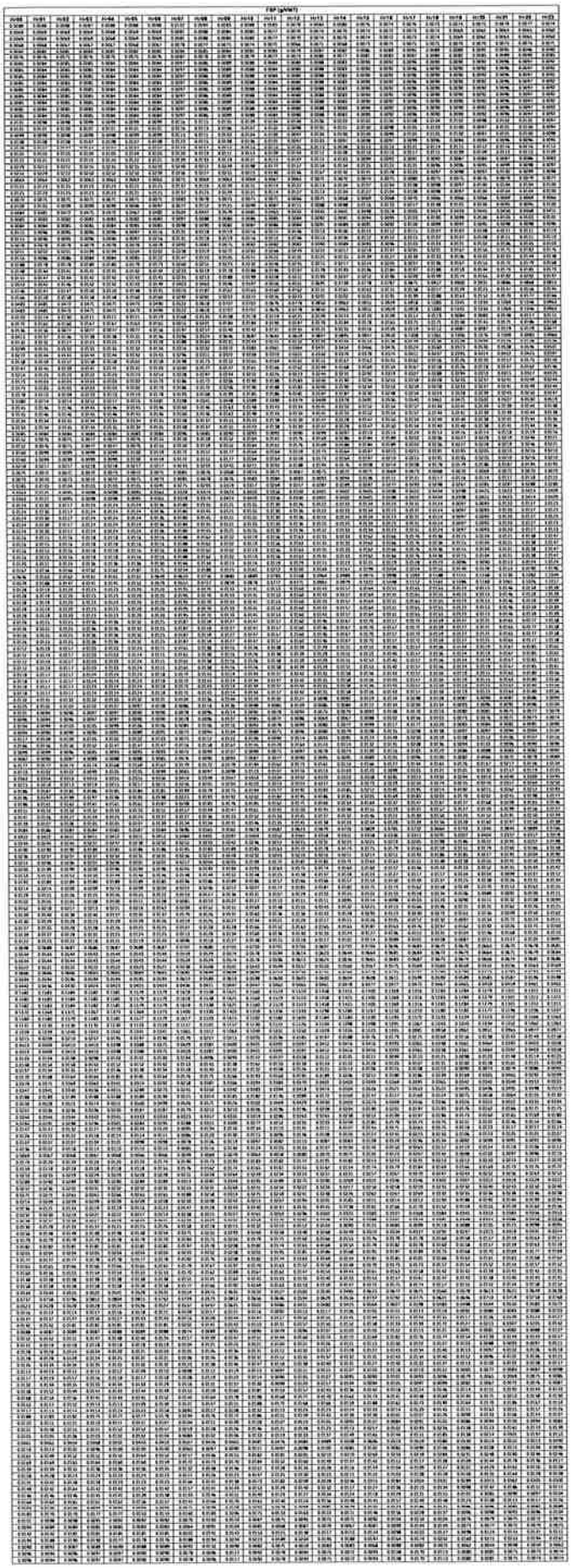

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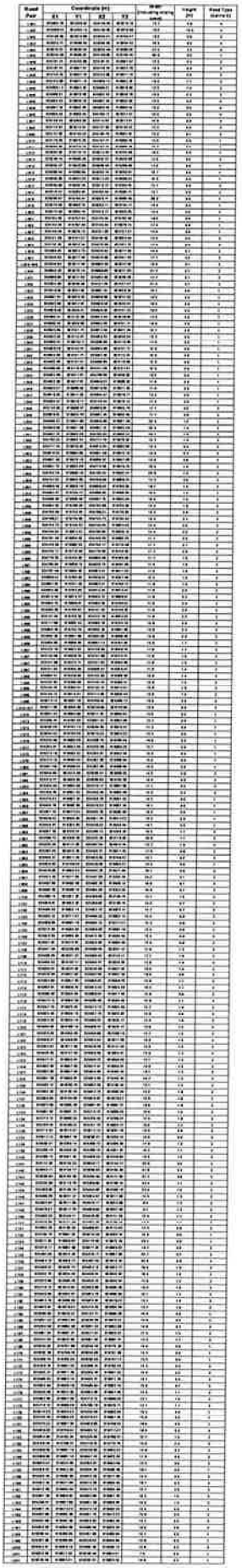

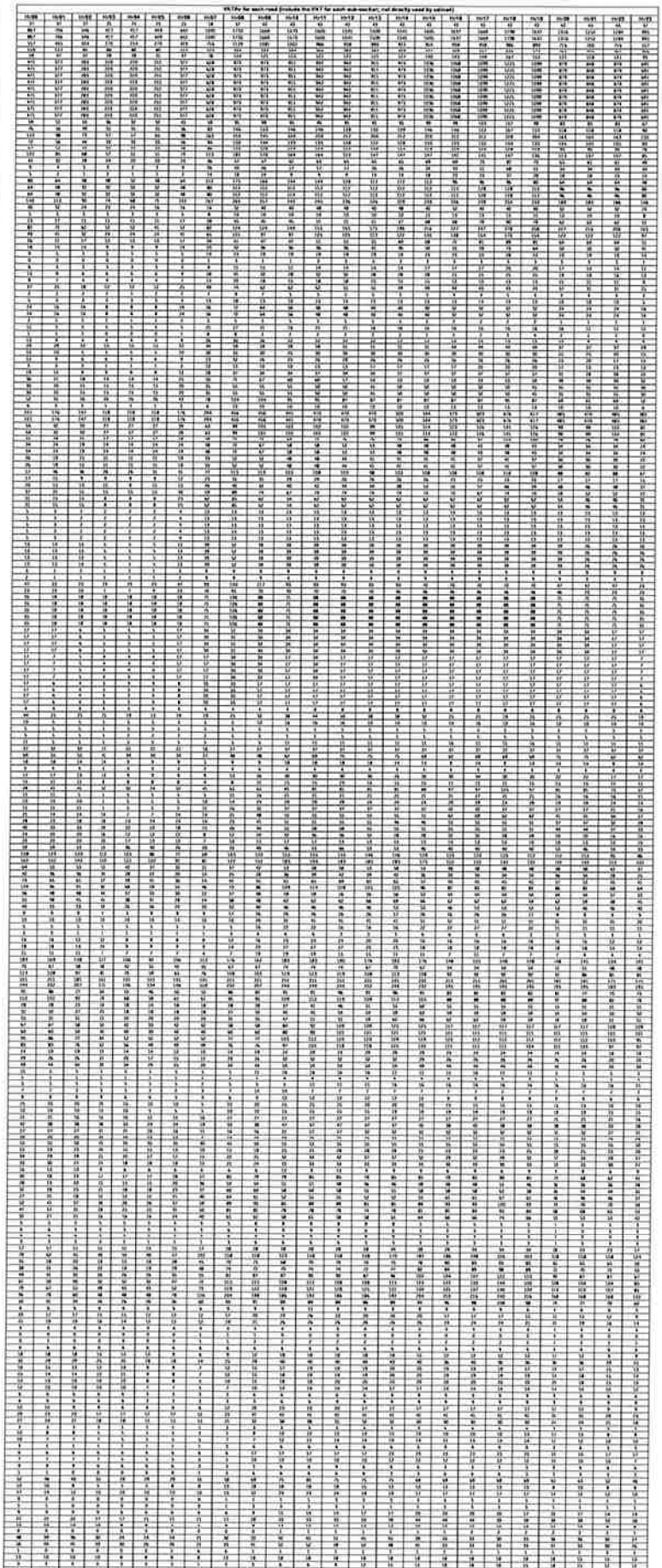

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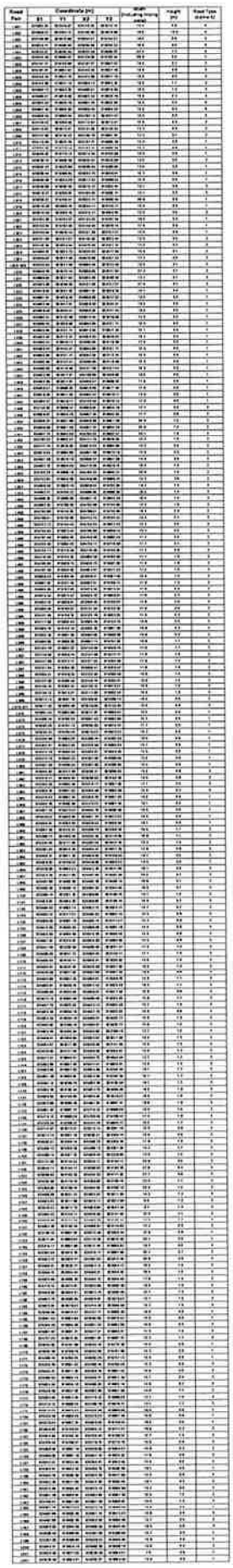

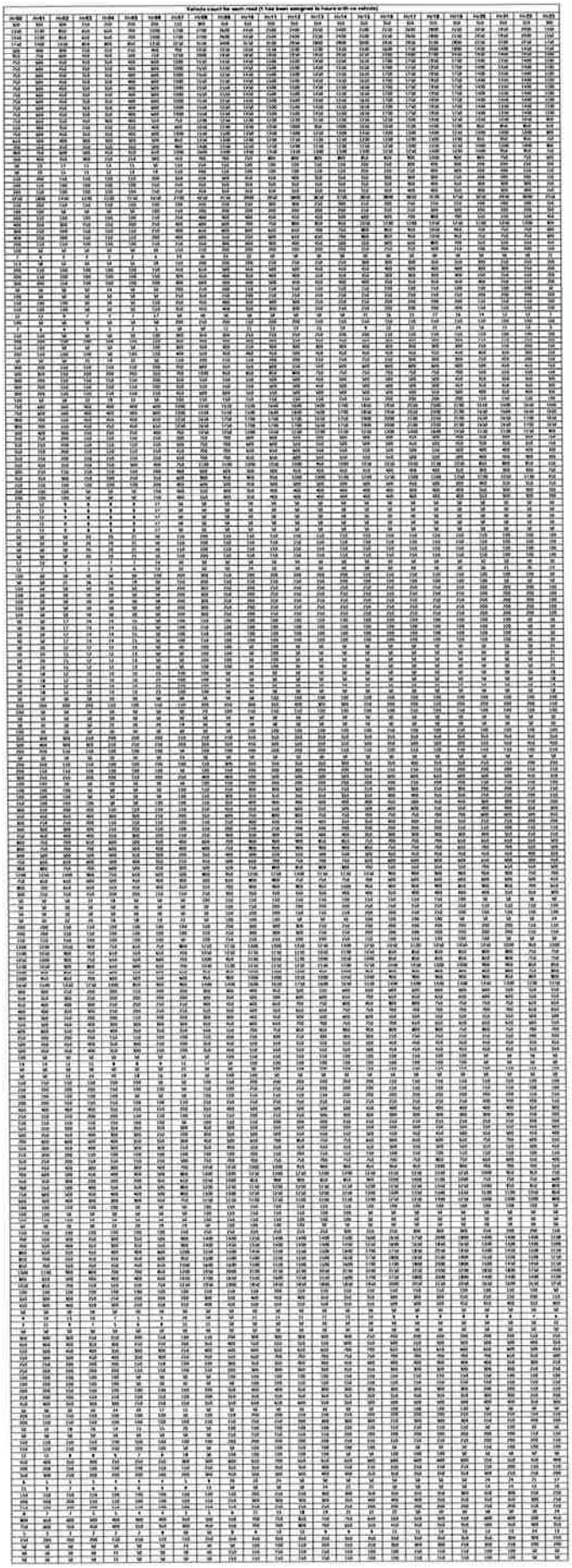

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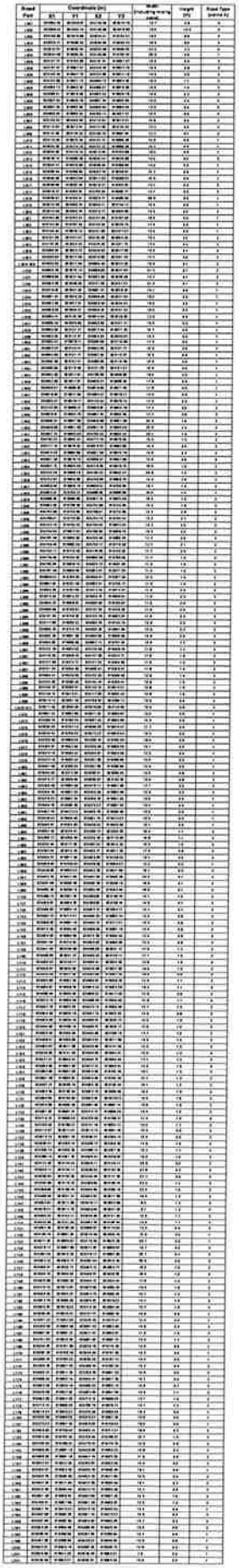

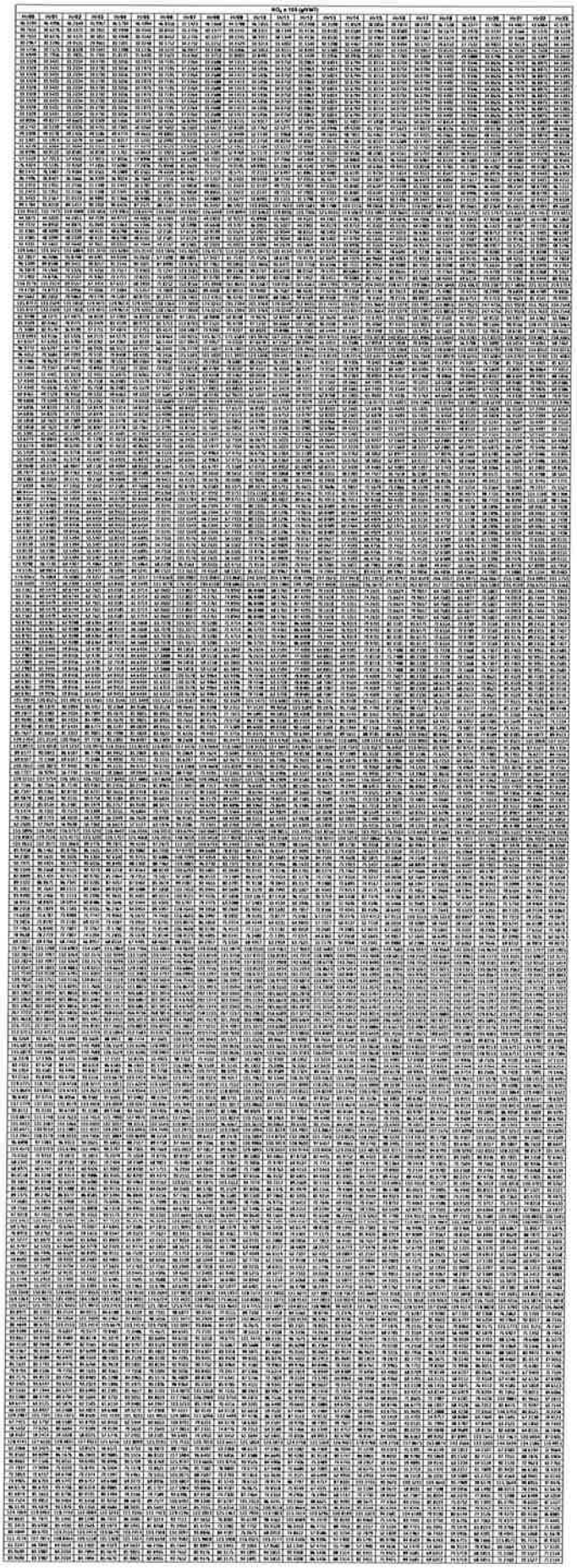

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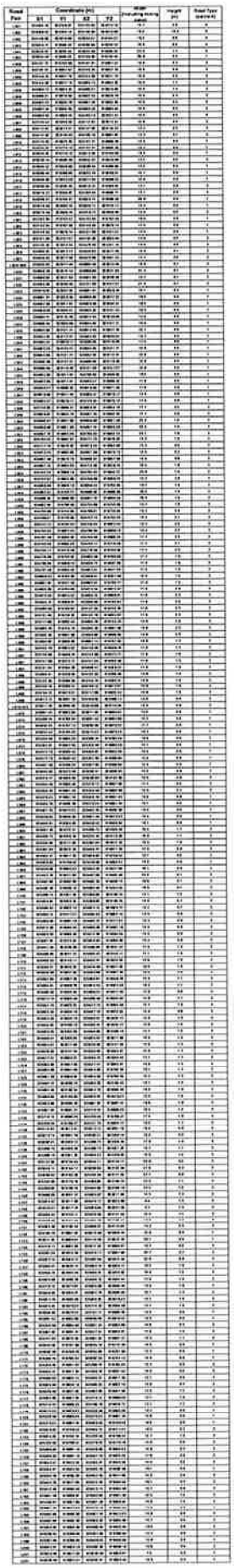

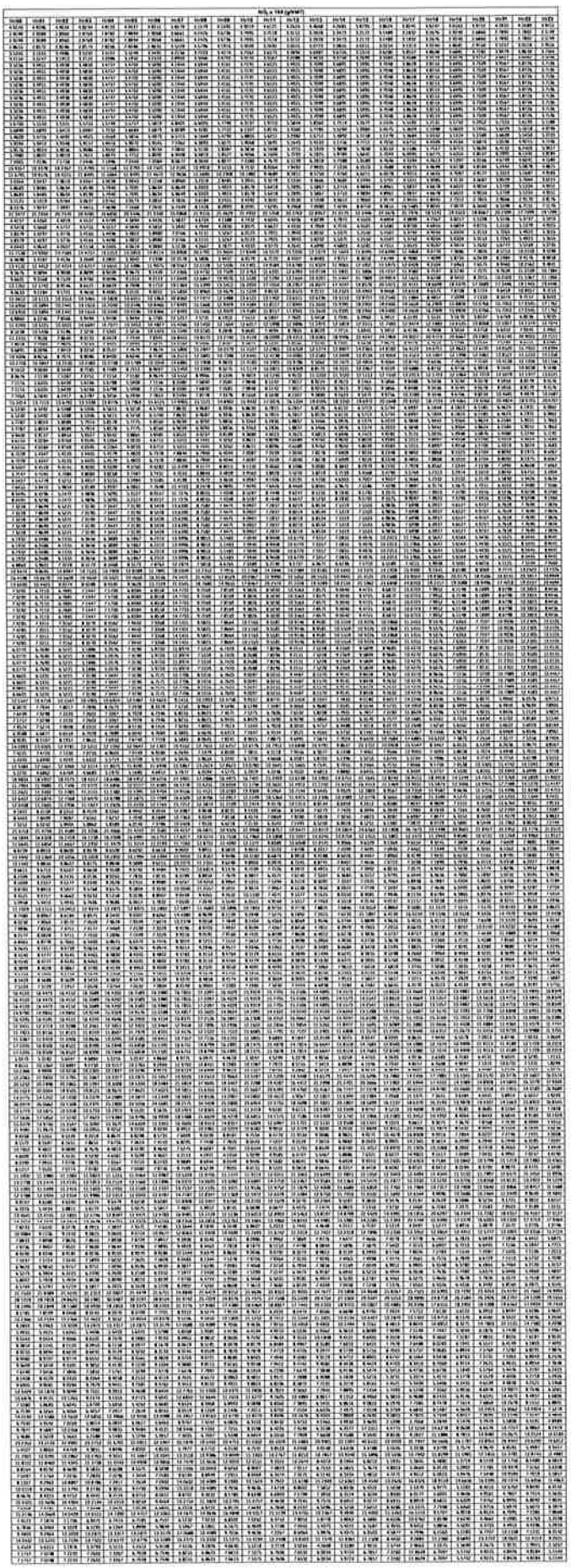

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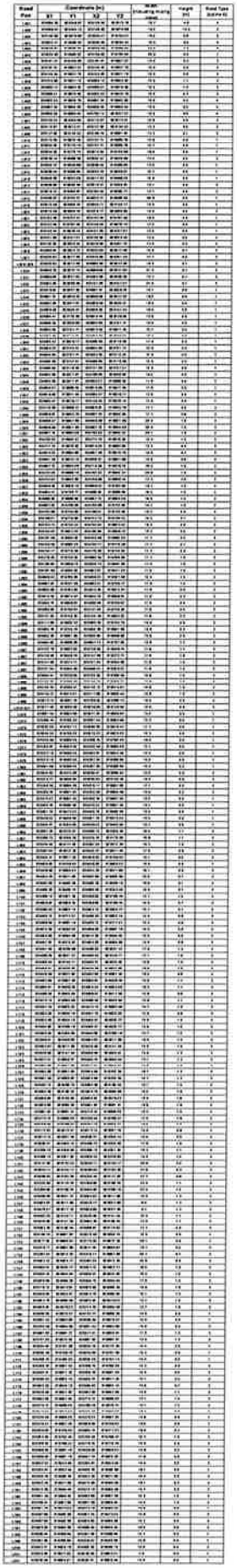

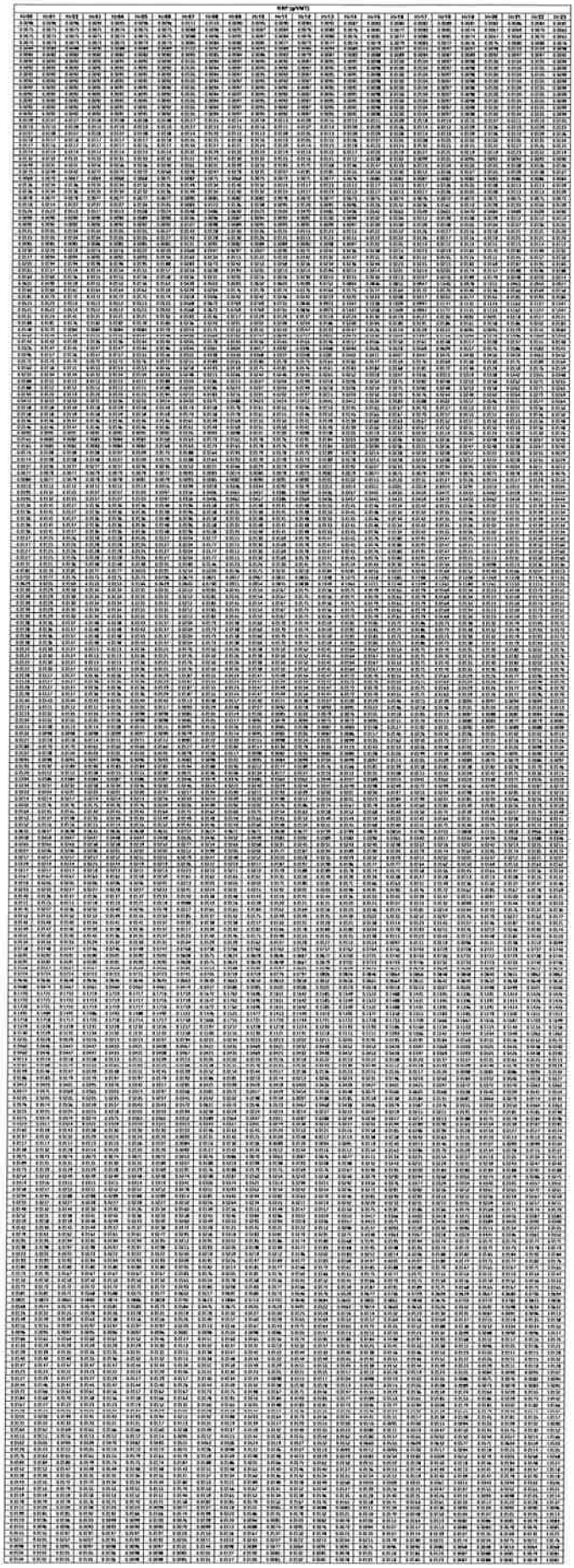

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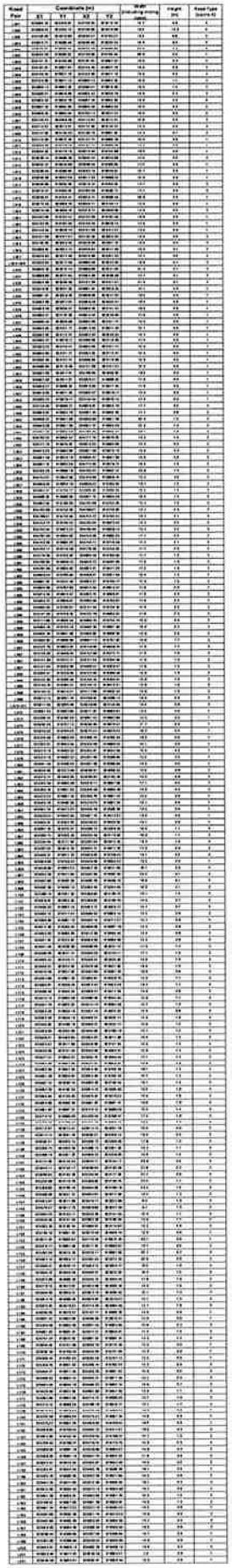
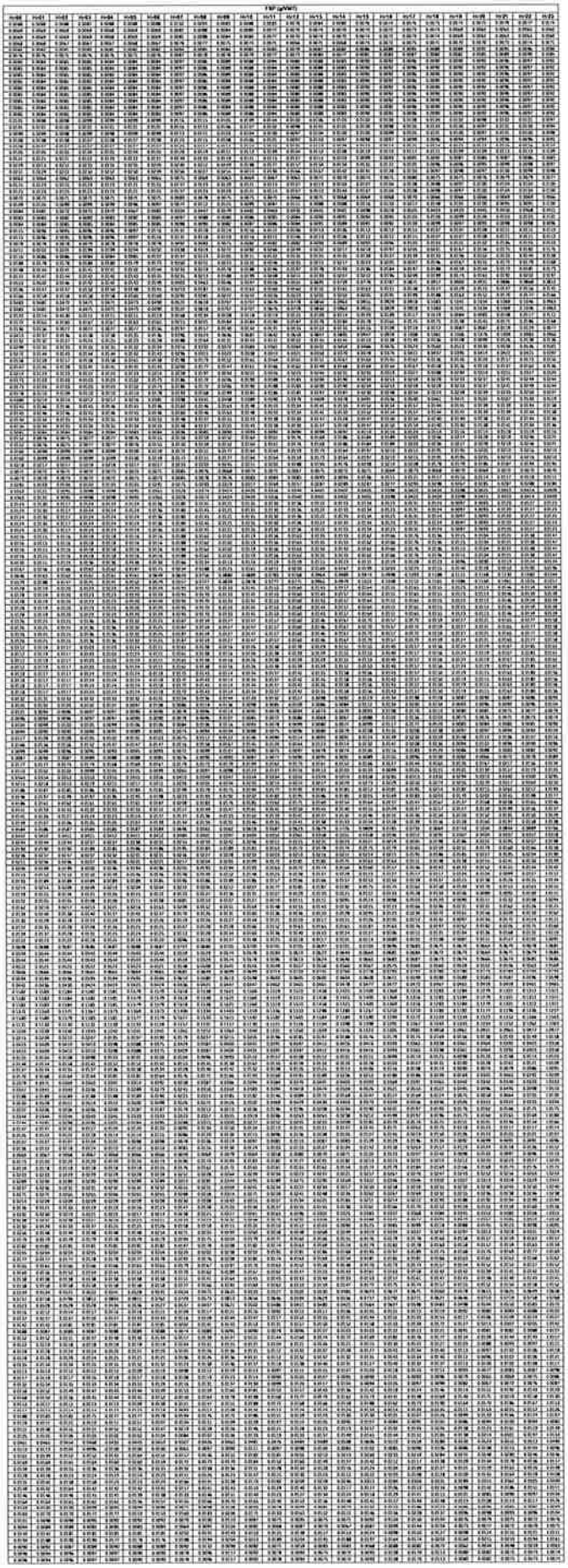




APPENDIX 4-5

MARINE SOURCES

Marine Emission for Ocean Terminal (Hotelling only)

Table 1 - Source strength of Hotelling OGV

Source	ID	Easting (m)	Northing (m)	Source Strength		Emission Height	Temp	Exhaust Velocity	Diameter	Operation hour	Remark
				NOx (g/s)	RSP (g/s)	(mPD)	(K)	(m/s)	(m)		
Ocean Terminal	OGV1a	835175.41	817276.31	3.24	0.47	50	448.2	10.65	0.6	8:00-20:00	4 emission sources per vessel
	OGV1b							10.65	0.6		
	OGV1c							10.65	0.6		
	OGV1D							10.65	0.6		
	OGV2a	835170.51	817393.3	3.64	0.49			11.22	0.6	24 hours	
	OGV2b							11.22	0.6		
	OGV2c							11.22	0.6		
	OGV2D							11.22	0.6		

Note/Referrence:

1 Source data extracted from Table 5 in Appendix 3.6 of the approved EIA AEIAR-179/2013

2 RSP emission from Ocean Terminal is not considered as major pollutant source considering the strength of RSP emission is much lower than NO_X and together with much more margin from the background concentration.

