S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOMES FOR THE ELDERLY) (RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD, SAN TIN, N.T.

FURTHER INFORMATION
JAN 2023

RLEE

RLEE Architects (HK) Ltd

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AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD,
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RESPONSE-TO-COMMENT - EPD

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
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(dated 27 SEPTEMBER 2022)
(updated 05 JANUARY 2023)

Comments	Response
5. Comments of the Director of Environmental Protection (DEP) as follow:	
5.1 Comments on ER of the supporting planning statement:	
5.1.1 Comments on air quality assessment	
1. Section 2.1.1 and 2.3.1: Please be reminded that it should be the responsibility of the applicant and their consultants to ensure the validity of the chimney data by their own site surveys. Should the information of industrial chimneys be subsequently found to be incorrect, the assessment result as presented in the planning application would be invalidated.	Please refer to 2.1.1 para.1
2. Table 2: Please review the latest 5 years (2017 -2021) of air quality (for both long term and short term AQOs) at Yuen Long Monitoring Station and describe the baseline air quality condition in the Yuen Long area.	Please refer to 2.1.1 para. 2 & Table 2
3. Section 2.2.1: Please combine the 1st and 2nd bullets point to read "No air-sensitive uses including openable window, fresh air intake and active recreational uses in open space shall be allowed within buffer zones."	Please refer to 2.2.1

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Comments	Response
4. Section 2.3.1: Please clarify if there is any air and odour emission sources (e.g. any emissions from nearby nullah, warehouses and workshops) within 200 m from the site boundary and address their potential impacts on the proposed development (if any) in this section.	Please refer to 2.3.1
5. Section 2.4.1: It is recommended that electric power supply shall be provided for on-site machinery as far as practicable to minimize aerial emissions. Please supplement.	Please refer to 2.4.1 last bullet point

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Comments	Response
6. Odour impact from the proposed on-site STP (as shown in Figure 3.2.1): (a) The consultant should address the odour impact arising from the proposed on-site STP on the nearby ASRs including the existing ones and the proposed development in the report. Please indicate the location of the exhaust of the proposed STP in a location map with the nearest ASRs and provide their separation distances. Please also specify the odour removal efficiency of the deodorizer in the report. (b) The applicant should observe and follow EPD's Guidelines for the Design of Small Sewage Treatment Plants for minimization of the odour impact from the proposed STP while the exhaust outlet of the proposed STP should be located away from all nearby ASRs as far as possible. (c) Please clarify how the sewage and sludge generated from the STP will be discharged and whether there is any odour issues related to disposal.	(a) &(b): A deodorization adsorption system is proposed to install for removal of odor from generated sources, which includes a FRP vessel with activated carbon media, pre-filter, post-filter and dehumidifier, please refer to attached brochure. The deodorization adsorption system will have minimum odor removal efficiency of 99.5% at 5 ppm H2S concentration. The deodorization adsorption system will have minimum service life for 12 months continuous operation for 5ppm H2S loading. Sufficient adsorption capacity of activated carbon will be installed. The odor removal air from the outlet of deodorization adsorption system will be exhausted through the air duct to high level. (c): A wet sludge transfer pipe will be installed to draw wet sludge from the sludge holding tank at sewage treatment plant to the collection point adjacent to the entrance of development in fully close system for tanker collection of wasting wet sludge to dispose to Government sewage treatment plant. It will be eliminated odor release during wasting wet sludge disposal service.

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Comments	Response
7. Air quality impact from the proposed kitchen of the proposed development: Please address if there are any oily fumes from the proposed kitchen and any mitigation measures will be in place to alleviate the potential air quality impact on the nearby ASRs in the report.	A grease filter would be applied to remove oily fume. The Catalogue is attached for your information. Routing is shown on the revised G-03 Rev.B.
8. Figure 2.1.1: Please provide a remark in the figure to state clearly that no air-sensitive uses including openable window, fresh air intake and active recreational uses in the open space is allowed within the buffer zone.	Figure attached to Appendix 2.1

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Comments	Response
5.1.2 Comments on Noise Impact Assessment	
Traffic noise	
1. Sections 3.1.2, 3.2.1 and 3.3.1: Please clarify if any diagnostic rooms/wards in the proposed RCHE development will rely on the operable window for ventilation. If yes, the road traffic noise criteria should be 55 dB(A). Please also clarify the nature and use of the Multi-Function Area, and whether there would be any openable window for ventilation.	No diagnostic rooms/wards is provided in the development. The Multi-function Area is for dinning and rest purpose. Since the area is air-conditioned by AC unit, openable window would not be provided.
2. Section 3.2.2: Please review if ASR "B" would be more appropriate for representative NSRs (i.e.W07 to W13) facing away from San Tin Highway.	Please refer to 3.2.2 para. 2
3. Section 3.3.2: Please document TD's agreement on the traffic forecast data in the report once available. In case TD has no comment on the methodology for traffic forecast only, the consultant should provide written confirmation from the respective competent party (e.g. traffic consultant) that TD's endorsed methodology has been strictly adopted in preparing the traffic forecast data, and hence the validity of traffic data can be confirmed.	TIA under process by TD. Would await TD's confirmation on methodology in due course.
4. Section 3.3.5: The consultant proposed vertical architectural fins at the northern, eastern and southern facade of the proposed RCHE to mitigate the traffic noise impact. Please note that the proposed architectural fin may bring a maximum of 3 dB(A) of additional noise reduction. Please review and propose noise mitigation measures such as INMD to mitigate traffic noise impact if necessary.	3.3.5 para. 1, bullet point 4 & subsequent analysis.

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Comments	Response
Noise model	
5. The search radius in the configuration should be set to 300m. Please review.	5-7 : Please refer to the attached revised traffic noise model attached in email to PlanD.
6. The traffic data for Road I to R are missing. Please supplement.	
7. The traffic flow of Road C1 appeared to be inconsistent with Table 3-3. Please review and rectify.	
Fixed noise	
8. Section 3.4.4 and Table 3-7: Please provide a figure with the location of representative NSRs (i.e. NSR N01 to NSR N03) relative to the proposed fixed plant noise sources.	Please refer to Appendix 3.2
9. Based on our desktop review, open storage was located approximately 100m to the west of the site, and a mobile forklift and crane were found in the open storage site. Please double-check the potential fixed noise sources in the vicinity that should be included in the fixed noise impact assessment. The fixed noise impact assessment from surrounding existing sources to the proposed development is found missing in the planning application.	Please refer to 3.4.2 para. 2 & 3.4.6.
10. Figure 3.2.4: Please assign the NSRs mentioned in Table 3-7 in CadnaA for fixed noise impact assessment. Please be reminded that the cumulative fixed noise impact should be included in the fixed noise impact assessment.	Updated in Table 3-8

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Comments	Response
5.1.3 Comments on water quality impact	
1. Please provide relevant baseline condition of nearby waterbodies and confirm whether the development would have adverse water quality impact on WQO.	Please refer to 4.3 para. 5
2. Section 4.5: Please provide more information on the sewage generation during operation, including the amount of sewage flow generated per day (from residents, staff, facilities, etc.), the size of the STP, mitigation measures to prevent discharge/ overflow of untreated raw sewage, etc. to demonstrate there would be no adverse water quality impact.	2 & 4: The Design Calculation is attached for your information. It provides the calculation of the daily flow generated from resident and staff, the applied discharge standard and design treatment tank to fulfill the effluent quality of discharge standard of EPD.
3. Section 4.3: Please list and provide a figure to identify the WSRs within 500m area. Please also indicates the discharge route of the proposed STP. Please also elaborate whether WSRs within 500m would be affected by the proposed development during construction and operation phase.	Please refer to 4.3 para. 6
4. Section 4.5: Design of the STP shall follow Guidelines for the Design of Small Sewage Treatment Plants by EPD.	Noted

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<table>
<tr><th>Comments</th><th>Response</th></tr>
<tr><td>5. Section 4.5: The subject site falls within Deep Bay catchment area with limited assimilative capacity. We understand that there is no public sewerage system available in the vicinity of the site. Subject to confirmation that connection to public sewerage is not feasible, the development shall be equipped with on-site tertiary sewage treatment facility. A typical tertiary treatment standard is attached below for reference.
<table>
<tr><td>Parameter</td><td>Tertiary Effluent Standards (Upper Limit) *</td></tr>
<tr><td>BOD5</td><td>10 mg/L</td></tr>
<tr><td>TSS</td><td>10 mg/L</td></tr>
<tr><td>TN</td><td>20 mg/L</td></tr>
<tr><td>TP</td><td>2 mg/L</td></tr>
<tr><td>Ammonia-N</td><td>5 mg/L</td></tr>
<tr><td>E. coli</td><td>100unts/100mL</td></tr>
</table>
*Depending on the water body receiving the discharge, the more stringent set of the effluent standards (those listed in the table or the WPCO TM) should be adopted as appropriate.</td><td>The Design Calculation is attached for your information. It provides the calculation of the daily flow generated from resident and staff, the applied discharge standard and design treatment tank to fulfill the effluent quality of discharge standard of EPD.</td></tr>
</table>

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Comments	Response
5.1.4 Comments on waste management 1. Please confirm whether there is any potential land contamination issue due to the historical and current land uses at the subject site.	Refer to enclosed FSD's letter dated 6 December 2022, neither records of dangerous goods license, nor incidents of spillage / leakage of dangerous goods were found for the captioned lots, land contamination from spillage / leakage of dangerous goods is not anticipated.
5.1.5 Comments on landfill gas hazard impact 1. As the application site falls within 250m consultation zone of the restored Ngau Tam Mei Landfill, please address potential landfill gas hazard impacts during construction and operation phase of the proposed development and propose mitigation measures, if necessary.	A Landfill Gas Hazard Assessment Report for the existing house was submitted on 04/2016 and be approved by EPD. A revised assessment could be carried out at later stage if necessary.

S12A AMENDMENT OF PLAN APPLICATION APPROVED NGAU TAM MEI OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOMES FOR THE ELDERLY) (RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD, SAN TIN, N.T.

REVISED ENVIRONMENTAL ASSESSMENT REPORT

RLEE

RLEE Architects (HK) Ltd

S12A Amendment of Plan Application,

Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12

Proposed Rezoning from "R(C)" to "GIC" for a Proposed "Social Welfare Facilities"

At Lot 4823 in DD 104, 81 San Tam Road, San Tin

Environmental Assessment Report

6 December 2022

Ref No.: C220410W-01

Submitted to:
R LEE Architects (HK) Ltd
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698 Prince Edward Road East,
San Po Kong, Kowloon

Prepared By:
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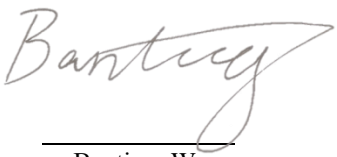
Project:	Proposed Residential Care Home for Elderly at 81 San Tam Road, Yuen Long, N.T.
Document No.:	C220410W-01

Revision	Issue Date	Description	Author	Checker	Approver
A	08/07/2022	First Issue	PL	EN	BW
B	12/07/2022	Revised according to comment	PL	EN	BW
C	6/12/2022	Revised according to comment	PL	EN	BW

Approved by:



Banting Wong
MSc, CEng, MIOA,
MHKIQEP, MHKIOA, AFCHKRI, MHKIEIA

Disclaimer:

- This report is prepared and submitted by Novox Limited with all reasonable skill to the best of our knowledge, incorporating our Terms and Conditions and taking account of the resources devoted to it by agreement with the client.
- We disclaim any responsibility to the client and others in respect of any matters outside the project scope.
- This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

TABLE OF CONTENT

1 INTRODUCTION

1.1 BACKGROUND

Wonder Pacific Development Limited (the Applicant) intends to develop an 10-storey Residential Care Home for the Elderly (RCHE) (the Development) at Lot 4823 in D.D. 140 in 81 San Tam Road, San Tin (the Site).

For a proposed amendment to the approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12, a planning application to the Town Planning Board (TPB) under Section 12A of the Town Planning Ordinance (TPO) is required for rezoning from "R(C)" zone to "G/IC" zone.

To satisfy the Section 12A planning application, Novox Ltd is commissioned to conduct an environmental assessment to evaluate the potential environmental impact based on the latest master layout plan.

1.2 THE PROJECT AREA

The Site area is approximately 736.3m^2 and it is located at Lot 4823 in D.D. 140 in 81 San Tam Road, as shown in **Appendix 1.1.** It locates within the R(C) zone of the OZP. The site is currently an existing House. The Proposed Development is an 10-storey RCHE which comprises a total 142 bed spaces. The anticipated year of construction completion and occupation is 2027.

The floor layout plans, and section diagrams of the Proposed Development are provided in the Planning Statement of the Planning Application.

1.3 OBJECTIVE AND SCOPE OF ENVIRONMENTAL ASSESSMENT

The key objectives of this EA are to identify environmental key issues and constraints of the project, to identify possible environmental impacts, to propose mitigation measures against any unacceptable environmental impacts during the construction and operation phases of the project, including

- Identify all sensitive receivers of the Proposed Development.
- Assess the potential air quality impact at the Proposed Development due to vehicular and any industrial emissions.
- Carry out a Noise Impact Assessment (NIA) during construction and operation of the RCHE Proposed Development.
- Assess the potential impact of water quality and waste management impact due to the Proposed Development.
- Recommend the necessary mitigation measures to alleviate any unacceptable impacts.

2 AIR QUALITY IMPACT ASSESSMENT

2.1 AIR QUALITY STANDARDS

The Air Pollution Control Ordinance (APCO) provides the statutory authority for controlling air pollutants from a variety of sources. The Hong Kong Air Quality Objectives (AQOs), which stipulate the statutory limits of air pollutants and the maximum allowable numbers of exceedance over specific periods should be met. With passage of Hong Kong's Air Quality Objectives (AQOs) in the Air Pollution Control Ordinance (Cap. 311), the latest AQOs as listed in Table 1 have been in effect.

Table 1 Hong Kong Air Quality Objectives

Pollutant	Averaging time	Concentration limit[1] (µg/m^3)	Allowable number of exceedances
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	50	3
Respirable Suspended Particulates (PM_{10}) [2]	24-hour	100	9
	Annual	50	Not Applicable
Fine Suspended Particulates ($PM_{2.5}$) [3]	24-hour	50	35
	Annual	25	Not Applicable
Nitrogen Dioxide (NO_2)	1-hour	200	18
	Annual	40	Not Applicable
Ozone (O_3)	8-hour	160	9
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Lead (Pb)	Annual	0.5	Not Applicable

Note: [i] All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293Kelvin and a reference pressure of 101.325 kilopascal.
[ii] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
[iii] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

2.1.1 The Site Environment

The existing environment of the proposed development is primarily affected by the local traffic such as San Tin Highway and San Tam Road. A site visit was carried out on 22nd June 2022 within 500m study area of the project, and no chimneys were observed near the Site during the site visit. The Site is used an existing House of GFA 294.258 m^2 and a plot ratio of 0.4. The uses adjoining to the Site is a small mountain full of greenery to the east, village houses namely Maple Garden and Casa Paradizo with 3 storeys to the north, and the south of the Site. Far away to the west of the Site are scattered building structures surrounding primarily for uses including warehouses, workshops and with several village houses. As such,

local traffic is considered to be the dominant emission source affecting the ambient air quality in these areas.

There is currently an air quality monitoring station operated by Environmental Protection Department (EPD) located outside the Project Site, namely Yuen Long Monitoring Station (situated at Yuen Long District Office, 269 Castle Peak Road). Despite this, in terms of geographical location, this monitoring station is considered the closest to the proposed Project Site. The annual average of air pollutants in µg/m^3 monitored at this station for the year 2017-2021 are summarized in Table 2 below. In 2021, all measured parameters complied with the AQO except Ozone recorded non-compliance with the 8-hour AQO (160 µg/m3 with allowance of 9 exceedances of AQO limit per year).

Table 2 EPD Air Quality Monitoring Record at Yuen Long Monitoring Station in 2021-2022

Pollutant	Averaging Time	Conc. Limits (µg/m^3)	No. of Exceedances Allowed	Concentrations (µg/m^3) [1]					Remarks
				2017	2018	2019	2020	2021	
PM_{10}	24-hour	100	9	87	75	83	77	73	10th highest conc.
	Annual	50	Not Applicable	40	37	37	30	30	/
$PM_{2.5}$	24-hour	50	35	**52**	46	45	36	43	34th highest conc.
	Annual	25	Not Applicable	22	20	20	16	17	/
NO_2	1-hour	200	18	156	150	161	135	148	18th highest conc.
	Annual	40	Not Applicable	**41**	**43**	**44**	32	40	/
SO_2	10-minute	500	3	80	52	42	26	24	4th highest conc.
	24-hour	50	3	20	17	11	10	14	4th highest conc.
CO	1-hour	30,000	0	1,450	1,720	2,150	1,530	2,090	1st highest conc.
	8-hour[2]	10,000	0	1,324	1,574	1,903	1,279	1,591	1st highest conc.

O_3	8-hour[2]	160	9	**175**	**162**	**200**	154	**178**	10th highest conc.
Lead	Annual	0.5	Not Applicable						/

Note:
[1] **Bolded in Red** concentrations indicate exceedance of the air quality objectives

2.1.2 Representative Air Quality Sensitive Receivers (ASRs)

All the residential units within the proposed development are identified as sensitive receivers for air quality impact assessment. **Appendix 2.1** shows the locations of Representative ASRs of proposed RCHE development.

2.1.3 Hong Kong Planning Standards and Guidelines (HKPSG)

According to Chapter 9, Environment of the Hong Kong Planning Standard and Guidelines (HKPSG), adequate buffer distance or screening should be provided between sensitive receptors and potential air pollution emitters. For roads that are distinguished as local distributor and truck road for active and passive recreational uses, the buffer distance must be greater than 5m and 20m respectively as shown in Table 3 below.

Table 3 Guidelines on Usage of Open Space Site

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Road and Highways	*Type of Road*		
	Trunk Road and Primary Distributor	>20m	Active and passive recreation uses
		3 - 20m	Passive recreational uses
		<3m	Amenity areas
	District Distributor	>10m	Active and passive recreational uses
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreational uses
		<5m	Passive recreational uses
	Under Flyovers		Passive recreational uses

2.2 OPERATIONAL VECHICULAR EMISSION SOURCES

2.2.1 Evaluation of Air Quality Impact

The development may be subject to vehicular emission impact from roads nearby during the operational phase of the project. According to the Annual Traffic Census 2020 published by the Transport Department (TD), San Tam Road is classified as a rural road and San Tin Highway is classified as a trunk road. With a view to achieving a better air quality environment, the project proponent proposed to incorporate a separation distance of more than 20m and more than 5m between the sensitive uses of this Project and from the road kerb of the San Tin Highway and San Tam Road, respectively, which satisfies the buffer distance requirement for active and passive recreation uses according to Chapter 9, Environment of the Hong Kong Planning Standard and Guidelines (HKPSG) as shown in Section 2.1.3. No adverse vehicular emission impact is anticipated upon incorporation of the relevant buffer distance stipulated under the HKPSG into the layout design. The buffer distance between the said roads and the proposed RCHE development is shown in **Appendix 2.1**. In order to avoid adverse air quality impact from the traffic emission, a buffer zone is recommended for the Proposed Development with the following requirements:

- No air-sensitive uses including openable window, fresh air intake and active recreational uses in open space shall be allowed within buffer zones.

- With the provision of the buffer zone, the buffer distances recommended in HKPSG will be satisfied. Therefore, no adverse air quality impact on the Site from traffic emission is anticipated.

2.3 OPERATIONAL INDUSTRIAL EMISSION SOURCES

2.3.1 Evaluation of Air Quality Impact

As discussed in Section 2.1.1, it has confirmed in a site visit carried out on 22 June 2022 within 200m study area of the project, that no chimneys were observed near the Site during the site visit. The uses adjoining to the Site is a small mountain full of greenery to the east, village houses namely Maple Garden and Casa Paradizo with 3 storeys to the north, and the south of the Site. To the west of the Site are scattered building structures surrounding primarily for uses including warehouses, workshops and with several village houses. It is confirmed that there is no air and odour emission sources in 200m study area by site survey. As such, local traffic is considered to be the dominant emission source affecting the ambient air quality in these areas. Thus, no adverse air quality impact to the proposed RCHE development due to industrial source emissions is anticipated.

2.4 CONSTRUCTION DUST EMISSION SOURCES

2.4.1 Evaluation of Air Quality Impact

The potential air quality impacts include the dust and exhaust emissions arising from the construction (e.g., demolition, site formation, foundation and formworks etc.). This may cause short–term air quality (i.e., dust) impacts on the surrounding air sensitive receivers. To minimize the potential dust emissions and for good site practice, relevant mitigation measures

under the Air Pollution Control (Construction Dust) Regulation would be incorporated in the relevant works contracts.

- Good practice and mitigation measures to be implemented during the construction phase are as follows:
- Regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.
- Frequent watering for particularly dusty areas and areas close to ASRs.
- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.
- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.
- Tarpaulin covering of all dusty vehicle loads transported to and from the Site.
- Establishment and use of vehicle wheel and body washing facilities at the exit points of the Site.
- Use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry weather.
- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.
- Imposition of speed controls for vehicles within the Site.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from off-site ASRs.
- Every stock of more than 20 bags of cement or dry Pulverised Fuel Ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.
- Electric power supply shall be provided for on-site machinery as far as practicable to minimize aerial emissions.

With implementation of the recommended mitigation measures, no adverse air quality impacts during construction are anticipated.

3 NOISE IMPACT ASSESSMENT

3.1 NOISE ENVIRONMENT

3.1.1 The Site Environment

The Subject Site is surrounded by mainly low-rise residential development, including Maple Garden and Casa Paradizo. San Tin Highway is located near the western side of the development nearby which will generate road traffic noise impact. There exists operation for sales of building materials with open storage to the west as observed in onsite survey. No existing noise sources are operating at night time.

3.1.2 Representative Noise Sensitive Receivers (NSRs)

All the residential units within the proposed development are identified as sensitive receivers for noise impact assessment. Representative Noise Sensitive Receivers (NSRs) at each flat was selected for the quantitative traffic noise impact assessment and their locations are shown in **Appendix 3.1**. The assessment points include all openable windows in habitable rooms such as living rooms and bedrooms. Windows in noise tolerance spaces such as toilets, bathroom and staircases are excluded.

There is no diagnostic rooms / wards in the proposed RCHE development. The Multi-Function Areas will not rely on operable window for ventilation.

The assessment points have been taken to be situated at 1.2 m above floor slabs and at 1 m away from the external facade of openable windows of habitable room of the flats.

3.2 ENVIRONMENTAL LEGISLATION AND STANDARDS

3.2.1 Road Traffic Noise Assessment Criteria

Noise standards are recommended in the *Hong Kong Planning Standards and Guidelines* (HKPSG) for planning against noise impact from road traffic. As stated in Table 4.1 of Chapter 9 of HKPSG, the criterion for road traffic noise impact on domestic premises (habitable rooms) is L_{10}(1-hour) 70dB(A). This criterion applies to uses which rely on openable windows for ventilation.

3.2.2 Fixed Noise Sources Assessment Criteria

Impacts of fixed noise sources within the Proposed Development on nearby noise sensitive buildings is governed by the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM)* issued under the *Noise Control Ordinance ("NCO")* and sections of Chapter 9 of HKPSG.

In setting the ANL, reference has to be made to the Area Sensitive Rating ("ASR") in Table 1 of IND-TM reflecting the type of area where the noise sensitive receivers ("NSRs") are situated. The proposed development and surrounding existing residential developments are considered low density residential area. Future noise sensitive uses of the proposed

development are expected to be directly affected by San Tin Highway with Annual Average Daily Traffic ("AADT") in excess of 30,000 (i.e. influencing factor, IF). An ASR of "C" is considered representative of the noise sensitive uses. For NSRs without direct line of sight to San Tin Highway, An ASR of "B" is adopted. ANL and operation noise criteria for different Area Sensitivity Ratings (ASRs) are summarized in **Table 3-1** and **Table 3-2**.

According to the HKPSG, the level of the intruding noise at the façade of the nearest sensitive use should be at least 5 dB(A) below the appropriate ANL shown in the IND-TM or, in the case of the background being 5 dB(A) lower than the Acceptable Noise Level (ANL), the predicted noise level should not exceed the background.

Background noise level in terms of L_{90}(1-hr) will be measured onsite by future contractor so that it can be adopted for determining necessary noise mitigation measures to meet the requirement. Regarding the identified existing NSR discussed above, it is close to and directly affected by road traffic along San Tin Highway so that the background noise level is more likely to be higher than ANL-5.

Table 3-1 Area Sensitivity Rating (ASR)

Type of Area Containing NSR \ Degree to which NSR is affected by IF	Not Affected	Indirectly Affected	Directly Affected
(i) Rural area, including country parks or village type developments	A	B	B
(ii) Low density residential area consisting of low-rise or isolated high-rise developments	A	**B**	**C**
(iii) Urban area	B	C	C
(iv) Area other than those above	B	B	C

Table 3-2 Acceptable Noise Levels (ANLs)

Time Period \ ASR	A	B	C
Day (0700 to 1900 hours)	60	**65**	**70**
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	**55**	**60**

Remarks:

1) *Prevailing background noise level to be measured by future contractor. Prevailing background noise level or ANL-5 will be finally adopted.*

3.2.3 Construction Noise Assessment Criteria

The main piece of legislation controlling environmental noise nuisance impact is the *Noise Control Ordinance (NCO)*. The NCO enables regulations and Technical Memoranda (TM) to be made, which introduce detailed control criteria, measurement procedures and other

technical matters.

Construction noise is governed under the following TMs:

- *Technical Memorandum on Noise from Percussive Piling (PP-TM).*
- *Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM).*
- *Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM).*

During "Restricted Hours", defined as 7pm to 7am from Monday to Saturday and all day on public holidays, the construction contractor must apply for and receive a Construction Noise Permit (CNP) from EPD for percussive piling (at any time) or any other construction activities conducted. While there is no planned construction works to be carried out during the restricted hours, the relevant TMs should be followed in case there is any need to carry out works in such time period in future.

3.3 ROAD TRAFFIC NOISE ASSESSMENT

3.3.1 Assessment Model

The U.K. Department of Transport's procedure *"Calculation of Road Traffic Noise"* (CRTN) is used to predict the hourly L_{10}(1-hour) noise levels generated from road traffic at selected representative NSRs using proprietary noise prediction software CadnaA. Road traffic noise impacts on various floor levels on the respective residential blocks/houses have been predicted. Practicable environmental mitigation measures will be recommended where necessary. The predicted noise levels are compared with the relevant HKPSG noise standards (i.e. L_{10}(1-hour) 70dB(A)).

The assessment methodology was implemented using noise prediction software CadnaA, which is a graphically based computer programs in full compliance with the noise prediction methodologies as set out in CRTN.

This proprietary modeling software is capable of simulating various road traffic conditions, road conditions and the form of noise mitigation measures. All the topographic effect, distance information, view angle information, shielding effects, ground absorption and façade reflection can be accurately illustrated and computed.

Topographic barrier including surrounding building structures, retaining walls, and natural terrains etc. all provide screening or reflection effect to the noise source. This information is retrieved from the latest digital map data provided by Lands Department and digitized in the road traffic noise model.

For the propagation of noise, a worst-case hard ground as defined in CRTN was assumed throughout the Study Area.

A +2.5dB(A) correction for façade reflection was applied at receptor locations in accordance with CRTN.

3.3.2 Traffic Flow Data

The road layout defines the road width, opposing traffic lane separation, road surface type, traffic mix, traffic flow and design speed. For the purpose of this road traffic noise impact assessment, traffic flows have been forecasted for all major roads within 300m of the proposed development. The road network was divided into discrete segments, each of which was assigned a segment number.

The proposed development is scheduled for construction completion and operation in year 2027. Traffic forecast for year 2042 representing the worst situation within 15 years from the operation of the residential care home is provided by project traffic consultant and included in **Table 3-3**. The traffic forecast was conducted by the Project's traffic consultant and agreed with Transport Department (TD) and Planning Department (PlanD).

Table 3-3 Year 2042 Traffic Forecast for Noise Impact Assessment

Road ID.	Road Name	Direction	Road Surface	Road Speed [km/h]	AM Peak		PM Peak	
					Traffic Flows [veh/hr]	% of HV *1	Traffic Flows [veh/hr]	% of HV *1
A	Geranium Path	Two-way	Impervious	50	20	10%	20	10%
B	Royal Palms Boulevar	Two-way	Impervious	50	540	10%	520	10%
C1	Castle Peak Road - Mai Po	NB	Impervious	50	205	34%	220	30%
C2	Castle Peak Road - Mai Po	SB	Impervious	50	285	34%	215	23%
D1	Castle Peak Road - Mai Po	NB	Impervious	50	365	25%	410	20%
D2	Castle Peak Road - Mai Po	SB	Impervious	50	565	20%	355	20%
E1	Castle Peak Road - Mai Po	NB	Impervious	50	340	23%	385	20%
E2	Castle Peak Road - Mai Po	SB	Impervious	50	590	21%	380	20%
F1	San Tin Highway	NB	Pervious	100	3990	49%	3490	50%
F2	San Tin Highway	SB	Pervious	100	4005	50%	4215	49%
G1	San Tam Road	NB	Impervious	50	390	17%	265	15%
G2	San Tam Road	SB	Impervious	50	315	22%	340	20%
H1	San Tam Road	NB	Impervious	50	340	15%	335	15%
H2	San Tam Road	SB	Impervious	50	405	20%	305	20%
I1	San Tam Road	NB	Impervious	50	340	15%	335	10%
I2	San Tam Road	SB	Impervious	50	405	20%	305	20%
J	Access Road	Two-way	Impervious	50	20	10%	30	10%
K	Maple Gardens 5th Street	Two-way	Impervious	50	20	10%	20	10%
L	Maple Gardens 4th Street	Two-way	Impervious	50	20	10%	20	10%
M	Maple Gardens 6th Street	Two-way	Impervious	50	20	10%	20	10%
N	Maple Gardens 6th Street	Two-way	Impervious	50	20	10%	20	10%

O	Maple Gardens 6th Street	Two-way	Impervious	50	20	10%	20	10%
P	Maple Gardens 5th Street	One-way	Impervious	8	20	10%	20	10%
Q	Access Road	Two-way	Impervious	50	40	10%	40	10%
R	Access Road	Two-way	Impervious	50	40	10%	40	10%

Remarks:

1) HV includes Light Van, Public Light Bus, Light Goods Vehicle, Medium Goods Vehicle, Heavy Goods Vehicle and Container/Tractor, Coach and Bus.

3.3.3 Road Surface Conditions

The CRTN modelling method uses emission level adjustments to take into account the influence of various road surfaces and gradients on noise emission level. A -1dB correction to the basic road source noise level is applied to impervious road surface with traffic speed below 75km/hr, and -3.5dB correction to the basic road source noise level for pervious road surface.

3.3.4 Road Traffic Noise Impact for Baseline Scenario

Quantitative road traffic noise impact assessment has been carried out and compared against the criterion. Noise levels were calculated for the baseline scenario without noise mitigation in place. Predicted maximum traffic noise levels for each assessment point are shown in table below. The detailed noise model and contour map are shown in **Appendix 3.1** for reference. The assessment is based on conservation assumption of hard reflecting ground surface over the entire Study Area.

In the baseline scenario the building layout and orientation has been duly considered with respect to traffic noise impact. Whereas practicable, the housing units are oriented away from major roads. Noise tolerant facades are used for self-screening. Notwithstanding the above, there is still slight noise exceedance. Noise mitigation measures are necessary.

Table 3-4 Predicted Road Traffic Noise Impact for Unmitigated Scenario

Window ID	Predicted Noise Level $L_{10,\ 1\ hour}$, dBA						Noise Criteria, dBA
	2/F	3/F	4/F	5/F	6/F	7/F	
W01	77.8	76.8	76.8	76.8	76.9	77.0	70
W02	76.8	77.0	77.1	77.1	77.2	77.2	70
W03	77.0	76.9	76.9	77.0	77.1	77.1	70
W04	77.0	76.7	76.7	76.7	76.9	77.0	70
W05	76.9	64.0	64.8	66.0	67.2	68.5	70
W06	76.7	54.8	55.1	55.5	56.4	57.9	70
W07	57.3	54.3	54.5	54.9	55.8	57.5	70
W08	54.0	58.4	59.0	59.2	59.6	60.4	70
W09	53.0	65.4	67.1	67.3	67.4	67.6	70

W10	53.5	69.6	72.0	72.3	72.4	72.5	70
W11	55.1	72.5	75.4	76.0	76.0	76.0	70
W12	59.7	69.6	73.6	74.3	74.4	74.4	70
W13	62.3	68.6	72.6	73.4	73.5	73.5	70
W14	64.1		71.6	72.5	72.6	72.6	70
W15	62.3		71.1	72.2	72.4	72.4	70
W16	61.2		71.5	71.7	71.8	71.9	70
W17	59.9		67.6	67.7	67.8	67.9	70
W18			69.0	69.1	69.3	69.4	70
W19			69.1	69.2	69.3	69.4	70
W20			69.0	69.1	69.2	69.3	70

Remarks:

North Façade

East Façade

Void in South Façade

3.3.5 Road Traffic Noise Impact for Mitigated Scenario

Practicable noise mitigation noise measures have been incorporated in the building layout design, in accordance with *Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact (PN_INMD)*, including:

- At the northern façade, vertical architectural fin is provided. The fin extends 1.7m from the building façade.
- At the eastern façade, a vertical architectural fin is provided at the southeast corners. The fin extends 1.5m from the building façade.
- At the southern façade, NSRs are located within a building void with self noise screening. Yet there are still some NSRs having direct line of sight towards San Tin Highway, thus a vertical architectural fin is provided at entrance towards the building void to block the line of sight. The fin extends 0.9m from the building façade.
- The maximum noise reductions by architectural fins are capped at 3dB for conservatism. For receivers with still having residual noise impact with the above architectural fins in place, acoustic window will be provided. An additional window layer is introduced to the conventional side-hung window in a staggering position. The outer window is a conventional push-pull type window whilst the inner one consists of a half-size sliding window. Making reference to PN_INMD, the proposed acoustic window configuration can offer an additional traffic noise reduction of 6dB(A).

The location and details of mitigation measures are illustrated in **Appendix 3.1.**

With the above mitigation measures in place, predicted maximum traffic noise levels for each assessment point are shown below. Since all the noise assessment points comply with the HKPSG noise standard, the residual noise impact is considered to be satisfactory.

Table 3-5 Predicted Road Traffic Noise Impact for Mitigated Scenario

Window ID	Predicted Noise Level $L_{10,\ 1\ hour}$, dBA						Noise Criteria, dBA
	2/F	3/F	4/F	5/F	6/F	7/F	
W01	68.8	67.8	67.8	67.8	67.9	68.0	70
W02	67.8	68.0	68.1	68.1	68.3	68.5	70
W03	68.4	69.7	69.8	69.9	70.0	70.0	70
W04	69.0	69.9	69.9	70.0	70.0	70.0	70
W05	69.7	62.9	63.7	65.1	66.6	68.0	70
W06	69.9	52.7	52.7	53.0	54.2	56.4	70
W07	56.3	52.4	52.4	52.6	53.9	56.3	70
W08	53.0	55.4	56.0	56.2	56.6	57.4	70
W09	52.4	62.4	64.1	64.3	64.4	64.6	70
W10	52.2	66.6	69.0	69.3	69.4	69.5	70
W11	52.2	64.9	68.6	69.3	69.4	69.3	70
W12	56.7	69.1	66.9	67.5	67.6	67.6	70
W13	59.3	65.6	65.8	66.6	66.7	66.7	70
W14	63.4		64.8	65.6	65.7	65.8	70
W15	60.8		64.4	65.4	65.5	65.6	70
W16	58.6		64.2	64.4	64.5	64.6	70
W17	56.9		64.7	64.7	64.8	65.2	70
W18			66.5	66.6	66.7	67.0	70
W19			66.1	66.2	66.3	66.4	70
W20			66.0	66.1	66.2	66.3	70

Remarks:

- *Noise reduction by acoustic fin is capped at 3dB(A) for conservatism.*

	North Façade
	East Façade
	Void in South Façade
68.8	*Underlined cells indicate façades with acoustic windows*

3.4 FIXED SOURCE NOISE ASSESSMENT

3.4.1 Assessment Model

Standard acoustical principles in accordance with *"ISO 9613-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation"* will be adopted for prediction of fixed noise impact. The general equation used to calculate the equivalent continuous sound pressure level at a receiver location arising from each individual noise source is described below:

$$L_{eq} = L_w + D_c - A_{div} - A_{atm} - A_{gr} - A_{bar} - A_{misc}$$

Where

L_w is the sound power level of the noise source;

D_c is the directivity factor of the noise source;

A_{div} is the attenuation due to geometrical divergence;

A_{atm} is the attenuation due to atmospheric absorption;

A_{gr} is the attenuation due to ground effect;

A_{bar} is the attenuation due to barrier;

A_{misc} is the attenuation due to miscellaneous other effects.