APPENDIX 4-6

DETAILED MODEL RESULTS (AIR QUALITY)

Appendix 4-6 - Predicted Pollutant Concentration

Assessment Point	Easting (m)	Northing (m)	Level (mAG)	Concentraion (μg/m³)								
				Daily 1st Maximum RSP	Daily 10th Maximum RSP	Annual RSP	Daily 1st Maximum FSP	Daily 10th Maximum FSP	Annual FSP	Hourly 1st Maximum NO2	Hourly 19th Maximum NO2	Annual NO2
Criteria (AQO)				--	100	50	--	75	35	--	200	40
L-01	835259.41	819867.95	1.5	111	79	36	84	59	26	247	161	51
			5	111	79	36	84	59	26	246	161	50
			10	111	79	36	84	59	26	242	158	48
			15	111	79	36	83	59	26	238	156	46
			20	111	79	36	83	59	26	234	155	45
			30	111	79	36	83	59	26	230	152	42
			32	110	79	36	83	59	26	229	152	41
			34	110	79	36	83	59	26	229	152	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	228	151	40
			40	110	79	36	83	59	26	228	151	40
L-02	835261.77	819854.72	1.5	111	79	36	84	59	26	246	161	51
			5	111	79	36	84	59	26	245	161	50
			10	111	79	36	84	59	26	242	158	48
			15	111	79	36	83	59	26	238	156	46
			20	111	79	36	83	59	26	234	155	45
			30	111	79	36	83	59	26	229	152	42
			32	110	79	36	83	59	26	229	152	41
			34	110	79	36	83	59	26	228	152	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	228	151	40
			40	110	79	36	83	59	26	227	151	40
L-03	835264.55	819840.30	1.5	111	79	36	84	59	26	246	161	51
			5	111	79	36	84	59	26	245	161	50
			10	111	79	36	84	59	26	241	158	48
			15	111	79	36	83	59	26	237	156	46
			20	111	79	36	83	59	26	234	155	44
			30	111	79	36	83	59	26	229	152	41
			32	110	79	36	83	59	26	229	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
L-04	835265.67	819834.45	1.5	111	79	36	84	59	26	246	161	51
			5	111	79	36	84	59	26	245	161	50
			10	111	79	36	84	59	26	241	158	48
			15	111	79	36	83	59	26	237	156	46
			20	111	79	36	83	59	26	234	155	44
			30	111	79	36	83	59	26	229	152	41
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
L-05	835255.92	819830.04	1.5	111	79	36	84	59	26	247	161	51
			5	111	79	36	84	59	26	245	161	50
			10	111	79	36	84	59	26	241	158	48
			15	111	79	36	83	59	26	237	156	46
			20	111	79	36	83	59	26	233	155	44
			30	111	79	36	83	59	26	229	152	41
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
L-06	835253.88	819835.40	1.5	111	79	36	84	59	26	247	161	51
			5	111	79	36	84	59	26	246	161	50
			10	111	79	36	84	59	26	242	158	48
			15	111	79	36	83	59	26	237	156	46
			20	111	79	36	83	59	26	233	155	44
			30	111	79	36	83	59	26	229	152	42
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
L-07	835248.40	819862.52	1.5	111	79	36	84	59	26	248	161	51
			5	111	79	36	84	59	26	246	161	50
			10	111	79	36	84	59	26	242	158	48
			15	111	79	36	83	59	26	237	156	46
			20	111	79	36	83	59	26	234	155	45
			30	111	79	36	83	59	26	229	152	42
			32	110	79	36	83	59	26	229	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	228	151	40
			40	110	79	36	83	59	26	227	151	40

Appendix 4-6 - Predicted Pollutant Concentration

Assessment Point	Easting (m)	Northing (m)	Level (mAG)	Concentraion (µg/m³)								
				Daily 1st Maximum RSP	Daily 10th Maximum RSP	Annual RSP	Daily 1st Maximum FSP	Daily 10th Maximum FSP	Annual FSP	Hourly 1st Maximum NO2	Hourly 19th Maximum NO2	Annual NO2
Criteria (AQO)				--	100	50	--	75	35	--	200	40
L-08	835253.78	819868.04	1.5	111	79	36	84	59	26	248	161	51
			5	111	79	36	84	59	26	246	161	50
			10	111	79	36	84	59	26	242	158	48
			15	111	79	36	83	59	26	238	156	46
			20	111	79	36	83	59	26	234	155	45
			30	111	79	36	83	59	26	229	152	42
			32	110	79	36	83	59	26	229	152	41
			34	110	79	36	83	59	26	228	152	41
			36	110	79	36	83	59	26	228	151	40
			38	110	79	36	83	59	26	228	151	40
			40	110	79	36	83	59	26	228	151	40
P-01	835254.52	819807.83	1.5	111	79	36	84	59	26	248	163	53
			5	111	79	36	84	59	26	246	161	51
			10	111	79	36	84	59	26	241	159	49
			15	111	79	36	83	59	26	236	156	46
			20	111	79	36	83	59	26	233	155	44
			30	111	79	36	83	59	26	228	152	41
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-02	835257.00	819800.31	1.5	111	79	36	84	59	26	248	164	54
			5	111	79	36	84	59	26	246	162	52
			10	111	79	36	84	59	26	241	159	49
			15	111	79	36	83	59	26	236	156	46
			20	111	79	36	83	59	26	233	156	44
			30	111	79	36	83	59	26	228	152	41
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	228	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-03	835251.46	819788.85	1.5	112	79	37	84	60	26	255	167	59
			5	111	79	36	84	59	26	248	164	52
			10	111	79	36	84	59	26	241	159	49
			15	111	79	36	83	59	26	236	156	46
			20	111	79	36	83	59	26	232	155	44
			30	111	79	36	83	59	26	228	152	41
			32	110	79	36	83	59	26	228	151	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-04	835236.24	819787.02	1.5	112	79	37	84	59	26	254	167	57
			5	111	79	36	84	59	26	249	164	52
			10	111	79	36	84	59	26	241	158	49
			15	111	79	36	83	59	26	235	156	46
			20	111	79	36	83	59	26	231	155	44
			30	111	79	36	83	59	26	228	152	41
			32	110	79	36	83	59	26	227	151	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-05	835227.64	819785.08	1.5	112	79	37	84	59	26	257	168	58
			5	111	79	36	84	59	26	249	164	52
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	235	156	46
			20	111	79	36	83	59	26	231	155	44
			30	111	79	36	83	59	26	227	152	41
			32	110	79	36	83	59	26	227	151	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-06	835216.15	819783.38	1.5	112	79	37	84	59	26	260	169	57
			5	111	79	36	84	59	26	248	164	52
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	234	157	46
			20	111	79	36	83	59	26	230	155	44
			30	111	79	36	83	59	26	227	152	41
			32	110	79	36	83	59	26	227	151	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40

Appendix 4-6 - Predicted Pollutant Concentration

Assessment Point	Easting (m)	Northing (m)	Level (mAG)	Concentraion (µg/m³)								
				Daily 1st Maximum RSP	Daily 10th Maximum RSP	Annual RSP	Daily 1st Maximum FSP	Daily 10th Maximum FSP	Annual FSP	Hourly 1st Maximum NO2	Hourly 19th Maximum NO2	Annual NO2
Criteria (AQO)				--	100	50	--	75	35	--	200	40
P-07	835213.76	819786.43	1.5	112	79	36	84	59	26	260	168	56
			5	111	79	36	84	59	26	247	164	52
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	234	157	46
			20	111	79	36	83	59	26	229	155	44
			30	111	79	36	83	59	26	227	152	41
			32	110	79	36	83	59	26	227	151	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-08	835212.79	819791.65	1.5	112	79	36	84	59	26	260	168	55
			5	111	79	36	84	59	26	248	164	52
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	234	157	46
			20	111	79	36	83	59	26	230	156	44
			30	111	79	36	83	59	26	227	152	41
			32	110	79	36	83	59	26	227	152	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-09	835215.17	819797.13	1.5	111	79	36	84	59	26	258	166	54
			5	111	79	36	84	59	26	249	164	52
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	235	157	46
			20	111	79	36	83	59	26	230	156	44
			30	111	79	36	83	59	26	227	153	41
			32	110	79	36	83	59	26	227	152	41
			34	110	79	36	83	59	26	227	152	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-10	835225.07	819802.69	1.5	111	79	36	84	59	26	254	166	53
			5	111	79	36	84	59	26	249	164	51
			10	111	79	36	84	59	26	241	160	49
			15	111	79	36	83	59	26	235	157	46
			20	111	79	36	83	59	26	231	156	44
			30	111	79	36	83	59	26	228	153	41
			32	110	79	36	83	59	26	227	152	41
			34	110	79	36	83	59	26	227	152	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
P-11	835237.36	819804.99	1.5	111	79	36	84	59	26	251	164	53
			5	111	79	36	84	59	26	248	163	51
			10	111	79	36	84	59	26	241	159	49
			15	111	79	36	83	59	26	236	157	46
			20	111	79	36	83	59	26	232	156	44
			30	111	79	36	83	59	26	228	153	41
			32	110	79	36	83	59	26	228	152	41
			34	110	79	36	83	59	26	227	151	41
			36	110	79	36	83	59	26	227	151	40
			38	110	79	36	83	59	26	227	151	40
			40	110	79	36	83	59	26	227	151	40
T-01	835254.52	819807.83	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	25	227	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	149	38
T-02	835257.00	819800.31	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	25	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-03	835258.88	819791.06	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	25	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-04	835251.46	819788.85	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	25	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38

Appendix 4-6 - Predicted Pollutant Concentration

Assessment Point	Easting (m)	Northing (m)	Level (mAG)	Concentraion (µg/m³)								
				Daily 1st Maximum RSP	Daily 10th Maximum RSP	Annual RSP	Daily 1st Maximum FSP	Daily 10th Maximum FSP	Annual FSP	Hourly 1st Maximum NO2	Hourly 19th Maximum NO2	Annual NO2
Criteria (AQO)				--	100	50	--	75	35	--	200	40
T-05	835236.24	819787.02	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	149	38
T-06	835227.64	819785.08	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	226	151	40
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	150	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-07	835218.55	819785.26	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	226	151	40
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	150	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-08	835220.30	819792.93	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	226	151	40
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	150	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-09	835224.69	819797.80	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	40
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	150	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	150	38
T-10	835232.77	819798.92	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	40
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	149	38
T-11	835245.63	819803.74	38.75	110	79	36	83	59	26	227	151	40
			41.9	110	79	36	83	59	26	227	151	39
			45.05	110	79	36	83	59	26	226	151	39
			48.2	110	79	36	83	59	25	226	151	39
			51.35	110	79	36	83	59	25	226	150	39
			54.5	110	79	36	83	59	25	226	149	38

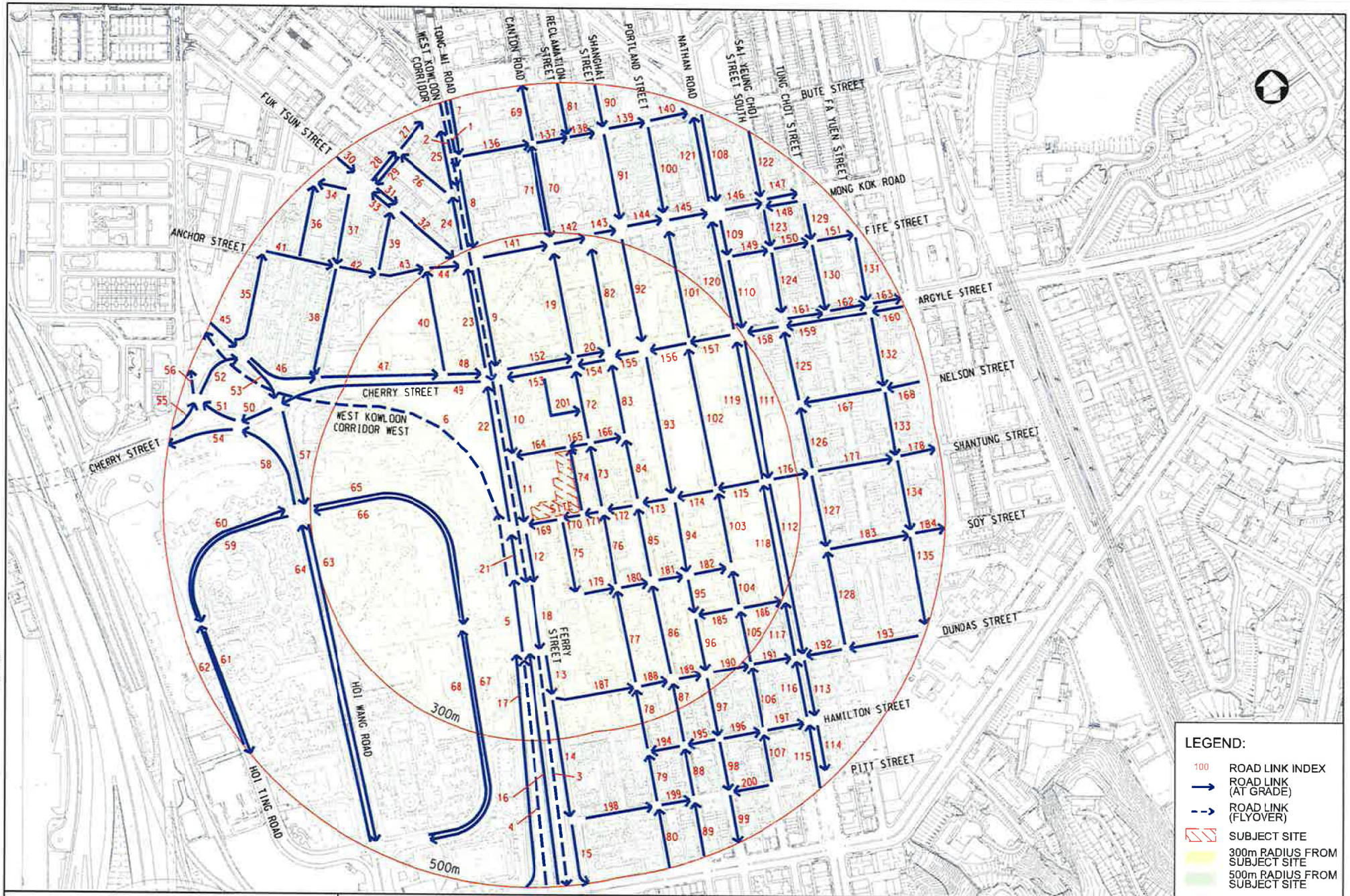
APPENDIX 4-7

SUMMARY OF ANNUAL AVERAGED NO2 CONCENTRATION

	Assessment Point	Annual Averaged NO_2 Concentration ($\mu g/m^3$) at different Height (mAG)																
		Non Residential											Residential					
		1.5	5	10	15	20	30	32	34	36	38	40	38.75	41.9	45.05	48.2	51.35	54.5
Low Block	L-01	51	50	48	46	45	42	41	41	40	40	40	-	-	-	-	-	-
	L-02	51	50	48	46	45	42	41	41	40	40	40	-	-	-	-	-	-
	L-03	51	50	48	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	L-04	51	50	48	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	L-05	51	50	48	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	L-06	51	50	48	46	44	42	41	41	40	40	40	-	-	-	-	-	-
	L-07	51	50	48	46	45	42	41	41	40	40	40	-	-	-	-	-	-
	L-08	51	50	48	46	45	42	41	41	40	40	40	-	-	-	-	-	-
Podium	P-01	53	51	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-02	54	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-03	59	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-04	57	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-05	58	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-06	57	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-07	56	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-08	55	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-09	54	52	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-10	53	51	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
	P-11	53	51	49	46	44	41	41	41	40	40	40	-	-	-	-	-	-
Residential Tower	T-01	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38
	T-02	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38
	T-03	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38
	T-04	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38
	T-05	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38
	T-06	-	-	-	-	-	-	-	-	-	-	-	40	40	39	39	39	38
	T-07	-	-	-	-	-	-	-	-	-	-	-	40	40	39	39	39	38
	T-08	-	-	-	-	-	-	-	-	-	-	-	40	40	39	39	39	38
	T-09	-	-	-	-	-	-	-	-	-	-	-	40	40	39	39	39	38
	T-10	-	-	-	-	-	-	-	-	-	-	-	40	40	39	39	39	38
	T-11	-	-	-	-	-	-	-	-	-	-	-	40	39	39	39	39	38

APPENDIX 5-1

PREDICTED TRAFFIC FLOW
AT PEAK HOUR IN YEAR 2045



URBAN RENEWAL AUTHORITY 市區重建局

SNC·LAVALIN ATKINS Member of the SNC-Lavalin Group

PROPOSED DEVELOPMENT SCHEME
SHANTUNG STREET / THISTLE STREET
(YTM-012)

Title: INDEX PLAN

Scale at A3	Date	Figure No.
N.T.S.	Sep 2019	2.1

Year 2045 Traffic Forecast for Environemental Assessment Study - Peak Hours Traffic Flows for NIA (road links within 300m radius from site)

Road ID	Road Name	Travel Direction	Within 300m	2045 AM PEAK FLOW (veh/hr)	2045 PM PEAK FLOW (veh/hr)	AM HV%	PM HV%
2	West Kowloon Corridor (elevated Rd)	SB	1	2700	2800	22%	18%
3	West Kowloon Corridor (elevated Rd)	SB	1	3850	3450	22%	23%
4	West Kowloon Corridor (elevated Rd)	NB	1	1550	2450	30%	30%
5	West Kowloon Corridor	NB	1	2600	3300	26%	28%
6	West Kowloon Corridor West (elevated Rd)	NB	1	1750	2150	28%	30%
9	Tong Mi Rd	SB	1	1800	1550	28%	26%
10	Tong Mi Rd	SB	1	1650	1550	30%	22%
11	Ferry St	SB	1	1750	1650	30%	30%
12	Ferry St	SB	1	2100	1950	30%	29%
13	Ferry St	SB	1	950	1300	39%	19%
14	Ferry St	SB	1	300	450	49%	23%
16	Ferry St	NB	1	650	350	15%	18%
17	Ferry St (slip Rd)	NB	1	450	500	31%	27%
18	West Kowloon Corridor	SB	1	4800	4750	25%	22%
19	Canton Rd	NB	1	200	250	24%	23%
20	Argyle St	EB	1	250	350	63%	57%
21	Ferry St	NB	1	850	1100	22%	25%
22	Ferry St	NB	1	900	1400	23%	23%
23	Tong Mi Rd	NB	1	750	1200	28%	25%
40	Palm St	NB	1	500	350	27%	22%
44	Anchor St	EB	1	800	700	31%	27%
47	Cherry St	EB	1	750	700	32%	41%
48	Cherry St	EB	1	250	350	60%	77%
49	Cherry St	WB	1	1700	2550	28%	25%
65	Hoi Ting Rd	EB	1	350	300	26%	24%
66	Hoi Ting Rd	WB	1	150	100	29%	34%
67	Hoi Ting Rd	SB	1	100	50	24%	38%
68	Hoi Ting Rd	NB	1	100	50	27%	35%
72	Canton Rd	NB	1	24	100	25%	17%
73	Canton Rd	NB	1	50	50	25%	17%
74	Thistle St	NB	1	50	50	28%	24%
75	Kam Lam St	SB	1	50	100	24%	27%
76	Canton Rd	NB	1	300	350	23%	22%
77	Canton Rd	NB	1	400	550	41%	18%
78	Canton Rd	NB	1	100	100	24%	22%
82	Reclaimation St	NB	1	450	700	74%	57%
83	Reclaimation St	NB	1	100	200	50%	53%
84	Reclaimation St	NB	1	150	300	49%	41%
85	Reclaimation St	NB	1	150	450	56%	39%
86	Reclaimation St	NB	1	200	500	54%	31%
87	Reclaimation St	NB	1	250	600	41%	28%
92	Shanghai St	SB	1	750	950	43%	33%
93	Shanghai St	SB	1	750	900	33%	24%
94	Shanghai St	SB	1	500	600	40%	29%

Year 2045 Traffic Forecast for Environemental Assessment Study - Peak Hours Traffic Flows for NIA (road links within 300m radius from site)

Road ID	Road Name	Travel Direction	Within 300m	2045 AM PEAK FLOW (veh/hr)	2045 PM PEAK FLOW (veh/hr)	AM HV%	PM HV%
95	Shanghai St	SB	1	600	750	38%	26%
96	Shanghai St	SB	1	650	800	36%	25%
97	Shanghai St	SB	1	1150	1300	30%	20%
101	Portland St	NB	1	100	150	22%	13%
102	Portland St	NB	1	50	300	41%	21%
103	Portland St	NB	1	100	250	31%	33%
104	Portland St	NB	1	50	100	30%	19%
105	Portland St	NB	1	150	200	27%	24%
111	Nathan Rd	SB	1	1300	1300	40%	33%
112	Nathan Rd	SB	1	1100	900	41%	39%
118	Nathan Rd	NB	1	500	800	65%	56%
119	Nathan Rd	NB	1	450	600	70%	69%
120	Nathan Rd	NB	1	700	950	52%	50%
141	Mong Kok Road	EB	1	900	950	27%	34%
142	Mong Kok Road	EB	1	1250	1100	27%	28%
152	Argyle St	EB	1	450	600	45%	52%
153	Argyle St	WB	1	1650	2550	33%	27%
154	Argyle St	WB	1	1550	2250	34%	28%
155	Argyle St	WB	1	1750	2450	37%	29%
156	Argyle St	WB	1	1750	2400	31%	26%
157	Argyle St	WB	1	1800	2250	28%	24%
164	Nelson St	WB	1	100	100	28%	24%
165	Nelson St	WB	1	100	50	44%	40%
166	Nelson St	EB	1	50	100	43%	40%
169	Shantung St	WB	1	400	600	26%	23%
170	Shantung St	WB	1	450	750	26%	23%
171	Shantung St	WB	1	500	800	27%	23%
172	Shantung St	WB	1	250	500	29%	23%
173	Shantung St	WB	1	200	350	24%	18%
174	Shantung St	WB	1	50	150	31%	16%
175	Shantung St	WB	1	50	150	36%	15%
176	Shantung St	EB	1	200	400	38%	21%
179	Soy St	EB	1	50	100	28%	27%
180	Soy St	EB	1	100	300	51%	17%
181	Soy St	EB	1	150	300	24%	8%
182	Soy St	EB	1	50	200	32%	27%
185	Changsha St	WB	1	100	50	17%	11%
186	Changsha St	EB	1	50	100	41%	42%
187	Dundas St	EB	1	700	850	42%	17%
188	Dundas St	EB	1	400	450	33%	17%
189	Dundas St	EB	1	500	550	28%	18%
190	Dundas St	EB	1	9	50	37%	55%
201	Shamchun St & Nam Tau St	SB	1	100	150	25%	17%

APPENDIX 5-2

TRAFFIC NOISE ASSESSMENT RESULTS (BASE SCENARIO)

AM Peak - Unmitigated

Predicted Noise level at NSR ($L_{10(1hr)}$, dB(A)) (Base Scenario)																																				
Unit	N1				N2					N3		N4			N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	L1	B1	B1	L1	L1	B1	L1	B1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	52	54	54	54	58	60	65	65	67	67	68	68	72	72	72	72	72	72	73	73	73	73	74	74	75	74	75	70	69	58	57	57	61	58	49	50
2	54	55	55	56	58	61	65	65	67	67	67	68	71	71	72	72	72	72	72	73	73	73	74	74	75	75	75	74	75	64	63	62	66	65	51	51
3	55	56	56	57	59	62	65	66	67	67	67	68	71	71	71	72	72	72	72	72	73	73	74	74	75	75	75	75	76	68	67	66	67	66	52	53
4	55	57	57	57	59	62	65	66	66	67	67	67	71	71	71	71	72	72	72	72	73	73	74	74	75	75	75	76	77	70	69	68	68	66	53	53
5	56	58	58	58	59	62	65	66	66	67	67	67	71	71	71	71	72	72	72	73	73	74	74	74	75	75	75	76	77	72	71	70	68	66	53	54
6	57	60	59	60	60	63	65	66	66	67	67	67	71	71	71	71	72	72	72	73	73	74	74	74	75	75	75	76	77	72	71	71	69	66	53	54
7	57	60	60	61	60	63	65	66	66	67	67	67	71	71	71	72	72	72	73	73	73	74	74	74	75	75	75	75	77	72	72	71	69	65	53	54
8	57	61	60	61	60	63	65	66	66	66	67	67	71	71	71	72	72	72	73	73	73	74	74	74	75	75	75	75	77	72	72	71	69	65	53	54
9	57	61	61	62	60	63	65	66	66	66	67	67	71	71	72	72	72	72	73	73	73	73	74	74	74	74	75	75	77	72	72	71	69	65	53	54
10	57	61	61	62	60	63	65	66	66	66	66	67	71	71	72	72	72	72	73	73	73	73	74	74	74	74	75	75	77	72	72	71	69	65	54	54
11	58	61	61	62	60	64	65	66	66	66	66	67	71	71	72	72	72	72	73	73	73	73	74	74	74	74	75	75	77	72	72	71	69	65	54	54
12	58	61	61	62	60	64	65	66	66	66	66	66	71	71	72	72	72	72	73	73	73	73	73	74	74	74	75	75	77	72	72	71	69	65	54	55
13	58	61	61	62	60	64	65	66	66	66	66	66	71	71	72	72	72	72	73	73	73	73	73	74	74	74	75	75	76	72	72	71	69	65	54	55
14	58	61	61	62	60	64	65	66	66	66	66	66	71	71	72	72	72	72	72	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	54	55
15	58	61	61	62	60	64	65	66	66	66	66	66	71	71	72	72	72	72	72	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	54	55
16	58	61	61	62	60	64	65	66	66	66	66	66	71	71	72	72	72	72	72	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	54	55
17	58	61	61	62	61	64	65	66	66	66	66	66	71	71	72	72	72	72	72	73	73	73	73	74	74	74	74	74	76	72	72	71	69	64	54	55
18	58	61	61	62	61	64	65	65	66	66	66	66	71	71	72	72	72	72	72	72	73	73	73	74	74	74	74	74	76	72	71	71	69	64	54	55
19	58	61	61	62	61	64	65	65	66	66	66	66	71	71	72	72	72	72	72	72	72	73	73	73	73	74	74	74	75	72	71	71	69	64	55	55
20	58	61	61	62	61	64	65	65	66	66	66	66	71	71	71	72	72	72	72	72	72	72	73	73	73	74	74	75	72	71	71	69	64	55	55			
21	58	61	61	62	61	64	65	65	66	66	66	66	71	71	71	71	72	72	72	72	72	72	73	73	73	74	74	75	72	71	71	69	64	55	56			
22	59	62	62	62	61	64	65	65	66	66	66	66	71	71	71	71	72	72	72	72	72	72	73	73	73	74	74	75	72	71	71	69	64	56	56			
23	59	62	62	63	61	64	65	66	66	66	66	66	71	71	71	71	71	72	72	72	72	72	73	73	73	73	74	75	72	71	71	69	64	57	57			
24	60	62	62	63	62	65	65	66	66	66	66	66	71	71	71	71	71	72	72	72	72	72	73	73	73	73	73	75	72	71	71	69	65	59	58			
25	61	63	63	63	63	65	66	66	66	66	66	66	71	71	71	71	71	71	72	72	72	72	73	73	73	73	73	75	72	71	71	69	65	61	60			
No.of Unit Complied 70B(A)	25				25					25		0			0		0		0		0		0		0				4				25			

>70 dB(A)

PM Peak - Unmitigated

Predicted Noise level at NSR ($L_{10(1hr)}$, dB(A)) (Base Scenario)																																				
Unit	N1				N2					N3		N4			N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	B1	B1	L1	B1	L1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	53	55	55	55	58	60	66	68	68	69	69	70	73	73	73	73	73	73	73	73	74	74	74	75	75	75	75	70	69	58	58	57	62	58	50	51
2	55	56	56	57	59	62	67	68	68	69	69	69	73	72	73	73	73	73	73	73	74	74	74	75	75	75	75	75	75	64	63	62	67	65	52	52
3	56	57	57	57	59	63	67	68	68	68	69	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	68	67	66	67	66	53	53
4	56	58	58	58	60	63	67	68	68	68	69	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	71	70	69	68	66	54	54
5	57	59	59	59	60	63	67	68	68	68	68	69	72	72	72	72	72	73	73	73	74	74	74	75	75	75	76	76	77	72	71	70	69	66	54	55
6	58	60	60	60	60	64	67	68	68	68	68	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	73	72	71	69	66	54	55
7	58	61	61	62	60	64	67	67	68	68	68	69	72	72	72	72	73	73	73	74	74	74	74	75	75	75	76	76	77	73	72	72	70	66	54	55
8	58	61	61	62	61	64	67	67	68	68	68	68	72	72	72	73	73	73	73	74	74	74	74	75	75	75	76	76	77	73	72	72	70	66	54	55
9	58	61	61	62	61	64	67	67	67	68	68	68	72	72	72	73	73	73	73	73	74	74	74	75	75	75	75	76	77	73	72	72	70	65	54	55
10	58	62	62	62	61	64	67	67	67	68	68	68	72	72	73	73	73	73	73	73	74	74	74	75	75	75	75	76	77	73	72	72	70	65	55	55
11	59	62	62	63	61	64	67	67	67	68	68	68	72	72	73	73	73	73	73	73	74	74	74	74	75	75	75	75	77	73	72	72	70	65	55	56
12	59	62	62	63	61	65	66	67	67	67	68	68	72	72	73	73	73	73	73	73	74	74	74	74	75	75	75	75	77	73	72	72	70	65	55	56
13	59	62	62	63	61	65	66	67	67	67	68	68	72	72	72	73	73	73	73	73	73	74	74	74	74	74	75	75	77	73	72	72	70	65	55	56
14	59	62	62	63	61	65	66	67	67	67	67	68	72	72	72	73	73	73	73	73	73	74	74	74	74	75	75	76	73	72	71	70	65	55	56	
15	59	62	62	63	61	65	66	67	67	67	67	68	72	72	72	73	73	73	73	73	73	73	74	74	74	75	75	76	73	72	71	69	65	55	56	
16	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	73	73	73	73	73	73	74	74	74	75	75	76	72	72	71	69	64	55	56	
17	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	73	73	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	56	56	
18	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	72	73	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	56	56	
19	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	73	73	73	73	74	74	74	74	74	76	72	72	71	69	64	56	57	
20	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	73	73	73	73	73	74	74	74	76	72	72	71	69	64	56	57	
21	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	72	73	73	73	73	74	74	74	76	72	72	71	69	64	57	57	
22	60	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	72	73	73	73	73	74	74	74	75	72	72	71	69	65	58	58	
23	60	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	72	72	73	73	73	73	73	74	74	75	72	72	71	70	65	60	59
24	61	63	63	63	63	65	67	67	67	67	67	67	72	72	72	72	72	72	72	72	72	73	73	73	73	73	74	74	75	72	72	71	70	66	62	61
25	62	63	63	64	63	66	67	67	67	67	67	67	72	72	72	72	72	72	72	72	72	72	72	73	73	73	74	74	75	72	72	71	70	66	63	63
No.of Unit Complied 70B(A)	25				25					25		0			0		0		0		0		0		0				3				25		

>70 dB(A)

Highest of AM/PM Peak - Unmitigated

Predicted Noise level at NSR ($L_{10(1hr)}$, dB(A)) (Base Scenario)																																				
Unit	N1				N2					N3		N4				N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	L1	B1	B1	L1	L1	B1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	53	55	55	55	58	60	66	68	68	69	69	70	73	73	73	73	73	73	73	73	74	74	74	75	75	75	75	70	69	58	58	57	62	58	50	51
2	55	56	56	57	59	62	67	68	68	69	69	69	73	72	73	73	73	73	73	73	74	74	74	75	75	75	75	75	75	64	63	62	67	65	52	52
3	56	57	57	57	59	63	67	68	68	68	69	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	68	67	66	67	66	53	53
4	56	58	58	58	60	63	67	68	68	68	69	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	71	70	69	68	66	54	54
5	57	59	59	59	60	63	67	68	68	68	68	69	72	72	72	72	72	73	73	73	74	74	74	75	75	75	76	76	77	72	71	70	69	66	54	55
6	58	60	60	60	60	64	67	68	68	68	68	69	72	72	72	72	73	73	73	73	74	74	74	75	75	75	76	76	77	73	72	71	69	66	54	55
7	58	61	61	62	60	64	67	67	68	68	68	69	72	72	72	72	73	73	73	74	74	74	74	75	75	75	76	76	77	73	72	72	70	66	54	55
8	58	61	61	62	61	64	67	67	68	68	68	68	72	72	72	73	73	73	73	74	74	74	74	75	75	75	76	76	77	73	72	72	70	66	54	55
9	58	61	61	62	61	64	67	67	67	68	68	68	72	72	72	73	73	73	73	74	74	74	74	75	75	75	75	76	77	73	72	72	70	65	54	55
10	58	62	62	62	61	64	67	67	67	68	68	68	72	72	73	73	73	73	73	73	74	74	74	75	75	75	75	76	77	73	72	72	70	65	54	55
11	59	62	62	63	61	64	67	67	67	68	68	68	72	72	73	73	73	73	73	73	74	74	74	74	75	75	75	76	77	73	72	72	70	65	55	55
12	59	62	62	63	61	65	66	67	67	67	68	68	72	72	73	73	73	73	73	73	74	74	74	74	75	75	75	75	77	73	72	72	70	65	55	56
13	59	62	62	63	61	65	66	67	67	67	68	68	72	72	72	73	73	73	73	73	73	74	74	74	74	74	74	75	75	73	72	72	70	65	55	56
14	59	62	62	63	61	65	66	67	67	67	67	68	72	72	72	73	73	73	73	73	73	74	74	74	74	74	74	75	75	73	72	71	70	65	55	56
15	59	62	62	63	61	65	66	67	67	67	67	68	72	72	72	73	73	73	73	73	73	73	73	74	74	74	74	75	75	73	72	71	70	65	55	56
16	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	73	73	73	73	73	73	73	74	74	74	75	75	76	73	72	71	69	65	55	56
17	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	73	73	73	73	73	73	73	74	74	74	75	75	76	72	72	71	69	64	55	56
18	59	62	62	63	61	65	66	67	67	67	67	67	72	72	72	72	72	73	73	73	73	73	74	74	74	74	75	76	72	72	71	69	64	56	56	
19	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	73	73	73	73	74	74	74	74	74	76	72	72	71	69	64	56	57	
20	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	73	73	73	73	74	74	74	74	74	76	72	72	71	69	64	56	57	
21	59	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	73	73	73	73	74	74	74	74	76	72	72	71	69	64	57	57	
22	60	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	72	73	73	73	73	74	74	74	75	72	72	71	69	65	58	58	
23	60	62	62	63	62	65	66	67	67	67	67	67	72	72	72	72	72	72	72	72	72	72	73	73	73	73	73	74	74	75	72	72	71	70	65	60	59
24	61	63	63	63	63	65	67	67	67	67	67	67	72	72	72	72	72	72	72	72	72	72	73	73	73	73	73	74	74	75	72	72	71	70	66	62	61
25	62	63	63	64	63	66	67	67	67	67	67	67	72	72	72	72	72	72	72	72	72	72	72	73	73	73	74	74	75	72	72	71	70	66	63	63
No.of Unit Complied 70B(A)	25				25					25		0				0		0		0		0		0		0				3				25		

>70 dB(A)

APPENDIX 5-3

PROPOSED MITIGATION MEASURES

Proposed Mitigation Measure

Structures of the Scheme																																						
Unit	N1				N2					N3		N4				N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	L1	B1	B1	L1	L1	B1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	-	-	-	-	-	-	-	-	-	-	-	-	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	AW	AB	AB	AB	AW	AW	AB	AB	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	AW	-	-	-	-	-

Mitigation

AB Type I: Acoustic Balcony (-2 dB(A))

AW Type II: Top-hung Type Acoustic Window (-5 dB(A))

Proposed Mitigation Measures (dB(A))																																					
Unit	N1				N2					N3		N4			N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	L1	B1	B1	L1	L1	B1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	5	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0

Mitigation Measure:

Type I: Acoustic Balcony (-2 dB(A))

Type II: Top-hung Type Acoustic Window (-5 dB(A))

APPENDIX 5-4

TRAFFIC NOISE ASSESSMENT RESULTS (MITIGATED SCENARIO)