The prediction methodology described in ISO 9631-2 is implemented via noise prediction software CadnaA. A 3D model was constructed taking into account the topology and site layout plan. CadnaA is proprietary software for noise mapping of road traffic, railway as well as fixed industrial plants, etc. It has been used for city-scale Strategic Noise Mapping in Europe according to the EC Directive 2002/49/EC, the reliability has been well verified and accepted.

Topographic barrier including surrounding buildings, retaining walls, and natural terrains etc. all provide screening effect to the noise source. This information is retrieved from the latest digital map data provided by Lands Department.

The noise barriers within the proposed development include self-screening by noise tolerant building blocks and architectural fins. These barriers are constructed in the 3D model based on latest master layout plan. For calculation of barrier screening effect, maximum insertion loss is capped at 20dB for single barrier, 25dB for double barrier, according to ISO 9613.

For the propagation of noise, a worst-case hard ground was assumed throughout the Study Area. No ground attenuation effect is applied.

A +3.0dB(A) correction for façade reflection was applied at receptor locations.

3.4.2 Identified Existing Fixed Noise Sources

Site survey has been conducted on 22 June 2022 to identify any presence of industrial/fixed noisy facilities/activities. There exists operation for sales of building materials with open storage to the west as observed in onsite survey.

According to the onsite survey, there is no noticeable noise observed from open storage. The

noise environment is dominated by road traffic, apparently from San Tin Highway.

To summarise, potential fixed/industrial noise sources were identified to the west of the Subject Site. Particulars of the identified fixed noise sources are presented below. No existing noise sources are operating at night time.

Table 3-6 Identified Fixed Noise Sources for Noise Impact Assessment

ID	Source Description	Source Location		Assumed SWL, dB(A)	Operation?		Reference
		Easting	Northing		0700-2300	2300-0700	
S1	盈豐倉庫 (Storage)	22.48355	114.05799	92	Y	N	Transitional Housing Development at Lots 111 (Part), 116 to 119 in D.D. 108 and Adjoining Government Land, Fan Kam Road, Pat Heung, N.T. - Environmental Assessment
S2	松輝木業公司 (Industrial)	22.48313	114.05794	92	Y	N	Transitional Housing Development at Lots 111 (Part), 116 to 119 in D.D. 108 and Adjoining Government Land, Fan Kam Road, Pat Heung, N.T. - Environmental Assessment

3.4.3 Identified Fixed Noise Source Generated by the Project

Planned fixed noise sources within the Proposed RCHE Development are identified as shown in **Appendix 3.2**

Among the identified sources, the dominate sources are two nos. of cooling towers located on the open rooftop having direct line of sight to NSRs. The noise may potentially affect Casa Paradizo and Maple Garden in the close proximity.

Most of the Mechanical and Electrical (M&E) equipment, such as chiller, water pumps, lift machines, etc. will be installed in enclosed plant rooms of the Proposed RCHE Development. Transformers and Sewage Treatment Plant will be located in the basement level and placed inside enclosed structure. The guidance of "Good Practices on Ventilation System Noise Control" and "Good Practices on Pumping System Noise Control" issued from EPD shall be referred to. Appropriate mitigation measures, where necessary, shall be provided to comply with the noise criteria.

Small power rating split type air conditioning systems will be installed for individual room. However, the noise impact of those small power rating outdoor units shall be minimal, and the contribution is hence not considered in the noise impact assessment.

3.4.4 Allowable Sound Power Level

At this stage the cooling towers for the project had not been confirmed as which shall be designed in future by the design and build contractor. As such the maximum allowable sound power level will be determined by back calculation from the separation distance

between the noise source and nearby representative nearest noise sensitive receivers are given in table below.

A catalogue of low noise type cooling towers as shown in **Appendix 3.2** for reference. The Sound Power Level (SWL) of this cooling tower model is 93dB which is adopted in the noise model. The sound power level and noise mitigation requirements will be stipulated in the project contractor specification governing the equipment selection by the design and build contractor.

Table 3-7 Proposed Fixed Source Noise Mitigation Treatment

Noise Sources	Allowable SWL	Noise Mitigation Description (refer to **Appendix 3.2**)
Cooling Tower (Intake)	73 dB(A)	- Low noise type cooling tower - Intake silencer with IL of 20dB(A), the silencer is typically 900 to 1200 long subject to supplier model selection
Cooling Tower (Discharge)	93 dB(A)	- Low noise type cooling tower - No silencer to be provided since fan noise is directed upward in the open rooftop and not affecting low rise residential premises

3.4.5 Fixed Plant Noise Assessment Results

Based on the allowable SWL and two cooling towers in full load operation, the noise impact at the worst affected façade at nearby representative NSRs are tabulated below.

Table 3-8 Predicted Fixed Source Noise Impact to Surroundings

ID	NSR	Predicted Noise Level at Worst Façade, dB(A)	Nighttime Noise Criteria, ANL-5 dB(A)
N01	Maple Garden G3	34.8	55
N02	Casa Paradizo A18	32.4	55
N03	Casa Paradizo C7	39.7	50

As such, provided the fixed plant noise generation at the cooling tower does not exceed the allowable SWL, fixed plant noise impact towards the affected NSRs will not exceed the noise criteria stipulated in the HKPSG.

3.4.6 Fixed Plant Noise Assessment Results

There are also existing industrial fixed noise sources operating during daytime. The cumulative fixed noise impact is included in the fixed noise impact assessment for compliance check. Fixed plant noise impact towards the affected NSRs will not exceed the ANL noise criteria.

Table 3-9 Predicted Cumulative Fixed Source Noise Impact

ID	NSR	Predicted Noise Level at Worst Façade dB(A)			Day & Evening Criteria, ANL dB(A)
		Planned Fixed Plant Noise	Existing Fixed Plant Noise	Cumulative Noise	
N01	Maple Garden G3	34.8	47.2	47.4	70
N02	Casa Paradizo A18	32.4	49.0	49.1	70
N03	Casa Paradizo C7	39.7	37.9	41.9	65

3.5 CONSTRUCTION NOISE IMPACT

Various construction activities will be the key noise sources generated during the construction phase. In particular, the use of PME and the vehicle movement within the Site are the major potential noise sources. Construction shall be carried out during non-restricted hours as far as practicable. The mitigation measures recommended in ProPECC PN2/93 should be implemented where applicable. In addition, the following measures and on-site practice are recommended in order to minimize the potential construction noise impacts during daytime:

- Quiet PME and construction method should be adopted if possible.
- The Contractor shall devise and execute working methods to minimise the noise impacts on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented.
- Switch off idling equipment.
- Regular maintenance of equipment.
- Fit muffler or silencer for equipment.
- Noisy equipment and noisy activities should be located as far away from the NSRs as is practical.
- Use quiet construction method, e.g. use saw-cut or hydraulic crusher instead of excavator mounted percussive breaker.
- PME should be kept to a minimum and the parallel use of noisy equipment / machineries should be avoided.
- Erect noise barriers or noise enclosure for the PME if appropriate.
- Implement good house-keeping and provide regular maintenance to the PME.
- Spot check resultant noise levels at nearby NSRs.

If construction work involving use of PME will be required during restricted hours, a CNP shall be applied for under the NCO. The noise criteria and assessment procedures for

obtaining a CNP are specified in GW-TM.

With the implementation of the abovementioned mitigation measures, adverse construction noise impact is not anticipated.

4 WATER QUALITY IMPACT ASSESSMENT

4.1 INTRODUCTION

This section reviews the water quality impacts from the Project. The potential environmental impacts from construction effluent generated by the proposed works and operation of the proposed residential home for elderly are assessed. Standards, guidelines and legislation, recommended mitigation measures and the disposal strategy are reviewed.

4.2 LEGISLATIONS, STANDARDS AND GUIDELINES

The following relevant Hong Kong legislations/guidelines governing water pollution control have been referenced in carrying out the assessment:

- *Environmental Impact Assessment Ordinance and EIAO-TM (Annex 6 and 14);*
- *Water Pollution Control Ordinance (WPCO) (Cap. 358) (as amended by the Water Pollution Control (Amendment) Ordinance 1990 and 1993);*
- *Water Pollution Control (General) Regulations (as amended by the Water Pollution Control (General) (Amendment) Regulations 1990 and 1994);*
- *Water Pollution Control (Sewerage) Regulation;*
- *Water Quality Objectives (WQOs) for relevant Water Control Zones (WCZs);*
- *Practice Note for Professional Persons ProPECC Note PN1/94, Construction Site Drainage; and*
- *Practice Note for Professional Persons ProPECC Note PN 5/93, Drainage Plans subject to Comment by the Environmental Protection Department.*

4.3 IDENTIFICATION OF WATER SENSITIVE RECEIVERS

The project site is located within the Northwest of New Territories and within the catchment of the Deep Bay Water Control Zone.

No communal foul sewer connection is available for the project area.

The quality of effluent during the construction and operation phase of the projects will be bounded by the discharge standard of Deep Bay Water Control Zone, subject to the estimated discharge quantity. Standards for effluents discharged into the coastal waters of Deep Bay Water Control Zone is annexed in Cap. 358AK Technical Memorandum on Effluent Standards.

For the marine environment, the nearest EPD Water Quality Monitoring Station (WQMS) to 81 San Tam Road is DM1. The latest summary of baseline condition of subject WQMS in 2020 is extracted, reference from “Marine Water Quality in Hong Kong in 2020” by EPD.

In 2020, the overall WQO compliance rate for Deep Bay WCZ was 67%, as compared with a ten year average of 47% in 2009-2018. Overall, with the measures under the Deep Bay Water

Pollution Control Joint Implementation Plan taken progressively by Hong Kong and Shenzhen, there have been significant water quality improvements in Deep Bay. In particular, there have been full compliance of the DO WQO in the past two years and NH3-N WQOs in the past five years. Although Deep Bay, as compared with other WCZs, had higher nutrient levels with annual depth averaged TIN levels exceeding the respective TIN WQOs, a noticeable long-term decrease in TIN levels since mid-2000s has been seen.

Appendix B

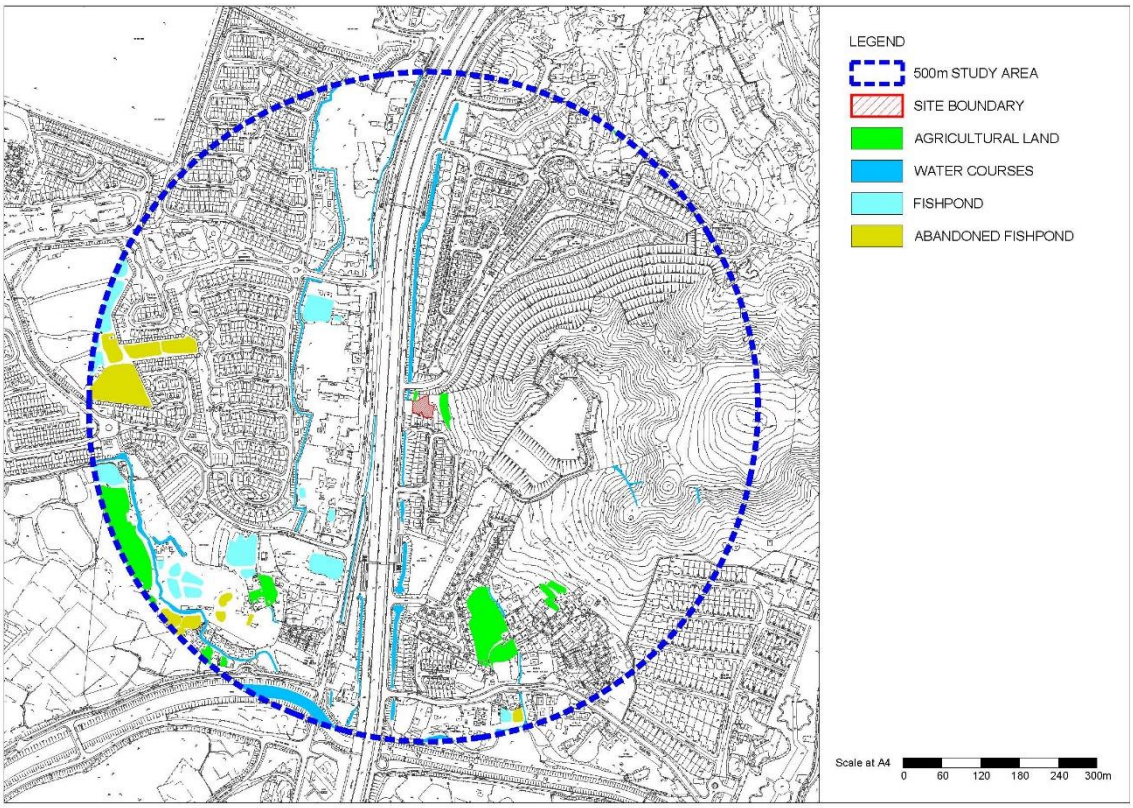
Summary of water quality statistics for the Deep Bay WCZ in 2020

Parameter		Inner Deep Bay DM1	DM2	DM3	Outer Deep Bay DM4	DM5
Number of samples		**8**	**8**	**12**	**8**	**8**
Temperature (°C)		26.5 (20.8 - 31.2)	26.6 (21.1 - 30.9)	25.4 (20.2 - 30.5)	26.1 (21.1 - 29.8)	25.7 (20.9 - 28.9)
Salinity		14.6 (1.6 - 22.6)	16.6 (3.0 - 25.5)	21.5 (4.4 - 29.3)	20.9 (3.8 - 30.7)	23.7 (8.9 - 31.6)
Dissolved Oxygen (mg/L)		5.9 (4.4 - 7.8)	6.1 (4.8 - 7.3)	6.0 (4.3 - 7.1)	5.8 (5.2 - 6.6)	5.8 (4.4 - 6.9)
	Bottom	N/A N/A	N/A N/A	N/A N/A	5.4 (4.6 - 6.6)	5.5 (2.6 - 7.1)
Dissolved Oxygen (% Saturation)		79 (62 - 105)	83 (69 - 94)	83 (66 - 97)	80 (70 - 94)	81 (59 - 98)
	Bottom	N/A N/A	N/A N/A	N/A N/A	75 (61 - 94)	77 (36 - 100)
pH		7.4 (7.1 - 7.8)	7.6 (7.2 - 8.0)	7.8 (7.4 - 8.2)	7.7 (7.3 - 8.1)	7.8 (7.5 - 8.1)
Secchi Disc Depth (m)		1.1 (0.8 - 1.2)	1.1 (0.8 - 1.3)	1.4 (1.1 - 1.9)	1.5 (1.0 - 2.0)	1.6 (1.0 - 2.1)
Turbidity (NTU)		21.7 (13.3 - 41.4)	28.3 (13.3 - 42.7)	9.5 (5.9 - 14.2)	9.0 (5.1 - 17.4)	9.1 (4.5 - 21.0)
Suspended Solids (mg/L)		37.0 (19.0 - 59.0)	47.4 (24.0 - 80.0)	15.3 (6.5 - 30.0)	14.5 (6.3 - 21.5)	14.7 (6.8 - 27.3)
5-day Biochemical Oxygen Demand (mg/L)		1.6 (0.3 - 3.1)	1.8 (0.7 - 4.9)	1.0 (0.3 - 4.3)	0.6 (0.2 - 0.8)	0.6 (0.3 - 1.0)
Ammonia Nitrogen (mg/L)		0.455 (0.190 - 0.970)	0.331 (0.075 - 0.930)	0.134 (0.029 - 0.320)	0.102 (0.018 - 0.180)	0.089 (0.011 - 0.170)
Unionised Ammonia (mg/L)		0.007 (0.002 - 0.014)	0.006 (0.002 - 0.019)	0.004 (<0.001 - 0.009)	0.003 (<0.001 - 0.007)	0.003 (<0.001 - 0.007)
Nitrite Nitrogen (mg/L)		0.131 (0.026 - 0.310)	0.105 (0.040 - 0.310)	0.061 (0.014 - 0.170)	0.067 (0.026 - 0.165)	0.052 (0.024 - 0.130)
Nitrate Nitrogen (mg/L)		1.300 (0.900 - 1.600)	1.080 (0.650 - 1.500)	0.753 (0.370 - 1.500)	0.711 (0.265 - 1.400)	0.605 (0.137 - 1.330)
Total Inorganic Nitrogen (mg/L)		1.89 (1.38 - 2.32)	1.52 (1.02 - 2.34)	0.95 (0.43 - 1.78)	0.88 (0.37 - 1.52)	0.75 (0.23 - 1.41)
Total Kjeldahl Nitrogen (mg/L)		0.90 (0.58 - 1.70)	0.79 (0.48 - 1.60)	0.39 (0.22 - 0.67)	0.34 (0.14 - 0.49)	0.43 (0.09 - 0.97)
Total Nitrogen (mg/L)		2.33 (1.81 - 2.91)	1.98 (1.52 - 3.01)	1.21 (0.77 - 2.11)	1.12 (0.76 - 1.81)	1.09 (0.73 - 1.72)
Orthophosphate Phosphorus (mg/L)		0.151 (0.120 - 0.220)	0.123 (0.066 - 0.160)	0.061 (0.010 - 0.092)	0.035 (0.017 - 0.053)	0.025 (0.011 - 0.037)
Total Phosphorus (mg/L)		0.24 (0.19 - 0.34)	0.21 (0.15 - 0.27)	0.10 (0.05 - 0.14)	0.07 (0.05 - 0.10)	0.06 (0.04 - 0.08)
Silica (as SiO_2) (mg/L)		5.88 (3.10 - 10.00)	5.15 (1.90 - 10.00)	3.70 (0.47 - 8.50)	3.89 (0.38 - 9.00)	3.50 (0.34 - 8.97)
Chlorophyll-*a* (µg/L)		6.3 (2.5 - 8.9)	8.4 (2.6 - 15.0)	2.8 (1.0 - 11.0)	1.9 (0.5 - 4.0)	1.9 (0.6 - 3.6)
E.coli (count/100mL)		200 (12 - 1600)	160 (17 - 6100)	22 (<1 - 1100)	63 (4 - 890)	75 (9 - 1500)
Faecal Coliforms (count/100mL)		530 (55 - 2800)	340 (24 - 9600)	66 (3 - 3900)	170 (11 - 3000)	190 (26 - 4600)

Note: 1. Unless otherwise specified, data presented are depth-averaged (A) values calculated by taking the means of three depths: Surface (S), Mid-depth (M), Bottom (B).
2. Data presented are annual arithmetic means of the depth-averaged results except for E. coli and faecal coliforms which are annual geometric means.
3. Data in brackets indicate the ranges.
4. N/A (Not Applicable) indicates the measurement was not made due to shallow water.
5. During the periods of the special work arrangement under the COVID-19 pandemic in 2020, marine water quality monitoring frequency was adjusted and sampling at representative monitoring stations were maintained. Full scale monitoring was conducted in the periods of January, May to June and September to November 2020.

MARINE WATER QUALITY IN HONG KONG IN 2020 B - 14

Water Sensitive Receivers (WSRs) are defined as those users of the aquatic/marine environment whose use of the environment could be impaired as a result of the proposed project. When WSRs that are potentially affected by the construction and operation of the Project are identified, further study will be conducted. Representative Water Sensitive Receivers (WSRs) identified within 500m of the Project boundary that may potentially be affected are shown in Figure below.



4.4 WATER QUALITY IMPACTS AND MITIGATIONS DURING CONSTRUCTION

Proposed construction works mainly involve excavation of soil, piling and building construction works. During construction phase of the Project, the primary sources of potential impacts to water quality will be from pollutants in site run-off, which may enter surface waters directly or enter storm drains. The primary pollutant will be mainly suspended solids.

Pre-bored piling works will be adopted for foundation works. Significant amount of water will be used for ground boring and drilling for site investigation or rock/soil anchoring.

Spillage, hydraulic leakage and runoff from the surface of standby construction equipment during rainy conditions may also release oil and lubricants to the environment if surface runoff is not adequately controlled.

Sewage generated by the workforce will not be directly disposed of. Instead, chemical toilets will be provided at the work sites. Regular cleansing and servicing of these toilets should be provided for the chemical toilets to maintain their proper operation. No canteen will be

provided in the project site.

Wastewater may also be generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities.

The potential impacts of land-based construction activities on water quality can be readily controlled by appropriate on-site measures pursuant to the *ProPECC Note PN 1/94*. The applicable measures should be implemented and will be sufficient to control/prevent impacts to the water sensitive receivers in the vicinity of the works area and downstream.

In particular, the following measures should be properly implemented to mitigate any potential adverse water quality impacts:

- Recirculate and reuse wastewater generated from onsite facilities, e.g., wheel washing facilities, and piling works, as far as practicable, after sedimentation.
- Provide and maintain adequately designed treatment system for all wastewater generated on site, including but not limited to runoff, onsite facilities, piling and building construction works, etc., in case disposal is required.
- Provide and maintain chemical toilets for workers on site.
- Provide and maintain sufficient drip trays for all generators, oil, chemicals, and chemical waste containers.

Water discharge license should be obtained for the Project during the entire construction phase. All the requirements and conditions as stipulated on the license shall be followed and complied with.

4.5 WATER QUALITY IMPACTS AND MITIGATIONS DURING OPERATION PHASE

The Project is to build a residential care home for elderly, accommodating at most 142 nos. of bedspaces. Sewage from the residents as well as workers and visitors will be generated from bathing and showers, toilet flushing, pantry, toilet basins, etc.

All storm water/rainwater from both open paved and developed areas of the site will be conveyed to the storm water drain.

The *ProPECC Note PN 5/93* provides guidelines and practices for handling, treatment, and disposal of various effluent discharges to stormwater drains and foul sewers. The design of site drainage and disposal of site effluents generated within the proposed development area should follow the relevant guidelines and practices as given in the *ProPECC Note PN 5/93*.

Since there is no communal foul sewer connection, an onsite sewage treatment plant (STP) will be installed to handle all sewage generated from the proposed residential care home before discharging offsite. Preliminary design of the STP according to Guidelines for the Design of Small Sewage Treatment Plants by EPD, including the amount of sewage flow generated per day (from residents, staff, facilities, etc.), the size of the STP, mitigation measures to prevent discharge/ overflow of untreated raw sewage, etc. is annexed in **Appendix 4.1**. Proper operation and maintenance should be provided for the STP. Storm

water/rainwater should be separated from the sewage collection network to avoid overload to the STP.

Sewage will be treated by the onsite STP before discharge. The disposal of the treated effluent shall comply with relevant statutory requirements and guidelines such as Water Pollution Control Ordinance (Cap. 358), etc. All discharges during the operation phase of the proposed development are required to comply with the Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) issued under Section 21 of the Water Pollution Control Ordinance (WPCO). The TM-DSS defines acceptable discharge limits to different types of receiving waters. Under the TM-DSS, effluents discharged into the drainage and sewerage systems, inland and coastal waters of the Water Control Zones (WCZs) are subject to pollutant concentration standards for specified discharge volumes. These are defined by the Environmental Protection Department (EPD) and are specified in licence conditions for any new discharge within a WCZ. Therefore, no adverse water quality impact on WQO is anticipated.

All storm water/rainwater from open paved and developed areas of the site will be conveyed to the storm water drain via properly designed surface drainage. Facilities such as standard gully grating, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system. Good management measures such as regular cleaning and sweeping open paved area of the site is suggested during operational phase.

During operation phase, stormwater runoff from paved surfaces within the Project Sites will be directed to a managed stormwater drainage system. Runoff from the roofs of buildings and road surfaces within the Sites may carry suspended solids and other pollutants such as fuel, oils and heavy metals that could enter nearby surface water bodies or storm drains if uncontrolled. With implementation of stormwater best management practices including provision of trapped gullies and catch-pits, adverse impacts to the water quality is not anticipated.

Similar to that during the construction phase, a water discharge license should be obtained for the operation of the proposed residential care home for elderly. All the requirements and conditions as stipulated on the license shall be observed and complied with.

5 WASTE MANAGEMENT

5.1 INTRODUCTION

This section reveals and discusses types of wastes generated from the Project during construction and operation phases. Hence, proper waste management strategies are recommended to reduce, reuse, recycle and dispose of wastes.

5.2 LEGISLATIONS, STANDARDS AND GUIDELINES

The following relevant Hong Kong legislations and guidelines governing waste disposal and management have been referenced in carrying out the assessment:

- *Waste Disposal Ordinance (Cap. 354);*
- *A Guide to the Chemical Waste Control Scheme;*
- *A Guide to the Registration of Chemical Waste Producers;*
- *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes; and*
- *Code of Practice for the Management of Clinical Waste – Small Clinical Waste Producers.*

5.3 WASTE MANAGEMENT IMPLICATIONS OF THE CONSTRUCTION PHASE

Major construction activities for the Project include demolition of existing property, site clearance, piling, construction of substructure and superstructure. Considering the small scale of the Project, it is anticipated not much waste would be generated though the exact quantity will be subject to detailed construction methods.

Wastes generated from the Project during the construction phase generally consist of:

- Construction and demolition (C&D) waste;
- General refuse; and
- Chemical waste.
- Possible wastes generated from the Project are detailed in Table 5-1.

Table 5-1 Possible Waste Generated During the Construction Phase

WASTE TYPE	POSSIBLE WASTE GENERATED FROM THE PROJECT
INERT C&D WASTE	• CONCRETE FROM DEMOLITION OF EXISTING PROPERTY • EXCAVATED MATERIALS (EXCLUDING TOPSOIL)

WASTE TYPE	POSSIBLE WASTE GENERATED FROM THE PROJECT
NON-INERT C&D WASTE	• FELLED TREES • REMOVED PLANT • TOPSOIL • DISCARDED FURNITURE • DAMAGED SCAFFOLDING BAMBOO • WOOD FORMWORK • USED PACKAGING MATERIALS
GENERAL REFUSE	• WASTEPAPER • FOOD DEBRIS • PACKAGING MATERIAL
CHEMICAL WASTE	• SPENT LUBRICATING OIL • PAINT

A Waste Management Plan (WMP) will be prepared to outline the estimated types and quantities of waste generated in the Project and formulate the approaches in dealing with them. Typical hierarchy of waste management, i.e., avoid, minimize, recycle and disposal as the last resort, will be adopted for the Project. The aims of the WMP are to:

- improve the resource efficiency.
- increase the waste and materials awareness of staff; and
- help to discharge duty of care obligations.

5.3.1 Waste Avoidance

To avoid generation of waste during the construction phase, good and detailed planning and smart procurement is crucial. The following approaches are suggested:

- avoid excess order;
- arrange delivery of goods according to construction progress;
- reject and return damaged goods;
- keep protective packaging on and ensure storage areas are secure and weatherproofs;
- minimize movement of goods to lower the chance of damage to goods; and
- eliminate over packaging and liaise with suppliers to return packaging materials to them.

5.3.2 Construction and Demolition Materials

Excavated materials, such as soil and rock, and demolition concrete should be reused for backfilling on site as far as practicable. Surplus materials of these inert types should be delivered to the Civil Engineering and Development Department (CEDD) managed public fill

reception points and/or sorting facilities. Prior licensing is required from the CEDD.

Non-inert C&D wastes, in particular steel bars and used cables from demolition works of this project, are recyclables and should be delivered to proper outlets for recycling. On the other hand, felled trees, removed plant and topsoil are normally not reusable and should be delivered to the landfill for disposal.

Considering that there are many types of wastes generated, proper sorting and segregation of various C&D wastes could minimize cross contamination and enhance waste recovery quantity.

A trip ticket system will be implemented for any wastes disposal to the public fill reception points, sorting facilities and landfills. All the disposal records should be properly maintained.

5.3.3 Chemical Waste

Chemicals, including lubricating oil, paint, thinner, etc. will be used in the Project. Should there be any chemical wastes generated in the Project, the Contractor is required to register as chemical waste producer pursuant to the Waste Disposal (Chemical Waste) (General) Regulation. Proper containers, labels and storage areas must be provided in accordance with the aforesaid regulation.

All the chemical waste should be collected by licensed chemical waste collector for disposal at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi or other licensed chemical waste treatment/disposal facilities.

5.3.4 General Refuse

General refuse includes wastepaper, packaging materials and food debris generated by the workforce on site. No canteen will be provided on site during the construction phase. The quantity of general waste is anticipated minimal in view of the small scale of the construction works. Nonetheless, before offsite disposal, they should be segregated into recyclable and non-recyclable wastes and kept in different covered storage areas/bins, where all of them should be sufficiently maintained and cleaned, to avoid attracting vermin and pests. All the general refuse will be collected on-site, separately from C&D materials by an appropriate waste collector employed by the contractor to the landfill.

Training should be provided for all site workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling. The training is expected to ensure their awareness of good waste management and the specific measures used at the site.

5.4 WASTE MANAGEMENT IMPLICATIONS OF THE OPERATIONAL PHASE

The project site will be converted into a residential care home for elderly. Wastes generated during operation phase includes:

- General refuse; and
- Clinical waste.

5.4.1 General Refuse

General refuse during the operation phase mainly comes from daily living of residents in the care home, e.g., food waste, packaging of goods, used plastic and glass bottles, bedding and blankets, etc., which are similar to those from general households. Considering the number of residents is low, the quantity of general waste should not be significant.

Solid waste should be properly kept in covered containers/storage areas to avoid attracting of vermin or pests. Recycling containers are recommended to be provided at suitable locations to encourage recycling in the care home.

5.4.2 Clinical Waste

Residential care home for elderly is considered as a small clinical waste producer. It is likely that some types of clinical wastes, particularly needles and sharps, would be generated from its operation. As such, the Operator of the care home should complete the "*Clinical Waste Producer Premises Code Request Form*" and manage the clinical waste in accordance with the *Code of Practice for the Management of Clinical Waste – Small Clinical Waste Producers*.

Clinical waste should be segregated from other wastes. Used needles and sharps are classified as Group 1 clinical waste and should be stored safely in sharps box, before transferring to a disposal site. Colour of the sharps box should be either in yellow or a combination of yellow and white and sealed with proprietary closure.

The care home operator shall engage the service of licensed collectors to collect and transport clinical waste to the CWTC for proper disposal. Alternatively, the clinical waste may also be delivered by a health professional under the clinical waste producer, if there is any, and subject to compliance of additional requirements as stipulated in the *Code of Practice for the Management of Clinical Waste – Small Clinical Waste Producers*.

The care home operator must also keep all the records of the clinical waste consigned to a licensed collector or delivered to a collection point or licensed disposal facility. To achieve it, it is suggested to retain the Waste Producer Copy of the Clinical Waste Trip Tickets of each delivery.

6 CONCLUSION

This Environmental Assessment presents the findings from assessing the potential impacts associated with the operation of the proposed RCHE development to confirm its environmental suitability. Key environmental concerns have been addressed and potential impacts assessed covering the following:

- Air Quality
- Noise
- Water Quality
- Waste Management

Overall, it would be environmentally acceptable with no adverse impacts on the identified sensitive uses. Suitable noise mitigation measures are recommended to minimize noise impacts to meet the specified noise standard.

Air Quality

The development may be subject to vehicular emission impact from roads nearby during the operation of the project. However, no adverse vehicular emission impact is anticipated upon incorporation of the relevant buffer distance stipulated under the HKPSG into the layout design.

There is no chimney within 200m from site boundary, i.e., complying the buffer distance for chimney emissions under the HKPSG. Thus, no adverse air quality impact to the proposed residential development due to industrial chimney emissions is anticipated.

Noise

Road traffic would be the major source of noise nuisance during the Project operation. After implementation of recommended architectural fins, the predicted noise levels at all residential units comply with HKPSG $L_{10(1\ hour)}$ 70dB(A) noise criterion.

A catalogue of low noise type cooling towers as shown in Appendix 3.2 for reference. The Intake Silencers will be provided for the cooling towers located on open rooftop. The sound power level and noise mitigation requirements will be stipulated in the project contractor specification governing the equipment selection by the design and build contractor. Provided the fixed plant noise generation at the cooling tower does not exceed the allowable SWL, fixed plant noise impact towards the affected NSRs will not exceed the noise criteria stipulated in the HKPSG.

Water Quality

With a properly designed sewerage and drainage system, no insurmountable water quality impacts would be generated from the construction and operation phases of the Project.

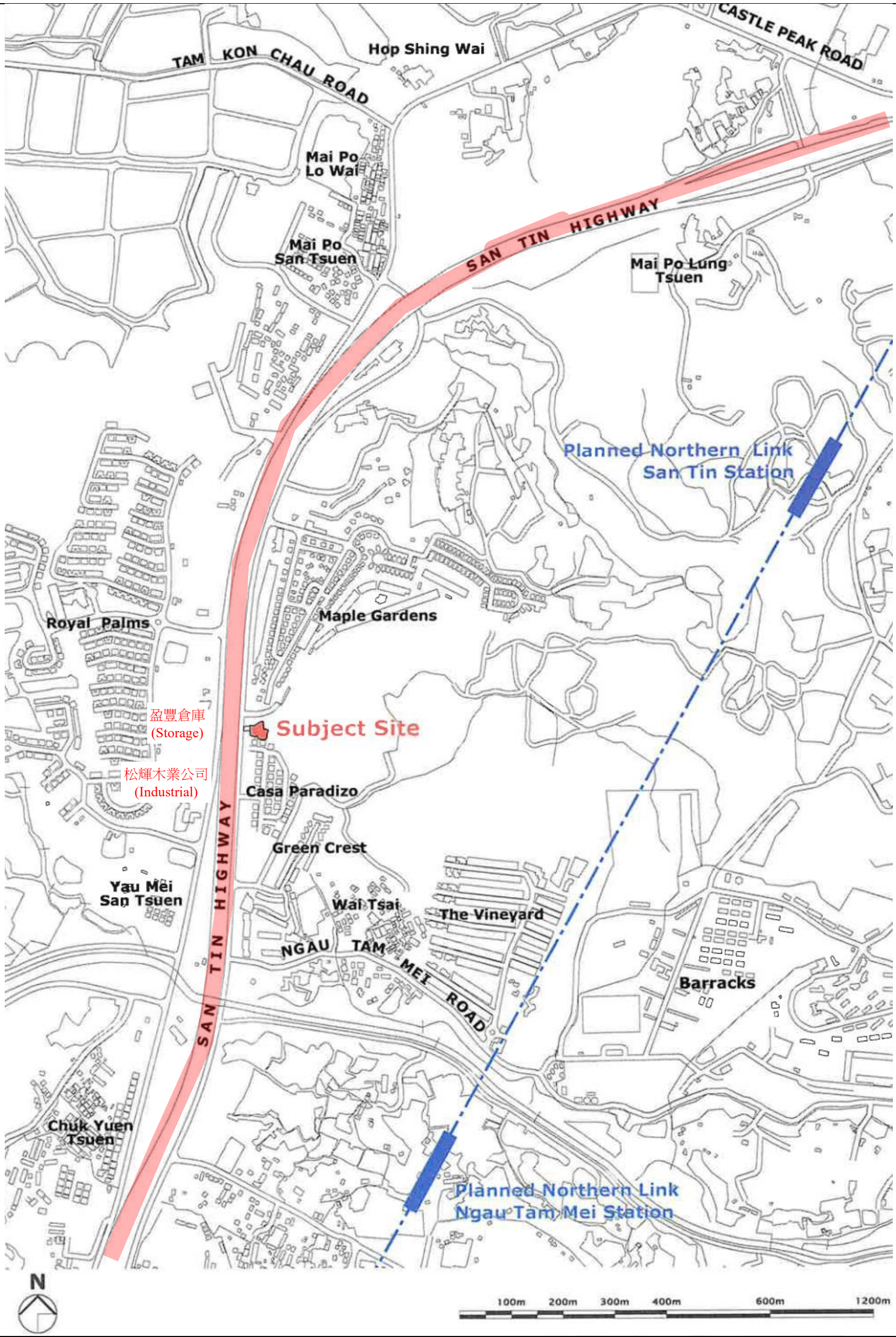
Waste Management

The quantity of waste to be generated from the Project is anticipated not significant, considering the small project scale. Through proper project planning and execution, waste

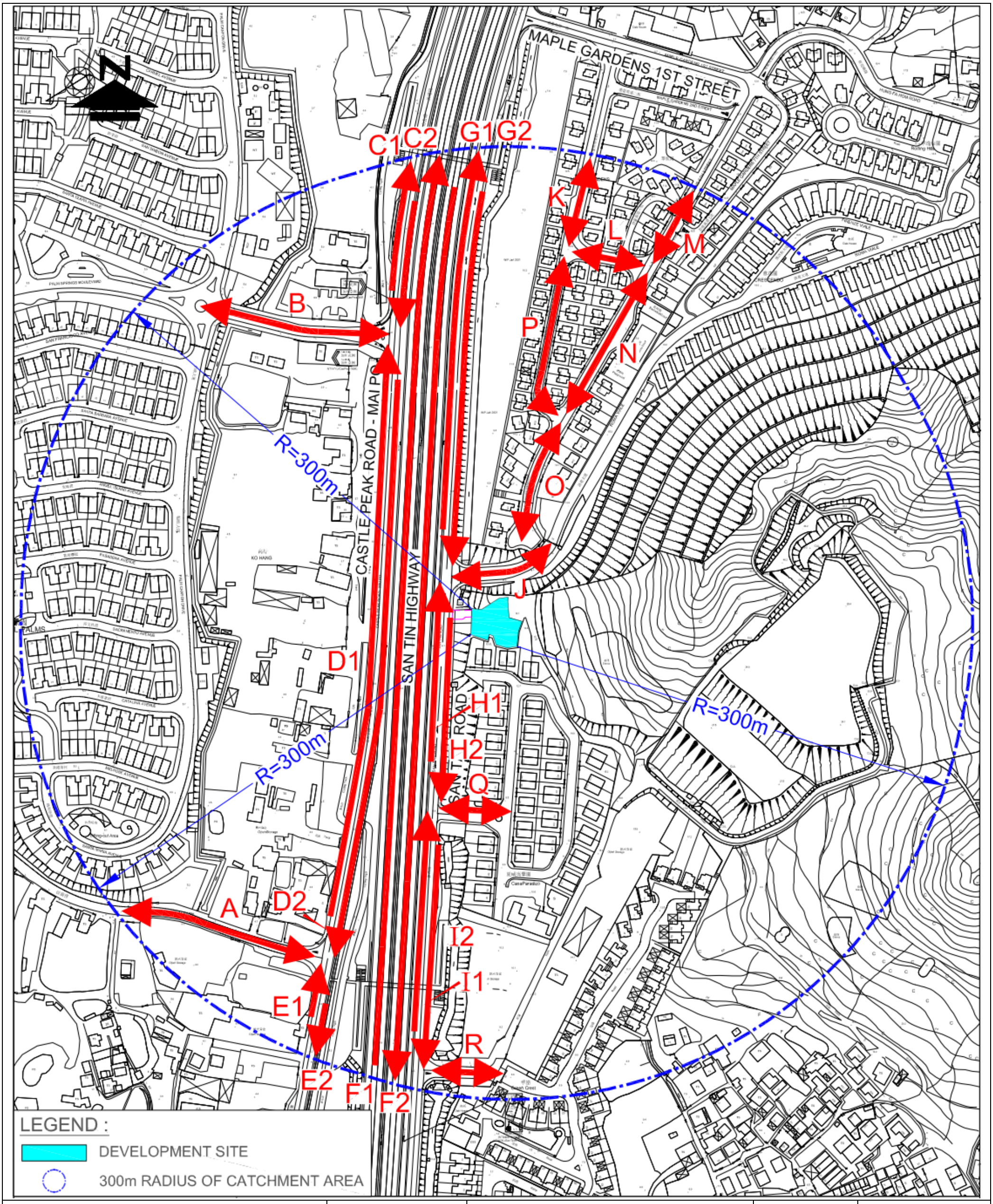
could be further avoided while useful materials could be reused or recycled. With implementation of the statutory procedures and recommended mitigation measures for offsite disposal of surplus excavated material, non-inert wastes, general refuse, chemical and clinical wastes, there should not be any insurmountable waste impact.