Predicted Noise level at NSR ($L_{10(1hr)}$, dB(A)) (Mitigated Scenario)																																			
Unit	N1				N2					N3		N4				N5		N6		N7		N8		N9		N10				N11				N12		
Floor	B1A	B1B	L1A	L1B	B1A	B1B	B1C	B2	L1	L1	B1	B1	B2A	B2B	L1	L1	B1	B1	L1	L1	B1	B1	L1	L1	B1	L1	B1	B2A	B2B	B1A	B1B	L1A	L1B	L1	B1A	B1B
1	53	55	55	55	58	60	66	68	68	69	69	70	68	68	68	68	68	68	68	68	68	69	69	69	70	70	70	70	70	69	58	58	57	62	58	50	51
2	55	56	56	57	59	62	67	68	68	69	69	69	68	70	68	68	68	68	68	68	68	69	69	69	70	70	70	70	70	70	64	63	62	67	65	52	52
3	56	57	57	57	59	63	67	68	68	68	69	69	67	70	70	70	68	68	68	68	68	69	69	69	70	70	70	71	71	72	68	67	66	67	66	53	53
4	56	58	58	58	60	63	67	68	68	68	69	69	67	70	70	70	68	68	68	68	68	69	69	69	70	70	70	71	71	72	66	70	69	68	66	54	54
5	57	59	59	59	60	63	67	68	68	68	68	69	67	70	70	70	67	68	68	68	68	69	69	69	70	70	70	71	71	72	67	66	70	69	66	54	55
6	58	60	60	60	60	64	67	68	68	68	68	69	67	70	70	70	68	68	68	68	68	69	69	69	70	70	70	71	71	72	68	67	66	69	66	54	55
7	58	61	61	62	60	64	67	67	68	68	68	69	67	70	70	70	68	68	68	68	69	69	69	69	70	70	70	71	71	72	68	67	67	70	66	54	55
8	58	61	61	62	61	64	67	67	68	68	68	68	67	70	70	68	68	68	68	68	69	69	69	69	70	70	70	71	71	72	68	67	67	70	66	54	55
9	58	61	61	62	61	64	67	67	67	68	68	68	67	70	70	68	68	68	68	68	69	69	69	69	70	70	70	70	71	72	68	67	67	70	65	54	55
10	58	62	62	62	61	64	67	67	67	68	68	68	67	70	68	68	68	68	68	68	68	69	69	69	70	70	70	70	71	72	68	67	67	70	65	55	55
11	59	62	62	63	61	64	67	67	67	68	68	68	67	70	68	68	68	68	68	68	68	69	69	69	69	70	70	70	70	72	68	67	67	70	65	55	56
12	59	62	62	63	61	65	66	67	67	67	68	68	67	70	68	68	68	68	68	68	68	69	69	69	69	70	70	70	70	72	68	67	67	70	65	55	56
13	59	62	62	63	61	65	66	67	67	67	68	68	67	70	70	68	68	68	68	68	68	68	69	69	69	69	69	70	70	72	68	67	67	70	65	55	56
14	59	62	62	63	61	65	66	67	67	67	67	68	67	70	70	68	68	68	68	68	68	68	69	69	69	69	69	70	70	71	68	67	66	70	65	55	56
15	59	62	62	63	61	65	66	67	67	67	67	68	67	70	70	68	68	68	68	68	68	68	68	68	69	69	69	70	70	71	68	67	66	70	65	55	56
16	59	62	62	63	61	65	66	67	67	67	67	67	67	70	70	70	68	68	68	68	68	68	68	68	69	69	69	70	70	71	68	67	66	69	65	55	56
17	59	62	62	63	61	65	66	67	67	67	67	67	67	70	70	70	68	68	68	68	68	68	68	68	69	69	69	70	70	71	67	67	66	69	64	55	56
18	59	62	62	63	61	65	66	67	67	67	67	67	67	70	70	70	67	68	68	68	68	68	68	68	69	69	69	69	70	71	67	67	66	69	64	56	56
19	59	62	62	63	62	65	66	67	67	67	67	67	67	70	70	67	67	68	68	68	68	68	69	69	69	69	69	69	69	71	67	67	66	69	64	56	57
20	59	62	62	63	62	65	66	67	67	67	67	67	67	70	70	70	67	67	70	68	68	68	68	68	68	69	69	69	69	71	67	67	66	69	64	56	57
21	59	62	62	63	62	65	66	67	67	67	67	67	67	70	70	70	67	67	70	70	68	68	68	68	68	69	69	69	69	71	67	67	66	69	64	57	57
22	60	62	62	63	62	65	66	67	67	67	67	67	67	70	70	70	67	67	70	70	68	68	68	68	68	69	69	69	69	70	67	67	66	69	65	58	58
23	60	62	62	63	62	65	66	67	67	67	67	67	67	70	70	70	67	67	70	70	67	68	68	68	68	68	68	69	69	70	67	67	66	70	65	60	59
24	61	63	63	63	63	65	67	67	67	67	67	67	67	70	70	70	67	67	70	70	67	68	68	68	68	68	68	69	69	70	67	67	66	70	66	62	61
25	62	63	63	64	63	66	67	67	67	67	67	67	67	70	70	70	67	67	70	70	67	67	67	68	68	68	68	69	69	70	67	67	66	70	66	63	63
No.of Unit Complied 70B(A)	25				25					25		25				25		25		25		25		25		6				25				25		

>70 dB(A)

APPENDIX 5-5

DETAILED CALCULATIONS OF NOISE FROM PLANNED FIXED SOURCES

List of Potential Fixed Noise Sources

Location	Reference Plant	Quantity	SWL/SPL, dB(A)		Total SWL/SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m^3/hr @ 750 Pa	1	SWL[2]	99	99
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m^3/hr @ 750 Pa	1	SWL[2]	99	103
	Fan with 17000 m^3/hr @ 750 Pa	1	SWL[2]	101	

[1] The SPL are based on the value listed in the product catalogue. The SPL are measured at 1m.

[2] The SWL are reference to Table 7c in EPD's *Good Practices on Ventilation System Noise Control* .

Fixed Noise Impact for Planned Noise Source (Unmitigated Scenario)

NSR1

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	17	-25	3	-5	0	0	41	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	58	-35	3	-5	0	0	32	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	16	-32	3	-5	0	0	65	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	61	-44	3	-5	0	0	57	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	66	

* Vertical distance has been adopted instead (vertical distance = ~ 16m (4/F - 6/F + transfer plate)

NSR2

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	10	-20	3	-5	0	0	46	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	28	-29	3	0	0	0	43	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	45	-41	3	-5	0	0	56	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	33	-38	3	0	0	0	68	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	68	

NSR3a

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	5	-15	3	0	0	0	56	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	42	-32	3	0	0	0	40	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	18	-33	3	-5	0	0	64	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	44	-41	3	0	0	0	65	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	68	

NSR3b

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	16	-24	3	0	0	0	47	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	54	-35	3	-5	0	0	32	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	10	-28	3	0	0	0	74	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	56	-43	3	-5	0	0	58	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	74	

NSR4

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	45	-33	3	0	0	0	38	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	18	-25	3	0	0	0	47	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	68	-45	3	-5	0	0	52	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	14	-31	3	0	0	0	75	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	75	

NSR5

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	42	-32	3	0	0	0	39	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	20	-26	3	-5	0	0	41	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	23	-35	3	-5	0	0	62	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	80	-46	3	-5	0	0	55	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	63	

NSR6

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	35	-31	3	0	0	0	40	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	27	-28	3	-5	0	0	39	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	32	-38	3	-5	0	0	59	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	73	-45	3	-5	0	0	56	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	61	

NSR7

Location	Reference Plant	Quantity	Source Strenght			Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)		Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1]	68	68	33	-30	3	-5	0	0	36	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1]	69	69	54	-35	3	0	0	0	37	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	99	52	-42	3	-5	0	0	55	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2]	99	103	59	-43	3	0	0	0	63	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2]	101									
											Total	63	

[1] The Distance Correction is based on SPL measured at 1m.
[2] The Distance Correction is based on SWL.
[3] For NSR that has no direct line of sight to the Noise Source, Barrier Correction of -5dB has been adopted.

Fixed Noise Impact for Planned Noise Source (Mitigated Scenario)

NSR1

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	17	-25	3	-5	0	0	41	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	58	-35	3	-5	0	0	32	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	16	-32	3	-5	-10	0	55	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	61	-44	3	-5	-10	0	47	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	56	

* Vertical distance has been adopted instead (vertical distance = ~ 16m (4/F - 6/F + transfer plate)

NSR2

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	10	-20	3	-5	0	0	46	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	28	-29	3	0	0	0	43	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	45	-41	3	-5	-10	0	46	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	33	-38	3	0	-10	0	58	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	58	

NSR3a

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	5	-13	3	0	0	0	56	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	42	-32	3	0	0	0	40	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	18	-33	3	-5	-10	0	54	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	44	-41	3	0	-10	0	55	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	60	

NSR3b

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	16	-24	3	0	0	0	47	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	54	-35	3	-5	0	0	32	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	10	-28	3	0	-10	0	64	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	56	-43	3	-5	-10	0	48	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	64	

NSR4

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	45	-33	3	0	0	0	38	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	18	-25	3	0	0	0	47	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	68	-45	3	-5	-10	0	42	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	14	-31	3	0	-10	0	65	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	65	

NSR5

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	42	-32	3	0	0	0	39	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	20	-26	3	-5	0	0	41	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	23	-35	3	-5	-10	0	52	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	80	-46	3	-5	-10	0	45	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	53	

NSR6

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	35	-31	3	0	0	0	40	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	27	-28	3	-5	0	0	39	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	32	-38	3	-5	-10	0	49	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	73	-45	3	-5	-10	0	46	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	51	

NSR7

Location	Reference Plant	Quantity	Source Strenght		Horizonal Distance (m)	Correction, dB(A)					At NSR	Criteria
			SWL/SPL, dB(A)	Total SWL/SPL, dB(A)		Distance [1][2]	Façade	Barrier [3]	Mitigation	Tonaloty	SPL, dB(A)	SPL, dB(A)
Tower Block, Plant Room at 3/F	VRV - Daikin RUXYQ36AB	1	SPL[1] 68	68	33	-30	3	-5	0	0	36	Day/Evening: 65 Night: 55
Low Block, Plabt Room at 3/F	VRV - Daikin RUXYQ44AB	1	SPL[1] 69	69	54	-35	3	0	0	0	37	
West Façade of Tower Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	99	52	-42	3	-5	-10	0	45	
West Façade of Low Block (2/F - 3/F)	Fan with 8600 m3/hr @ 750 Pa	1	SWL[2] 99	103	59	-43	3	0	-10	0	53	
	Fan with 17000 m3/hr @ 750 Pa	1	SWL[2] 101									
										Total	54	

[1] The Distance Correction is based on SPL measured at 1m.
[2] The Distance Correction is based on SWL.
[3] For NSR that has no direct line of sight to the Noise Source, Barrier Correction of -5dB has been adopted.

VRV X SERIES Outdoor Lineup

Outdoor Unit																	
Model			RUXYQ8AB	RUXYQ10AB	RUXYQ12AB	RUXYQ14AB	RUXYQ16AB	RUXYQ18AB	RUXYQ20AB	RUXYQ22AB	RUXYQ24AB	RUXYQ26AB	RUXYQ28AB	RUXYQ30AB	RUXYQ32AB	RUXYQ34AB	RUXYQ36AB	RUXYQ38AB
Horse Power		HP	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
Combination			—	—	—	—	—	—	—	—	12+12	10+16	12+16	8+22	10+22	12+22	14+22	16+22
Power Supply			3-Phase 50Hz 380V															
★1 Cooling Capacity		kW	22.4	28.0	33.5	40.0	45.0	50.4	56.0	61.5	67.0	73.0	78.5	83.9	89.5	95.0	101.5	106.5
★2 Heating Capacity		kW	25.0	31.5	37.5	45.0	50.0	56.5	63.0	69.0	75.0	81.5	87.5	94.0	100.5	106.5	114.0	119.0
Power Consumption	Cooling	kW	5.08	7.00	6.70	10.30	12.70	14.30	16.50	18.6	17.40	19.70	21.40	23.7	25.6	27.3	29.3	31.3
	Heating	kW	5.34	7.15	6.81	10.90	12.40	14.00	16.50	18.70	17.60	19.55	21.20	24.00	25.85	27.51	29.60	31.10
Airflow Rate		m³/min	162	175	185	220	260	251	261	271	265+185	175+260	185+260	162+271	175+271	185+271	223+271	260+271
Dimensions (HxWxD)		mm	1657×930×765			1657×1240×765				1657×930×765+1657×930×765			1657×930×765+1657×1240×765				1657×1240×765+1657×1240×765	
External Static Pressure		Pa								81								
★3 Sound Level	Front Sound Level	dB(A)	57	58	60		61	62		63		62	63	64			65	
	Surround Sound Level	dB(A)	60	61	63		64	65		66		65	66	67			68	
Night Quiet Mode		dB(A)	40							43								
Piping Connections	Liquid	mm	Φ9.5		Φ12.7					Φ15.9				Φ19.1				
	Gas	mm	Φ19.1	Φ22.2	Φ25.4			Φ28.6						Φ31.8			Φ38.1	
Weight		kg	186	193	215	288			322		430	461	503	506	513	537	610	
Refrigerant	Type		R410A															
	Charge	kg	7.9	8.2	9.3	10.5	10.6		13.6		16.4	16.80	19.5	21.5	21.80	22.90	24.10	24.20
Operation Range	Cooling	°CDB	-5~50°CDB															
	Heating	°CWB	-20~15.5°CWB															
★4 Max. Fuse Amps	MFA	A	25		30	35				50			55		60		80	
★4 Min. Circuit Amps	MCA	A	16.1	18.0	20.1	24.4	26.0	34.8	39.6	43.6	40.2	44.0	46.1	59.7	61.6	63.7	68.0	69.6

Outdoor Unit																	
Model			RUXYQ40AB	RUXYQ42AB	RUXYQ44AB	RUXYQ46AB	RUXYQ48AB	RUXYQ50AB	RUXYQ52AB	RUXYQ54AB	RUXYQ56AB	RUXYQ58AB	RUXYQ60AB	RUXYQ62AB	RUXYQ64AB	RUXYQ66AB		
Horse Power		HP	40	42	44	46	48	50	52	54	56	58	60	62	64	66		
Combination			16+22	20+22	22+22	8+16+22	10+16+22	12+16+22	10+20+22	10+22+22	12+22+22	14+22+22	16+22+22	16+22+22	20+22+22	22+22+22		
Power Supply			3-Phase 50Hz 380V						3-Phase 50Hz 380V									
★1 Cooling Capacity		kW	111.9	117.5	123.0	128.9	134.5	140.0	145.5	151.0	156.5	163.0	168.0	173.4	179.0	184.5		
★2 Heating Capacity		kW	125.5	132.0	138.0	144.0	150.5	156.5	163.5	169.5	175.5	183.0	188.0	194.5	201.0	207.0		
Power Consumption	Cooling	kW	32.9	35.1	37.2	38.4	38.3	40.0	42.1	44.2	45.9	47.9	48.9	51.5	53.7	55.8		
	Heating	kW	32.70	35.20	37.40	38.40	38.30	39.90	42.40	44.60	46.20	48.30	49.80	51.40	53.90	56.10		
Airflow Rate		m³/min	261+271	261+271	271+271	162+260+271	175+260+271	185+260+271	175+261+271	175+271+271	185+271+271	223+271+271	240+271+271	251+271+271	261+271+271	271+271+271		
Dimensions (HxWxD)		mm	1657×1240×765+1657×1240×765			1657×930×765+1657×1240×765+1657×1240×765			1657×930×765+1657×1240×765+1657×1240×765			1657×1240×765+1657×1240×765+1657×1240×765						
External Static Pressure		Pa							81									
★3 Sound Level	Front Sound Level	dB(A)	65			66						67				68		
	Surround Sound Level	dB(A)	68			69						70				71		
Night Quiet Mode		dB(A)	43						45									
Piping Connections	Liquid	mm	Φ9.5			Φ12.7			Φ19.1					Φ22.2				
	Gas	mm	Φ19.1			Φ28.6			Φ31.8					Φ41.3				
Weight		kg	644			796	800	825	837.0		839.0	932			968			
Refrigerant	Type		R410A															
	Charge	kg	27.20			32.10	32.40	33.5	36.4		36.3	37.70	37.80		40.80			
Operation Range	Cooling	°CDB	-5~50°CDB															
	Heating	°CWB	-20~15.5°CWB															
★4 Max. Fuse Amps	MFA	A	95		100				120	130	135	140		150	155	160		
★4 Min. Circuit Amps	MCA	A	78.4	83.2	87.2	93.7	87.6	89.7	101.2	105.2	107.3	111.6	113.2	122.0	126.8	130.8		

★1 : Indoor Temp. at 27°CDB, 19°CWB; Outdoor Temp. at 35°CDB

★2 : Indoor Temp. at 20°CDB; Outdoor Temp. at 2°CDB, 1°CWB

★3 : Sound level: The operation sound levels are conversion values in anechoic chamber. In practice, sound levels tend to be higher than the specified values due to ambient noise or reflection. Front sound level measured at a point 1m in front of the unit. Surround sound: measured at 4 points (front, rear, left and right) of 1m in front of the unit.

★4 : MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker). MCA is used to select wire size.

Remark : 1. System Connection Ratio: 50%~130%

2. Additional refrigerant to be charged : R (kg)

R = Total length(m) of liquid piping size at 22.2mm x 0.36 + Total length(m) of liquid piping size at 19.1mm x 0.26 + Total length(m) of liquid piping size at 15.9mm x 0.17 + Total length(m) of liquid piping size at 12.7mm x 0.11+ Total length(m) of liquid piping size at 9.5mm x 0.057 + Total length(m) of liquid piping size at 6.4mm x 0.022

APPENDIX 7-1

AERIAL PHOTOS

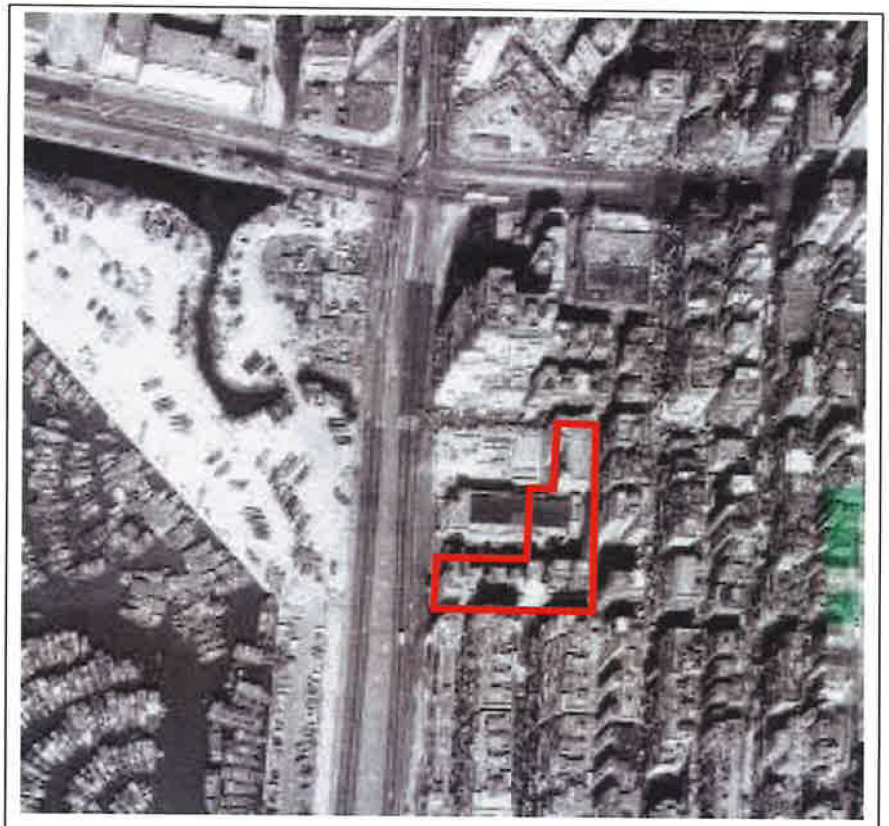
Appendix 7-1 - Aerial Photos



Year: 1963 **Photo No. 4929**

Description:

The area is developed and low-rise buildings can be seen within the project site.



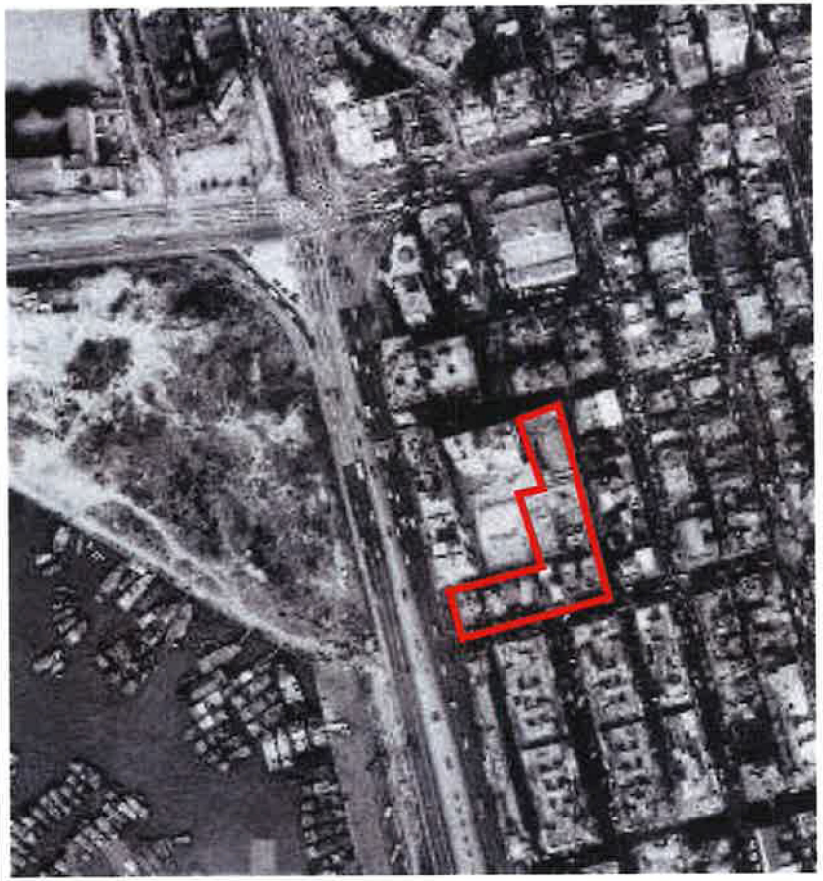
Year: 1975 **Photo No. 11299**

Description:

No significant changes can be seen in the project site

Project Site

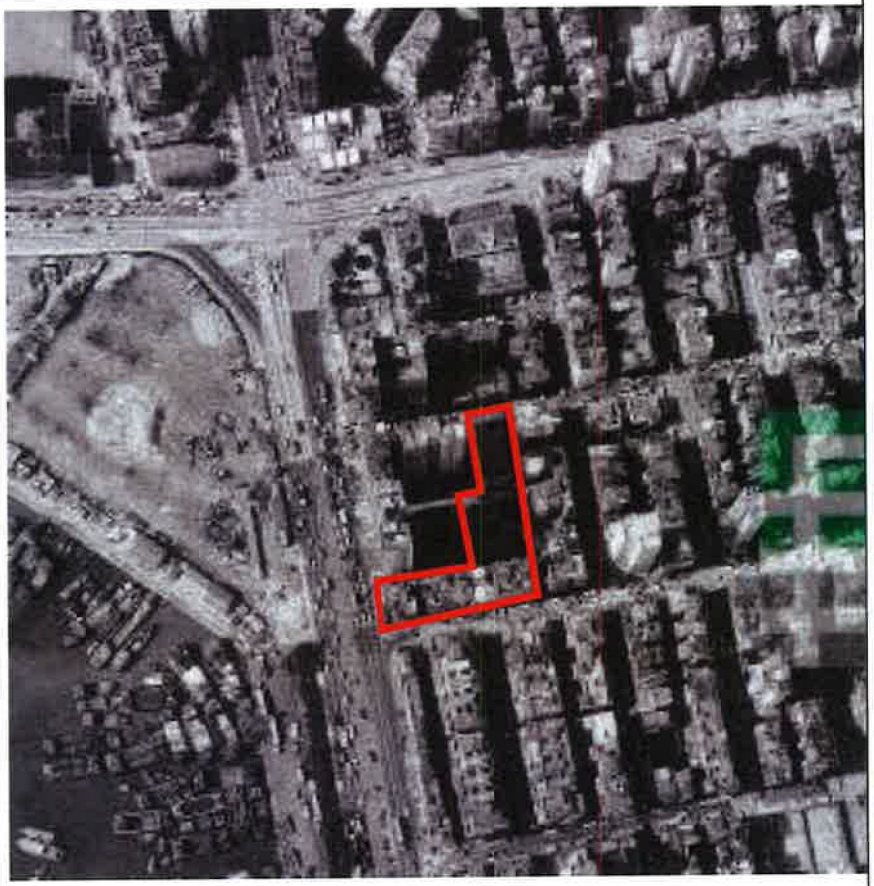
Appendix 7-1 - Aerial Photos



Year: 1983 **Photo No. 47465**

Description:

Demolished of buildings and construction of Rest Garden can be observed at the project site.



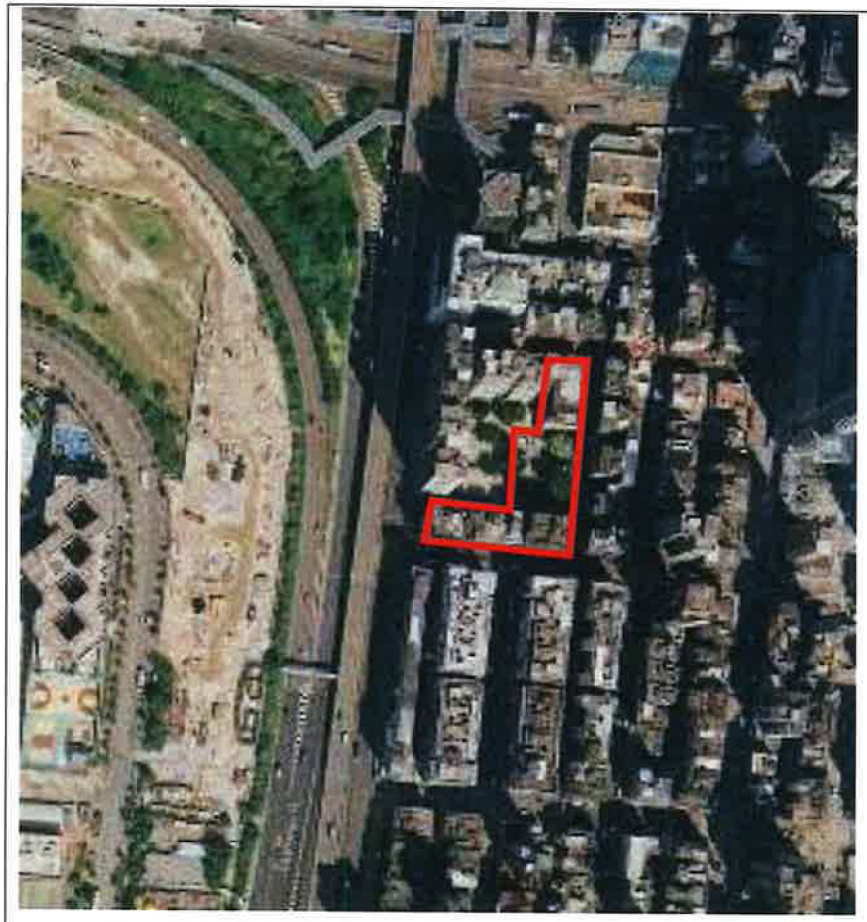
Year: 1992 **Photo No. A30380**

Description:

No significant changes can be seen in the project site

Project Site

Appendix 7-1 - Aerial Photos



Year: 2004 **Photo No. CW60256**

Description:

No significant changes can be seen in the project site



Year: 2015 **Photo No. CW114679**

Description:

No significant changes can be seen in the project site

Project Site

Appendix 7-1 - Aerial Photos



Year: 2019 **Photo No. E054129C**

Description:

No significant changes can be seen in the project site

Project Site

APPENDIX 7-2

SITE WALKOVER CHECKLIST

Site Walkover Checklist (24th Feb 2020)

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

The site is located on a flat ground.

State the size and location of the nearest residential communities.

The site is located within a residential community and the size is approximately 30,000m².

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

No.

Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
1. What are the main activities/operations at the above address?	-	N/A (No site owner/occupier were met in the site during the site survey)
2. How long have you been occupying the site?	-	N/A
3. Were you the first occupant on site? If yes, what was the usage of the site prior to occupancy?)	-	N/A
4. Prior to your occupancy, who occupied the site?	-	N/A
5. What were the main activities/operations during their occupancy?	-	N/A
6. Have there been any major changes in operations carried out at the site in the last 10 years?	-	N/A
7. Have any polluting activities been carried out in the vicinity of the site in the past?	-	N/A
8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage?	-	N/A
9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	-	N/A
10. Do you have any registered hazardous installations as defined under relevant ordinances? If yes, please provide details.)	-	N/A
11. Are any chemicals used in your daily operation? (If yes, please provide details.)	-	N/A
• Where do you store these chemicals?	-	N/A

12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	-	N/A
13. Has the facility produced a separate hazardous substance inventory?	-	N/A
14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.)	-	N/A
15. How are material received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cistems, vaults and cylinders)?	-	N/A
16. Do you have any underground storage tanks? (If yes, please provide details.)	-	N/A
• How many underground tanks do you have on site?	-	N/A
• What are the tanks constructed of?	-	N/A
• What are the contents of these tanks?	-	N/A
• Are the pipelines above or below ground?	-	N/A
• If the pipelines area below ground, has any leakage and integrity testing been performed?	-	N/A
• Have there been any spills associated with these tanks?	-	N/A
17. Are there any disused underground storage tanks?	-	N/A
18. Do you have ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	-	N/A
19. How are the wastes disposed of?	-	N/A
20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	-	N/A
21. Have any spills occurred on site? (If yes, please provide details.)	-	N/A
• When did the spill occur?	-	N/A
• What were the substances spilled?	-	N/A
• What was the quantity of material spilled?	-	N/A
• Did you notify the relevant departments of the spill?	-	N/A
• What were the actions taken to clean up the spill?	-	N/A
• What were the areas affected?	-	N/A
22. Do you have any records of major renovation of your site or rearrangement of underground utilities, pipework/underground tanks (If yes, please provide details.)	-	N/A
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	-	N/A
24. Are there any known contaminations on site? (If yes, please provide details.)	-	N/A
25. Has the site ever been remediated? (If yes, please provide details.)	-	N/A

Observations

	Yes/No	Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floor)?	No	Only the public areas have been inspected. The privacy areas with potential land contamination source, i.e chemical storage area within hardware shops, were not inspected.
2. What are the conditions of the bund walls and floors?	-	-
3. Are any surface water drains located near to drum storage and unloading areas?	No	-
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	No	No additional waste other than residential and commercial waste identified.
5. Is there a storage site for the waste?	No	-
6. Is there an on-site landfill?	No	-
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please provide details.)	No	Only the public areas have been inspected.
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	No	Only the public areas have been inspected.
9. Are there any potential off-site sources of contamination?	No	-
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	No	-
11. Are there any sumps, efficient pits, interceptors or lagoons on site?	Yes	Efficient pits were found in the Thistle Street Rest Garden
12. Any noticeable odours during site walkover?	No	Any
13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluid, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam?	Yes	Lubricating oils, hydraulic fluid, and cleaning solvents are likely selling in the hardware shops. The packing machine in recycle shop should also use lubricating oils.

APPENDIX 7-3

SITE PHOTOS

Appendix 7-3 – Site Photos

Photo No. 1








Description:

The ground floor shops in 1-27 (odd number) Shantung Street.

Appendix 7-3 – Site Photos

Photo No. 2

Description: The ground floor shops in Ferry Street, near the Shantung Street Junctuion.

Appendix 7-3 – Site Photos

Photo No. 3





Description:

The ground floor shops in Thistle Street.

Appendix 7-3 – Site Photos

Photo No. 4





Description:

Thistle Street Rest Garden

Appendix 7-3 – Site Photos

Photo No. 5

Description: The ground floor shops in 2 Nelson Street

APPENDIX 7-4

CORRESPONDENCES AND RECORDS FROM EPD AND FSD

CINOTECH 漢臻
consultants limited

Room 1710, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel.: (852) 2151 2083 Fax: (852) 3107 1388
Website : http://www.cinotech.com.hk
E-mail : info@cinotech.com.hk

Our Ref: **CCL/IA19021/ks200213a**

Environmental Protection Department
Environmental Compliance Division
Regional Office (East)
MongKok

8th floor, Cheung Sha Wan Government Offices,
303 Cheung Sha Wan Road, Kowloon

By Mail
13 Feb 2020

Attn.: Mr. KWAN Yiu Keung, John

Dear Sir,

STRICTLY CONFIDENTIAL

Environmental Assessment for Proposed Urban Renewal Authority Development Scheme at Mong Kok
Enquiry on Record of Land Contamination

We, Cinotech Consultants Ltd., have been commissioned by the Urban Renewal Authority (URA) to conduct a Land Contamination Assessment to investigate the environmental acceptability for a Proposed Development Scheme at Mong Kok.