Appendix 1.1.

SITE LAYOUT PLAN & SURROUNDING ENVIRONMENT

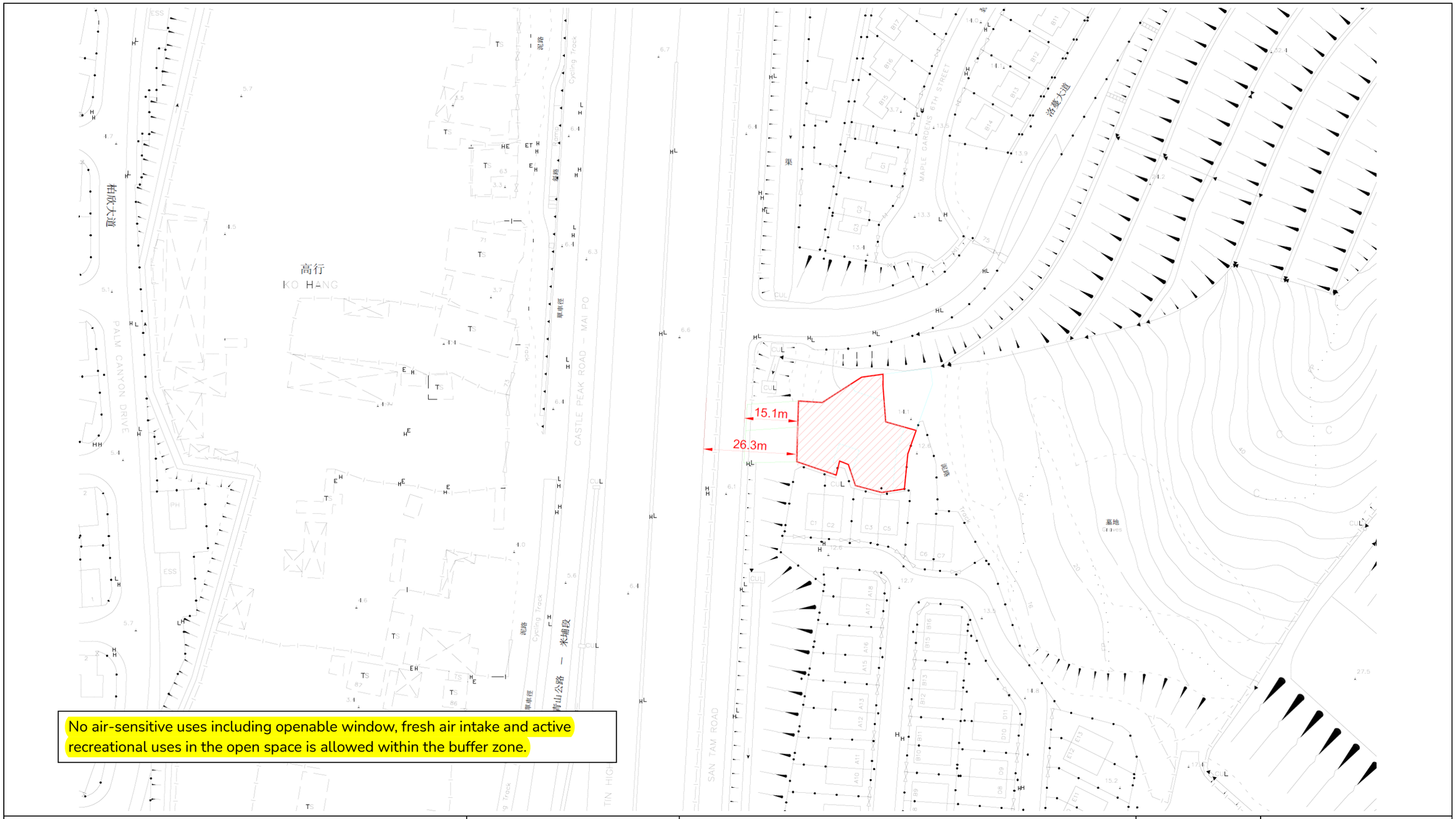


PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 1.1.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY	Phoenix Lee
DRAWING TITLE: SITE LAYOUT PLAN AND SURROUNDING ENVIRONMENT	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY	Eddy Ng
				APPROVED BY	Banting Wong



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 1.1.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY	Phoenix Lee
DRAWING TITLE: LOCATION OF ADJACENT ROADS	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY	Eddy Ng
				APPROVED BY	Banting Wong

APPENDIX 2.1. AIR QUALITY SENSITIVE RECEIVERS & EMISSION SOURCES

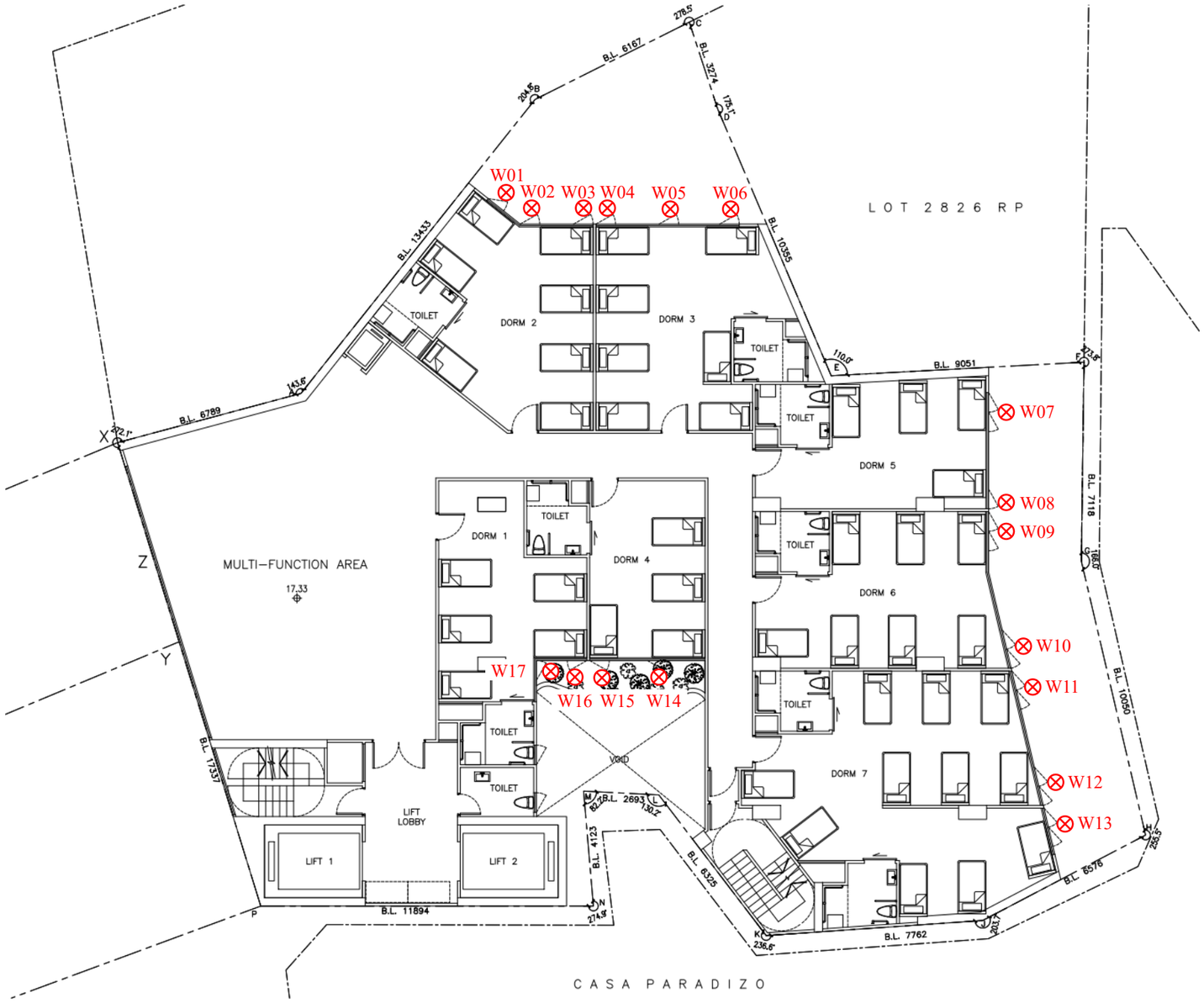


No air-sensitive uses including openable window, fresh air intake and active recreational uses in the open space is allowed within the buffer zone.

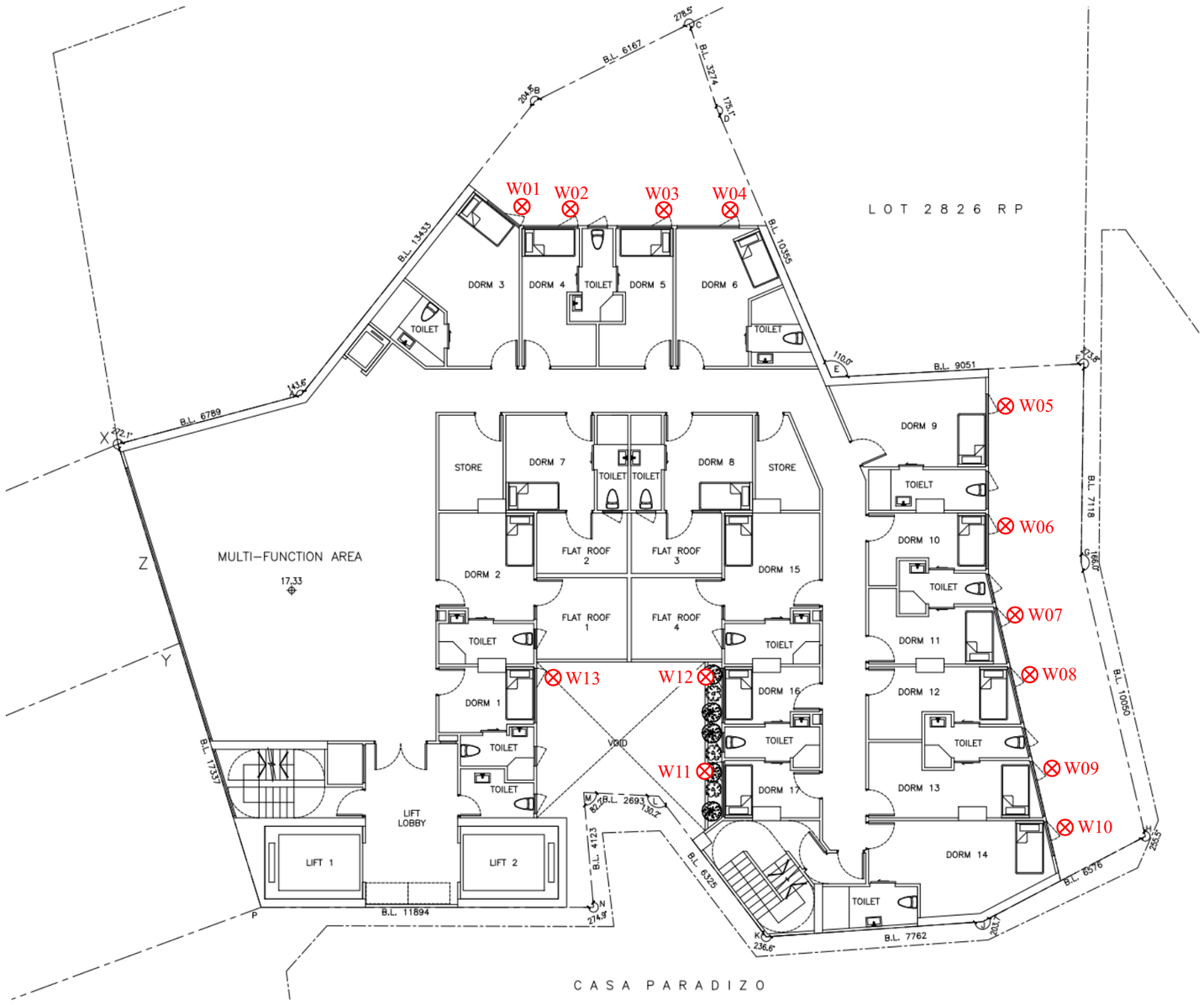
PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 2.1.1			
DRAWING TITLE: REPRESENTATIVE ASRS & BUFFER DISTANCE FROM VEHICLE SOURCES	SCALE: N.T.S.	REV: A	LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox

PREPARED BY	Phoenix Lee
CHECKED BY	Eddy Ng
APPROVED BY	Banting Wong

APPENDIX 3.1. TRAFFIC NOISE IMPACT ASSESSMENT



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (2/F)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



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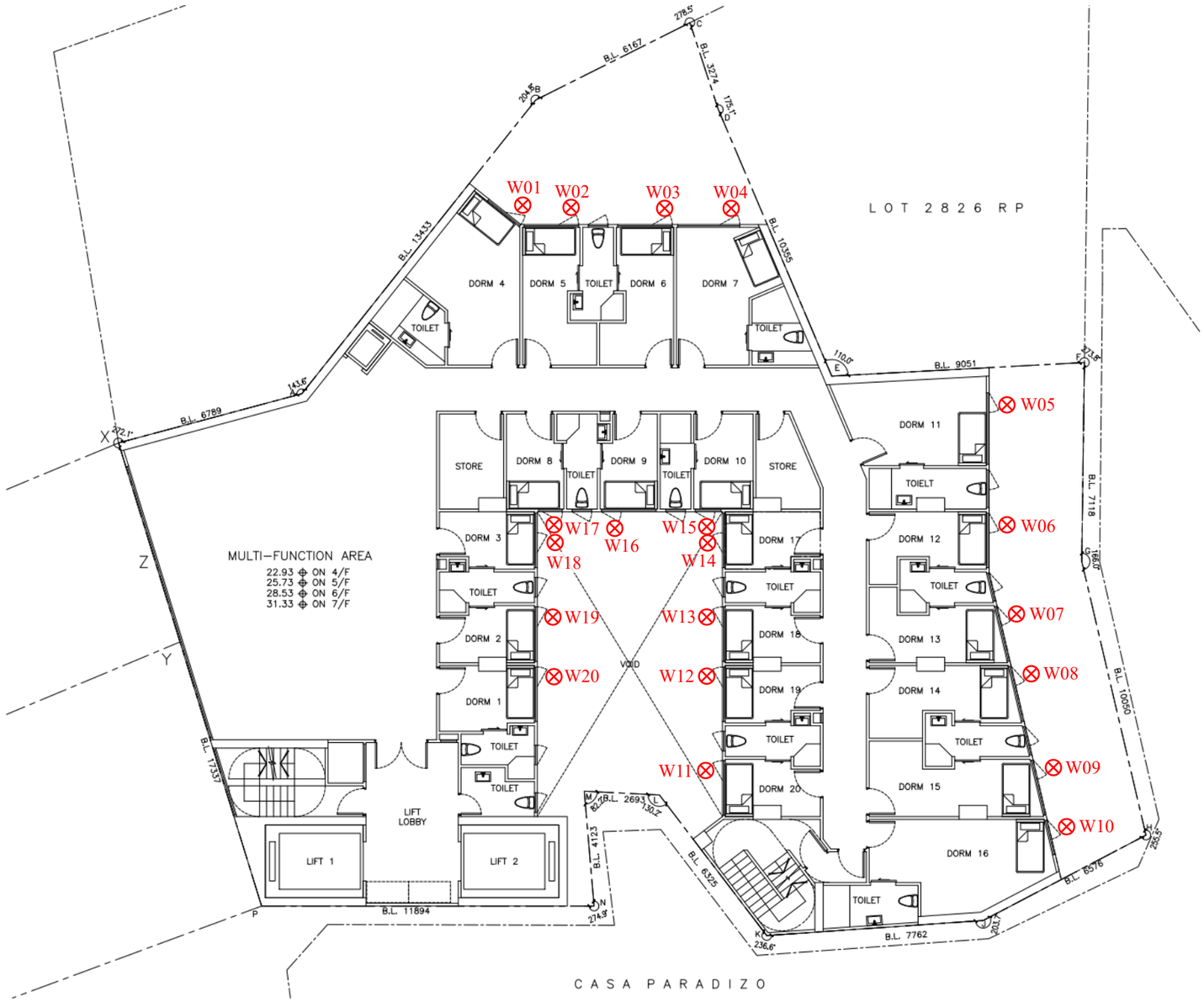
1 G-06 3/F PLAN

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (3/F)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



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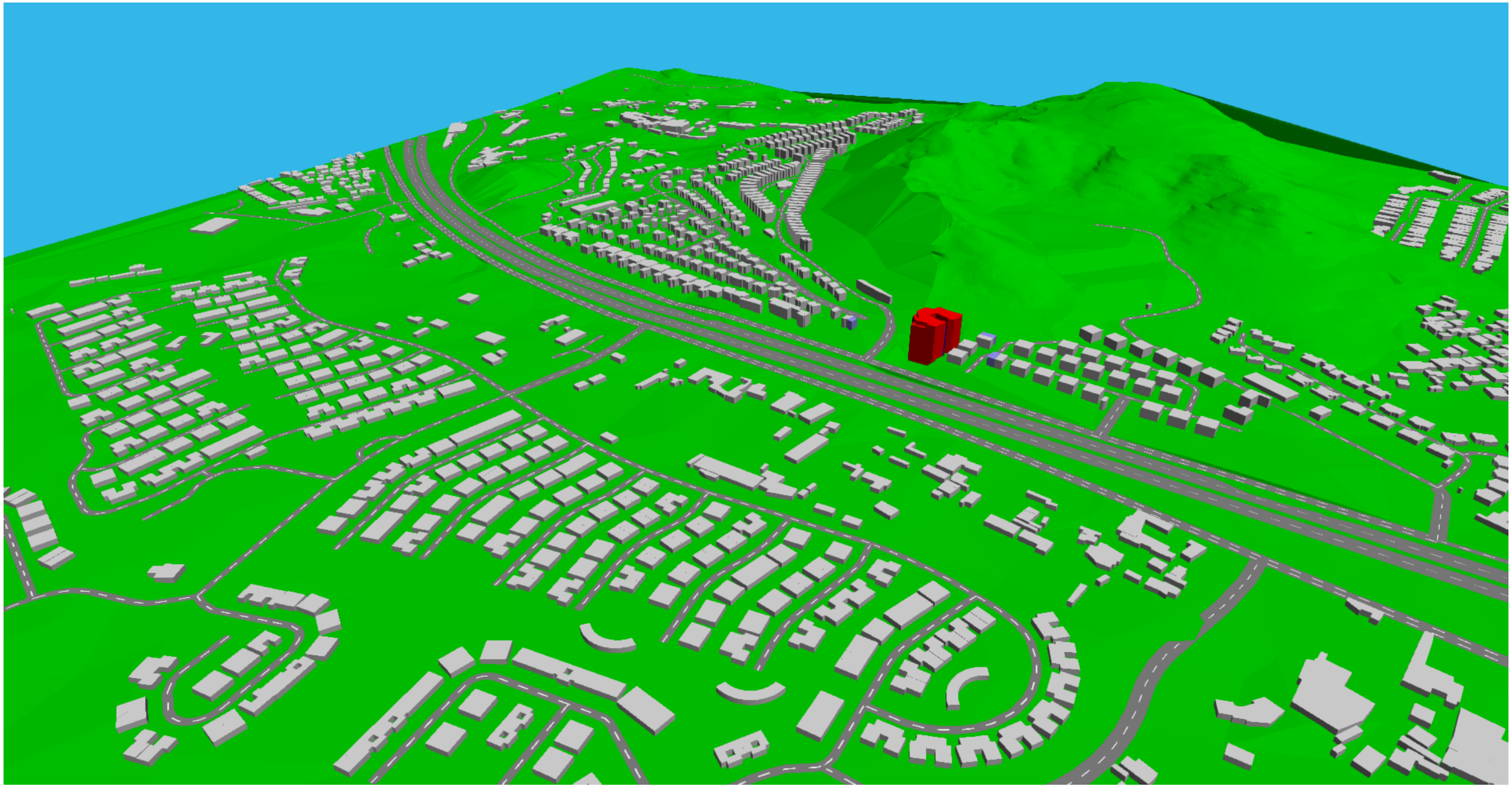
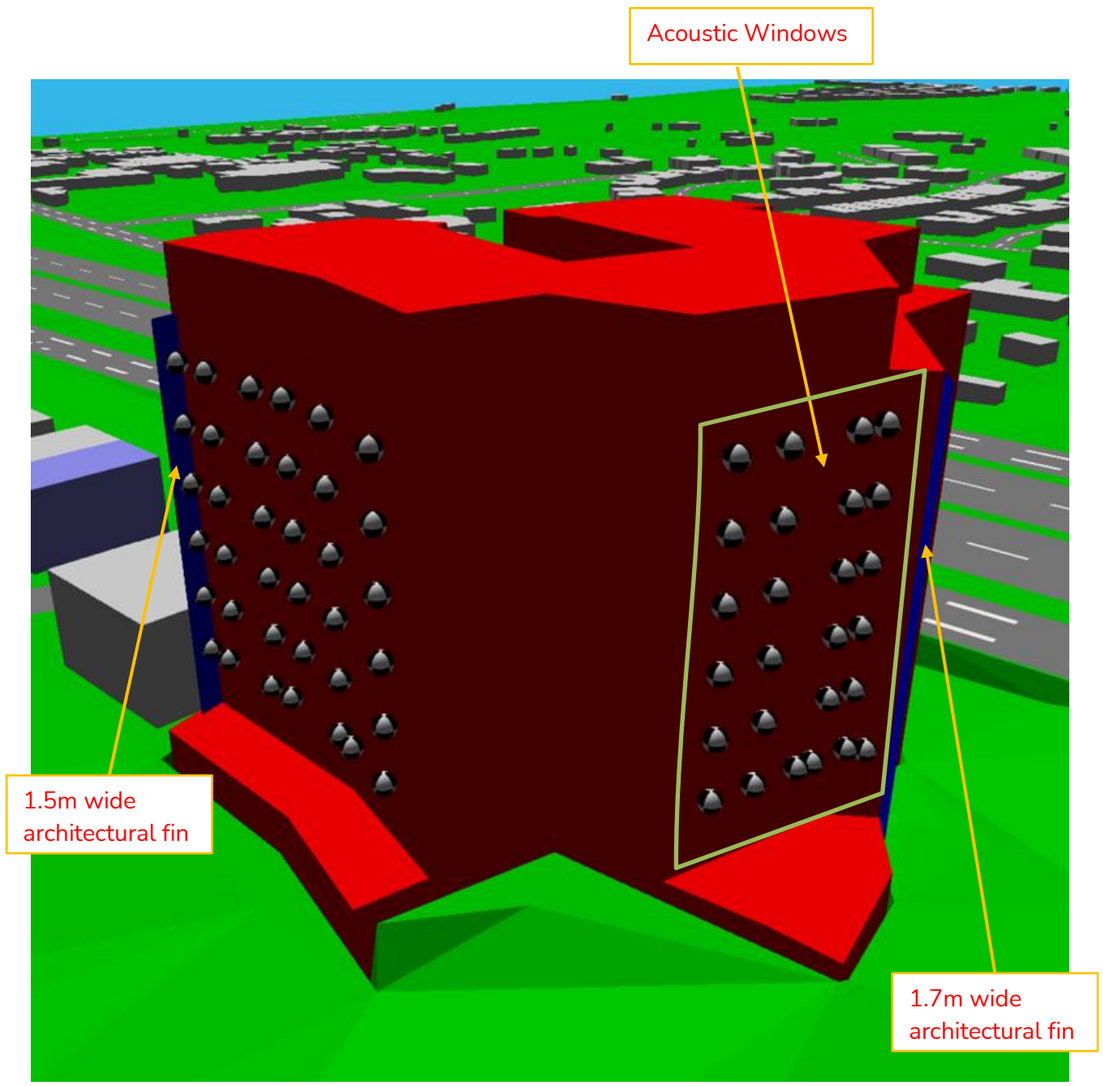
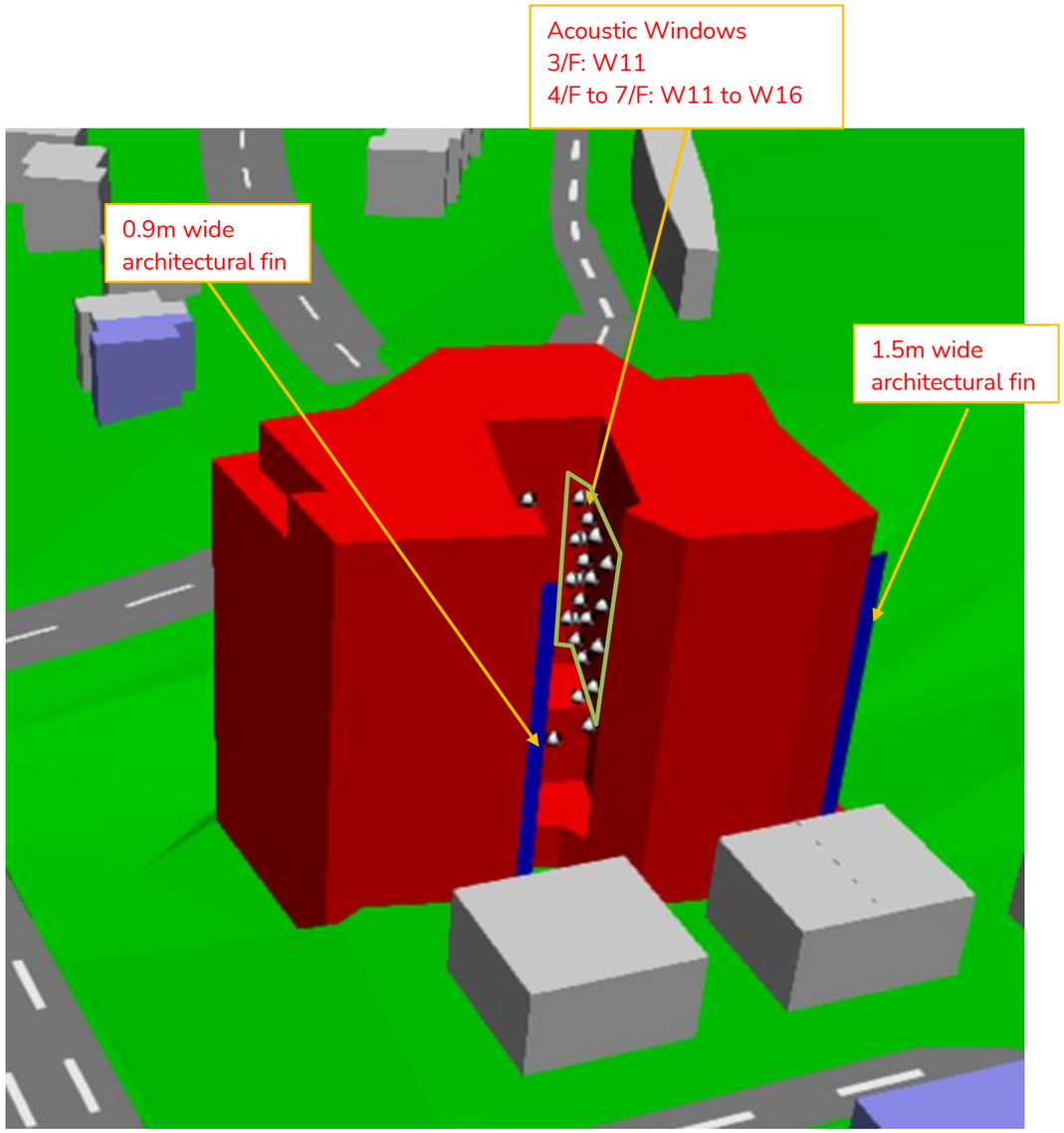
1 G–07 TYPICAL FLOOR PLAN PLAN

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.3		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (4/F TO 7/F TYPICAL)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

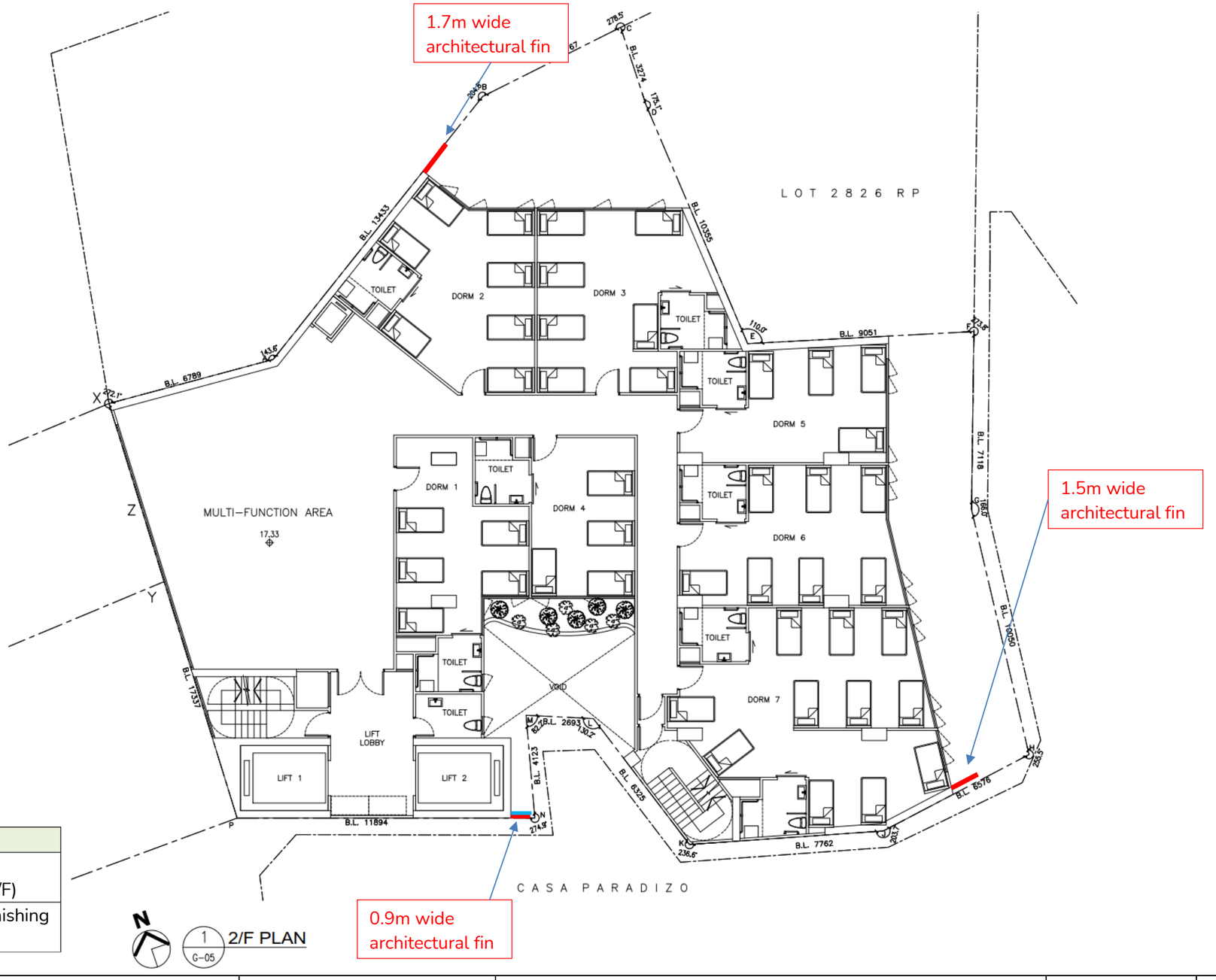


PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.4		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Phoenix Lee
DRAWING TITLE: 3D VIEW OF NOISE MODEL, NOISE SOURCES AND REPRESENTATIVE NSRS	SCALE: N.T.S.	REV: A			CHECKED BY: Eddy Ng
					APPROVED BY: Banting Wong



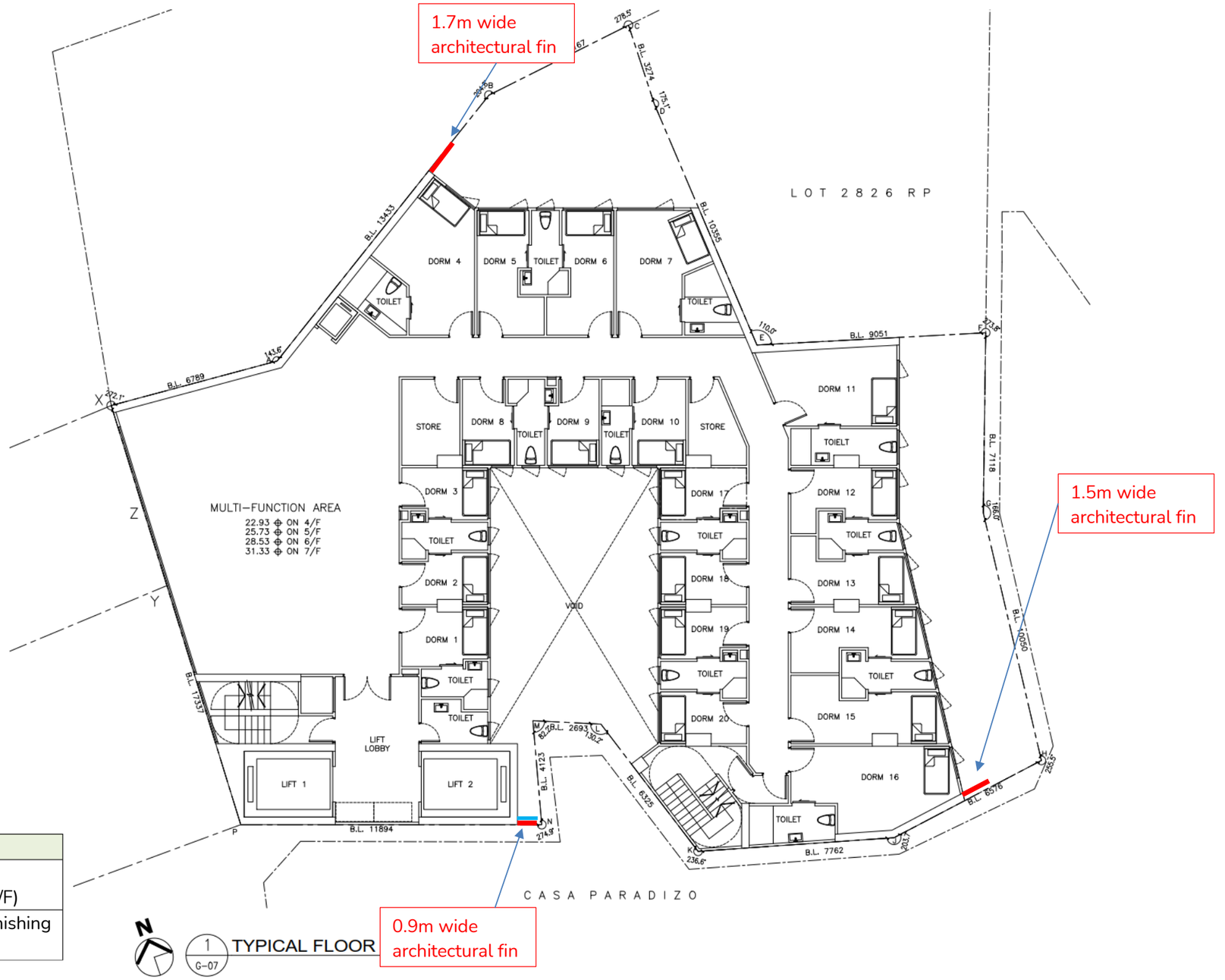


PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.5		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: 3D VIEW OF NOISE MITIGATION MEASURES	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