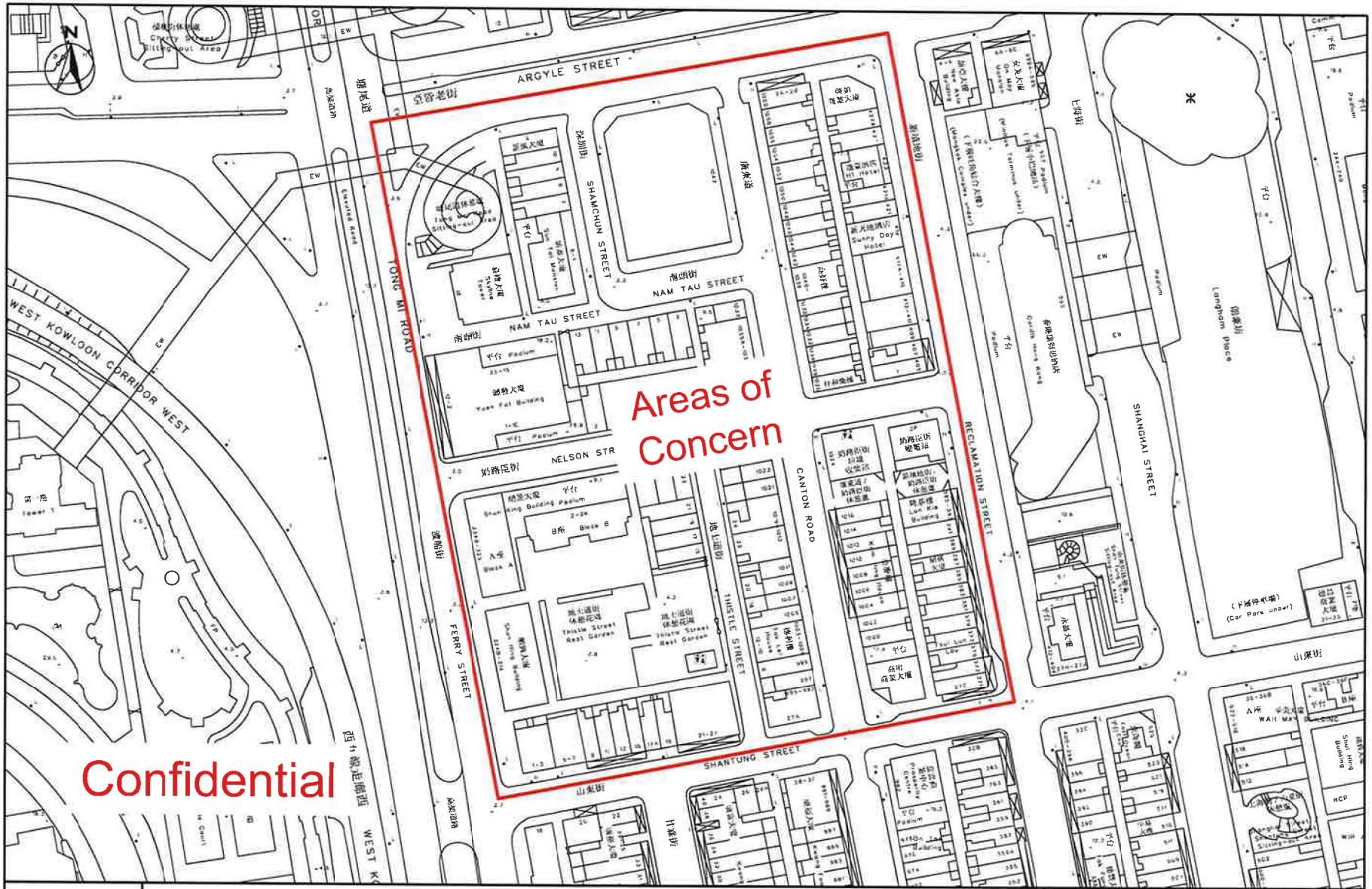
I am writing to enquire if there is any past record of registered chemical waste producers and reported accidents of chemical leakage or spillage within or in the vicinity of the proposed works. A location plan covering the areas of concern is attached for reference.

Your reply by 28 February 2020 will be much appreciated. If you need any further clarification, please contact our Colman Wong at 2151 2068 or the undersigned at 2151 2091.

Yours sincerely,

KS Lee
Project Manager

Encl. Figure – Areas of Concern
c.c. URA Ms. Y.T. Li (Planning & Design Division) (by e-mail)



CINOTECH
Cinotech Consultants Limited

Environmental Assessment
Urban Renewal Authority Development Scheme
Areas of Concern

SCALE	1:1000 @ A3	DATE	Feb 2020
CHECK	KC	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	A
			RDV -

本署檔案
OUR REF : (12) in EP410/M4/1 Pt.2
來函檔案
YOUR REF :
電　話
TEL NO : 2150 8020
圖文傳真
FAX NO : 2402 8275
網　址
HOMEPAGE : http://www.epd.gov.hk/

Environmental Protection Department
Environmental Compliance Division
Regional Office (East)
8/F., Cheung Sha Wan Government Offices
303 Cheung Sha Wan Road
Kowloon

環境保護署
環保法規管理科
區域辦事處(東)
九龍長沙灣道 303 號
長沙灣政府合署 8 樓

CONFIDENTIAL

11 March 2020

Cinotech Consultants Ltd.
Room 1710, Technology Park,
18 On Lai Street, Shatin,
New Territories
(Attn.: Mr. K S LEE, Project Manager)

Dear Mr. LEE,

Re: Environmental Assessment for Proposed Urban Renewal Authority Development Scheme at Mong Kok
Enquiry on Record of Land Contamination

I refer to your letter of 13 February 2020 on the subject.

Regarding your request for information on land contamination within the areas of concern, please find our responses as follow.

Records of Chemical Waste Producers Registration

Under the Waste Disposal (Chemical Waste) (General) Regulation, the Director of Environmental Protection has maintained a register containing the names of producers of chemical waste, the locations of the premises where the chemical waste is produced and the descriptions of the businesses or activities concerned. The register is open for inspection by the public at the Territory Control Office of this Department on 25/F., Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong. The contact person for making appointment is Mr. Dennis LEUNG at 2835 1017.

Spillage / Leakage Records

As far as this office is concerned, we are not aware of any record of spillage / leakage of chemicals within the areas of concern. However, please be reminded that this information is not exhaustive. You may need to seek further advice from other relevant government departments or parties and previous users of the building on this issue.

Thank you for your attention.

Yours faithfully,

(Marco C. W. WU)
for Director of Environmental Protection

CINOTECH 漢臻
consultants limited

Room 1710, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel.: (852) 2151 2083 Fax: (852) 3107 1388
Website : http://www.cinotech.com.hk
E-mail : info@cinotech.com.hk

Our Ref: **CCL/IA19021/ks200213b**

Fire Services Department
Fire Services Headquarters Command
Management Group (MG)
9th Floor, Fire Services Headquarters Building
1 Hong Chong Road, Tsim Sha Tsui East, Kowloon

By Mail
13 Feb 2020

Attn.: To whom it may concern

Dear Sir/Madam,

STRICTLY CONFIDENTIAL

Environmental Assessment for Proposed Urban Renewal Authority Development Scheme at Mong Kok
Enquiry on Record of Land Contamination

We, Cinotech Consultants Ltd., have been commissioned by the Urban Renewal Authority (URA) to conduct a Land Contamination Assessment to investigate the environmental acceptability for a Proposed Development Scheme at Mong Kok.

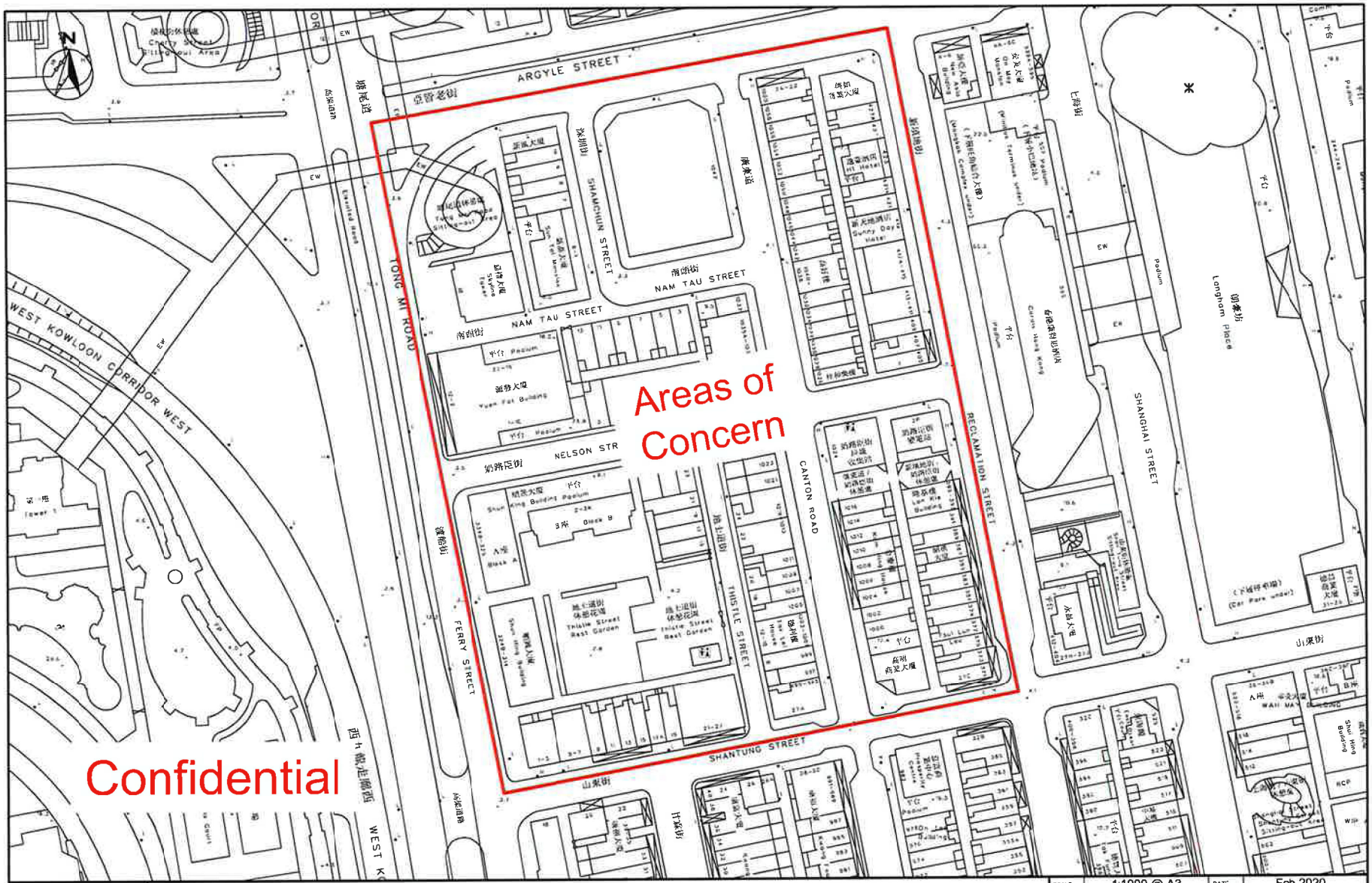
I am writing to enquire if there is any past record of dangerous goods license and reported accidents of dangerous goods leakage or spillage within or in the vicinity of the proposed works. A location plan covering the areas of concern is attached for reference.

Your reply by 28 February 2020 will be much appreciated. If you need any further clarification, please contact our Colman Wong at 2151 2068 or the undersigned at 2151 2091.

Yours faithfully,

KS Lee
Project Manager

Encl. Figure – Areas of Concern
c.c. URA Ms. Y.T. Li (Planning & Design Division) (by e-mail)



CINOTECH
Cinotech Consultants Limited

Environmental Assessment
Urban Renewal Authority Development Scheme

Areas of Concern

SCALE	1:1000 @ A3	DATE	Feb 2020
CHECK	KC	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	A
		REV	-

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.

本處檔號 **OUR REF.** : (50) in FSD GR 6-5/4 R Pt. 27
來函檔號 **YOUR REF.** : CCL/IA19021/ ks200424
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2739 5879
電　　話 **TEL NO.** : 2733 7741

25 May 2020

CINOTECH Consultants Limited
Room 1710, Technology Park,
18 On Lai Street, Shatin, N.T.
(Attn: KS LEE, Project Manager)

Dear KS LEE,

Environmental Assessment for
Proposed Urban Renewal Authority Development Scheme at Mong Kok
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 13.2.2020 and subsequent letter of 24.4.2020 regarding the captioned request and reply below in response to your questions.

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(KONG Wai-chung)
for Director of Fire Services

Appendix 7

Drainage & Sewerage Impact Assessment (DSIA) Report

Urban Renewal Authority
Shantung Street / Thistle Street
Development Scheme
(YTM-012)

Drainage Impact Assessment Report

(V1.0)

October 2020

Approved By 

(Project Manager: K.S. Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LIMITED
Room 1710, Technology Park
18 On Lai Street
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

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3 CONCLUSION ---------- **8**

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Figure 2 Layout of Existing Drainage in the Neighbourhood of the Site
Figure 3 Drainage Zoning and Proposed Pipes

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Table 2 Runoff Coefficients
Table 3 Comparison of Drainage Discharge from the Site
Table 4 Capacities of Existing Drainage Pipes
Table 5 Capacities of Proposed Drainage Pipes

APPENDICES

Appendix I Layout Plan for Proposed Development
Appendix II Drainage from Catchment Zone
Appendix III Detailed Calculation of Pipe Capacities

1 INTRODUCTION

Background

1.1 The Urban Renewal Authority (URA) has proposed Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). This Drainage Impact Assessment (DIA) is to support the submission of a draft Development Scheme Plan (DSP) with its planning proposal to the Town Planning Board (TPB) for consideration.

1.2 The Scheme is located between Nelson Street, Thistle Street, Shantung Street and Ferry Street. It is currently zoned as "Residential (Group A)" (R(A)) and "Open Space" (O) on the Approved Mong Kok Outline Zoning Plan No. S/K3/32. The Scheme comprises 2 rows of dilapidated buildings and part of existing LCSD's Thistle Street Rest Garden ("Rest Garden"). The location of the site is shown in **Figure 1**.

1.3 Cinotech Consultants Limited was commissioned by URA to conduct this assessment aiming to assess any potential drainage impact brought by the proposed development. Architectural drawings and technical information of the subject site were largely provided by the project architect and other project team members.

2 DRAINAGE IMPACT ASSESSMENT

Review Existing Drainage

2.1 The site area is partly permeable due to the grassland and partly impermeable due to the concrete pavement. According to DSD records, the site is not within any of DSD flooding black spots; and there have been no records of any minor flooding near the site over the past 10 years.

2.2 The existing drainage network is based on Drainage Record Plan shown in **Figure 2**. According to the Drainage Record Plan No. 11NW19, the nearest public drainage manhole served by DSD are SMH4012833, SMH4012836 and SMH4012975. SMH4012833 & SMH4012836 flow out to public manhole to discharge along Thistle Street and SMH4012975 flow out to discharge along Shantung Street.

2.3 The stormwater run-off from Thistle Street Rest Garden is currently collected by SMH4012974 and SMH4012833.

2.4 The pipe (from SMH4012836 to SMH4012837) and the pipe (from manhole SMH4012833 to SMH4012835) should be removed as it is located within the site boundary. New pipes would be proposed to cater the drainage discharge from the new development.

Impact Assessment

2.5 The Scheme area is proposed to be rezoned to "R (A)" to redevelop the area for high-density residential development, with commercial uses always permitted on the lowest three floors of a building or in a purpose-designed non-residential portion of a building. Under current notional design, the Scheme propose to develop 2 buildings and a sunken plaza. It includes a composite building (Tower Block) on the southern side of 25 residential storeys (about 300 units) and a 7 storey podium for club house, podium garden, G/IC facilities and retail uses. A GIC/retail block (Low Block) of 6 storeys (above ground) for retail shops and G/IC is located on the northern side of the site. A 2-storey basement ancillary car park will be provided for loading/unloading bays and private car parking spaces. About 780m^2 of LCSD's Rest Garden (the affected POS) is included in the Scheme and will be re-configured to create a new entrance at the corner of Shantung Street and Thistle Street to enhance its accessibility and visibility from the main pedestrian routes. An additional sunken plaza of about 200 m^2 with open space and retail shops will be provided within the Scheme to create an interesting square for public enjoyment. The notional layout plan of the proposed development is shown in **Appendix I**. The notional design is subject to change in detailed design stage.

2.6 Stormwater Drainage Manual – Planning, Design and Management", fifth edition, January 2018, (hereafter called "the DSD Manual") prepared by the DSD provides guidelines for the design of the drainage system. According to Table 10 of the DSD Manual, the recommended design return period based on flood levels is 50 years ("main rural catchment drainage channels") for conservative purpose.

2.7 The runoff coefficients of each zone are summarized in **Table 2**.

Table 2 Runoff Coefficients

Type of Area	Run-off Coefficient[1]
Grass	0.18
Paved/Concrete	0.9

Note:
1.The runoff coefficients are extracted from Section 7.5.2 of "Stormwater Drainage Manual – Planning, Design and Management", fifth edition, January 2018.

2.8 A hydraulic calculation has been performed on the peak flows from a 1:50 year rainstorm with rainfall intensity according to the DSD Manual. The catchments are shown in **Figure 3**. The volumes of stormwater runoff of each zone are summarized in **Table 3**. The detailed calculations are shown in **Appendix II.**

Table 3 Comparison of Drainage Discharge from the Site

	Area (m^2)			Total Drainage Discharge (L/s)
	Paved	Unpaved	Total	
Catchment A (Residential Building)	750.4	0.0	750.4	41.1
Catchment B (Open Space)	226.8	56.7	283.5	15.7
Catchment C (Low Block & Sunken Plaza)	622.3	0.0	622.3	38.9
Rest Garden	1388.4	137.0	1525.8	84.0
Catchment R1	1256.0	0.0	1256.0	75.6
Catchment R2	954.0	0.0	954.0	62.8

Note:
1. Detailed calculations are shown in **Appendix II**.
2. Paved and unpaved area for the proposed development subject to minor changes in detailed design stage.

2.9 The runoff from each catchment should be directed to the nearest existing manhole (see **Figure 3**) The hydraulic calculations of the full capacities for the existing pipe connecting to the public drainage system are summarized in **Table 4**. The detailed calculation can be found in Table A in **Appendix III.**

Table 4 Capacities of Existing Drainage Pipes

Drainage Pipe	Upstream Manhole no.	Downstream Manhole no.	Full Capacity[1] (L/s)	Catchment	Peak Flow (L/s)	Percentage
Pipe A1	SMH4012974	SMH4012975	23	Rest Garden	84.0	**371%**
Pipe A2	SMH4012975	SMH4012976	70	Rest Garden	84.0	**119%**
Pipe B1	SMH4012837	SMH4012835	48	B & R1	91.3	**191%**
Pipe B2	SMH4012835	SMH4012832	87	B, C, R1 & R2	193.0	**221%**
Pipe B3	SMH4012832	SGJ4001331	87	B, C, R1 & R2	193.0	**221%**

Note:
1. Calculated by Colebrook-White Equation. The detailed calculation is shown in **Appendix III**.
2. **Bold** for surcharged pipes.

2.10 From the calculation detailed in **Appendix III**, Pipes A1, A2, B1, B2 and B3 are all surcharged. Upgrading works for those pipes are required.

Drainage Discharge from Project to Public Drainage System

Catchment A (Residential Building)

2.11 Drainage from Catchment A (Residential building) will be collected by a new terminal manhole (STMH-01) then discharged via a new pipe (PP01) to SMH4012999 and then to the box culvert (SBP4000706) (3300×3300mm) along Shantung Street.

Catchment B (Open Space)

2.12 Total calculated drainage discharge of Catchment B (Open Space) is 15.7 L/s. The surface run-off from Catchment B is proposed to be collected by a new terminal manhole (STMH-02) and discharged via a new pipe (PP02), which connected to the public manhole SMH4012837 along Thistle Street.

Catchment C (Low Block & Sunken Plaza)

2.13 Total calculated drainage discharge of Catchment C (*Low Block & Sunken Plaza*) is 38.9 L/s. The stormwater from Catchment C is proposed to be collected by a new terminal manhole (STMH-03) and discharged via a new pipe (PP03), which connected to the public manhole SMH4012835 along Thistle Street.

Public Drainage System in the Vicinity

2.14 A new manhole (STMH-04) is proposed to collect all drainage discharge from the Thistle Street Rest Garden and discharged via a new pipe (PP04), with 300mm diameter and a slope of 1/50 connected to public manhole SMH401975. Due to the discharged from PP04 (84 L/s), the downstream Pipe A1 (from SMH4012974 to SMH4012975) and Pipe A2 (from SMH4012975 to SMH4012976) will be surcharged. Therefore, Pipes A1 & A2 are proposed to be upgraded to 300 mm pipes which have sufficient capacity to cater the drainage discharge from the Rest Garden to the box culvert along Shantung Street.

Pipes along Thistle Street

2.15 The full capacity of existing Pipe B1 (from SMH4012837 to SMH4012835) is 48 L/s. For conservative approach, the catchment R1 has been included into the flow calculation, Pipe B1 will be surcharged (191% of full capacity). The full capacity of existing Pipe B2 (from SMH4012835 to SMH4012832) and Pipe B3 (from SMH4012832 to SGJ4001331) are 87 L/s and also surcharged (221% of full capacity). Pipes B1 is proposed to be upgraded to 450mm diameter, while Pipes B2 & B3 are proposed to be upgraded to 600mm diameter, to cater the discharge runoff from the catchment along Thistle Street.

2.16 The new pipes and upgrading pipes are proposed to be constructed to collect stormwater from the site and the nearby catchment, the capacity of the proposed pipes is listed in **Table 5** below. Detailed calculation is presented in Table B of **Appendix III**.

Table 5 Capacities of Proposed Drainage Pipes

Drainage Pipe	Upstream Manhole no.	Downstream Manhole no.	Diameter (mm)	Gradient[2]	Full Capacity[1] (l/s)
PP01	STMH-01	SMH4012999	225	0.020	51
PP02	STMH-02	SMH4012837	225	0.020	51
PP03	STMH-03	SMH4012835	225	0.020	51
PP04	STMH-04	SMH4012974	300	0.020	124
Pipe A1	SMH4012974	SMH4012975	300	0.027	145
Pipe A2	SMH4012975	SMH4012976	300	0.030	152
Pipe B1	SMH4012837	SMH4012835	450	0.004	142
Pipe B2	SMH4012835	SMH4012832	600	0.004	307
Pipe B3	SMH4012832	SGJ4001331	600	0.004	307

Note:
1. Calculated by Colebrook-White Equation. The detailed calculation is shown in **Appendix III**.
2. The gradients of the proposed upgrade pipes remain unchanged.

3 CONCLUSION

3.1 The proposed redevelopment is not expected to induce any flooding risk to the existing box culverts as the total drainage discharge from the catchment is less than the existing development.

3.2 The pipe (from SMH4012836 to SMH4012837) and the pipe (from manhole SMH4012833 to SMH4012835) should be removed as it is located within the site boundary. New pipes would be proposed to cater the drainage discharge from the new development.

3.3 Pipes and manholes are proposed and upgraded to be constructed around the site boundary to collect stormwater from the Site.

3.4 A new manhole (STMH-01) is proposed to cater drainage discharge from Catchment A (Residential Building); and a new 225 mm pipe (PP01) is proposed to connect to SMH4012999 to discharge to SGJ4018540 at the box culvert (3300×3300mm) along Shantung Street.

3.5 A new manhole (STMH-02) is proposed to cater drainage discharge from Catchment B (Open Space); and a new 225 mm pipe (PP02) is proposed to connect to the public manhole SMH4012837 along Thistle Street.

3.6 A new manhole (STMH-03) is proposed to cater drainage discharge from Catchment C (Low Block & Sunken Plaza); and a new 225 mm pipe (PP03) is proposed to the public manhole SMH4012835 along Thistle Street.

3.7 A new manhole (STMH-04) is proposed to cater drainage discharge from Rest Garden; and a new 300 mm pipe (PP04) is proposed to connect to manhole SMH4012974. Pipe sections from SMH4012974 to SMH4012976 are proposed to be upgraded to 300 mm pipes and connected to undertake the discharge from the Rest Garden to the box culvert along Shantung Street.

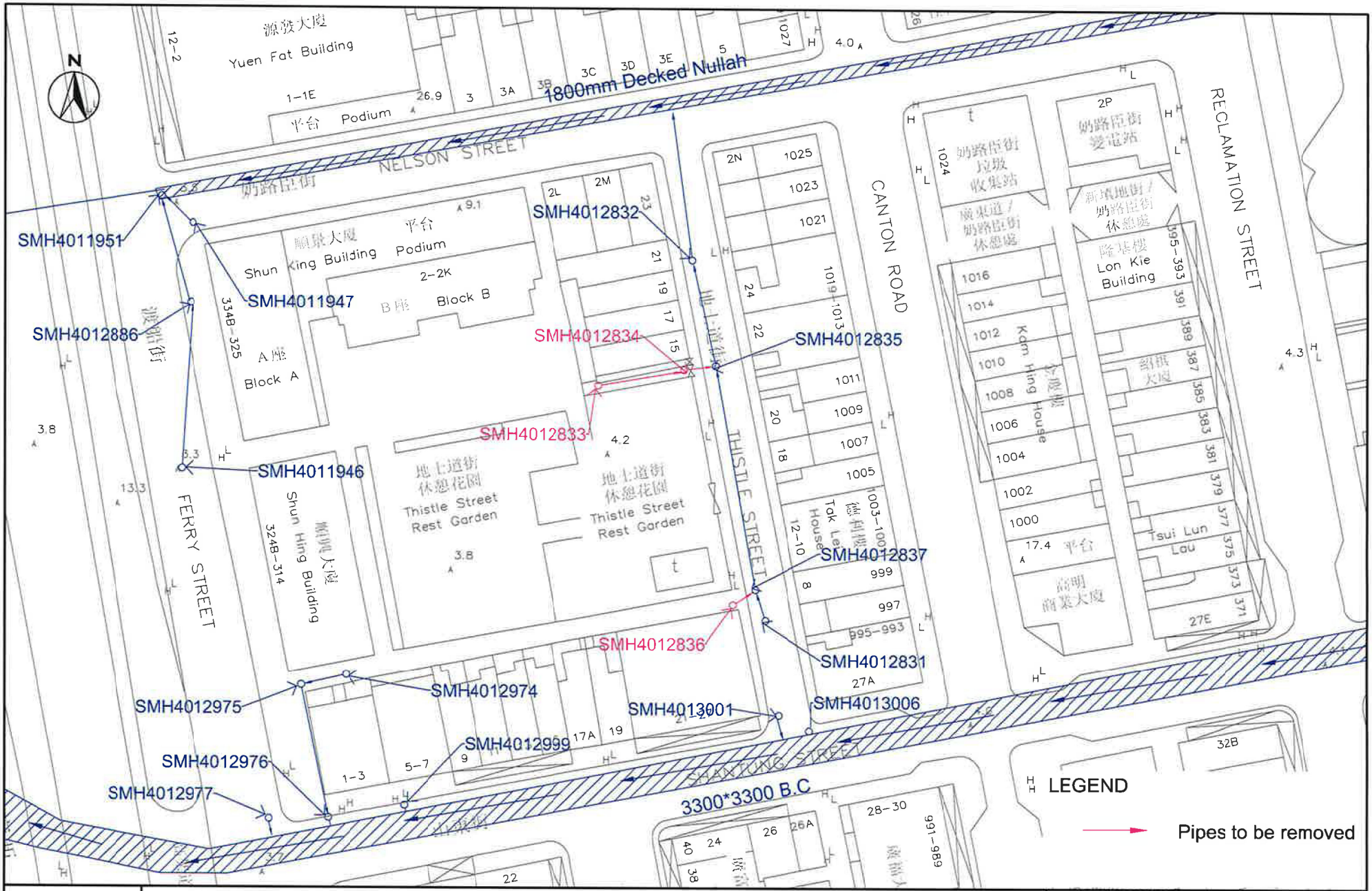
3.8 Pipe A1 (from SMH4012974 to SMH4012975) and Pipe A2 (from SMH4012975 to SMH4012976) are proposed to be upgraded to 300 mm diameter.

3.9 Pipe B1 (from SMH4012837 to SMH4012835), Pipe B2 (from SMH4012835 to SMH4012832) and Pipe B3 (from SMH4012832 to SGJ4001331) along Thistle Street are proposed to be upgraded to 450 mm, 600 mm and 600 mm diameters respectively, to cater the discharge runoff from the catchment.

3.10 In conclusion, the public drainage network in the vicinity of the site would have sufficient capacity to cater for the expected 1:50 year drainage flow from the proposed use of the Site.