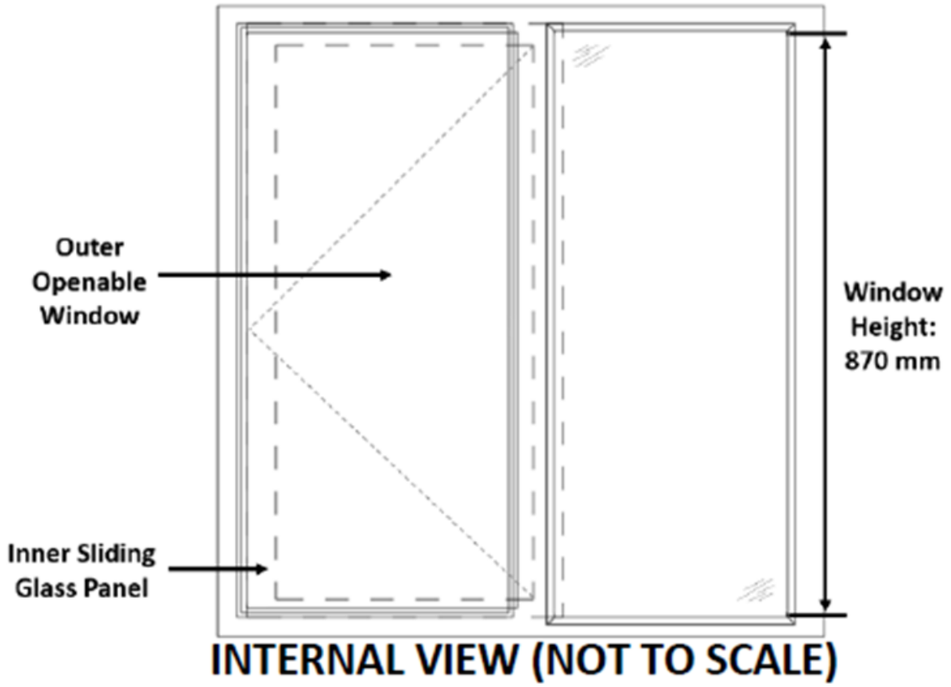
Legend	Description
	Architectural Fins (extend from 2/F to 3/F)
	Sound Absorption Finishing on one side of Fin

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.6		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY: Phoenix Lee
DRAWING TITLE: ACOUSTIC MITIGATION MEASURES FOR ROAD TRAFFIC NOISE (2/F)	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY: Eddy Ng
				APPROVED BY: Banting Wong

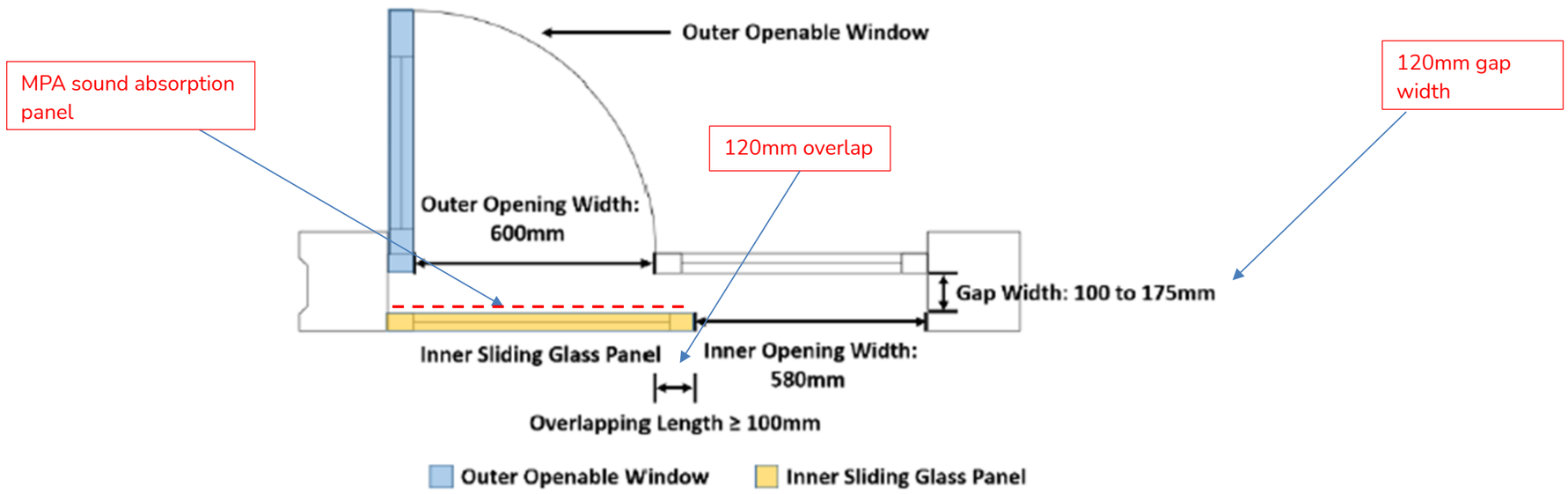


Legend	Description
	Architectural Fins (extend from 3/F to 7/F)
	Sound Absorption Finishing on one side of Fin

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.7	LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: ACOUSTIC MITIGATION MEASURES FOR ROAD TRAFFIC NOISE (3/F TO 7/F)	SCALE: N.T.S. / REV: A			CHECKED BY	Eddy Ng
				APPROVED BY	Banting Wong



INTERNAL VIEW (NOT TO SCALE)

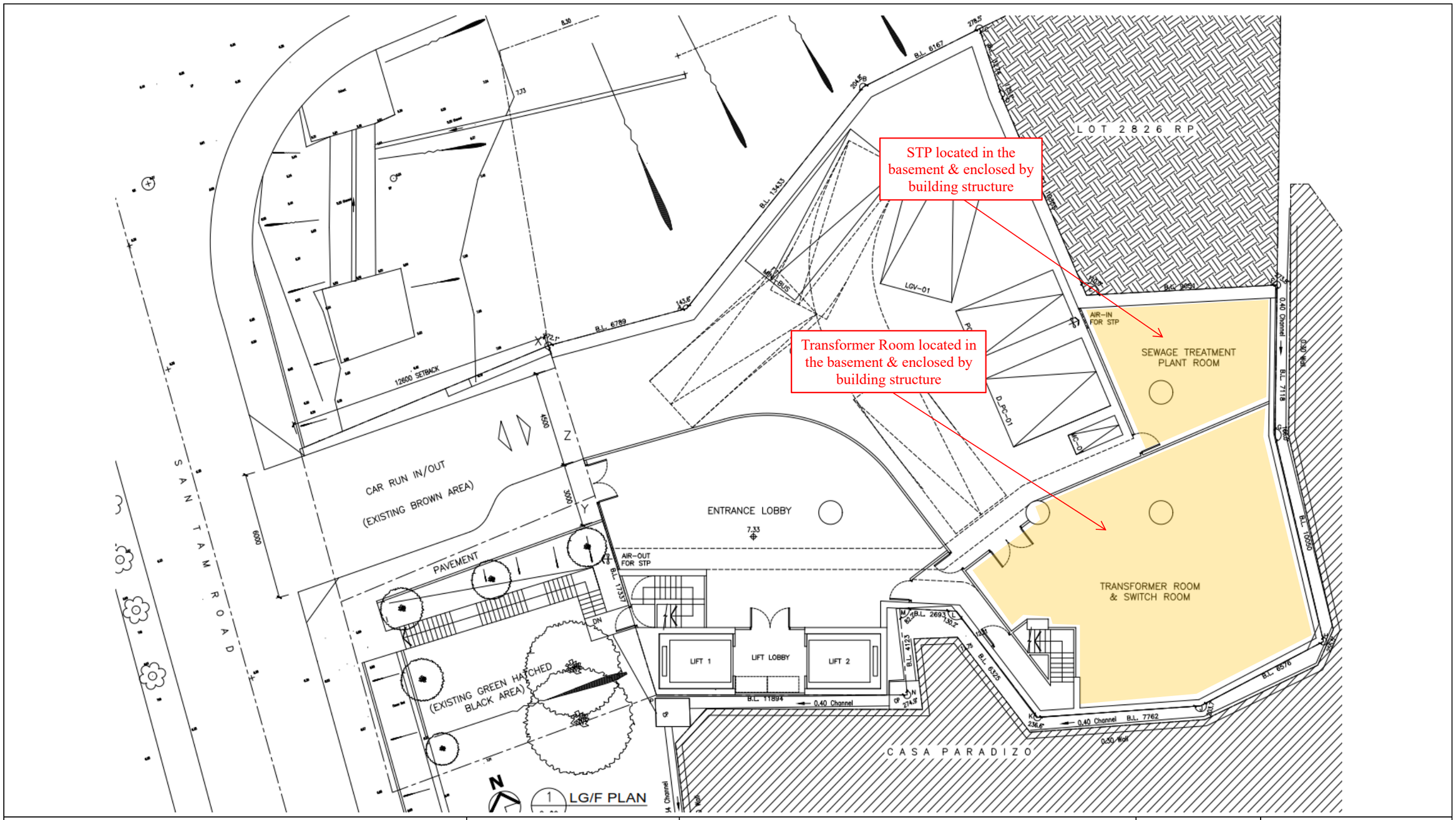


PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.8		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: ACOUSTIC MITIGATION MEASURES FOR ROAD TRAFFIC NOISE – ACOUSTIC WINDOW	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

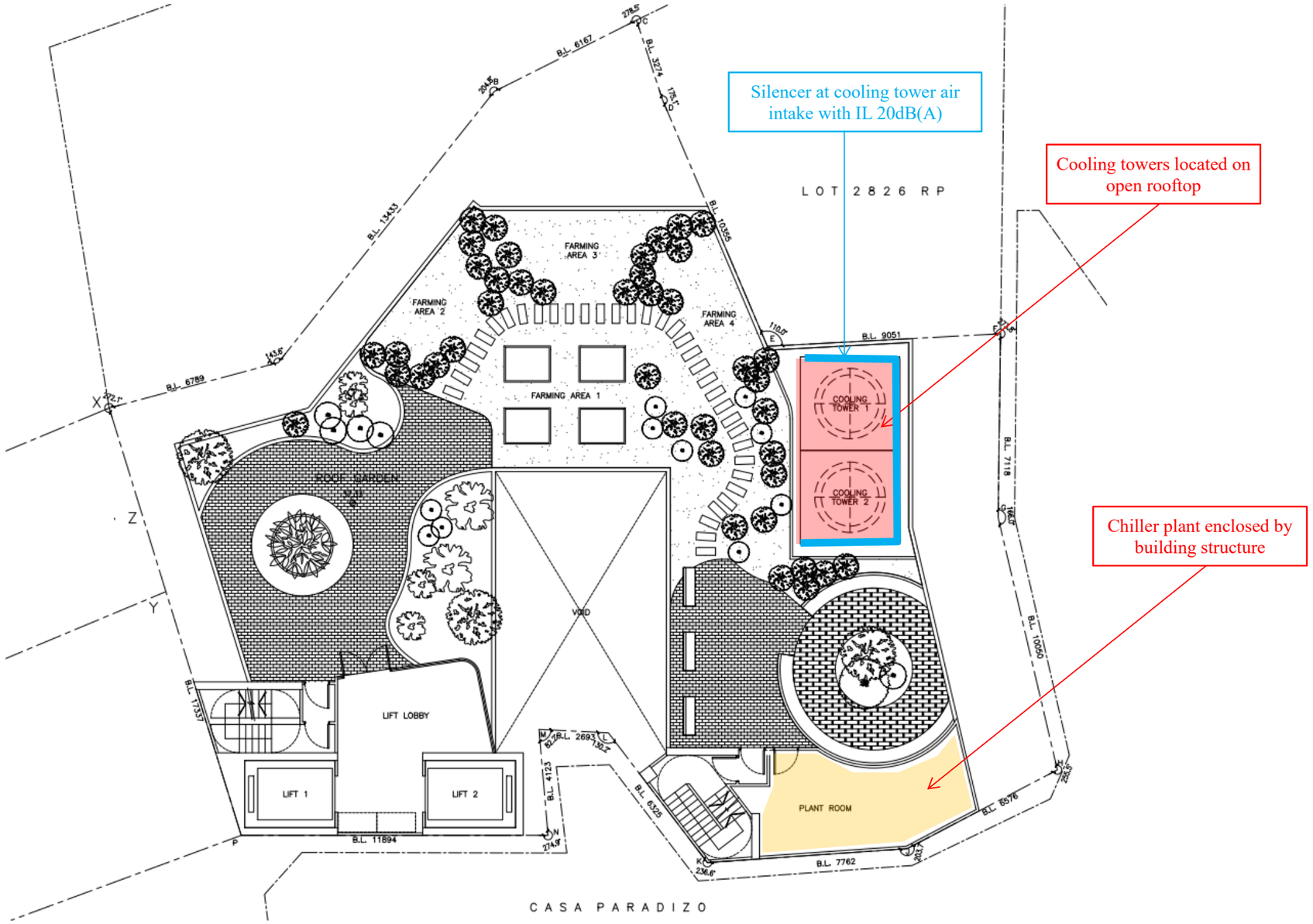
PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.1.9		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox
DRAWING TITLE: NOISE CONTOUR OF ROAD TRAFFIC NOISE IMPACT (MITIGATED)	SCALE: N.T.S.	REV: A		

PREPARED BY	Phoenix Lee
CHECKED BY	Eddy Ng
APPROVED BY	Banting Wong

Appendix 3.2. FIXED SOURCE NOISE ASSESSMENT



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.2.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: FIXED NOISE SOURCES LOCATIONS & MITIGATION TREATMENT (LG/F)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.2.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Phoenix Lee
DRAWING TITLE: FIXED NOISE SOURCES LOCATIONS & MITIGATION TREATMENT (R/F)	SCALE: N.T.S.	REV: A			CHECKED BY: Eddy Ng APPROVED BY: Banting Wong

1

The ryowo Group is the pioneer and manufacturer of fiberglass-reinforced polyester (FRP) cooling towers in Hong Kong.

We offer a full range of product lines in FRP, stainless steel and galvanized steel water-cooling towers. With our vital production station, Shenzhen RYOWO Cooling Tower Company Limited, we manufacture, market and service a full range of water-cooling towers. Over 90% of the cooling tower parts are from our own factory and, as a result, control of cost and quality are ensured.

RYOWO has been a member of the Cooling Technology Institute since 1982. With our own R&D Department and testing facilities, we have five lines of product which are CTI-201 certified.

In 2004, our R & D department successfully developed a CTI STD-20l rated product line, the FWS series, the highest standard of water-cooling towers with guaranteed cooling capacity. In order to expand the application of our cooling towers, we developed the integrated drift eliminator, and used the super low noise fan as an option in this series.

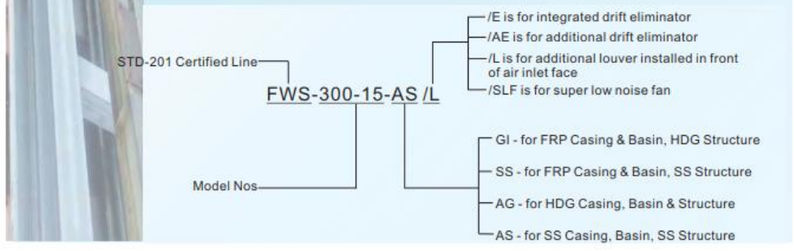
FWS

Low Noise Cross Flow Type

MANUFACTURER'S PUBLISHED THERMAL PERFORMANCE IS CERTIFIED BY THE COOLING TOWER INSTITUTE UNDER THE PROVISIONS OF STD-201 (02) CERTIFICATION VALIDATION NUMBER 04-27-01

THE COOLING TOWER YOU CAN RELY ON

MODEL DESIGNATION



ryowo

3 SPECIFICATION

Cooling Tower selected for 81 San Tam Road Yuen Long
Model FWS-94-7.5 by Ryowo, two units are required to be installed.