FIGURES


N
WEST KOWLOON CORRIDOR WEST
EW
Elevated Road
TONG MI ROAD
HANCHUN STREET
NAM TAU STREET
NAM TAU STREET
Tong Mi Road Sitting-out Area
Skyline Tower
Sun Fai Mansion
Yuen Fat Building
Podium
Sunny Day Hotel
Podium
Cordis Hong Kong
EW
EW
Podium
Langham Place
(Car Park under)
SHANGHAI STREET
RECLAMATION STREET
NELSON STREET
Shun Kong Building
Podium
2-2K
Block B
Block A
Shun Wing Building
Thistle Street Rest Garden
Thistle Street Rest Garden
SITE
THISTLE STREET
CANTON ROAD
Lan Kie Building
Kwan Fung Building
Shun Fung Street Sitting-out Area
Tai Lun Lau
FERRY STREET
SHANTUNG STREET
Tower 1
Hoi Tai House
Tennis Court
Tennis Court
WEST KOWLOON CORRIDOR WEST
Elevated Road
KAM LAM STREET
Kwong Wing Building
Kwong Yu Building
Kwong Fu Building
Kwong Yuen Building
Kwong Ming Building
Kwong Yue Building
Kwong Yuen Building
Kwong Yuen Building
Kwong Yuen



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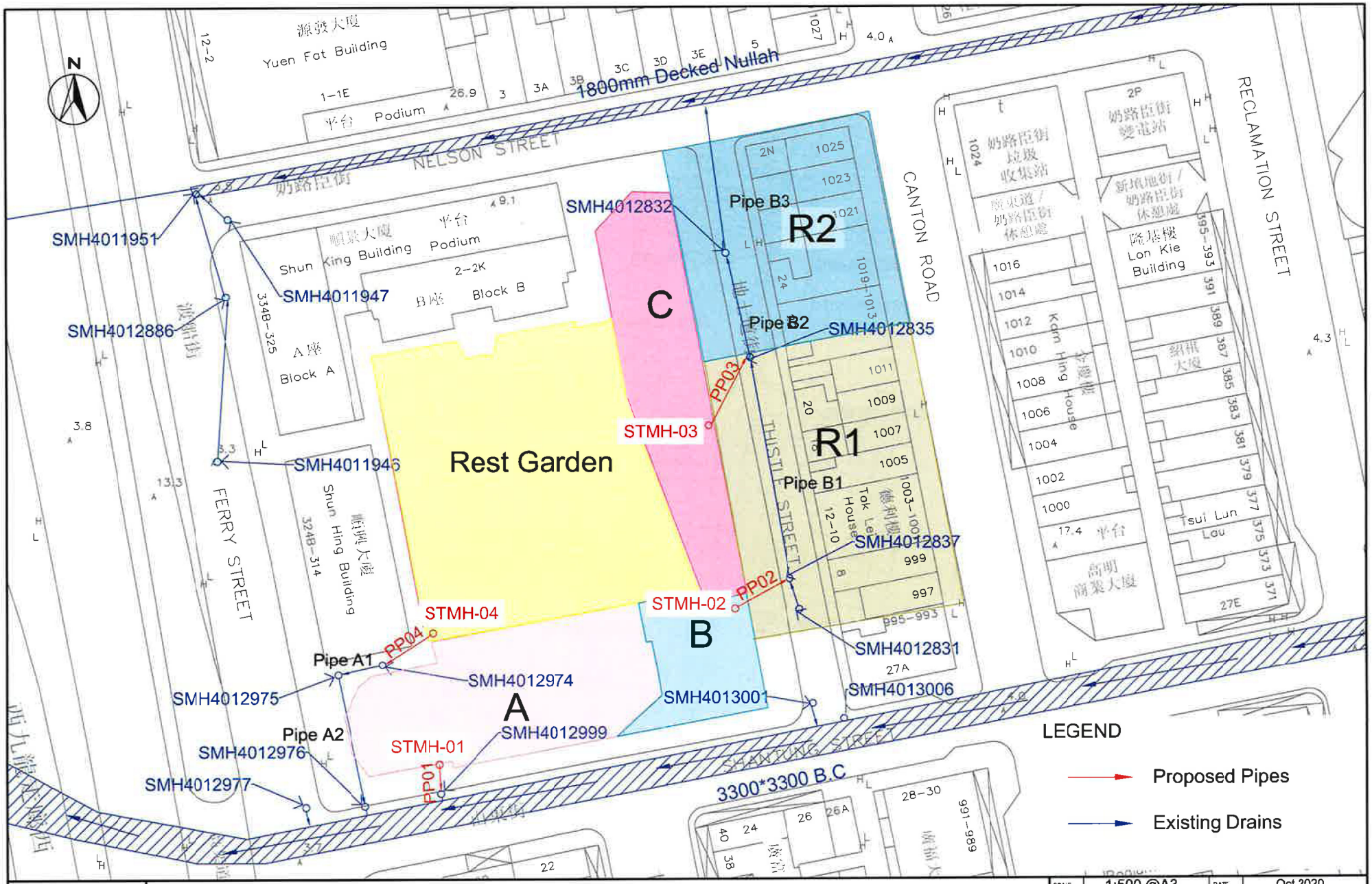
URA Shantung Street / Thistle Street Development Scheme (YTM-012)

Layout of Existing Drainage in the Neighbourhood of the Site

SCALE	1:500 @A3	DATE	Oct 2020
CHECK	EY	DRAWN	CC
JOB No.	IA19021	DRAWING No.	2
		REV.	-



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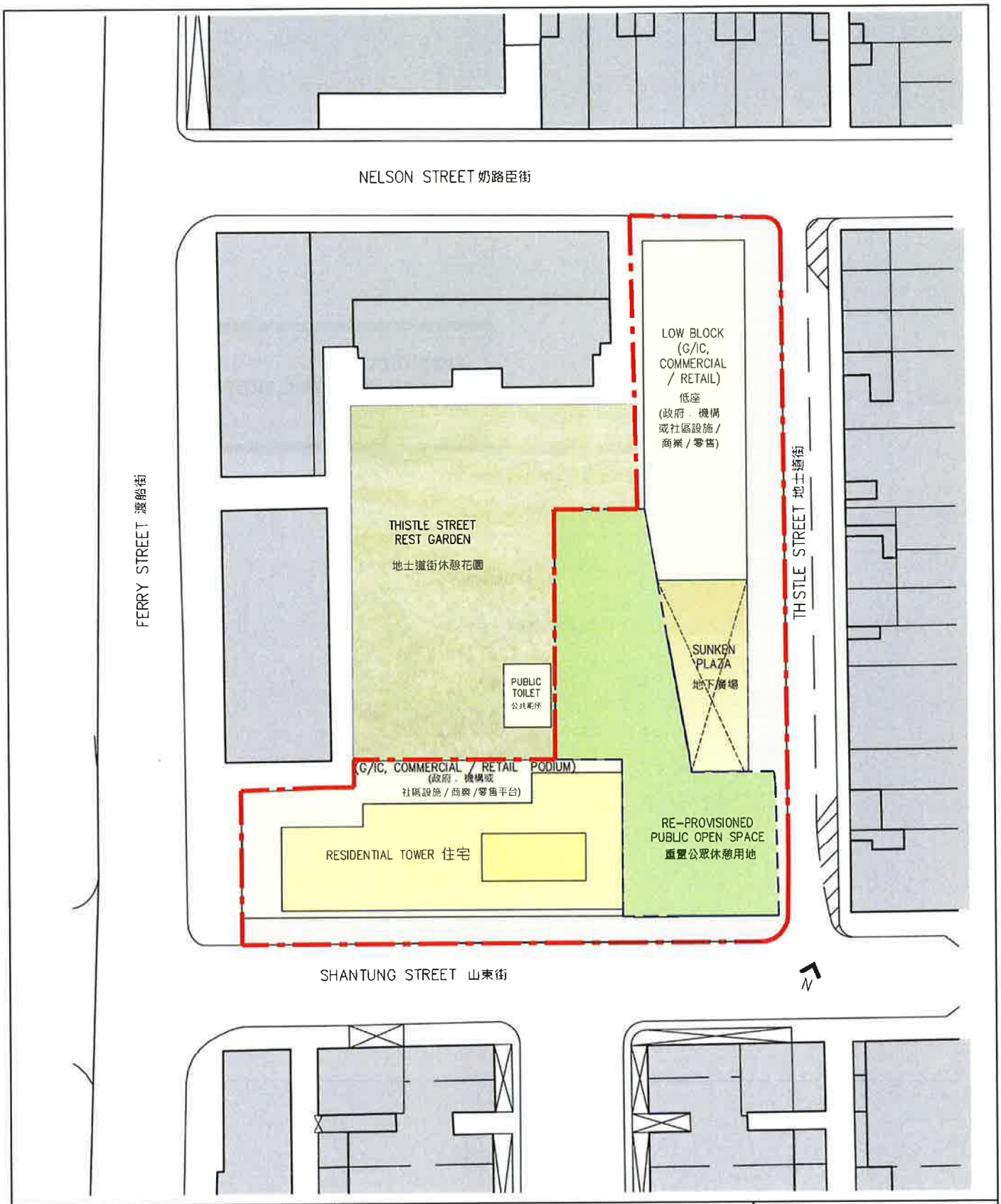
URA Shantung Street / Thistle Street Development Scheme (YTM-012)

Drainage Zoning and Proposed Pipes

SCALE	1:500 @A3	DATE	Oct 2020
CHECK	EY	DRAWN	CC
JOB No.	IA19021	DRAWING No.	3
			REV -

APPENDIX I
LAYOUT PLAN FOR PROPOSED DEVELOPMENT



THE SCHEME

(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Block Plan

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

SCALE 1 : 600 (A4)

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012

APPENDIX II
DRAINAGE FROM CATCHMENT ZONE

Appendix II - Drainage from Catchment Zone

Catchment Zone	A	B	C	Rest Garden	R1	R2
Description	Residential Building	Open Space	Low Block + Sunken Plaza	Thistle Street Rest Garden	Thistle Street and building (997-1011 Canton Road)	Thistle Street and building (1013-1025 Canton Road)
Catchment Area (m^2)	750.4	283.5	622.3	1525.8	1256.0	954.0
Slope (m per 100m)[1]	0.40	0.40	0.40	0.40	0.40	0.40
L (m)	68.3	25.1	35.7	51.0	47.0	28.9
TOC (min)	6.1	2.5	3.3	4.3	4.0	2.5
Runoff intensity (mm/hr)[2]	218.9	263.1	250.2	237.0	240.7	263.1
Paved area (m^2)	750.4	226.8	622.3	1388.4	1256.0	954.0
Runoff coefficient (paved)	0.9	0.9	0.9	0.9	0.9	0.9
Drainage discharge (L/s)	41.1	14.9	38.9	82.3	75.6	62.8
Unpaved area (m^2)[3]	0	56.7	0	137	0	0
Runoff coefficient (unpaved)	0.18	0.18	0.18	0.18	0.18	0.18
Drainage discharge (L/s)	0.0	0.7	0.0	1.6	0.0	0.0
Total Drainage discharge (L/s)	41.1	15.7	38.9	84.0	75.6	62.8

Note:

[1] a slope of 1:250 is assumed for flat catchment area.

[2] The run-off intensity is calculated by the equation in Section 4.3.3 of the Drainage Manual:

$$i = \frac{a}{(t_d + b)^c}$$

where Table 3a - Storm Constants for 50years return period of HKO Headquarters are adopted.

a = 451.3

b = 2.46

c = 0.337

[3] The % green area of the entire existing LCSD Garden is about 9%, a similar unpaved area ratio would be applied to the re-provisioned rest garden. 20% of green area would be provided to the open space area (Catchment B).

APPENDIX III
DETAILED CALCULATION OF PIPE CAPACITIES

Appendix III - Detailed Calculation of Pipe Capacities

Table A - Caculation of Existing Pipe

Pipe No.	Upstream Manhole No.	Downstream Manhole No.	Upstream invert level (mP.D.)	Downstream invert level (mP.D.)	Length (m)	Diameter (m)	Area (m^2)	Hydraulic Radius (m)	Slope	Kinematic Viscosity (m^2/s)	Hydraulic Pipeline Roughness (m) [2]	Velocity (m/s)	Full Capacity (L/s)	Peak Flow (L/s)	Required Capacity	% of full capacity
Route 1 - West of Rest garden																
Pipe A1	SMH4012974	SMH4012975	2.68	2.5	6.6	0.15	0.018	0.038	0.027	1.14E-06	0.003	1.28	23	Rest garden	84.0	371%
Pipe A2	SMH4012975	SMH4012976	2.5	1.92	19.4	0.225	0.040	0.056	0.030	1.14E-06	0.003	1.77	70	Rest garden	84.0	119%
Route 2 - Pipes along Thistle Street																
Pipe B1	SMH4012837	SMH4012835	2.28	2.16	31.5	0.3	0.071	0.075	0.004	1.14E-06	0.006	0.68	48	B+R1	91.3	191%
Pipe B2[1]	SMH4012835	SMH4012832	2.16	-	15.6	0.375	0.110	0.094	0.004	1.14E-06	0.006	0.79	87	B+C+R1+R2	193.0	221%
Pipe B3[1]	SMH4012832	SGJ4001331	-	-	21.3	0.375	0.110	0.094	0.004	1.14E-06	0.006	0.79	87	B+C+R1+R2	193.0	221%

Note:
[1] As the invert level for Pipe B2 and B3 cannot be found on DSD's Drainage Record Plan, the slope is assumed to be the same as Pipe B1.
[2] The roughness coefficient for slimed concrete sewer under poor condition is adopted; the ks values are 3mm for velocities greater than 1.2m/s, otherwise 6mm.

Table B - Calculation of Proposed New and Upgrading Pipes

Pipe No.	Upstream Manhole No.	Downstream Manhole No.	Upstream invert level (mP.D.)	Downstream invert level (mP.D.)	Length (m)	Diameter (m)	Area (m^2)	Hydraulic Radius (m)	Slope	Kinematic Viscosity (m^2/s)	Hydraulic Pipeline Roughness (m)*	Velocity (m/s)	Full Capacity (L/s)	Peak Flow (L/s)	Required Capacity	% of full capacity
Proposed New Pipes																
PP01	STMH-01	SMH4012999	2.05	1.92	6.6	0.225	0.040	0.056	0.020	1.14E-06	0.006	1.27	51	A	41.1	81%
PP02	STMH-02	SMH4012837	2.47	2.28	9.6	0.225	0.040	0.056	0.020	1.14E-06	0.006	1.27	51	B	15.7	31%
PP03	STMH-03	SMH4012835	2.39	2.16	11.5	0.225	0.040	0.056	0.020	1.14E-06	0.006	1.27	51	C	38.9	77%
PP04	STMH-04	SMH4012974	2.85	2.68	8.4	0.3	0.071	0.075	0.020	1.14E-06	0.003	1.76	124	Rest garden	84.0	68%
Proposed Upgrading Pipes																
Pipe A1	SMH4012974	SMH4012975	2.68	2.50	6.6	0.3	0.071	0.075	0.027	1.14E-06	0.003	2.05	145	Rest garden	84.0	58%
Pipe A2	SMH4012975	SMH4012976	2.50	1.92	19.4	0.3	0.071	0.075	0.030	1.14E-06	0.003	2.15	152	Rest garden	84.0	55%
Pipe B1	SMH4012837	SMH4012835	2.28	2.16	31.5	0.45	0.159	0.113	0.004	1.14E-06	0.006	0.89	142	B+R1	91.3	64%
Pipe B2	SMH4012835	SMH4012832	2.16	-	15.6	0.6	0.283	0.150	0.004	1.14E-06	0.006	1.09	307	B+C+R1+R2	193.0	63%
Pipe B3	SMH4012832	SGJ4001331	-	-	21.3	0.6	0.283	0.150	0.004	1.14E-06	0.006	1.09	307	B+C+R1+R2	193.0	63%

Note:
*The upstream and downstream level of proposed pipes will be confirmed by pipe survey in detail design stage.
The location of the terminal manhole within the Site is subject to detail design.

Urban Renewal Authority
Development Scheme
Shantung Street / Thistle Street
(YTM-012)

Sewerage Impact Assessment Report

(V2.0)

October 2020

Approved By 

(Project Manager: K.S. Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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1 INTRODUCTION

1.1 The Urban Renewal Authority (URA) has proposed Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). This Sewerage Impact Assessment (SIA) is to support the submission of a draft Development Scheme Plan (DSP) with its planning proposal to the Town Planning Board (TPB) for consideration.

1.2 Cinotech Consultants Limited was commissioned by URA to conduct this assessment to assess any potential sewerage impact brought by the proposed development. Architectural drawings and technical information of the subject site were largely provided by the project architect and other project team members.

2 ENVIRONMENTAL SETTING

2.1 The Scheme is located between Nelson Street, Thistle Street, Shantung Street and Ferry Street. It is currently zoned as "Residential (Group A)" (R(A)) and "Open Space" (O) on the Approved Mong Kok Outline Zoning Plan No. S/K3/32. The Scheme comprises 2 clusters of dilapidated buildings and part of existing LCSD's Thistle Street Rest Garden ("Rest Garden"). The location of the site is shown in **Figure 1**. The gross site area is about 2,796 m^2 and net site area is about 1,660 m^2, subject to site survey.

2.2 The site is currently occupied by two clusters of dilapidated buildings, one facing Shantung Street, and one at the junction of Nelson Street and Thistle Street, as well as part of existing LCSD Rest Garden.

2.3 The site is surrounded by residential buildings on all sides. On-street wet market activities are found along the section of Nelson Street to the immediate north of the site. The Rest Garden is located to the immediate west of the site. Part of the western side of the site is close to Ferry Street and the West Kowloon Corridor (an elevated road).

3 SEWERAGE IMPACT ASSESSMENT

Sewage Discharge from Scheme

3.1 The Scheme area is proposed to be rezoned to "R(A)" to redevelop the area for high-density residential development, with commercial uses always permitted on the lowest three floors of a building or in a purpose-designed non-residential portion of a building. Under current notional design, the proposed development is planned to develop 2 buildings and a sunken plaza. It includes a composite building (Tower Block) on the southern side of 25 residential storeys (about 300 units) and a 7 storey podium for club house, podium garden, G/IC facilities and retail uses. A GIC/retail block (Low Block) of 6 storeys (above ground) for retail shops and G/IC is located on the northern side of the site. A 2-storey basement ancillary car park will be provided for loading/unloading bays and private car parking spaces. About 780 m^2 of LCSD's Rest Garden (the affected POS) is included in the Scheme and will be re-configured to create a new entrance at the corner of Shantung Street and Thistle Street to enhance its accessibility and visibility from the main pedestrian routes. An additional sunken plaza of about 200 m^2 with open space and retail shops will be provided within the Scheme to create an interesting square for public enjoyment. The proposed Gross Floor Area ("GFA") includes about 12,450 m^2 for domestic use, about 2,490 m^2 for non-domestic commercial uses, and about 2,850 m^2 of non-domestic GFA will be reserved for GIC provision in the Scheme. An existing public toilet will be re-provisioned outside the Scheme boundary. The proposed development layout is shown in **Appendix I**. The notional design is subject to change at detailed design stage. The population intake year of the proposed development is Year 2030.

3.2 Due to the redevelopment, the existing public sewer manholes FMH4011390 and the pipe between manhole FMH4011390 and FMH4011391 will be removed. **Figure 3** shows the proposed removal manhole (FMH4011390) and pipe. As the above sewer serves the Scheme area only, the public sewer service of nearby residents or shops will not be affected.

Residential Tower (Tower Block)

3.3 Based on population by-census 2016, the average domestic household size in Mong Kok West District Council Constituency Area is 2.6 persons; therefore the design residential population is about 780 persons (300 flats × 2.6). The population of retail shop, GIC and club house employees are estimated according to the usable floor area (UFA) per person and the

occupancy factor from code of practice for fire safety in building 2011, published by Building Department. **Table 1a** shows the population calculation of the residential building.

Table 1a Estimation of Residential Tower (Tower Block) Population

Section	No. of Flat [1]	Non-residential GFA (m^2)	Population Factor		Population	
			No. of person per flat [2]	Residential Population	Worker Density [4]	No. of Employee
Residential	300	-	2.6	780	-	-
Retail	-	235	-	-	3.5	8
G/IC	-	1800	-	-	3.3	59
Club House	-	682	-	-	3.3	23

[1] No. of Flat = 25 (Storeys)*12 (No. of Flat per Storey)

[2] The average domestic household size is 2.6 persons for Mong Kok West district according to Population By-census 2016.

[3] Occupancy factors for the corresponding type of accommodation are from Table B1 of Code of Practice for Fire Safety in Buildings 2011.

[4] The worker density for different sections are from Figure 9 of Commercial and Industrial Floor Space Utilization Survey. [1]

3.4 The estimated contributing population, sewage flow rate and peak flow from the residential tower are summarized in **Table 1b**. The peak flow is 21.9 L/s, applying the peaking factor including stormwater allowance of 8 for a contribution population less than 1,000.

Table 1b Estimation of Residential Tower Sewage Flow

Occupant Type	Unit Flow Factors [1] [4] (m^3/day/person)	No. of Occupants	Flow Rate (m^3/day)	Contributing population [2]	Peak Flow (L/s) [3]
Residential	0.27	780	210.6	-	-
Retail	0.28	8	2.2	-	-
GIC	0.28	59	16.5	-	-
Club House	0.28	23	6.4	-	-
Total	-	-	235.8	874	**21.9**

[1] EPD's Guidelines for Estimating Sewage Flows for Infrastructure Planning defining sewage flow parameter.
[2] The contribution population is 235.8 (m^3/day) / 0.27(m^3/day/person) = 874
[3] Peaking Factor of 8 for contributing population <1,000 is adopted and the operation hour is assumed to be 24 hours. The peak flow is the sum of flow rate of each occupant type × peaking factor.
[4] The Unit Flow Factors are 0.27 m^3/day/head for residential use, and 0.28 m^3/day/head for retail/club house/GIC use respectively.

[1] Commercial and Industrial Floor Space Utilization Survey, viewed Apr 2020, https://www.pland.gov.hk/pland_en/p_study/comp_s/cifsus/cifsusReport.pdf

Low Block

3.5 The Low Block comprises of retail shops, restaurants and GIC use area, **Table 2a** shows the population calculation of the Low Block.

Table 2a Estimation of Low Block Population

Section	Non-residential GFA (m^2)	Population	
		Worker Density (worker/100 m^2) [2]	No. of Employee [3]
Retail	1128	3.5	39
Restaurant	1128	5.1	58
G/IC	1050	3.3	35

[1] Occupancy factors for the corresponding type of accommodation are from Table B1 of Code of Practice for Fire Safety in Buildings 2011.
[2] The worker density for different sections are from Figure 9 of Commercial and Industrial Floor Space Utilization Survey 2005.
[3] A staff to occupant ratio of 1:10 is assumed for Retail, GIC and clubhouse to estimate the number of employees.

3.6 The estimated contributing population, sewage flow rate and peak flow from the Low Block are summarized in **Table 2b**. The peak flow is 10.4 L/s, applying the peaking factor including stormwater allowance of 8 for a contribution population less than 1,000.

Table 2b Estimation of Low Block Sewage Flow

Occupant Type	Unit Flow Factors [1] (m^3/day/person)	No. of Occupants	Flow Rate (m^3/day)	Contributing population [2]	Peak Flow (L/s) [3]
Retail	0.28	39	10.9	-	-
Restaurant	1.58	58	91.6	-	-
GIC	0.28	35	9.8	-	-
Total	-	-	112.4	417	**10.4**

[1] EPD's Guidelines for Estimating Sewage Flows for Infrastructure Planning defining sewage flow parameter.
[2] The contribution population is 112.4 (m^3/day) / 0.27(m^3/day/person) = 417
[3] Peaking Factor of 8 for contributing population <1,000 is adopted and the operation hour is assumed to be 24 hours. The peak flow is the sum of flow rate of each occupant type × peaking factor.

Sewage Discharge from the Re-provisioned Public Toilet

3.7 The sewage from the existing public toilet at Rest Garden is collected by manhole FMH4011390 and discharged via a 225mm diameter pipe. The public toilet and the pipe

connecting manhole FMH4011390 will be relocated after the redevelopment; the re-provisioned public toilet is shown in the ground floor layout plan in **Appendix I**.

3.8 **Table 3** shows the sewage discharge calculation from the re-provisioned public toilet. Assuming that male uses toilet for 1.95 minutes and female uses toilet for 2.61 minutes[2], all the sanitary fitment will be able to serve 292 number of uses each hour. The peak sewage flow is 3.7 L/s by applying the peaking factor including storm water allowance of 8 for contributing population less than 1000.

Table 3 Sewage Discharge from Re-provisioned Public Toilet

	Unit	Female W. C.	Male W. C.	Male Urinal	Disable W.C
Total number in the Project		3	2	3	1
Volume of flushing water	L	6	6	1	6
Volume of water for washing	L	2	2	2	2
Average occupy duration	min	2.61	1.95	1.31	2.61
Number of occupy per toilet in one hour	-	23	31	46	23
Total number of occupy in one hour	-	69	62	138	23
Total volume of sewage generated per hour	L	552	496	414	184
Total volume of sewage generated by Visitors per hour	L	1646			
Total volume of sewage generated by Visitors in whole day*	L	39,504			
Total number of visitors using toilet facilities per hour	person	292			
Average Flow Rate	L/s	0.15	0.14	0.12	0.05
Total Flow Rate	L/s	0.46			
Peaking Factor	-	8			
Peak Flow Rate	L/s	3.7			

* The open hours of the Public toilet is assumed to be 24 hours.

3.9 As the public toilet is proposed to be re-provisioned the remaining part of Thistle Street Rest Garden (outside the Scheme boundary), it is proposed that the sewage from the public toilet to be collected by its own terminal manhole and discharged via a set of 225mm diameter sewers which direct to FMH4011402. The proposed pipes are illustrated in **Figure 3** and the calculation will be shown in sections below.

[2] Development Bureau. 2015. Response to the concerns raised by the Members at the meeting of 9 November 2015 [online] Available at: http://www.legco.gov.hk/yr15-16/english/hc/sub_leg/sc01/papers/sc0120151113cb1-152-2-e.pdf. Last Accessed: 13 November 2019.

Sewerage Discharge from the Vicinity

3.10 The surrounding developments near the project site is sectioned into different catchment based on the existing sewerage system. **Figure 2** shows the sewage catchment areas in the vicinity and **Table 4** shows the developments in the catchment area and the total flow rate from each catchment. The population and detailed calculation of flow rate are presented in **Appendix II**. It should be noted that the actual sewage discharge route of Shun Hing Building (Catchment D) is uncertain due to the lack of information in the relevant record plans. Based on the best available information, for the assessment in Catchment D below, assumption has been made that its sewage shares the sewage route with the tenement buildings at Shantung Street within the Scheme boundary and discharged to sewer manhole FMH4011390 at Thistle Street. Additional pipes were proposed to re-divert the sewage from Shun Hing Building towards Shantung Street. The said proposal will be subject to change upon verification of the sewerage discharge route of Shun Hing Building at subsequent detailed design stage.

Table 4 Sewage Discharge from Surrounding Catchment

Catchment ID	Development	Total Flowrate / catchment (m^3/day)
A	2N Nelson Street	55.0
	1025 Canton Road	
	1023 Canton Road	
	1021 Canton Road	
	1013-1019 Canton Road	
B	15-23 Thistle Street	96.7
	1011 Canton Road	
	1009 Canton Road	
	1007 Canton Road	
	1005 Canton Road	
	Tak Lee House	
	999 Canton Road	
	8 Thistle Street	
C	997 Canton Road	23.6
	993-995 Canton Road	
D	Shun Hing Building	171.2

*The calculation is detailed in **Appendix II**.

Review Sewerage System

3.11 Since the population at the Site area is expected to increase after the redevelopment, the downstream sewer shall be checked for sufficient capacities to cater sewerage discharge. The capacities of the existing downstream foul sewer pipe sections (PS 01 – PS 09, **Figure 3**) are calculated by Colebrook-White Equation and listed in **Table 5**. The detailed calculation is shown in **Table A** of **Appendix III**.

Table 5 Capacity of Existing Foul Sewers

Segment	Upstream Manhole	Downstream Manhole	Full Capacity (L/s)
PS 01	FMH4011402	FMH4054970	14.7
PS 02	FMH4054970	FMH4054971	13.6
PS 03	FMH4054971	FMH4011404	12.2
PS 04	FMH4011404	FMH4011391	15.5
PS 05	FMH4011390	FMH4011391	35.2
PS 06	FMH4011391	FMH4012051	42.1
PS 07	FMH4012051	FMH4011988	37.9
PS 08	FMH4011988	FMH4011989	2933.1
PS 09	FMH4011989	FMH4011990	4598.5
Upstream PS 01	FMH4012042	FMH4011988	126.9
Upstream PS 02	FMH4012023	FMH4011988	1878.1
Upstream PS 03	FMH4012047	FMH4011989	350.3

*As some of the pipe's invert level cannot be found on the drainage record plan, only the manholes with invert levels are calculated and the pipes between is assumed to have an average slope.

3.12 **Table 6** shows a summary of the proportion of peak flow to full capacity from surrounding catchment area to each segment of existing pipe sections, the detailed calculation is shown in Table B of **Appendix III**.

Table 6 Proportion of Peak Flow to Full Capacity - Existing Pipes

Segment	Full Capacity (L/s)	Total Peak Flow (L/s)	Total Discharge Loading to Pipe Capacity (%)*
PS 01	14.7	10.3	70%
PS 02	13.6	10.3	75%
PS 03	12.2	35.4	**292%**
PS 04	15.5	35.4	**229%**
PS 05	35.2	24.3	69%
PS 06	42.1	45.1	**107%**
PS 07	37.9	66.4	**175%**
PS 08	2933.1	2071.3	71%
PS 09	4598.5	2421.6	53%

***Bold** for surcharged pipe.

3.13 PS 03, 04, 06 and 07 are required be upgraded due to the capacity are more than 100% full with the proposed redevelopment. PS 03, 04 and 06 are proposed be upgraded to 225 mm with

its original slope; While the slope of PS 07 is proposed be raised by changing the downstream invert level from -1.81mPD to -1.91mPD. Actual invert levels of the proposed pipes are subject to detailed design. Moreover, as the diameter of existing sewers PS 01 and 02 are 150 mm, those pipe sections should also be upgraded to 225 mm, to align with the proposed/upgraded upstream sewer pipes to avoid backflow.

3.14 The discharge loading and capacity of the upgrading pipe sections are shown in **Table 7** below and the detailed calculation can be found in **Appendix IV**.

Table 7 Proportion of Peak Flow to Full Capacity after Upgrading

Segment	Full Capacity (L/s)	Peak Flow (L/s)	Total Discharge Loading to Pipe Capacity (%)
PS 01	44.3	8.7	20%
PS 02	40.9	8.7	21%
PS 03	36.5	28.1	77%
PS 04	46.6	28.1	60%
PS 06	125.0	35.5	28%
PS 07	59.6	51.9	87%

3.15 The sewage discharge from the Low Block is proposed to be collected by a terminal manhole (FTMH03) and discharged via proposed pipe (PP 03), while the discharge from the residential tower and podium below would be diverted by another terminal manhole (FTMH01) and discharged via the proposed pipes (PP 01 & 02). The diameter and slope of the proposed pipes (PP 01 – PP 02 & PP 03) are ϕ225mm and 1:100 respectively.

3.16 As the re-provisioned Public Toilet will be handover to LCSD for ownership, management and maintenance, it is proposed that a separate manhole (FTMH04) and proposed pipes (PP 04 – PP 09) with 225mm diameter with a slope of 1:200 to collect the sewage discharge from the re-provisioned public toilet.

3.17 The terminal manholes will ultimately be connected to the public sewerage system. The proposed pipes are shown on **Figure 3**. The proposed new pipes are presented in **Table 8** below, the exact location of the new manholes and invert level will subject to future detail design.

Table 8 Proportion of Peak Flow to Full Capacity – Proposed Pipes

Segment	Catchment	Length (m)	Full Capacity (L/s)	Peak Flow (L/s)	Total Discharge Loading to Pipe Capacity (%)
PP01	Residential Building (Tower Block)	2.1	35.7	21.8	61%
PP02		27.0	35.7	21.8	61%
PP03	Low Block	6.9	35.7	10.4	29%
PP04	Re-provisioned Public Toilet	2.2	25.2	3.7	14%
PP05		20.4	25.2	3.7	14%
PP06		13.4	25.2	3.7	14%
PP07		32.6	25.2	3.7	14%
PP08		16.6	25.2	3.7	14%
PP09		6.7	25.2	3.7	14%
PP10	Re-diverted sewers for Shun Hing Building	5.0	57.6	15.9	28%
PP11		20.0	57.6	15.9	28%
PP12		10.0	57.6	15.9	28%

4 CONCLUSION

4.1 The Shantung Street / Thistle Street Development Scheme proposes to redevelop into a residential tower cum GIC/retail/clubhouse podium, a GIC/retail building, a sunken plaza with retail shops and connecting to the public open space.

4.2 The estimated daily sewage discharge from the proposed the Residential Tower (Tower Block) and the Low Block is 235.8 m^3/day and 112.4 m^3/day respectively. The terminal manhole (FTMH01) will collect sewage effluent from the proposed residential tower and connect to the public sewer at manhole FMH4012051. Terminal manhole (FTMH03) will collect all sewerage discharge from the proposed Low Block and ultimately discharge to the public sewer at manhole FMH4054971. The diameter and slope of the proposed pipes (PP 01 – PP 02 & PP 03) are ϕ225mm and 1:100 respectively.

4.3 The existing public toilet at Thistle Street Rest Garden will be relocated outside the Scheme boundary after redevelopment. A separate manhole (FTMH04) and proposed new pipe sections (PP 04 - PP 09) with 225mm diameter and slope of 1:200 are proposed to collect the sewage discharge from the public toilet. The proposed new pipes are summarised in **Table 9**.

Table 9 Proposed New Pipes

Catchment	New Pipe Sections	Connecting Public Manhole	Total Length (m)	Diameter (mm)	Slope (m)	Full Capacity (L/s)
Residential Building	PP 01 – PP 02	FMH4012051	29.0	225	1:100	35.7
Low Block	PP 03	FMH4054971	6.9	225	1:100	35.7
Public Toilet	PP 04 – PP 09	FMH4011402	91.9	225	1:200	25.2
Re-diverted sewers for Shun Hing Building	PP10 – PP12	FMH4011989	35.0	225	1:50	57.6

*The details of the proposed new pipes are shown in **Appendix IV** and illustrated in **Figure 3**.

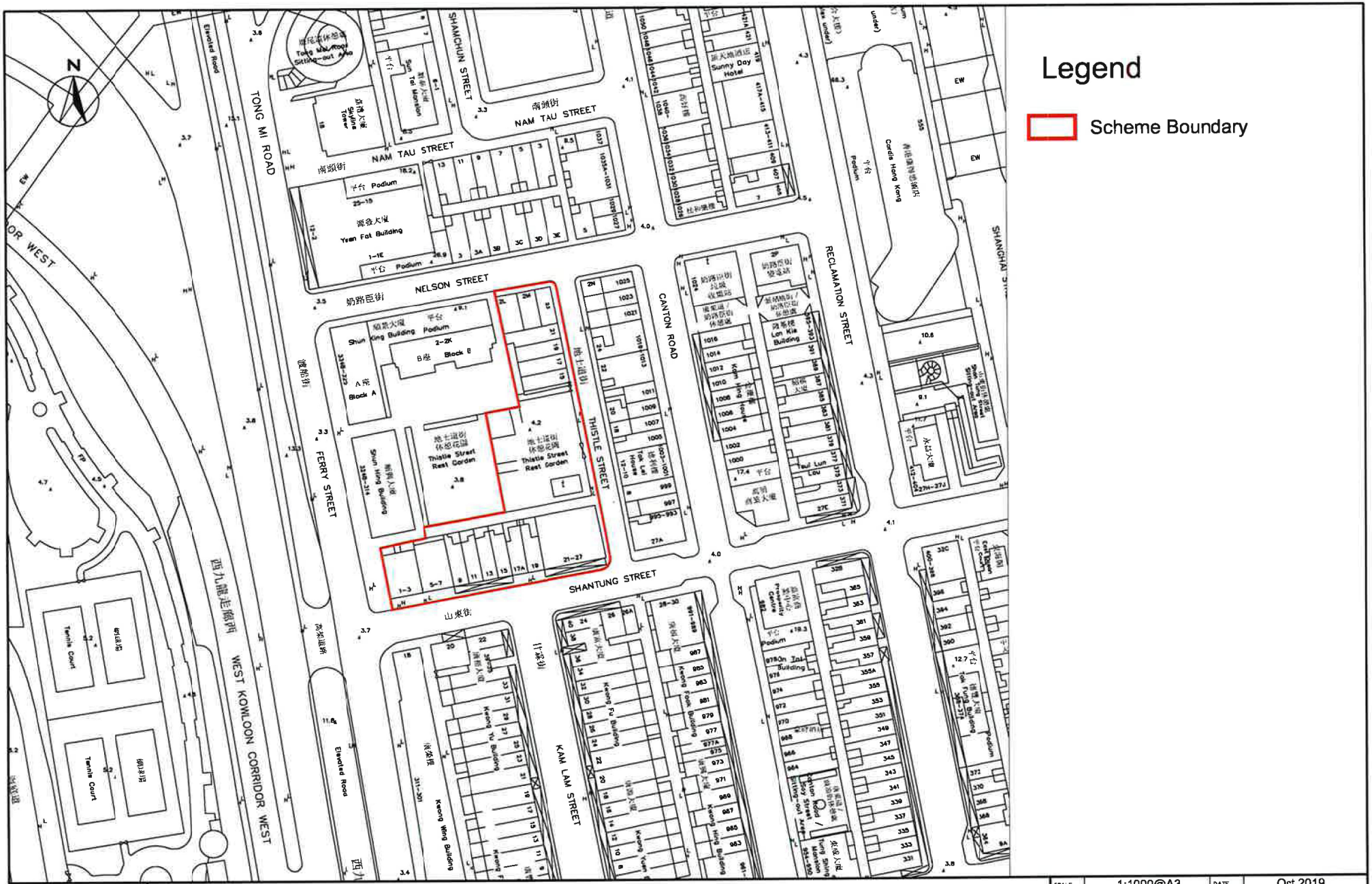
4.4 Some existing foul sewers in the vicinity of the site have insufficient capacity to cater for the expected sewage flows from the proposed use of the site and surrounding catchment, therefore pipe sections from manhole FMH4011402 to manhole FMH4012051 (PS 01 – PS 04 & PS 06) are proposed to be upgraded from 150mm to 225mm pipe; and the slope of pipe section between manhole FMH4012051 and manhole FMH4011988 (PS 07) is proposed to be increased for more capacity. Actual layout and invert levels of the proposed pipes are subject to detail design. The proposed upgrading pipes are summarised in **Table 10**.

Table 10 Proposed Upgrading Pipes

Segment	Upstream Manhole	Downstream Manhole	Diameter (mm)		Slope		Full Capacity (L/s)
			Existing	Proposed	Existing	Proposed	
PS 01	FMH4011402	FMH4054970	150	225	0.0153	0.0153	44.3
PS 02	FMH4054970	FMH4054971	150	225	0.0131	0.0131	40.9
PS 03	FMH4054971	FMH4011404	150	225	0.0104	0.0104	36.5
PS 04	FMH4011404	FMH4011391	150	225	0.0170	0.0170	46.6
PS 06	FMH4011391	FMH4012051	150	225	0.0939	0.0939	125.0
PS 07	FMH4012051	FMH4011988	225	225	0.0112	0.0214	59.6

4.5 The upgraded sewers would have sufficient capacity to cater for the sewage discharge from the proposed development and surrounding catchments; therefore, no adverse sewerage impact on the public sewerage system is expected.

Figures



CINOTECH
Cinotech Consultants Limited

Sewerage Impact Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Project Location

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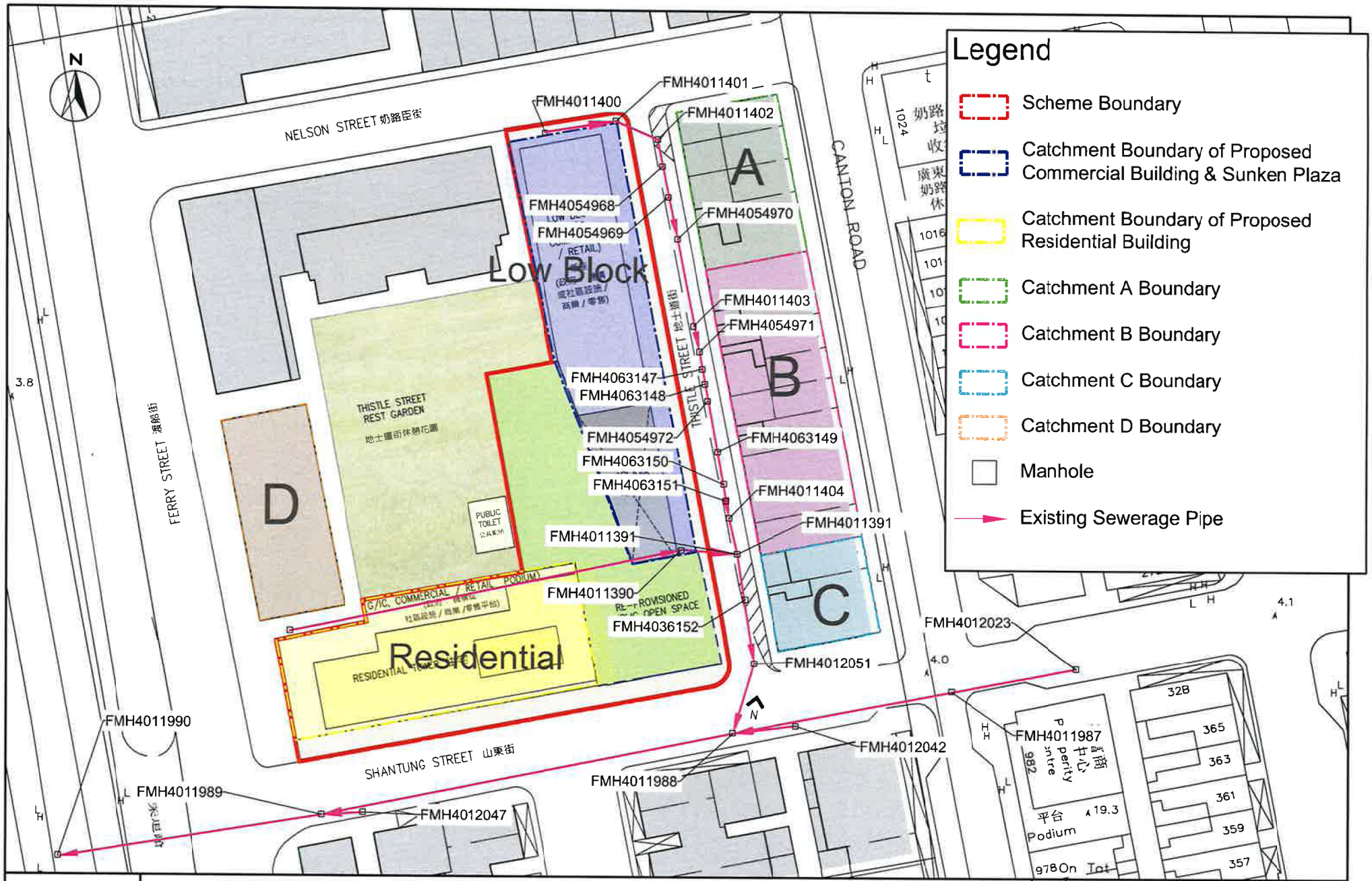
JOB No.	IA19012	FIGURE No. 1	REV -



CINOTECH
Cinotech Consultants Limited

Sewerage Impact Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Sewage Catchment Areas in the Vicinity

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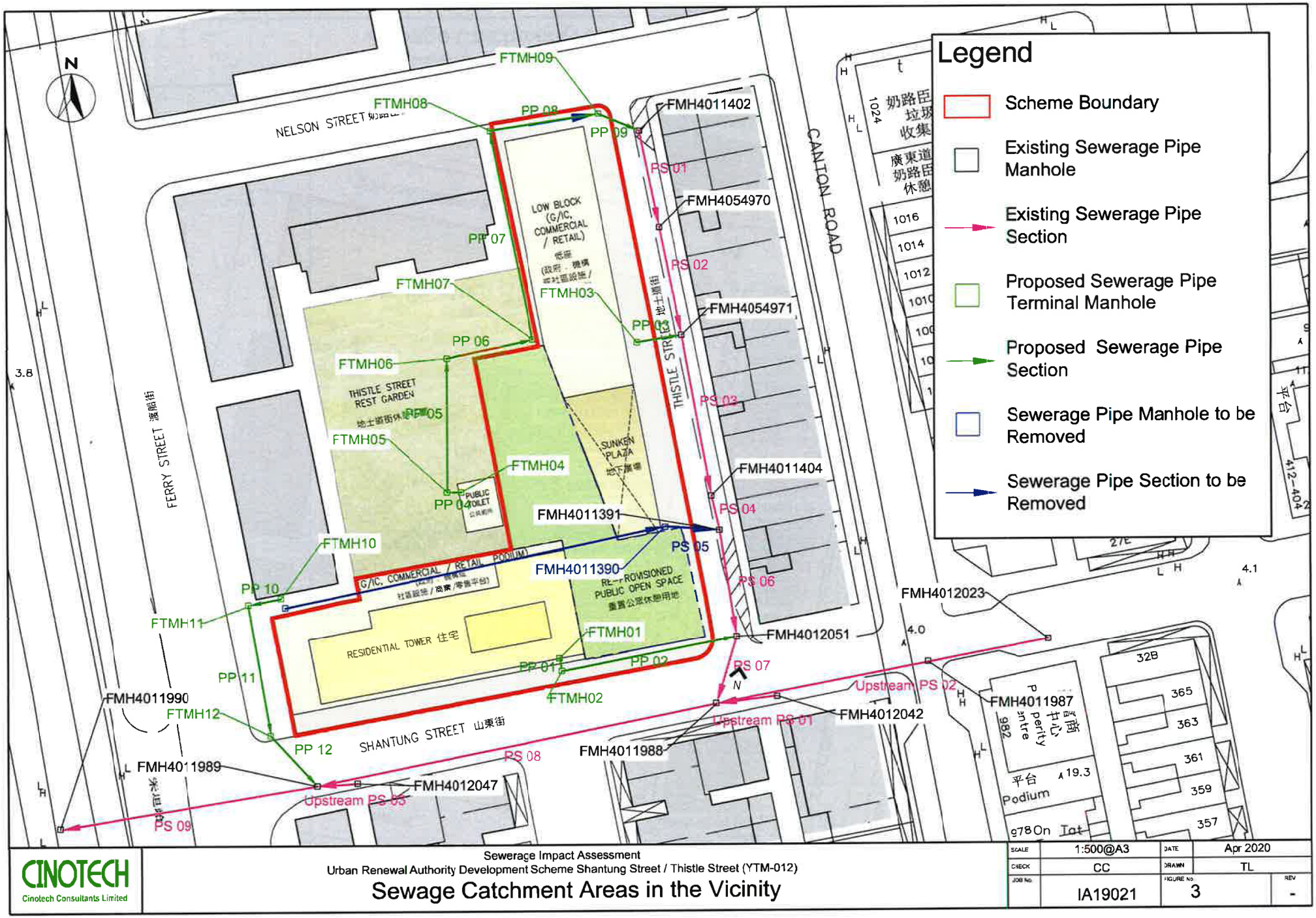

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Sewerage Impact Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Sewage Catchment Areas in the Vicinity

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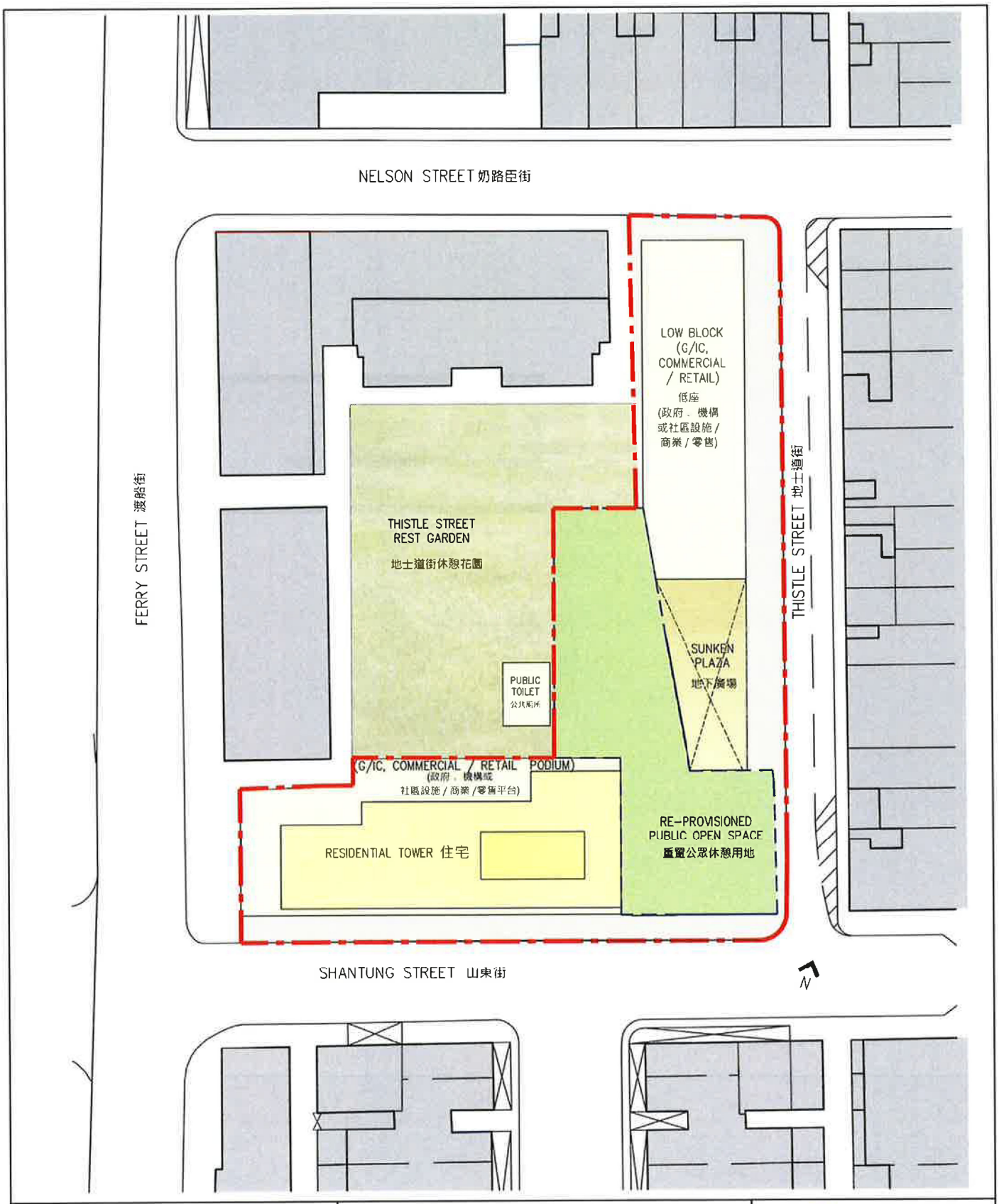
CHECK	CC	DRAWN	TL
JOB No.	IA19021	FIGURE No.	3
		REV	-

Appendix I

Proposed Development Layout



THE SCHEME

(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Block Plan

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

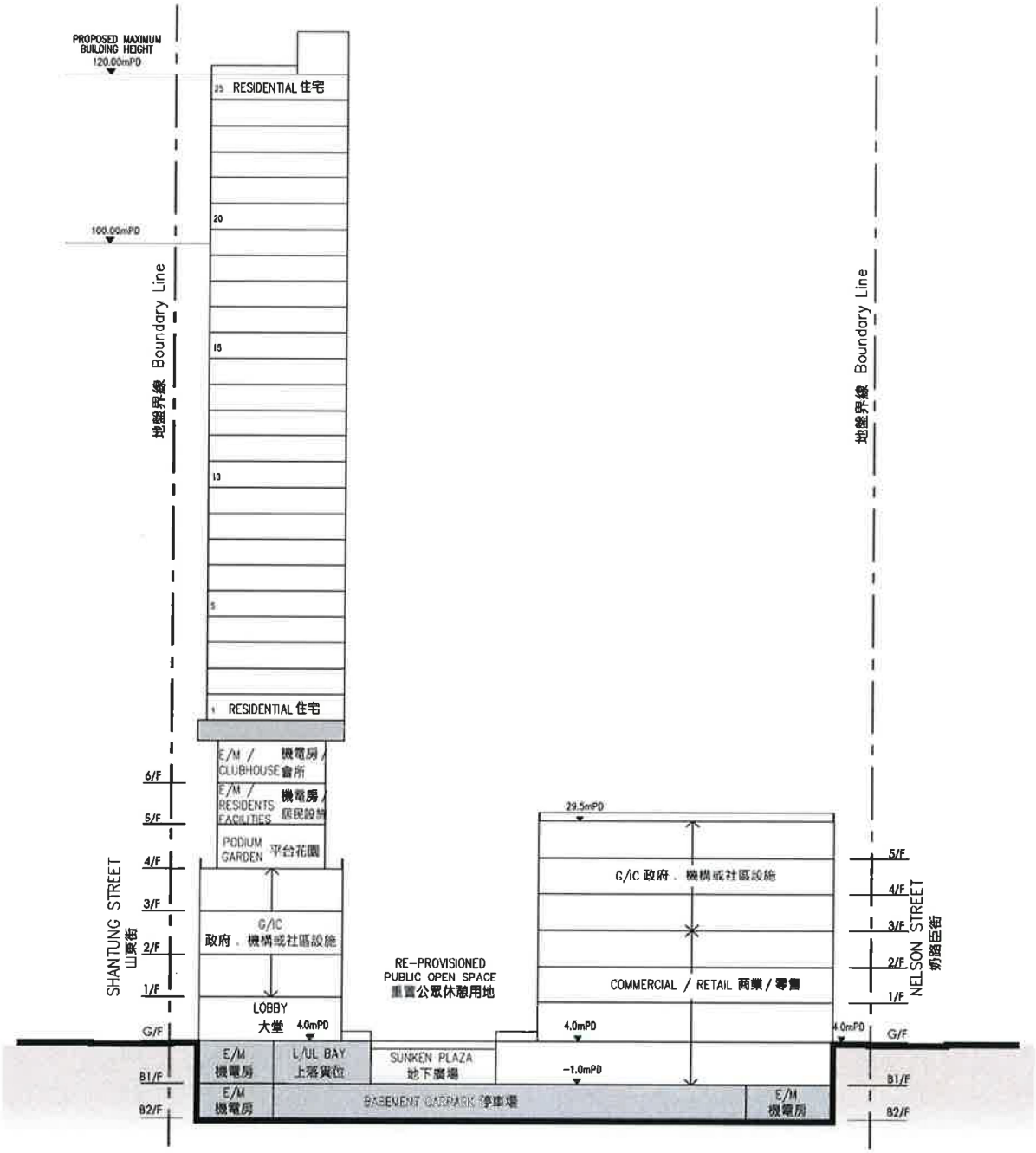
SCALE 1 : 600 (A4)

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012



KEY PLAN



(Remarks: For indicative purpose only. Notional layout subject to detailed design upon DSP approval.)

Notional Design – Section A-A

URA SHANTUNG STREET / THISTLE STREET DEVELOPMENT SCHEME

市區重建局 URBAN RENEWAL AUTHORITY

YTM-012

Appendix II

Sewage Flow from Surrounding Catchment Area

Appendix II: Sewage Discharge from Surrounding Catchment

Catchment ID	Building	No. of Flats	No of Shops	No. of Restaurants	Population			Flowrate (m^3/day) [3]			Total Flowrate / catchment (m^3/day)	Reference
					Residential (head) [1]	Retail/Shop (Staff) [2]	Restaurants (Staff) [2]	Residential UFF=0.27	Retail/Shop UFF=0.28	Restaurants UFF=1.58		
Public Toilet	Re-provisioned Public Toilet	-	-	-	-	-	-	-	-	-	3.7 L/s	Client
A	2N Nelson Street	8	1	-	21	2	-	5.7	0.6	-	55.0	Centaline Property
	1025 Canton Road	8	1	-	21	2	-	5.7	0.6	-		
	1023 Canton Road	7	1	-	18	2	-	4.9	0.6	-		
	1021 Canton Road	9	1	-	23	2	-	6.2	0.6	-		
	1013-1019 Canton Road	40	4	-	104	8	-	28.1	2.2	-		Building Rehabilitation Platform [4]
B	15-23 Thistle Street	43	5	-	112	10	-	30.2	2.8	-	96.7	Centaline Property
	1011 Canton Road	8	1	-	21	2	-	5.7	0.6	-		
	1009 Canton Road	8	1	-	21	2	-	5.7	0.6	-		
	1007 Canton Road	8	1	-	21	2	-	5.7	0.6	-		
	1005 Canton Road	8	1	-	21	2	-	5.7	0.6	-		
	Tak Lee House	15	3	-	39	6	-	10.5	1.7	-		
	999 Canton Road	15	1	-	39	2	-	10.5	0.6	-		
	8 Thistle Street	10	1	1	26	2	5	7.0	0.6	7.9		
C	997 Canton Road	5	1	-	13	2	-	3.5	0.6	-	23.6	
	993-995 Canton Road	26	2	-	68	4	-	18.4	1.1	-		
D	Shun Hing Building	224	11	1	582	22	5	157.1	6.2	7.9	171.2	

Notes:

[1] The average domestic household size is 2.6 persons for Mong Kok West District, according to Population By-census 2016. Source from (http://www.bycensus2016.gov.hk/en/bc-dp.html).

[2] The density of 2 employees per a retail/shop and 5 employees per a restaurant is based on site survey.

[3] The Unit Flow Factors are 0.27, 0.28, 1.58 m^3/day/head for residential use, industrial/retail/office use, restaurants respectively.

[4] The number of flats of building 1013-1019 Canton Road is referencing from (https://brplatform.org.hk/en/cost-reference-centre/nos-1013-1019-canton-road).

Appendix III

Detailed Calculation of Existing Sewage Discharge

Appendix III: Calculation of Existing Pipe Capacity

Table A - Pipe Capacity Calculation

Segment	Upstream Manhole	Downstream Manhole	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Length (m)	Diameter (mm)	Diameter (m)	Area (m^2)	Hydraulic Radius (m)	Slope	Kinematic Viscosity (m^2/s)	Hydraulic Pipeline Roughness (m)[1]	Velocity (m/s)	Full Capacity (l/s)
Existing Pipes														
PS 01	FMH4011402	FMH4054970	2.92	2.69	15.0	150	0.15	0.018	0.0375	0.0153	0.00000114	0.006	0.83	14.7
PS 02	FMH4054970	FMH4054971	2.69	2.47	16.8	150	0.15	0.018	0.0375	0.0131	0.00000114	0.006	0.77	13.6
PS 03	FMH4054971	FMH4011404	2.47	2.21	24.9	150	0.15	0.018	0.0375	0.0104	0.00000114	0.006	0.69	12.2
PS 04	FMH4011404	FMH4011391	2.21	2.12	5.3	150	0.15	0.018	0.0375	0.0170	0.00000114	0.006	0.88	15.5
PS 05	FMH4011390	FMH4011391	2.49	2.41	8.3	225	0.225	0.040	0.05625	0.0097	0.00000114	0.006	0.88	35.2
PS 06	FMH4011391	FMH4012051	2.12	0.58	16.4	150	0.15	0.018	0.0375	0.0939	0.00000114	0.003	2.38	42.1
PS 07	FMH4012051	FMH4011988	-1.70	-1.81	9.8	225	0.225	0.040	0.05625	0.0112	0.00000114	0.006	0.95	37.9
PS 08	FMH4011988	FMH4011989	-2.19	-2.63	61.8	1200	1.2	1.131	0.3	0.0071	0.00000114	0.003	2.59	2933.1
PS 09	FMH4011989	FMH4011990	-2.63	-3	39.3	1350	1.35	1.431	0.3375	0.0094	0.00000114	0.003	3.21	4598.5
Upstream Pipe Sections														
Upstream PS 01	FMH4012042	FMH4011988	2.00	1.10	9.3	225	0.225	0.040	0.05625	0.0968	0.00000114	0.003	3.19	126.9
Upstream PS 02	FMH4012023	FMH4011988	-2.04	-2.19	51.3	1200	1.2	1.131	0.3	0.0029	0.00000114	0.003	1.66	1878.1
Upstream PS 03	FMH4012047	FMH4011989	1.88	-2.63	6.1	225	0.225	0.040	0.05625	0.7370	0.00000114	0.003	8.81	350.3

Note:

[1] The roughness coefficient for slimed concrete sewer under poor condition is adopted; the ks values are 3mm for velocities greater than 1.2m/s, otherwise 6mm.

Table B: Proportion of Peak Flow to Full Capacity

Segment	Upstream Manhole	Downstream Manhole	Full Capacity (L/s)	Catchment	Total catchment discharge without reprovisioned pubic Toilet (m^3/day)	Contribution Population [1]	Peaking Factor[2]	Catchment Inflow Factors, P_{CIF}	Peak Flow without reprovisioned pubic Toilet [3] (L/s)	Peak Flow with reprovisioned pubic Toilet [4] (L/s)	Total Peak Flow[5] (L/s)	% of full capacity
Existing Pipes												
PS 01	FMH4011402	FMH4054970	14.7	A+Reprovisioned Public Toilet	55.0	204	8	1.3	6.6	10.3	10.3	70%
PS 02	FMH4054970	FMH4054971	13.6	A+Reprovisioned Public Toilet	55.0	204	8	1.3	6.6	10.3	10.3	75%
PS 03	FMH4054971	FMH4011404	12.2	A+Reprovisioned Public Toilet+Low Block+B	264.1	978	8	1.3	31.8	35.4	35.4	292%
PS 04	FMH4011404	FMH4011391	15.5	A+Reprovisioned Public Toilet+Low Block+B	264.1	978	8	1.3	31.8	35.4	35.4	229%
PS 05	FMH4011390	FMH4011391	35.2	D	171.2	634	8	1.3	20.6	24.3	24.3	69%
PS 06	FMH4011391	FMH4012051	42.1	A+Reprovisioned Public Toilet+Low Block+B+C+D	458.9	1699	6	1.3	41.4	45.1	45.1	107%
PS 07	FMH4012051	FMH4011988	37.9	A+Reprovisioned Public Toilet+Low Block+B+C+D+Residential Tower	694.7	2573	6	1.3	62.7	66.4	66.4	175%
PS 08	FMH4011988	FMH4011989	2933.1	A+Reprovisioned Public Toilet+Low Block+B+D+Residential Tower+C+Full Pipe Capacity of Upstream pipe section 01+Full Pipe Capacity of Upstream pipe section 02[6]	694.7	2573	6	1.3	62.7	66.4	2071.3	71%
PS 09	FMH4011989	FMH4011990	4598.5	A+Reprovisioned Public Toilet+Low Block+B+D+Residential Tower+C+Full Pipe Capacity of Upstream pipe section 01+Full Pipe Capacity of Upstream pipe section 02+Full Pipe Capacity of Unstream pipe section 03	694.7	2573	6	1.3	62.7	66.4	2421.6	53%

Note:

[1] The contribution population = total catchment discharge (m^3/day) / 0.27(m^3/day/person)

[2] Peaking Factor of 8 for contribution population <1,000 and 6 for contribution population of 1000 - 5000 are adopted.

[3] Peak Flow = Daily average dry weather flow × Peaking Factor (including stormwater allowance) × Catchment Inflow Factor / 24 / 3600, the operation hour is assumed to be 24 hours.

[4] The sewage discharge from the re-provisioned public toilet is 3.7L/s. No inflow factor is required as new pipes will be adopted.

[5] Full pipe of Upstream Pipe Section 01 and 02 are added to the peak flow of Pipe Section 07.

[6] The full pipe capacity of Upstream Pipe Section 01 and 02 are calculated in Table A.

Appendix IV

Capacity Calculation of Proposed Pipes and Upgraded Pipes

Appendix IV: Calculation of Proposed Pipe Capacity

Table A - Pipe Capacity Calculation

Segment	Upstream Manhole	Downstream Manhole	Upstream Invert Level (mPD) [1]	Downstream Invert Level (mPD) [1]	Length (m)	Diameter (mm)	Diameter (m)	Area (m^2)	Hydraulic Radius (m)	Slope	Kinematic Viscosity (m^2/s)	Hydraulic Pipeline Roughness (m) [2]	Velocity (m/s)	Full Capacity (l/s)
Proposed New Pipe														
PP01	FTMH01	FTMH02	1.82	1.80	2.1	225	0.225	0.040	0.05625	0.0100	0.00000114	0.006	0.90	35.7
PP02	FTMH02	FMH4012051	1.27	1.00	27.0	225	0.225	0.040	0.05625	0.0100	0.00000114	0.006	0.90	35.7
PP03	FTMH03	FMH4054971	2.57	2.50	6.9	225	0.225	0.040	0.05625	0.0100	0.00000114	0.006	0.90	35.7
PP04	FTMH04	FTMH05	3.38	3.37	2.2	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP05	FTMH05	FTMH06	3.37	3.27	20.4	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP06	FTMH06	FTMH07	3.27	3.20	13.4	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP07	FTMH07	FTMH08	3.20	3.04	32.6	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP08	FTMH08	FTMH09	3.04	2.95	16.6	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP09	FTMH09	FMH4011402	2.95	2.92	6.7	225	0.225	0.040	0.05625	0.0050	0.00000114	0.006	0.64	25.2
PP10	FTMH10	FTMH11	-1.93	-2.03	5.0	225	0.225	0.040	0.05625	0.0200	0.00000114	0.003	1.45	57.6
PP11	FTMH11	FTMH12	-2.03	-2.43	20.0	225	0.225	0.040	0.05625	0.0200	0.00000114	0.003	1.45	57.6
PP12	FTMH12	FMH4011989	-2.43	-2.63	10.0	225	0.225	0.040	0.05625	0.0200	0.00000114	0.003	1.45	57.6
Proposed Upgrading Pipe														
PS 01	FMH4011402	FMH4054970	2.92	2.69	15.0	225	0.225	0.040	0.05625	0.0153	0.00000114	0.006	1.11	44.3
PS 02	FMH4054970	FMH4054971	2.69	2.47	16.8	225	0.225	0.040	0.05625	0.0131	0.00000114	0.006	1.03	40.9
PS 03	FMH4054971	FMH4011404	2.47	2.21	24.9	225	0.225	0.040	0.05625	0.0104	0.00000114	0.006	0.92	36.5
PS 04	FMH4011404	FMH4011391	2.21	2.12	5.3	225	0.225	0.040	0.05625	0.0170	0.00000114	0.006	1.17	46.6
PS 06	FMH4011391	FMH4012051	2.12	0.58	16.4	225	0.225	0.040	0.05625	0.0939	0.00000114	0.003	3.14	125.0
PS 07	FMH4012051	FMH4011988	-1.70	-1.91	9.8	225	0.225	0.040	0.05625	0.0214	0.00000114	0.003	1.50	59.6

Note:

[1] The upstream and downstream level of proposed pipes will be subject to detail design.

[2] The roughness coefficient for slimed concrete sewer under poor condition is adopted; the ks values are 3mm for velocities greater than 1.2m/s, otherwise 6mm.

Table B: Proportion of Peak Flow to Full Capacity after Upgrading

Segment	Upstream Manhole	Downstream Manhole	Full Capacity (L/s)	Catchment	Total catchment discharge (m^3/day)	Contribution Population [1]	Peaking Factor[2]	Catchment Inflow Factors, P_{CIF}	Peak Flow without reprovisioned pubic Toilet [3] (L/s)	Peak Flow with reprovisioned pubic Toilet [4] (L/s)	% of full capacity
Proposed New Pipes											
PP01	FTMH01	FTMH02	35.7	Residential Tower	235.8	873	8	-	21.8	21.8	61%
PP02	FTMH02	FMH4012051	35.7		235.8	873	8	-	21.8	21.8	61%
PP03	FTMH03	FMH4054971	35.7	Low Block	112.4	416	8	-	10.4	10.4	29%
PP04	FTMH04	FTMH05	25.2	Re-provisioned Public Toilet	-	-	-	-	-	3.7	14%
PP05	FTMH05	FTMH06	25.2		-	-	-	-	-	3.7	14%
PP06	FTMH06	FTMH07	25.2		-	-	-	-	-	3.7	14%
PP07	FTMH07	FTMH08	25.2		-	-	-	-	-	3.7	14%
PP08	FTMH08	FTMH09	25.2		-	-	-	-	-	3.7	14%
PP09	FTMH09	FMH4011402	25.2		-	-	-	-	-	3.7	14%
PP10	FTMH10	FTMH11	57.6	Re-diverted sewers for Shun Hing Building	171.2	634.1	8	-	15.9	15.9	28%
PP11	FTMH11	FTMH12	57.6		171.2	634.1	8	-	15.9	15.9	28%
PP12	FTMH12	FMH4011989	57.6		171.2	634.1	8	-	15.9	15.9	28%
Proposed Upgrading Plan											
PS 01	FMH4011402	FMH4054970	44.3	A+Reprovisioned Public Toilet	55.0	204	8	-	5.1	8.7	20%
PS 02	FMH4054970	FMH4054971	40.9	A+Reprovisioned Public Toilet	55.0	204	8	-	5.1	8.7	21%
PS 03	FMH4054971	FMH4011404	36.5	A+Low Block+Reprovisioned Public Toilet	264.1	978	8	-	24.5	28.1	77%
PS 04	FMH4011404	FMH4011391	46.6	A+Low Block+Reprovisioned Public Toilet+B	264.1	978	8	-	24.5	28.1	60%
PS 06	FMH4011391	FMH4012051	125.0	A+Low Block+Reprovisioned Public Toilet+B	458.9	1699	6	-	31.9	35.5	28%
PS 07	FMH4012051	FMH4011988	59.6	A+Low Block+Reprovisioned Public Toilet+B	694.7	2573	6	-	48.2	51.9	87%

Note:

[1] The contribution population = total catchment discharge (m^3/day) / 0.27(m^3/day/person)

[2] Peaking Factor of 8 for contribution population <1,000 is adopted.

[3] Peak Flow = Daily average dry weather flow × Peaking Factor (including stormwater allowance) × Catchment Inflow Factor / 24 / 3600, the operation hour is assumed to be 24 hours.

[4] The sewage discharge from the re-provisioned public toilet is 3.7L/s.

Appendix 8

Water Supply Impact Assessment (WSIA) Report

Urban Renewal Authority
Development Scheme
Shantung Street / Thistle Street
(YTM-012)

Water Supply Impact Assessment Report

(V1.0)

October 2020

Approved By 

(Project Manager: K.S. Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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Appendix II Salt Water Mains Record Plan
Appendix III Detailed Water Demand Calculation

1 INTRODUCTION

Background

1.1 The Urban Renewal Authority (URA) has proposed Shantung Street / Thistle Street Development Scheme (YTM-012) (the Scheme) under section 25 of the Urban Renewal Authority Ordinance (URAO). This Water Supply Impact Assessment (WSIA) is to support the submission of a draft Development Scheme Plan (DSP) with its planning proposal to the Town Planning Board (TPB) for consideration.

1.2 The Scheme is located between Nelson Street, Thistle Street, Shantung Street and Ferry Street. It is currently zoned as "Residential (Group A)" (R(A)) and "Open Space" (O) on the Approved Mong Kok Outline Zoning Plan No. S/K3/32. The Scheme comprises 2 rows of dilapidated buildings and part of existing LCSD's Thistle Street Rest Garden ("Rest Garden"). The location of the site is shown in Figure 1.

1.3 The Scheme area is proposed to be rezoned to "R (A)" to redevelop the area for high-density residential development, with commercial uses always permitted on the lowest three floors of a building or in a purpose-designed non-residential portion of a building. Under current notional design, the Scheme propose to develop 2 buildings and a sunken plaza. It includes a composite building (Tower Block) on the southern side of 25 residential storeys (about 300 units) and a 7 storey podium for club house, podium garden, G/IC facilities and retail uses. A GIC/retail block (Low Block) of 6 storeys (above ground) for retail shops and G/IC is located on the northern side of the site. A 2-storey basement ancillary car park will be provided for loading/unloading bays and private car parking spaces. About 780m^2 of LCSD's Rest Garden (the affected POS) is included in the Scheme and will be re-configured to create a new entrance at the corner of Shantung Street and Thistle Street to enhance its accessibility and visibility from the main pedestrian routes. An additional sunken plaza of about 200 m^2 with open space and retail shops will be provided within the Scheme to create an interesting square for public enjoyment. The notional design is subject to change at detailed design stage.

1.4 Cinotech Consultants Limited was commissioned by URA to conduct this to assess any potential water supply impact brought by the proposed development. Architectural drawings and technical information of the subject site were largely provided by the project architect and other project team members.

2 WATER SUPPLY IMPACT ASSESSMENT

Existing Freshwater Supply

2.1 The Site is within the supply zone of Ho Man Tin East Fresh Water Service Reservoir (Capacity 152,411m^3).

2.2 The Site is supplied by a 250mm main in Ferry Street, a 200mm main in Shantung Street, a 100mm water main in Thistle Street and smaller mains within an access alleyway running through the middle of the Site (see extracts from WSD Fresh Water Mains Record Plans in **Appendix I**).

Existing Saltwater Supply

2.3 The Site is within the supply zone of Kowloon South No.2 Saltwater Pumping Station (Pumping Capacity 65MLD) and Yau Ma Tei Salt Water Service Reservoir (capacity 7,830 m^3).

2.4 The Site is supplied by a 100mm diameter water main in an access alleyway running through the middle of the Site (see extracts from WSD Salt Water Mains Record Plans in **Appendix II**).

Freshwater Supply Impact

2.5 Water demands for the existing and future scenarios are included in **Appendix III**, together with comparisons with the existing supply facilities. It should be noted that the existing public toilet within the Site and the re-provisioned toilet within the Scheme are both not included in the calculation as no additional water demand is anticipated.

2.6 The freshwater demand is expected to increase from 181.5 m^3/day to 238.76 m^3/day (an increase of 57.26 m^3/day, or 0.057 MLD) as a result of the proposed development. However, as shown in **Appendix III**, there is substantially greater spare capacity in the service reservoirs serving the Site. The expected increase in demand can therefore be accommodated by the existing main supply facilities.

2.7 The detailed connection arrangements for the Site and the local water mains will be reviewed in later stages of project implementation. Local upgrading and/or realignment will be implemented as required.

Salt Water Supply Impact

2.8 The salt water demand is expected to increase from 42.35 m^3/day to 57.31 m^3/d (an increase of 14.96 m^3/day, or 0.015 MLD) as a result of the proposed development. However, as shown in **Appendix III**, there is substantially greater spare capacity in the salt water pumping station serving the Site. The expected increase in demand can therefore be accommodated by the existing main supply facilities.

2.9 The detailed connection arrangements for the Site and the local water mains will be reviewed in later stages of project implementation. Local upgrading and/or realignment will be implemented as required.

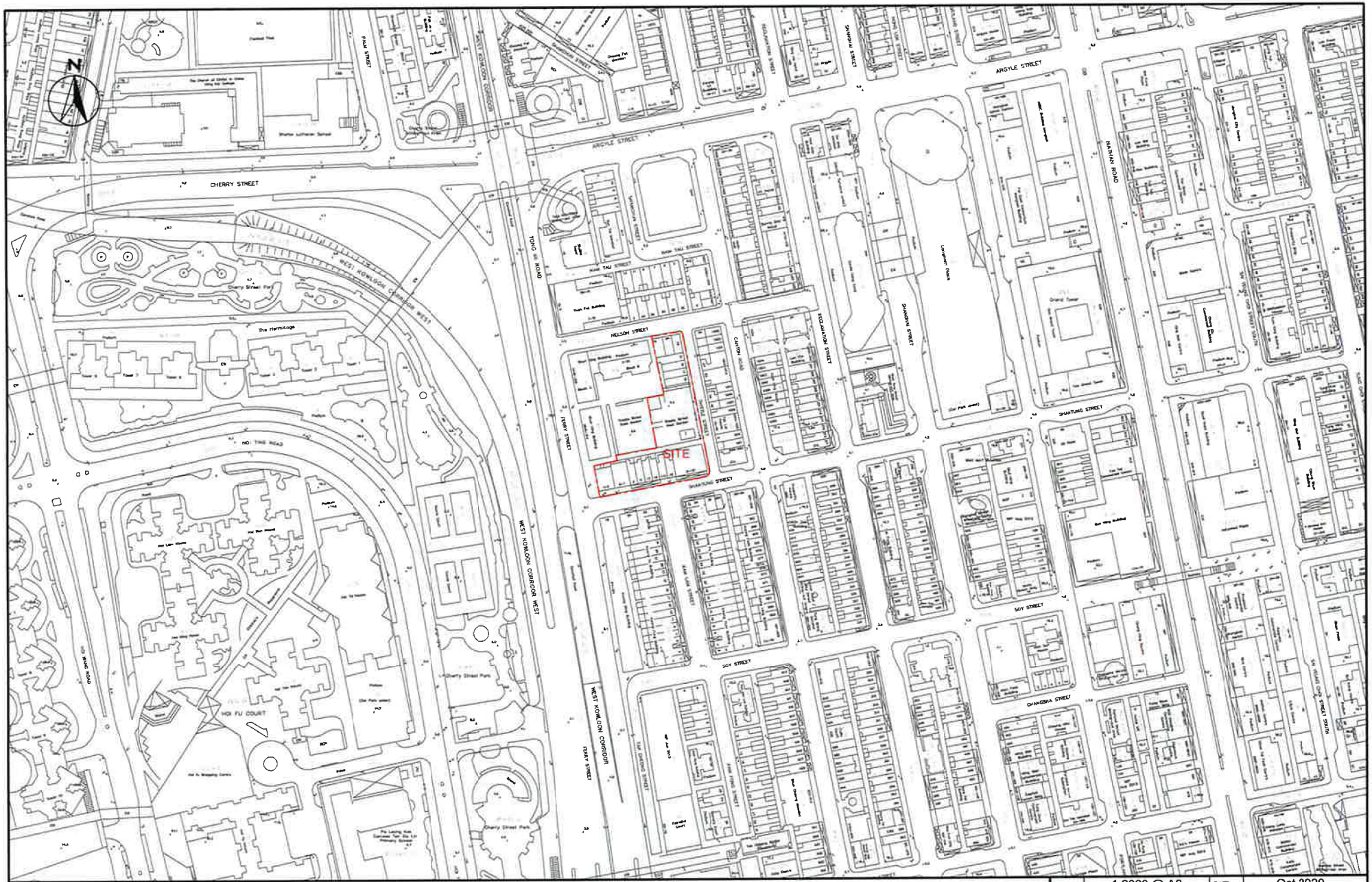
Construction and Maintenance

2.10 The Project Proponent will be responsible for the investigation, design, construction, repair and maintenance of the internal water supply facilities and connection to the main water system(s) to the satisfaction of relevant Government departments.

3 CONCLUSION

3.1 The water supply impact due to the proposed Scheme has been reviewed. Although the proposed Scheme at the Site will result in increases in both the fresh and salt water demands, the increases can be accommodated by the existing main supply facilities. Therefore, no adverse water supply impact is anticipated from the proposed development.

Figures



CINOTECH
Cinotech Consultants Limited

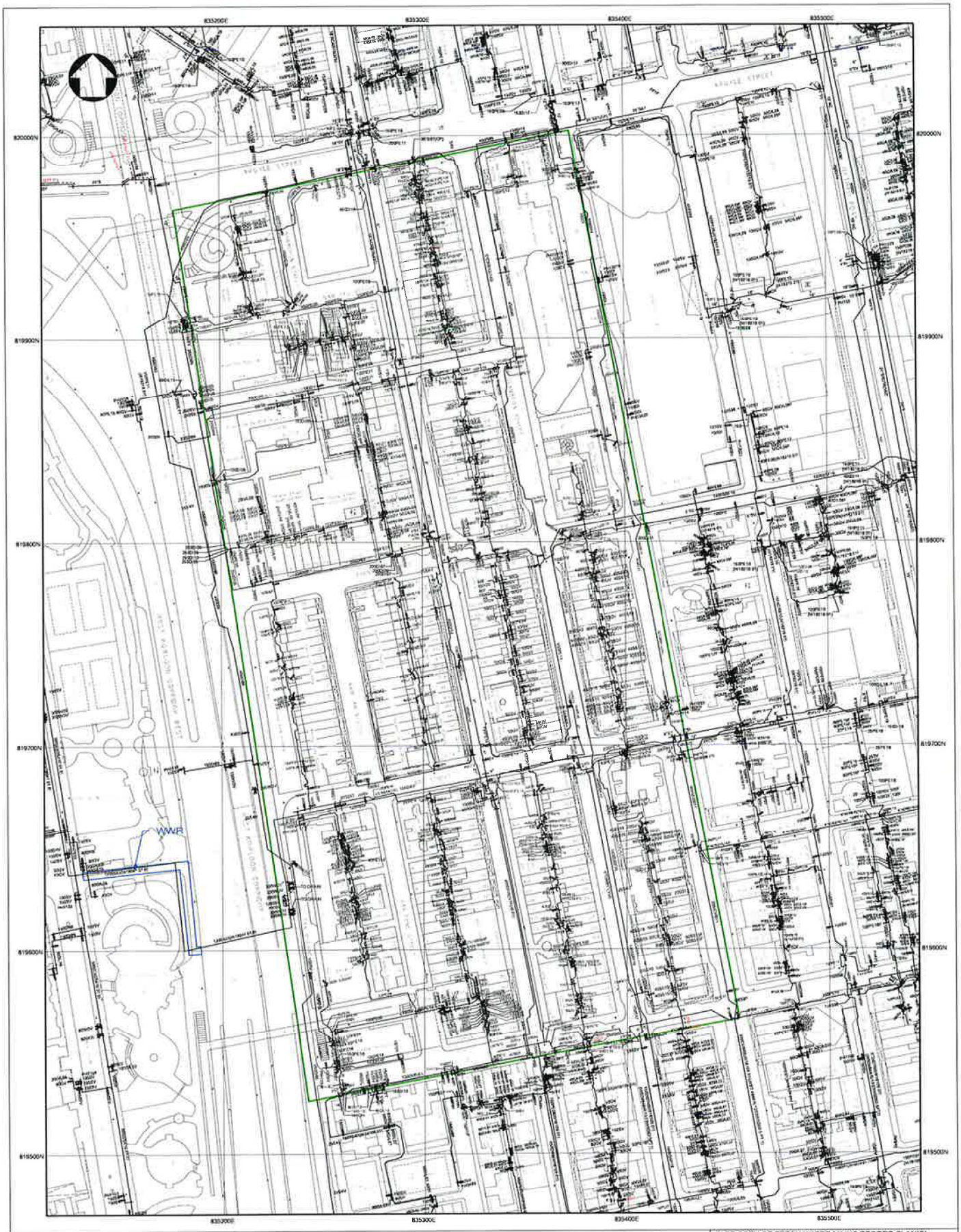
Water Supply Impact Assessment
Urban Renewal Authority Development Scheme Shantung Street / Thistle Street (YTM-012)

Location of Project Site

SCALE	1:2000 @ A3	DATE	Oct 2020
CHECK	KS	DRAWN	CC
JOB No.	IA 19021	DRAWING No.	1
		REV	-

Appendix I –

Fresh Water Mains Record Plan



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.

SUBJECT SITE

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

WB/880/11-NW-19A, 19B, 19C & 19D

FILE REF: DOK19_356

REF. CODE: 40W19M	SHEET 1 OF 1	SCALE 1:1200

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Appendix II –

Salt Water Mains Record Plan



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
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7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.

SUBJECT SITE

PART COPY OF SALT WATER MAINS RECORD PLAN(S)

W6/881/11-NW-19A, 19B, 19C & 19D

FILE REF: DOK19_356

REF. CODE: 40W19M | SHEET 1 OF 1 | SCALE 1:1200

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Appendix III –

Detailed Water Demand Calculation

Existing Water Demands

Populations (Residiential)

	Units [1]	Popn. [1]	
Shantung Street (1-27 odd number) (R2) Thistle Street (1-23 odd number) (R2) Nelson Street (2L & 2M) (R2)	286	**605**	**Persons**

Note [1] - Based on URA's Estimation

Water Demands

Refer to **WSD Departmental Instruction 1309**

Residiential

	Category	Population	Unit Demand Freshwater (m^3/h/d)	Unit Demand Saltwater (m^3/h/d)	Daily Demand Freshwater (m^3/d)	Daily Demand Saltwater (m^3/d)
Residential Accommodation	R2	605	0.300	0.070	181.50	42.35

Total

	Daily Demand Freshwater (m^3/d)	Daily Demand Saltwater (m^3/d)
Total	181.50	42.35

Predicted Water Demands

Populations (Residiential)

	Units	PPF [1]	Popn.	
Residential Accommodation (R2)	300	2.6	780	**Persons**
Management/Club House Staff (Service Trade)			18	**Persons**

Note [1] - The average domestic household size is 2.6 persons for Mong Kok West district according to Population By-census 2016.

Floor Area (Commercial & G/IC)

	UFA (m^2)		UFA (ha)	
Commercial (C/R)	**1,853**	m^2	1.853	**ha**
Government, Institution/Community (G/IC)	**2,138**	m^2	2.138	**ha**

Water Demands

Refer to **WSD Departmental Instruction 1309**

Residiential

	Category	Population	Unit Demand Freshwater (m^3/h/d)	Unit Demand Saltwater (m^3/h/d)	Daily Demand Freshwater (m^3/d)	Daily Demand Saltwater (m^3/d)
Residential Accommodation	R2	780	0.300	0.070	234.00	54.60
Management/Club House Staff	Service Trade	18	0.035	0.070	0.63	1.26

Commercial & G/IC

	Category	UFA (ha)	Unit Demand Freshwater (m^3/ha/d)	Unit Demand Saltwater (m^3/ha/d)	Daily Demand Freshwater (m^3/d)	Daily Demand Saltwater (m^3/d)
Commercial	C/R	1.9	2	0.700	3.71	1.30
Government, Institution/Community	G/IC	2.1	0.2	0.07	0.43	0.15

Total

	Daily Demand Freshwater (m^3/d)	Daily Demand Saltwater (m^3/d)
Total	238.76	57.31

Summary of Water Demands

Scenario	Daily Demand - Freshwater (m^3/d)	Daily Demand - Saltwater (m^3/d)
Existing	181.50	42.35
Future	238.76	57.31
Increase	57.26	14.96
	0.057 (MLD)	0.015 (MLD)

Freshwater Reservoir Capacity

Reservoir	Capacity (x 1,000 m^3)	Supply Capacity @ Capacity Factor = 0.8 (MLD)	Existing Daily Consumption (MLD)	Spare Capacity (MLD)	Remarks
Ho Man Tin East FWSR	152.411	191	123	68	>> 0.057 MLD Additional Demand from Development

Saltwater Reservoir Capacity

Reservoir	Capacity (x 1,000 m^3)
Yau Ma Tei SWSR	7.83

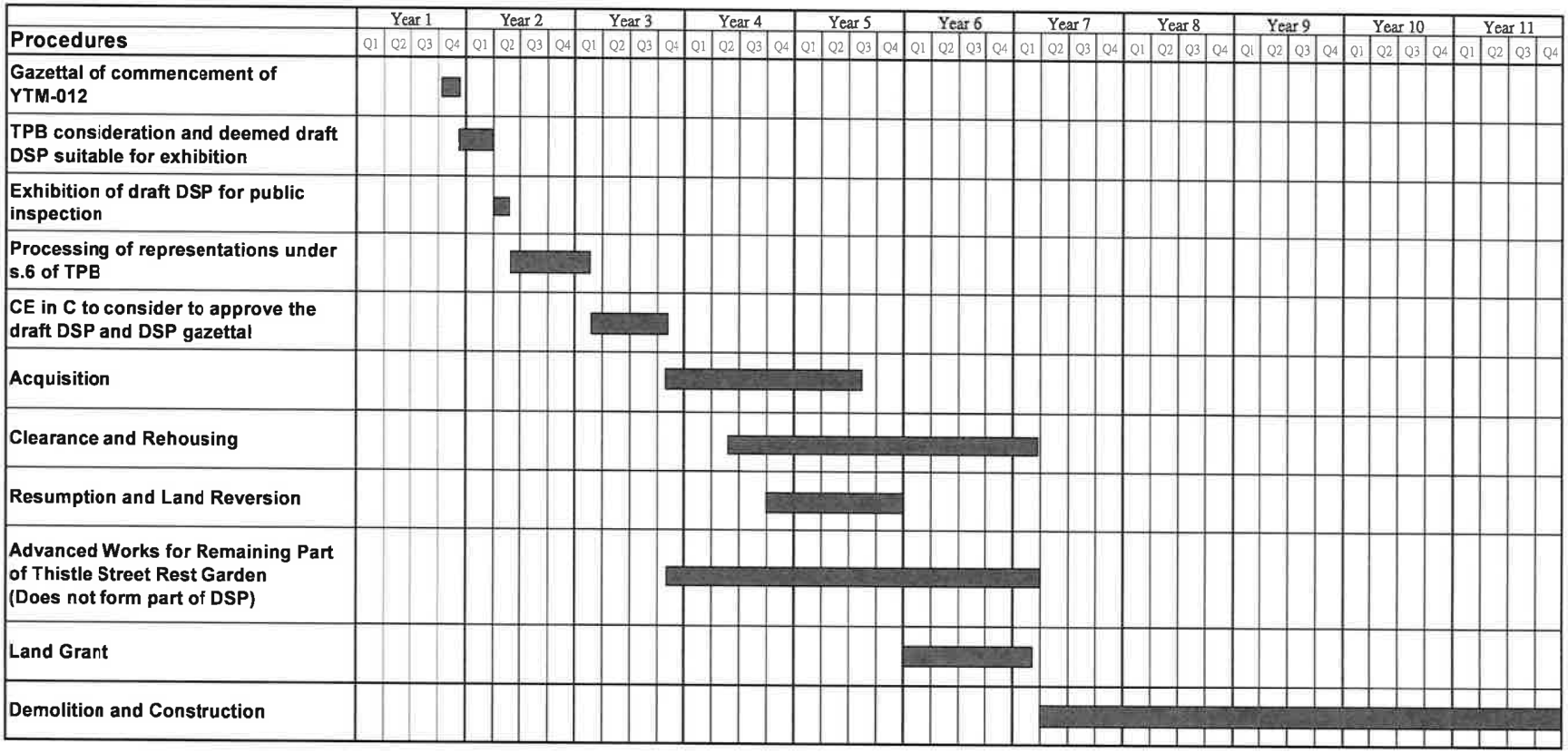
Saltwater Pumping Capacity

Pumping Station	Design Pumping Capacity (MLD)	Existing Daily Consumption (MLD)	Spare Capacity (MLD)	Remarks
Kowloon South No.2 SWPS	67.25	65	2	>> 0.015 mLD Additional Demand from Development

Appendix 9

Tentative Implementation Programme

YTM-012 URA Shantung Street / Thistle Street Development Scheme
Tentative Implementation Programme



Appendix 10

Acquisition and Resumption of Affected Properties

Principles Adopted by the Urban Renewal Authority in Property Acquisition (Other than Industrial Properties)

This pamphlet briefly outlines the principles adopted by the Urban Renewal Authority ("URA") in the acquisition of properties (other than industrial properties) affected by URA's urban renewal projects ("URA Projects").

Domestic Properties

1. URA will offer an owner-occupier of domestic property within a URA Project the market value (assessed on vacant possession basis) of the affected property plus an ex-gratia allowance, namely Home Purchase Allowance ("HPA"), for purchase of the affected property. The amount of HPA payable to individual owners is the difference between the value of a notional replacement flat and the market value of the property being acquired. The notional replacement flat is based on a seven-year-old flat of a size similar to the affected property and in the same locality. The notional replacement flat is assumed to be in a comparable quality building, situated in a similar locality in terms of characteristics and accessibility. The notional replacement flat will be situated at the middle floor of a notional building with average orientation, i.e. not facing south or west, and without sea view.

2. "Owner-occupier" here means an owner who occupies the affected property as his/her sole residence. If an owner does not reside in the affected property as his/her sole residence, the occupancy status of the affected property will be treated as "Vacant" and the owner will be offered Supplementary Allowance ("SA") instead of HPA. SA is a percentage of HPA. The criteria for determining whether an owner occupies the affected property as his/her "sole residence" will be determined by URA according to URA's prevailing policy.

3. An owner-occupier will be offered HPA for no more than three properties in a redevelopment project. (Please see **Appendix I** for examples of calculation of HPA and **Appendix II** for HPAs available in different scenarios.)

4. Property used as sole residence by an owner's "immediate family members" will be treated as being occupied by the owner himself/herself as sole residence for the purpose of ascertainment of his/her eligibility for HPA. "Immediate family members" of an owner means parents, children, dependent brothers and sisters, grandparents, grandchildren, step-parents, spouse's parents, and spouse's step-parents.

5. An owner who leaves the affected property vacant will be offered the market value (assessed on vacant possession basis) of the affected property plus SA. In addition, URA will offer an Allowance for Vacant Property ("AVP") to the owner who has (i) left the affected property vacant on the first day of the freezing survey conducted for the relevant URA Project ("FS Date") and thereafter; (ii) accepted URA's initial acquisition offer within the validity period of the offer; and (iii) sold the affected property with vacant possession to URA. AVP is equivalent to 2 times the amount of the Rateable Value of the affected property.

6. An owner who lets the affected property out will be offered the market value (assessed on vacant possession basis) of the affected property plus SA.

7. An owner of tenanted or vacant properties will be offered SA for no more than two properties in a URA Project. (Please see **Appendix I** for examples of calculation of SA and **Appendix II** for different SAs available in different scenarios.)

8. In addition to HPA or SA, URA will offer an Incidental Cost Allowance ("ICA") to owners of domestic properties to assist the owners' payment of removal expenses and expenditure relating to the purchase of a domestic replacement flat and the legal cost incurred in the sale of the affected properties to URA. The actual amount of ICA shall be determined and announced by URA as and when an offer to purchase is made for each individual project.

9. If the amount of necessary and reasonable expenses actually incurred by the owner of a domestic property in selling the affected property to URA (namely legal cost) and purchasing a domestic replacement flat (namely removal cost, stamp duty, agency fee and legal cost) exceeds the amount of ICA offered by URA, the owner may be reimbursed with the difference ("the Expense"). The owner can only submit one single reimbursement claim for each domestic property sold to URA, and must fulfill the following eligibility criteria:

   (a) The owner must have accepted the initial acquisition offer of URA within the validity period of the offer;

   (b) The reimbursement claim must be made within 12 months from the date of execution of assignment of the affected property sold to URA, and the reimbursable amount must be the actual expenses already paid by the owner within 12 months after the property is sold to URA;

   (c) The domestic replacement flat must be located in Hong Kong and must be purchased after the date of issuance of initial acquisition offer by URA; and

   (d) The owner should be the sole registered owner or one of the registered owners of the domestic replacement flat, and his/her interest in the replacement flat must be recorded in the land register.

10. In general, the principles in assessing the reimbursable amount of the Expense as described in Paragraph 9 above are:

    (a) The reimbursable amount for stamp duty should be calculated at the lower rates (Scale 2) of the ad valorem stamp duty payable for a domestic replacement flat;

    (b) The reimbursable amount for real estate agency fee should follow the general market practice but not exceed 1% of the purchase price of the domestic replacement property;

    (c) The reimbursable amounts in both item (a) and item (b) above will be subject to a ceiling to be calculated on the basis of a domestic replacement property with a purchase price of 110% of the total of (i) the market value of the affected property and (ii) the sum of HPA/SA as stipulated in the initial acquisition offer of URA;

(d) URA will only reimburse the Expense which is reasonable, absolutely necessary and actually paid by the owner in relation to the expenses described above;

(e) The owner should provide sufficient documentary evidence for the Expenses submitted in the reimbursement claim; and

(f) URA will consider each reimbursement claim on its own merits, and URA has the sole discretion in determining the amount of the Expenses reimbursable in each case.

11. If a domestic property has been sub-divided into several flats with undivided shares ("sub-divided flat") before the FS date and an owner-occupier of a sub-divided flat elects not to receive the HPA, subject to eligibility criteria and other requirements, such an owner-occupier will be offered re-housing.

12. The HPA or SA may be payable for non-domestic property which has been issued with an occupation permit other than for domestic purpose but nevertheless has been used by the same owner for domestic purpose for a long time (generally about 10 years) in the following situation:

(a) An owner-occupier who has used the affected property for domestic purposes for a long time will be offered market value (assessed on vacant possession basis) of the affected property plus the higher of:

(i) HPA and ICA as a domestic property; and

(ii) the allowance applicable to non-domestic properties (other than Industrial Properties).

(b) An owner of tenanted property which has been occupied for domestic purpose for a long time will be offered market value (assessed on vacant possession basis) of the affected property plus the higher of:

(i) SA and ICA as a domestic property less the Ex-gratia Allowance payable to a domestic tenant; and

(ii) the allowance applicable to non-domestic properties (other than Industrial Properties).

13. For URA Projects which are commenced after the promulgation of the new Urban Renewal Strategy on 24 February 2011:

(a) Subject to the conditions and provisions contained in the "Urban Renewal Authority Flat-for-Flat Pamphlet" ("the Pamphlet"), eligible owner-occupiers of domestic properties in URA Projects, who will be offered HPA, can opt to participate in URA's "Flat-for-Flat" Scheme ("the Scheme"). Please refer to the Pamphlet for details of the Scheme.

(b) Elderly owners of tenanted domestic properties in URA Project may apply for the Elderly Domestic Owner-Landlords Compassionate Allowance ("EDOLCA") in addition to the market values of their properties and SA as described in Paragraph 6 above, subject to the eligibility criteria set by URA. Eligible elderly owners

can apply for EDOLCA after receiving URA's initial acquisition offers. EDOLCA is only payable to eligible elderly owners who have accepted the initial acquisition offers of URA within the validity period of the offer. Please refer to the pamphlet of *"Elderly Domestic Owner-Landlords Compassionate Allowance"* for details of the eligibility criteria and the arrangement.

Non-domestic Properties (Other than Industrial Properties)

14. URA will offer an owner of a non-domestic property (other than industrial property) the market value of the affected property (assessed on vacant possession basis) and an ex-gratia allowance. The amount of the ex-gratia allowance for tenanted or vacant non-domestic property (other than industrial property) is equivalent to 10% of its market value (assessed on vacant possession basis) or one time its Rateable Value, whichever is higher. In addition, URA will offer AVP at 2 times the amount of the Rateable Value of the affected property to the owner who has (i) left the affected property vacant on the FS Date and thereafter; (ii) accepted URA's initial acquisition offer within the validity period of the offer; and (iii) sold the affected property with vacant possession to URA. The amount of ex-gratia allowance for owner-occupied non-domestic property (other than industrial property) is equivalent to 35% of its market value (assessed on vacant possession basis) or 4 times its Rateable Value, whichever is higher. "Owner-occupier" here means an owner who occupies and operates his/her business in the affected property.

15. In addition to the ex-gratia allowance described in Paragraph 14 above, an additional payment of the Ex-gratia Business Allowance ("EGBA") is payable to an owner-occupier of non-domestic property (other than industrial property) who had commenced occupying the premises for business use before the FS Date and have accepted the initial acquisition offer from URA both unconditionally and within the validity period of the offer. The amount of EGBA is directly proportional to the number of years of continuous operation by the owner-occupier as business owner in the affected property. In calculating the total number of years of continuous operation, the last date of the continuous operation is set at 2 years from the date on which URA issues initial acquisition offer to the property owner. The amount of EGBA is payable at a rate of 0.1 times the Rateable Value for each year that the owner-occupier has operated the business as the business owner in the property concerned, subject to a maximum of 30 years. For an incomplete year, the amount of EGBA is calculated on a pro-rata basis to the nearest month. The amount of EGBA is subject to a maximum amount of $700,000 and a minimum amount as described in the table below:

Continuous Operation for	Minimum Amount of EGBA
(a) 10 years or less	HK$110,000 (effective from 1 April 2020 and subject to annual review)
(b) More than 10 years (maximum 30 years)	The minimum amount for (a) above plus an additional HK$10,000 for each completed year after 10 years.

In applying for EGBA, an owner-occupier is required to substantiate the period of continuous operation in the property as business owner. The owner-occupier may choose to claim for severance payments payable to his/her employees under the Employment Ordinance (Chapter 57) as an alternative to EGBA.

16. URA will also offer ICA to owners of non-domestic properties (other than industrial property) to assist their payment of expenditure relating to the purchase of a non-domestic replacement property and the legal cost incurred in the sale of the affected properties to URA. The amount of ICA payable is 5% of the market value (assessed on vacant possession basis) of the affected property. Payment of the ICA is subject to the condition that the owner must have accepted the initial acquisition offer of URA within the validity period.

17. If the amount of necessary and reasonable expenses actually incurred by the owner in selling the affected property to URA (namely legal cost) and purchasing a non-domestic replacement property (namely stamp duty, agency fee and legal cost) exceeds the amount of ICA offered by URA, the owner may be reimbursed with the difference ("the Expense for Non-domestic Property"). The owner can only submit one single reimbursement claim for each non-domestic property sold to URA, and must fulfill the following eligibility criteria:

    (a) The owner must have accepted the initial acquisition offer of URA within the validity period of the offer;

    (b) The reimbursement claim must be made within 12 months from the date of execution of assignment of the affected property sold to URA, and the reimbursable amount must be the actual expenses already paid by the owner within 12 months after the property is sold to URA;

    (c) The non-domestic replacement property must be located in Hong Kong and must be purchased after the date of issuance of initial acquisition offer by URA; and

    (d) The owner should be the sole registered owner or one of the registered owners of the non-domestic replacement property, and his/her interest in the replacement property must be recorded in the land register.

18. In general, the principles in assessing the reimbursable amount of the Expense for Non-domestic Property as described in Paragraph 17 above are:

    (a) The reimbursable amount for stamp duty shall be calculated at the lower rates (Scale 2) of the ad valorem stamp duty payable for a non-domestic replacement property;

    (b) The reimbursable amount for real estate agency fee should follow the general market practices but not exceed 1% of the purchase price of the non-domestic replacement property;

    (c) The reimbursable amounts in both item (a) and item (b) above will be subject to a ceiling to be calculated on the basis of a non-domestic replacement property with a purchase price of 110% of the market value of the affected property as stipulated in the initial acquisition offer of URA;

    (d) URA will only reimburse the Expense for Non-domestic Property which is reasonable, absolutely necessary and actually paid by the owner in relation to the expenses described above;

(e) The owner should provide sufficient documentary evidence for the expenses submitted with the reimbursement claim; and

(f) URA will consider each reimbursement claim on its own merits, and URA has the sole discretion in determining the amount of the Expenses for Non-domestic Property reimbursable in each case.

19. An owner-occupier may choose to claim for business loss as an alternative to all the above-mentioned allowances for an affected non-domestic property.

Domestic Properties being used for Non-domestic Purposes

20. If an affected property with an occupation permit for domestic use has been used for non-domestic purpose, the owner-occupier will be offered market value (assessed on vacant possession basis) of the affected property plus the higher of:

(i) the allowances applicable to owner-occupied non-domestic properties (other than industrial properties); and

(ii) SA and ICA for domestic properties.

21. An owner of an affected property with an occupation permit for domestic use being leased out for non-domestic use will be offered market value (assessed on vacant possession basis) of the affected property plus the higher of:

(i) the allowances applicable to tenanted non-domestic properties (other than industrial properties); and

(ii) SA plus ICA for domestic properties less 3 times the Rateable Value of the affected property.

Separate Roof Top Interest (Not ancillary to any Domestic/Non-Domestic Property)

22. The title of the rooftop property must be legal.

23. An owner of a tenanted rooftop property will be offered the market value of the property on an open roof basis (disregarding any illegal structure or any rent passing) plus an ex-gratia allowance at 10% of the said market value.

24. An owner of a vacant rooftop property will be offered the market value of the property on an open roof basis (disregarding any illegal structure) plus an ex-gratia allowance at 10% of the said market value. In addition, URA will offer the owner AVP at 2 times of the Rateable Value of the affected rooftop property if the owner has (i) left the rooftop property vacant on the FS Date and thereafter; and (ii) accepted the initial acquisition offer within the validity period of the offer; and (iii) sold the affected rooftop property with vacant possession to URA.

25. An owner-occupier of a rooftop property will be offered the market value of the property on an open roof basis (disregarding any illegal structure) plus:

(a) rehousing if the owner-occupier fulfills the normal eligibility criteria for public rental housing application of Hong Kong Housing Authority or Hong Kong Housing Society, or

(b) an ex-gratia allowance at 10% of the market value (on open roof basis disregarding any illegal structure) of the property if the owner-occupier is not eligible for re-housing or does not opt for re-housing. In addition, if the owner-occupier has accepted the initial acquisition offer within the validity period of the offer, URA will offer him/her an allowance at 2 times of the Rateable Value of the property.

Buildings in Single Ownership

26. An owner of a building in single ownership will be offered the higher of (a) and (b) below:

(a) The total amount of the existing use values of individual units of the building plus the allowances applicable to the non-domestic units (if any) of the building and the allowances applicable to the domestic units (if any) of the building, as if the building is in multiple ownership.

(b) The redevelopment value of the building (assuming redevelopment of the building on its own) plus:

(i) an ex-gratia allowance at 5% of the redevelopment value; and

(ii) ICA at 5% of the redevelopment value, subject to the condition that an owner must have accepted the initial acquisition offer of URA within the validity period. An owner may claim for reimbursement of the actual expenses in selling the affected building to URA and purchase of a replacement building in accordance with the same criteria and principles described in Paragraphs 17 to 18 above but the replacement property must be a building in single ownership.

Vacant Sites

27. An owner of a vacant site will be offered:

(a) the redevelopment value of the vacant site (assuming redevelopment of the site on its own);

(b) an ex-gratia allowance at 5% of the redevelopment value; and

(c) ICA at 5% of the redevelopment value, subject to the condition that an owner must have accepted the initial acquisition offer of URA within the validity period. An owner may claim for reimbursement of the actual expenses in purchasing a replacement site in accordance with the same criteria and principles as described in paragraphs 17 to 18 above but the replacement property must be a vacant site.

Other General Rules

28. Calculation of the market value of a property is based on the saleable area of the property. The definition of saleable area shall follow the Code of Measuring Practice issued in March 1999 and the Supplement to the Code of Measuring Practice issued in July 2014 by the Hong Kong Institute of Surveyors. Subject always to the owner having good title to the property or any part thereof, area calculations may be based on the boundary of the property as delineated on the assignment plan and the area as measured from the latest relevant building plans approved by the Buildings Department (if any).

29. For the purpose of calculating the value of the notional replacement flat, URA will appoint seven professional surveyor firms to provide the assessments.

30. URA will provide an allowance to the owner, who has employed a professionally qualified surveyor to assess the market value of the affected property (which shall not include any ex-gratia allowance, such as HPA and SA etc.), as a subsidy for the owner's payment of the surveyor's fees for the relevant services. Please refer to the pamphlet of "Allowance for Surveyor's Fees" for details of the arrangement.

31. If an owner only purchased the affected property in the project on/after the FS Date, URA will not pay to such owner any of the above-mentioned HPA, SA, AVP, EDOLCA and any allowances applicable to non-domestic property, separate rooftop interest, single-owned building and vacant site.

32. URA will consider acquiring property from a holder of a valid adverse possessory order granted by the Court in favour of him/her. Depending on the circumstances of individual cases, URA may impose appropriate additional requirements to safeguard the interest of URA when acquiring properties with adverse possessory title.

33. URA will not purchase a structure which is not erected in compliance with the Buildings Ordinance or the terms of the Government lease and no value, compensation or allowance will be paid by URA in respect of such structure.

34. If an owner is found to have given false or misleading information to URA, URA reserves the right to revise its offers and/or take legal action against such owner and/or report the matter to relevant enforcement authorities.

35. URA's acquisition offer is made by reference to the occupancy status of an owner's property on the FS Date and in accordance with the URA's prevailing principles and practice for property acquisition. One of such prevailing principles is that an owner whose property was owner-occupied on the FS Date but is let out at the time URA's acquisition offer is made will only be offered the allowances for the acquisition of the affected property on a tenanted basis.

36. Particularly, URA would draw the attention to owners whose properties had been tenanted out on the FS Date that URA will not make a higher offer to them to acquire their properties in the following situations:

    (a) the properties are subsequently left vacant; or

(b) the owners have entered into new tenancies, whether with the existing tenants or new tenants; or

(c) the owners have subsequently obtained possession and occupied their properties for their own self-use.

37. URA would remind owners that it is an offence for a landlord to unlawfully deprive a tenant of occupation of property or to make an unwarranted demand with menaces with a view to gaining for himself/herself or others or to defraud against URA. URA will report to the enforcement authorities on all cases of suspected criminal offences.

This pamphlet is issued for the purpose of general reference only. The information contained herein is with reference to the principles and practice of the Urban Renewal Authority prevailing at the date of issue of this pamphlet. It shall not constitute any representation on the part of the Urban Renewal Authority or give rise to any expectation whatsoever and shall not be relied on as such. Each case will be considered on its own merits having regard to all factors and circumstances. The terms of acquisition to be offered are subject to the principles and practice of the Urban Renewal Authority prevailing at the time the offer of acquisition is made and are subject to review from time to time as the Urban Renewal Authority shall at its absolute discretion consider appropriate. The Urban Renewal Authority's right to add to, amend or delete the whole or any part of this pamphlet is hereby reserved.

For enquiries, please call URA External Relations Department:
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October 2020

Appendix I

Examples (Domestic Properties)

(Figures are based on assumption and for reference only)

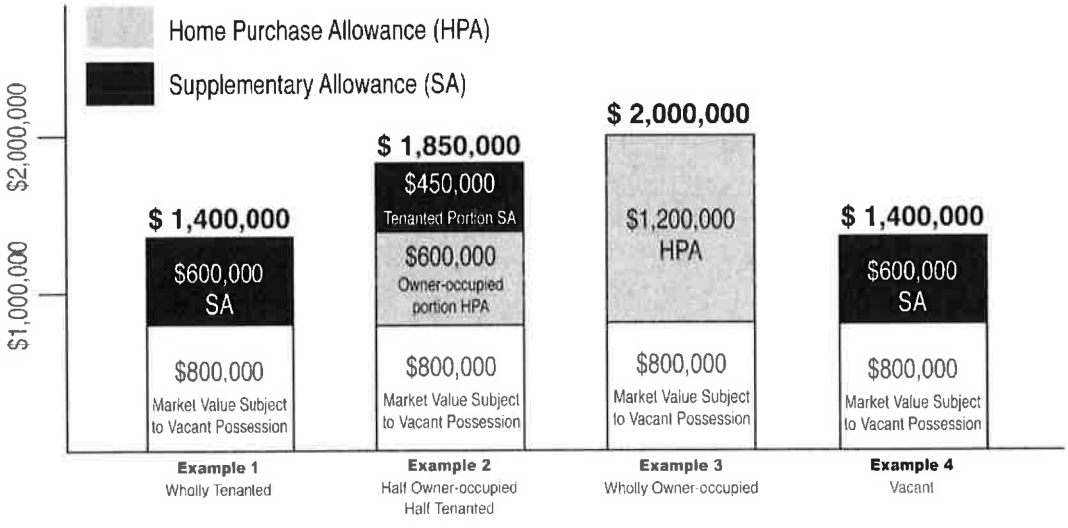
Assuming the market value of a domestic flat on vacant possession (VP) basis is HK$800,000 and the value of a notional replacement flat is HK$2,000,000. The HPA will then be HK$1,200,000.

Example One
An owner of the above domestic flat who lets out the entire flat
This owner will get the market value of his flat (on VP basis) of HK$800,000 and SA of HK$600,000 (HK$1,200,000 x 50%). In total, this owner will receive HK$1,400,000.

Example Two
An owner of the above domestic flat who occupies half of the flat and leases out the other half
This owner will get the market value of his flat (on VP basis) of HK$800,000 and HPA of HK$600,000 for the owner-occupied portion and SA of HK$450,000 (HK$600,000 x 75%) for the tenanted portion. In total, this owner will receive HK$1,850,000.

Example Three
An owner of the above domestic flat who occupies the entire flat for his own use
This owner will get the market value of his flat (on VP basis), which is HK$800,000, plus HPA which is HK$1,200,000. In total, this owner will receive HK$2,000,000.

Example Four
An owner of the above domestic flat who leaves the entire flat vacant
The owner will get the market value of his flat (on VP basis), which is HK$800,000, plus SA of HK$600,000 (HK$1,200,000 x 50%). In total, this owner will receive HK$1,400,000.



Appendix II : Domestic Properties - Diagramatic Illustration of HPA, SA & EUV

One Flat

Occupation Status	HPA	SA	Market Value
1 Owner-occupied	100%		EUV(VP)
2 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
3 Wholly Tenanted		50%	EUV(VP)
4 Vacant		50%	EUV(VP)

Two Flats

Occupation Status	HPA	SA	Market Value
5 Owner-occupied	100%		EUV(VP)
Owner-occupied	100%		EUV(VP)
6 Owner-occupied	100%		EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
7 Owner-occupied	100%		EUV(VP)
Wholly Tenanted		50%	EUV(VP)
8 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
9 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Wholly Tenanted		50%	EUV(VP)
10 Wholly Tenanted		50%	EUV(VP)
Wholly Tenanted		25%	EUV(VP)
11 Vacant		50%	EUV(VP)
Vacant		25%	EUV(VP)

Three Flats

Occupation Status	HPA	SA	Market Value
12 Owner-occupied	100%		EUV(VP)
Owner-occupied	100%		EUV(VP)
Owner-occupied	100%		EUV(VP)
13 Owner-occupied	100%		EUV(VP)
Owner-occupied	100%		EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
14 Owner-occupied	100%		EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
15 Owner-occupied	100%		EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Wholly Tenanted		50%	EUV(VP)
16 Owner-occupied	100%		EUV(VP)
Owner-occupied	100%		EUV(VP)
Wholly Tenanted		50%	EUV(VP)
17 Owner-occupied	100%		EUV(VP)
Wholly Tenanted		50%	EUV(VP)
Wholly Tenanted		25%	EUV(VP)

Occupation Status	HPA	SA	Market Value
18 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
19 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Wholly Tenanted		50%	EUV(VP)
20 Partially Owner-occupied & Partially Tenanted	Owner-occupied portion : 100%	Tenanted portion : 75%	EUV(VP)
Wholly Tenanted		50%	EUV(VP)
Wholly Tenanted		25%	EUV(VP)
21 Wholly Tenanted		50%	EUV(VP)
Wholly Tenanted		25%	EUV(VP)
Wholly Tenanted			EUV(VP)
22 Vacant		50%	EUV(VP)
Vacant		25%	EUV(VP)
Vacant			EUV(VP)

Abbreviations:

HPA Home Purchase Allowance
SA Supplementary Allowance
EUV Existing Use Value
VP Vacant Possession

Appendix 11

Rehousing and Ex-Gratia Payment Package for Domestic and Non-Domestic Tenants

Principles Adopted by the Urban Renewal Authority for Tenant Re-housing and Ex-gratia Allowance for Projects announced under the Urban Renewal Authority Ordinance (Not applicable to Tenants of Industrial Premises)

This leaflet briefly outlines the current principles and policies adopted by the Urban Renewal Authority ("URA") for providing re-housing and ex-gratia allowance to affected tenants of projects announced by the URA under the Urban Renewal Authority Ordinance ("URAO") (other than tenants of industrial premises).

(A) Re-housing for Domestic Tenants

(I) Public Rental Housing ("PRH")

Re-housing Arrangement

1. Eligible domestic tenants living in acquired properties of the URA will be re-housed in units provided by the Hong Kong Housing Authority ("HKHA") or the Hong Kong Housing Society ("HKHS"). In addition, they may opt for other subsidized housing schemes provided by the HKHA and the HKHS, if available.

Re-housing Eligibility

2. Domestic tenants must have been genuinely living in the properties within the project area continuously before and since the first day of Freezing Survey of the project ("the date of Freezing Survey") conducted by the URA until the date of re-housing offers issued by the URA to the domestic tenants, and have no alternative accommodation during the same period.

3. Domestic tenants must fulfill the prevailing eligibility criteria for PRH of the HKHA and the HKHS.

Re-housing Eligibility of Illegal Rooftop Structure Occupiers

4. Since there is no difference between the illegal rooftop structures within the URA's redevelopment project areas and the illegal rooftop structures in other domestic buildings, the re-housing eligibility of illegal rooftop structure occupiers for PRH of the HKHA is the same as the eligibility criteria adopted by the HKHA in re-housing the illegal rooftop structure occupiers in domestic buildings affected by the enforcement actions taken by the Buildings Department. Therefore, in addition to the general eligibility criteria for PRH of the HKHA, occupiers of illegal rooftop structures have to satisfy that they have been genuinely living in the structures within the project area continuously since two years before the date of Freezing Survey until the date of re-housing offers issued by the

URA to the occupiers, and have no alternative accommodation during the same period, and that the structures were built on or before 1 June 1982 in order to be eligible for PRH of the HKHA.

5. Occupiers of the illegal rooftop structures who can only fulfill the requirement of having been genuinely living in the relevant illegal rooftop structures continuously before and since the date of Freezing Survey until the date of re-housing offers issued by the URA to the occupiers, and have no alternative accommodation during the same period, will be eligible for re-housing in the PRH of the HKHS subject to meeting the eligibility criteria for PRH of the HKHS.

(II) URA Re-housing Block

Re-housing Arrangement

1. Domestic tenants living in URA acquired properties, who due to various reasons are not provided PRH re-housing as described in Part (A)(I) above, may be re-housed in units of Re-housing Block provided by the URA subject to fulfillment of the following eligibility criteria of the URA.

Re-housing Eligibility

2. A tenant and his/her household members must have been genuinely living in the properties within the project area continuously before and since the date of Freezing Survey until the date of re-housing offers issued by the URA to the tenants, and have no alternative accommodation during the same period.

3. All household members of a tenant must be legally residing in Hong Kong without any conditions of stay (excluding a time limit of stay).

4. All household members of a tenant, whether personally or through a company, must not own nor have any interest in any domestic property in Hong Kong.

5. The total monthly income of all household members of a tenant (including a tenant with all household members aged 60 or above) must not exceed 3 times the prevailing PRH maximum income limit of the HKHA for ordinary family applicants according to the tenant's household size. The total net asset of all household members of a tenant (including a tenant with all household members aged 60 or above) must not exceed 84 times the prevailing PRH maximum income limit of the HKHA for ordinary family applicants according to the tenant's household size.

6. Tenants and their household members, who are eligible for registration on the Application for PRH of the HKHA, must make the application accordingly.

7. Allocation of re-housing unit is governed by the prevailing policy of the URA on household composition.

(III) Ex-gratia Removal Allowance

1. Domestic tenants who accept rehousing arrangement will also be offered an ex-gratia removal allowance of an amount equivalent to the prevailing ex-gratia allowance offered by the Lands Department on resumption by the Government ("Government EGA") or the prevailing rates of the Ex-gratia Domestic Removal Allowance of HKHA, whichever is higher.

(IV) Compassionate Re-housing

1. Domestic tenants who do not fulfill the above rehousing eligibility criteria may be re-housed on compassionate grounds if they have genuine hardship arising from factors such as ill health, disability or special family circumstances.

(B) Ex-gratia Allowances

(I) Domestic Tenants

1. According to Landlord and Tenant (Consolidation) Ordinance, domestic tenants are required to move out from the properties and are not entitled to any compensation or forms of payments if their tenancies are terminated and are not renewed. However, for tenants of the URA acquired properties who decline re-housing as described in Part (A) above or who are not provided re-housing due to various reasons and agreed to move out from the properties, the URA will still offer to them an appropriate amount of ex-gratia allowances as described below.

Tenants who commenced occupying the properties before the date of Freezing Survey

2. Subject to the exceptions described in Paragraph 4 of Part (B)(I) below, the URA will offer an ex-gratia allowance to domestic tenants who had commenced occupying the properties under valid tenancies before the date of Freezing Survey. Based on the rateable value of the properties

concerned, the ex-gratia allowance is calculated according to the method as listed in **Table 1** below:

Table 1

Rateable Value ("RV")	Ex-gratia Allowance
1st HK$10,000	9 times RV
2nd HK$10,000	8 times RV
3rd HK$10,000	7 times RV
4th HK$10,000	6 times RV
5th HK$10,000	5 times RV
6th HK$10,000	4 times RV
7th HK$10,000	3 times RV
8th HK$10,000	2 times RV
9th HK$10,000 and above	1 times RV

3. Subject to the exceptions described in Paragraph 4 of Part (B)(I) below, the total amount of ex-gratia allowance is subject to a minimum amount of HK$180,000 (1) for an one-person household and a minimum amount of HK$200,000 (1) for a two-person or larger household.

Note: (1) Effective from 1 April 2020 and subject to annual review

4. The ex-gratia allowance described in Paragraph 2 of Part (B)(I) above and the minimum amount described in Paragraph 3 of Part (B)(I) above do not apply to domestic tenants who, at any time before and since the date of Freezing Survey and until the date of ex-gratia allowance offers issued by the URA to the tenants,

(i) have alternative accommodation; or

(ii) are not genuinely residing in properties within the project.

Domestic tenants who fall under any of these circumstances will be offered an ex-gratia allowance equal to 3 times Government EGA. However, if the tenants are not legal Hong Kong residents holding valid Hong Kong Identity Card ("HKIC"), they will only be offered 2 times Government EGA.

Tenants who commenced occupying the properties on or after the date of Freezing Survey

5. Subject to the exceptions described in Paragraph 6 of Part (B)(I) below, the URA will only offer an ex-gratia allowance equal to 2 times Government EGA to domestic tenants who had commenced occupying the properties under valid tenancies on or after the date of Freezing Survey.

6. The ex-gratia allowance described in Paragraph 5 of Part (B)(I) above does not apply to domestic tenants who,

(i) at any time before and since their occupation of the properties until the date of ex-gratia allowance offers issued by the URA to the tenants,

(a) have alternative accommodation; or
(b) are not genuinely residing in properties within the project; or

(ii) have received from the URA within two years prior to the date of Freezing Survey or at any time after the date of Freezing Survey any of the following allowances or arrangement:

(a) allowances for owners of domestic properties but excluding the incidental cost allowance; or
(b) ex-gratia allowances for domestic tenant being higher than Government EGA; or
(c) Relocation Assistance; or
(d) re-housing; or

(iii) are not legal Hong Kong residents holding valid HKIC.

Domestic tenants who fall under any of these circumstances will only be offered an ex-gratia allowance equal to 1 times Government EGA.

Principal Tenants

7. Subject to the exceptions described in Paragraph 8 of Part (B)(I) below, for principal tenants who had commenced occupying their properties and whose domestic tenancies commenced before the date of Freezing Survey, the URA will offer to them an ex-gratia allowance equal to the ex-gratia allowance described in Paragraph 2 of Part (B)(I) above subject to a minimum amount described in Paragraph 3 of Part (B)(I) above, plus an additional ex-gratia allowance equal to 24 months' profit rent (i.e. rent received from the sub-tenants after deduction of the rent payable by them to their landlords).

8. The ex-gratia allowance and minimum amount described in Paragraph 7 of Part (B)(I) above does not apply to principal tenants who, at any time before and since the date of Freezing Survey and until the date of ex-gratia allowance offers issued by the URA to the tenants,

(i) have alternative accommodation; or
(ii) are not genuinely residing in their properties within the project.

Principal tenants who fall under any of these circumstances will be offered an ex-gratia allowance equal to 3 times Government EGA plus 24 months' profit rent. However, if the principal tenants are not legal Hong Kong

residents holding valid HKIC, they will only be offered 2 times the Government EGA plus 24 months' profit rent.

9. Principal tenants occupying the properties and whose domestic tenancies commenced on or after the date of Freezing Survey will be offered an ex-gratia allowance according to Paragraphs 5 or 6 of Part (B)(I) above, whichever is applicable.

10. For those principal tenants who do not occupy their properties and whose domestic tenancies commenced before the date of Freezing Survey, they will be offered a minimum amount of HK$20,000 (1) or 24 months' profit rent, whichever is the higher. No ex-gratia allowance will be offered to principal tenants whose tenancies commenced on or after the date of Freezing Survey.

Note: (1) Effective from 1 April 2020 and subject to annual review

11. Principal tenants will be offered rental reduction from the URA. Where any sub-tenant surrenders his leased portion to the URA before the principal tenant delivers vacant possession, the rent payable by principal tenant will be reduced accordingly.

(II) Non-domestic Tenants (Other than Tenants of Industrial Premises)

Ex-gratia Allowance

1. According to the Landlord and Tenant (Consolidation) Ordinance, non-domestic tenants are required to move out from their properties and are not entitled to any compensation or other payments if their tenancies are terminated and are not renewed. However, the URA will still offer an ex-gratia allowance equals to 3 times the RV of the affected properties or an ex-gratia allowance equivalent to the prevailing ex-gratia allowance offered by the Lands Department on resumption by the Government, whichever is higher, to non-domestic tenants (other than tenants of industrial premises) who agreed to move out from their properties.

2. In addition to the ex-gratia allowance described in Paragraph 1 of Part (B)(II) above, additional payment of ex-gratia business allowance ("EGBA") is payable to any tenant-operator of non-domestic property (other than tenants of industrial premises) who had commenced occupying their properties for business use before the date of Freezing Survey and have accepted the ex-gratia allowance offer from the URA both unconditionally and within the validity period of the offer and agreed to move out from their properties. The amount of EGBA is directly proportional to the number of years of continuous operation by the tenant-operator as business owner in the property. In calculating the number of

years of continuous operation, the expiry date of continuous operation is 2 years from the date which the URA issues initial acquisition offers to property owners. The amount of EGBA is payable at a rate of 0.1 times the RV for each year, subject to a maximum of 30 years. For an incomplete year, the amount of EGBA is calculated on a pro-rata basis to the nearest month. The amount of EGBA is subject to a maximum amount of $700,000 and a minimum amount as described in **Table 2** below.

Table 2

Continuous Operation for	Minimum Amount of EGBA
(a) 10 years or less	HK$110,000 (effective from 1 April 2020 and subject to annual review)
(b) More than 10 years (maximum 30 years)	The minimum amount for (a) above plus an additional HK$10,000 for each completed year after 10 years.

3. In the application for EGBA, the Tenant-operator is required to substantiate the period of continuous operation in the property as business owner. "Tenant-operator" here means a tenant who occupies his property, which is a legal premises, for his own business.

4. A tenant-operator may choose to claim for (i) severance payment (if any) paid to his/her employees under Employment Ordinance (Chapter 57); and (ii) value of an unexpired lease term and professional fee reasonably incurred (if any), as an alternative to the EGBA (if applicable).

5. A tenant-operator may also choose to claim for business loss (including the claims as mentioned in Paragraph 4 of Part (B)(II) above) as an alternative to the two allowances referred to in Paragraphs 1 and 2 of Part (B)(II) above (if applicable).

(C) Payment Arrangement

1. All applicable allowance mentioned above, half will be paid upon the execution of surrender agreement and the remaining half will be paid after the delivery of vacant possession.

(D) Other General Rules

1. Trespassers occupying properties (domestic or non-domestic) in the project, who move in on or after the date of Freezing Survey, will be required to move out without any allowance or re-housing.

2. In cases where the property is occupied for domestic and non-domestic uses simultaneously, the URA will determine whether the tenancy is domestic or non-domestic in accordance with the provisions of the Landlord and Tenant (Consolidation) Ordinance.

3. If tenants (domestic or non-domestic) refuse to accept ex-gratia allowance or re-housing offer or execute surrender documents, the URA will recover vacant possession of their properties in accordance with the laws.

4. Domestic tenants whose tenancy commenced before the date of Freezing Survey and who was requested by their landlord to move out from the affected properties due to the expiry or termination of their tenancies before the URA acquired the affected properties successfully and who are unable to receive the ex-gratia allowances according to Part (B)(I) (the "affected domestic tenants") can apply for the URA's "Domestic Tenant Compassionate Assistance Programme" ("DTCAP"). The affected domestic tenants should submit application to the URA with tenancy agreement, rent receipts, termination notice served by the landlord to the affected domestic tenants and residential proof etc., at least 1 month before moving out from the affected properties, to facilitate the URA to conduct initial assessment on their eligibility of receiving Special Ex-gratia Allowance or Special Re-housing. Amount of the Special Ex-gratia Allowance is equal to the ex-gratia allowance described in Paragraph 2 and Paragraph 3 of Part (B)(I) above.

5. To become eligible for DTCAP, the affected domestic tenants should fulfill the following eligibility criteria:

   (i) they have been genuinely residing with valid tenancy in the affected properties continuously before and since the date of Freezing Survey and have been genuinely residing in the affected properties for at least 6 months continuously before moving out from the affected properties; and
   (ii) they do not have alternative accommodation elsewhere before and since the date of Freezing Survey until their moving out from the affected properties; and
   (iii) they are required to leave the affected properties not because of their breach of tenancy on their part; and
   (iv) after the expiry of their tenancies, they have not refused to renew their tenancies due to unreasonable grounds and circumstances; and
   (v) they have not received any compensation or other payment from their landlords for vacating the affected properties; and
   (vi) they are legal Hong Kong residents holding valid HKIC; and
   (vii) their landlords have not served the termination notice to them before the date of Freezing Survey; and
   (viii) they have registered on the Application for PRH of the HKHA; and

(ix) if Special Re-housing is to be offered, they have to fulfill the eligibility criteria of PRH laid down by the HKHA and/or HKHS or of URA re-housing.

Tenants who moved in on or after the date of Freezing Survey are not eligible for DTCAP.

6. If the affected domestic tenants are eligible for DTCAP, the URA will pay Special Ex-gratia Removal Allowance in advance. The amount is equal to the ex-gratia removal allowance as described in Paragraph 1 of Part (A)(III) above. The pre-paid amount will be deducted from the future payment of Special Ex-gratia Allowance.

After completion of the acquisition or government resumption of the affected properties, the URA will assess the eligibility of the affected domestic tenants in receiving the Special Ex-gratia Allowance or Special Re-housing.

7. Domestic tenants, who undergo the same situation as mentioned in Paragraph 4 of Part (D) above and are not eligible for DTCAP, can apply for the URA's Relocation Assistance. The affected domestic tenants must fulfill the eligibility criteria mentioned in items (i) to (vi) of Paragraph 5 of Part (D) above, and should submit application and provide sufficient evidence to the URA at least 1 month before moving out from the affected properties for URA's verification and assessment.

8. The URA will pay Relocation Assistance to the affected domestic tenants after they have moved out from the affected properties. Affected domestic tenants who have received Relocation Assistance are not eligible to apply for DTCAP described in Paragraph 4 of Part (D) above in the same project.

9. Domestic tenants who opt for receiving any ex-gratia allowance of a total amount more than 1 times the Government EGA (but excluding the 24 months' profit rent) or Relocation Assistance as described in Paragraph 7 of Part (D) above have to agree to give up their rights to public housing assistance for the next 2 years. Such tenants are only allowed to submit fresh applications for PRH and other public housing assistance after the expiry of the 2-years period.

10. Non-domestic tenant-operator (except tenants of industrial premises) whose tenancy commenced before the date of Freezing Survey and who was requested by their landlord to move out from the affected properties due to the expiry or termination of their tenancies before the URA acquired the affected properties successfully and moving out from the affected non-domestic properties after the date of Freezing Survey and who are unable to receive the ex-gratia allowances according to Part (B)(II) (the "affected non-domestic tenants") can apply for the URA's Special EGBA. The amount is equal to EGBA as described in Paragraph 2 of Part (B)(II) above. The affected non-domestic tenants should provide

sufficient evidence of business operation, including tenancy agreements, rental receipts, termination notice served by their landlord and other relevant documents, at least 1 month before moving out from the affected non-domestic properties, to facilitate the URA to conduct initial assessment on their eligibility of receiving Special EGBA.

11. To become eligible for Special EGBA, the affected non-domestic tenants should fulfill the following criteria:

(i) they are operating in a legal premises; and
(ii) they have commenced operating business in the affected properties with valid tenancy continuously before and since the date of Freezing Survey and have been in operation for at least 6 months continuously before moving out from the affected properties; and
(iii) they are required to leave the affected properties not because of his/her breach of tenancy terms; and
(iv) the tenancy is terminated or not renewed by the landlord and they have not terminated the tenancy early at their own will; and
(v) they have received no compensation or other payment from their landlord for vacating the affected properties; and
(vi) after the expiry of the tenancy, they have not refused to renew their tenancy due to unreasonable grounds and circumstances.

After completion of the acquisition or government resumption of the affected properties, the URA will assess the eligibility of the affected non-domestic tenants in receiving the Special EGBA.

12. The URA has drawn to the attention of landlords whose properties had been tenanted out on the date of Freezing Survey that the URA will not consider making a higher offer to them to acquire their properties in the following situations: -

(i) properties being left vacant; or
(ii) landlords entering into new tenancies, whether with the existing tenants or new tenants; or
(iii) landlords occupying their properties for their own use.

13. The URA would remind landlords / tenants that it is an offence for landlords to unlawfully deprive a tenant of occupation of property or to make an unwarranted demand with menaces with a view to gain for himself or others or to defraud against the URA. The URA will report to the enforcement authorities on all cases of suspected criminal offences.

14. The information contained in this leaflet applies to projects announced by the URA under the URAO only (i.e. not applicable to tenants of industrial premises). The URA reserves the right to adopt different policies and procedures for its other projects.

This leaflet is issued for the purpose of general reference only. The information contained herein is with reference to the principles and practice of the Urban Renewal Authority prevailing at the date of issue of this leaflet. It shall not constitute any representation on the part of the Urban Renewal Authority or give rise to any expectation whatsoever and shall not be relied on as such. Each case will be considered on its own merits having regard to all factors and circumstances. The terms of re-housing and/or ex-gratia allowance to be offered are subject to the principles and practice of the Urban Renewal Authority prevailing at the time the offer of re-housing and/or ex-gratia allowance is made and are subject to review from time to time as the Urban Renewal Authority shall at its absolute discretion consider appropriate. The Urban Renewal Authority's right to add to, amend or delete the whole or any part of this leaflet is hereby reserved.

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