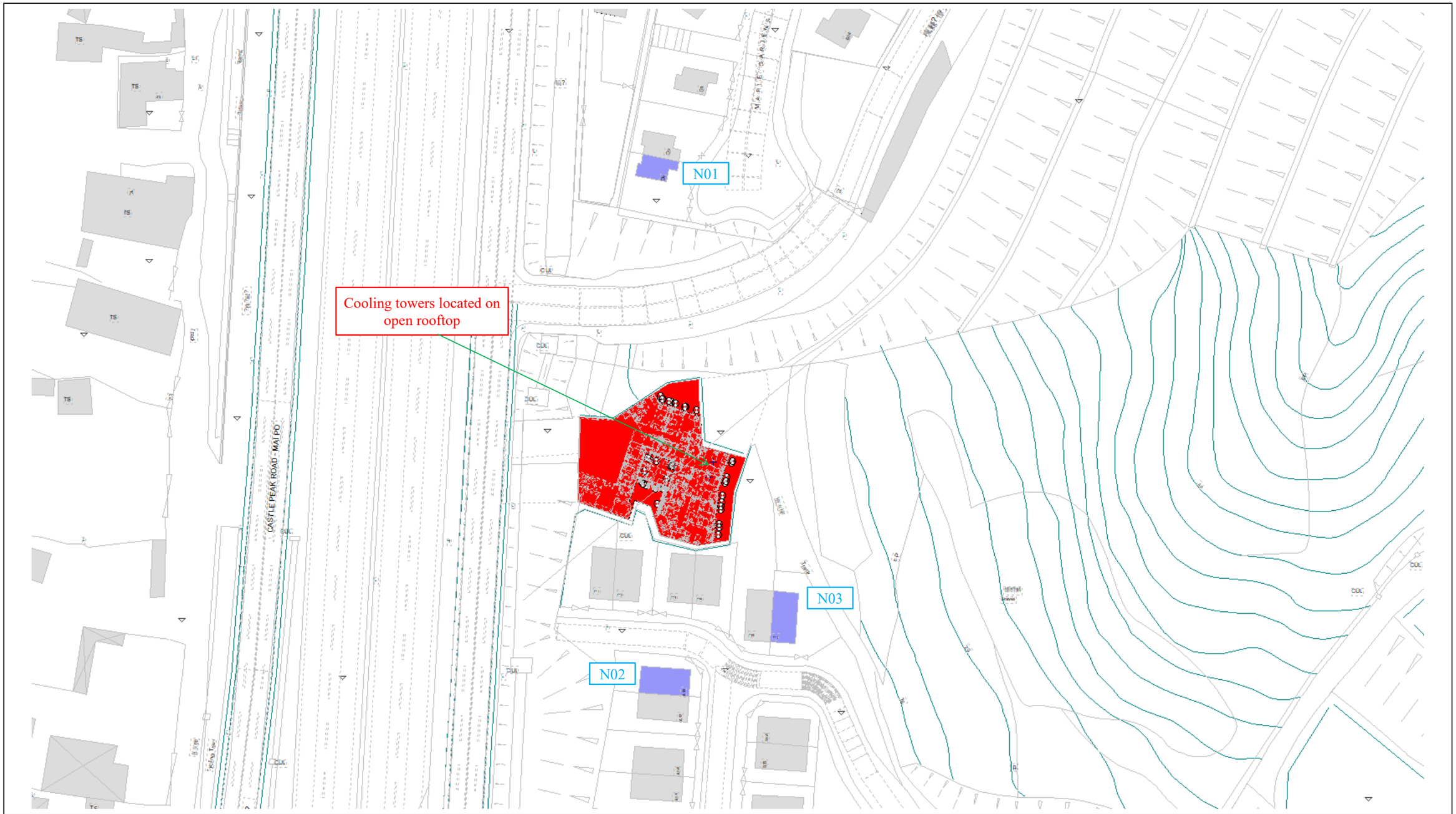
Model	Nominal Water Flow M³/hr	Dimension L mm	W mm	h mm	H mm	Fan Motor kW	Fan Dia mm	Piping In mm	Out mm	Fv mm	Of mm	Dr mm	Sound Power Level	Weight Dry kgs	Wet kgs
FWS-94-3.7	94				4625	3.7							88	1335	2300
FWS-94-5.5	107	4000	2000	4125	4705	5.5	1600	100x2	150	25	50	50	91	1385	2350
FWS-94-7.5	119				4745	7.5							93	1400	2365
FWS-127-5.5	127				4705	5.5							90	1570	3000
FWS-127-7.5	141	4400	2300	4125	4745	7.5	1800	100x2	150	25	50	50	92	1585	3015
FWS-127-11	160				4825	11							94	1650	3080
FWS-169-7.5	169				4745	7.5							92	1690	3700
FWS-169-11	192	4400	2600	4125	4825	11	2000	125x2	200	25	50	50	94	1760	3770
FWS-169-15	213				4870	15							95	1770	3780
FWS-200-7.5	190				4785	7.5							91	2195	4000
FWS-200-11	215	4600	2600	4145	4865	11	2400	125x2	200	40	80	50	93	2250	4055
FWS-200-15	235				4910	15							95	2255	4060
FWS-250-7.5	210				4985	7.5							90	2890	5000
FWS-250-11	240	4800	3200	4345	5065	11	2400	125x2	200	40	80	50	93	2945	5055
FWS-250-15	265				5110	15							94	2950	5060
FWS-275-7.5	225				4785	7.5							89	3050	5160
FWS-275-11	255	5200	3200	4145	4865	11	2900	150x2	200	40	80	50	92	3105	5215
FWS-275-15	285				5910	15							94	3110	5220
FWS-300-7.5	235				4895	7.5							89	3310	6500
FWS-300-11	270				5065	11							91	3365	6555
FWS-300-15	300	6000	3200	4345	5110	15	2400	150x2	200	40	80	50	93	3370	6560
FWS-300-18.5	320				5175	18.5							94	3410	6600
FWS-300-22	340				5215	22							95	3470	6660
FWS-330-7.5	260				4785	7.5							88	3405	6595
FWS-330-11	300				4865	11							91	3460	6650
FWS-330-15	330	6300	3200	4145	4910	15	2900	150x2	250	50	80	50	93	3465	6655
FWS-330-18.5	350				5175	18.5							94	3505	6695
FWS-330-22	375				5215	22							95	3565	6755
FWS-350-7.5	275				6065	7.5							89	3580	6770
FWS-350-11	315				6145	11							91	3635	6825
FWS-350-15	350	5400	3600	5425	6190	15	3000	150x2	250	50	80	50	93	3640	6830
FWS-350-18.5	375				6255	18.5							94	3680	6870
FWS-350-22	400				6295	22							95	3740	6930
FWS-400-7.5	285				4985	7.5							87	3630	7000
FWS-400-11	325				5065	11							89	3685	7055
FWS-400-15	360	6600	3600	4345	5110	15	3000	125x4	250	50	80	50	91	3690	7060
FWS-400-18.5	385				5135	18.5							92	3730	7100
FWS-400-22	410				5195	22							93	3790	7160
FWS-400-30	450				5255	30							94	3820	7185
FWS-500-7.5	305				5990	7.5							87	4230	8000
FWS-500-11	345				6070	11							90	4285	8055
FWS-500-15	385	6000	4200	5355	6115	15	3400	125x4	250	50	80	50	91	4290	8060
FWS-500-18.5	410				6180	18.5							93	4325	8100
FWS-500-22	435				6220	22							94	4390	8120
FWS-500-30	485				6280	30							95	4415	8145
FWS-550-7.5	315				5990	7.5							87	4350	8080
FWS-550-11	360				6070	11							89	4405	8135
FWS-550-15	400	6600	3600	5355	6115	15	3000	125x4	250	50	80	50	91	4410	8140
FWS-550-18.5	430				6180	18.5							92	4450	8180
FWS-550-22	455				6220	22							94	4510	8240
FWS-550-30	500				6280	30							95	4535	8275
FWS-600-11	435				6255	11							89	5015	9000
FWS-600-15	485				6300	15							91	5020	9005
FWS-600-18.5	520	7000	4200	5500	6365	18.5	3700	150x4	300	50	80	50	92	5060	9045
FWS-600-22	550				6405	22							94	5120	9085
FWS-600-30	610				6465	30							95	5140	9110
FWS-600-37	650				6485	37							96	5330	9300
FWS-700-11	515				6255	11							89	5650	12000
FWS-700-15	570				6300	15							91	5655	12005
FWS-700-18.5	610	7000	5000	5500	6365	18.5	3700	150x4	300	50	80	50	92	5690	12055
FWS-700-22	645				6405	22							93	5755	12120
FWS-700-30	720				6465	30							95	5780	12145
FWS-700-37	765				6485	37							96	5970	12335
FWS-800-11	555				7155	11							88	6905	14880
FWS-800-15	615				7200	15							90	6910	14885
FWS-800-18.5	655				7265	18.5	4200	150x4	300	50	80	50	91	6945	14920
FWS-800-22	695				7305	22							93	7010	14985
FWS-800-30	760	7500	5000	6400	7365	30							95	7035	15010
FWS-800-37	820				7385	37							98	7225	15200
FWS-800-45	880				7405	45	4200	150x4	350	50	80	50	99	7255	15230
FWS-800-55	940				7495	55							100	7365	15340

Notes:

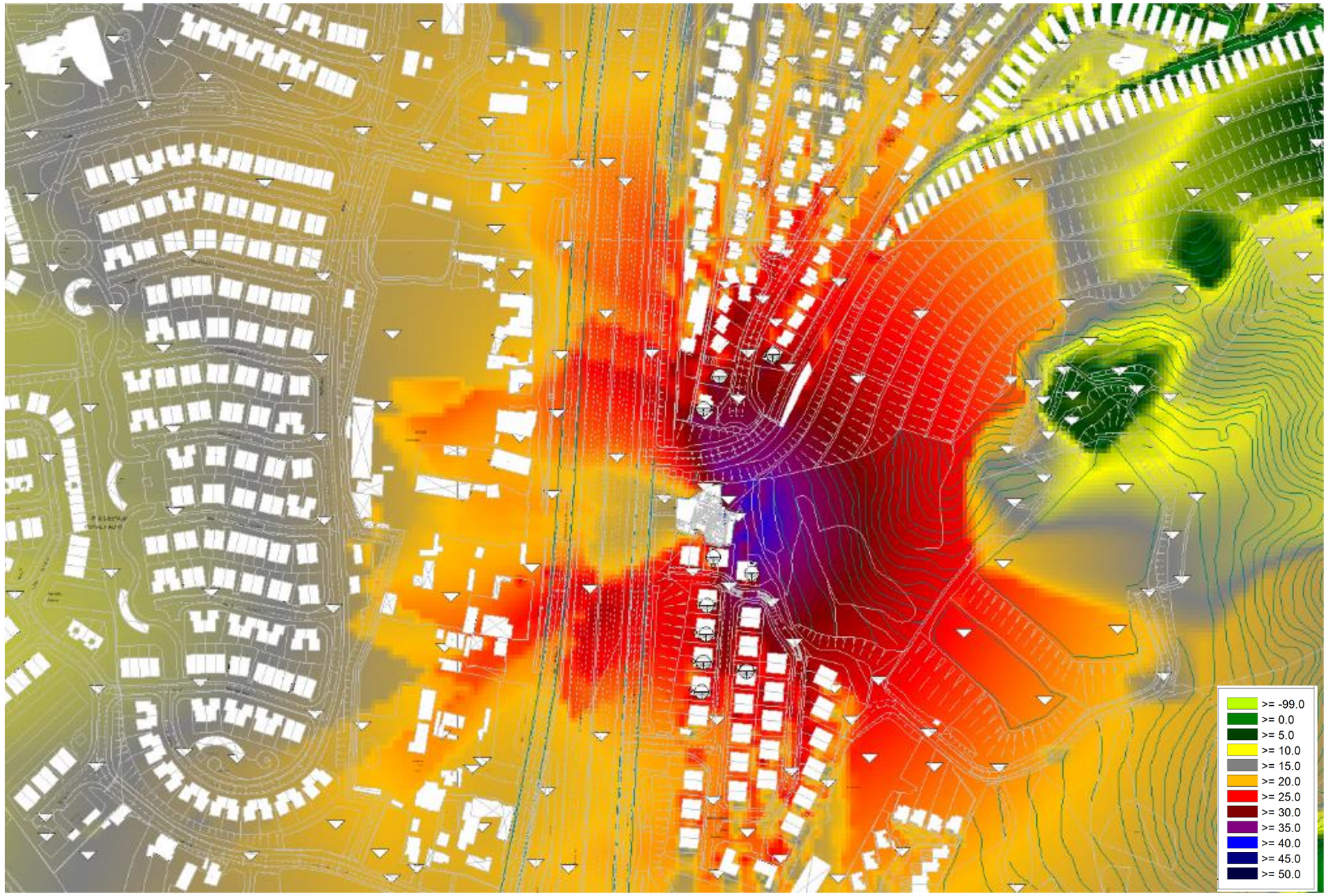
1/CTI Certification applies to the operation with the Wet Bulb Temp. between 12.8°C and 32.2°C, Max. Entering Water Temp. 51.7°C, Min. Range of 2.2°C and Min. Approach of 2.8°C.
2/The nominal water flows are based upon 37°C HWT, 32°C CWT, 28°C WBT, 32°C DBT and 101.3 kPa Barometric pressure.
3/Sound Power Level is in dBA re 10^{-12} Watt.
4/Data and specifications are subjected to change without prior notice.

ryowo

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.2.3	LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: ACOUSTIC DATA FOR PROPOSED COOLING TOWERS	SCALE: N.T.S. / REV: A			CHECKED BY	Eddy Ng
				APPROVED BY	Banting Wong



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.2.4		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: LOCATION OF FIXED NOISE SOURCES & REPRESENTATIVE NSRS	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 3.2.5		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Phoenix Lee
DRAWING TITLE: NOISE CONTOUR OF FIXED SOURCE NOISE IMPACT (MITIGATED)	SCALE: N.T.S.	REV: A			CHECKED BY: Eddy Ng
					APPROVED BY: Banting Wong

Appendix 4.1. WATER QUALITY STANDARD

Determinand / Flow rate (m^3/day)	≦10	>10 and ≦200	>200 and ≦400	>400 and ≦600	>600 and ≦800	>800 and ≦1000	>1000 and ≦1500	>1500 and ≦2000	>2000 and ≦3000	>3000 and ≦4000	>4000 and ≦5000	>5000 and ≦6000
pH (pH units)	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
Temperature (℃)	45	45	45	45	45	45	45	45	45	45	45	45
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	50	50	50	50	50	50	25	25	25	25	25	25
BOD	20	20	20	20	20	20	10	10	10	10	10	10
COD	80	80	80	80	80	80	50	50	50	50	50	50
Oil & Grease	20	20	20	20	20	20	10	10	10	10	10	10
Iron	10	10	10	7	5	4	3	2	1	1	1	1
Boron	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2
Barium	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2
Mercury	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	0.5	0.5	0.5	0.4	0.4	0.25	0.2	0.15	0.1	0.1	0.1
Total toxic metals	2	1	1	1	0.8	0.8	0.5	0.4	0.3	0.2	0.14	0.1
Cyanide	0.1	0.1	0.1	0.1	0.1	0.08	0.06	0.04	0.03	0.02	0.01	0.01
Phenols	0.5	0.5	0.4	0.3	0.25	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	100	100	100	100	80	80	50	50	50	50
Total phosphorus	10	10	10	10	10	10	8	8	5	5	5	5
Surfactants (total)	15	15	15	15	15	15	10	10	10	10	10	7
E. coli (count/100ml)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

PROJECT: PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY AT 81 SAN TAM ROAD, YUEN LONG, N.T.	DRAWING NO.: C220410W-01 Figure 4.1.1	LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Phoenix Lee
DRAWING TITLE: STANDARDS FOR EFFLUENTS DISCHARGED INTO THE COASTAL WATERS OF DEEP BAY WATER CONTROL ZONE	SCALE: N.T.S. / REV: A			CHECKED BY: Eddy Ng
				APPROVED BY: Banting Wong

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC"
FOR A PROPOSED "SOCIAL WELFARE FACILITIES"
(RESIDENTIAL CARE HOMES FOR THE ELDERLY)
(RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD,
SAN TIN, N.T.

RESPONSE-TO-COMMENT - SWD

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
1.1 Comments from RCHE licensing perspective	
(i) In assessing a licence application, the applicant is required to comply with the requirements stipulated in the Residential Care Homes (Elderly Persons) Ordinance (Cap. 459), its subsidiary legislation and the latest version of the Code of Practice for Residential Care Homes (Elderly Persons)(CoP).	Noted
(ii) As noted from the submitted R-to-C in respect of the building height, it is mentioned that the proposed highest floor of the dormitory is on 8/F and within 24 m from ground. However, as shown on the section plan, the height of 8/F is exceeding 24 m measuring from the San Tam Road and it is proposed to be used for administrative office and staff quarter. The applicant is thus required to clarify the proposed usage of 8/F and ensure that all dormitories are located within 24 m measuring vertically from the ground of the building as required under section 20 of the Residential Care Homes (Elderly Persons) Regulation.	It is a typo-error of the previously submitted R-to-C. It should be "The proposed highest floor of the dormitory is on 7/F and within 24 m from ground. One additional floor above the dormitory above 24m is solely for administrative staff. A similar design is also observed in "Forward Living", which is a RCHE at No.9 Fu Tei Road, Tuen Mun, the highest floor of dorms is 7/F and its floor slab is within 24 m from the street level."
(iii) For those ancillary facilities of the RCHE to which the resident normally do not have access (e.g. kitchen, laundry room, office, staff resting room) and proposed to to be situated at a height more than 24 m above the ground, the applicant's attention is drawn to the previous comments lastly provided and recapped as follows :	Noted

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
(iv) "Under section 20 of the Residential Care Homes (Elderly Persons) Regulation, no part of an RCHE shall be situated at a height more than 24 m above the ground floor, measuring vertically from the ground of the building to the floor of the premises in which the RCHE is to be situated. If the operator of the proposed RCHE can prove that the proposed RCHE possesses facilities for fire safety, evacuation and rescue, and appropriate evacuation, contingency and fire drill plans to the satisfaction of the DSW, the DSW may approve the ancillary facilities of the RCHE to which the resident normally do not have access (e.g. kitchen, laundry room, office, staff resting room) to be situated at a height more than 24 m above the ground ".	Noted. Detail design would be provided on next step.

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
1.2 Comments from RCHE services perspective (I) Applicant's R-to-C A) Salient points on design of RCHE i) Boundary/ extent of the RCHE	
● The applicant should clarify the boundary/ extent and the total GFA of the intended RCHE for our consideration. As per our last comments, the applicant clarified that the whole development is designed as RCHE, which includes other facilities such as Entrance, Carpark, Multi-purpose Room, Wellness Centre, Sky Garden, Administrative Office and Staff Quarter.	The boundary/extent included other facilities such as Entrance, Carpark, Multi-purpose Room, Wellness Centre, Sky Garden, Administrative Office and Staff Quarter has been submitted as per last R-to-C. The total GFA of the intended RCHE is 5,400 sq.m.
● While the site boundary is indicated by red-dashed line in all revised drawings, we have no further comments on extent of the RCHE at this stage.	
ii) 24m height restriction of RCHE	
● The applicant replied that the 24m height restriction of RCHE was noted. While it is indicated "our proposed highest floor of the dormitory on 8/F is within 24m from ground" and "one additional floor above the dormitory above 24m is soley for the administrative staff", we would like to defer to LORCHE for comments should the proposed location of the RCHE is in full compliance of the 24m height requirements in accordance with the licensing standard.	Noted. It is a typo-error of the previously submitted R-to-C. It should be "The proposed highest floor of the dormitory is on 7/F and within 24 m from ground. One additional floor above the dormitory above 24m is solely for administrative staff. A similar design is also observed in "Forward Living", which is a RCHE at No.9 Fu Tei Road, Tuen Mun, the highest floor of dorms is 7/F and its floor slab is within 24 m from the street level."

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
iii) Isolation measures ● As per our last comments, 3 no. of Isolation Rooms are added on 3/F as shown on the revised layout plan for the fulfilment of licensing requirements. ● Subject to design feasibility, the applicant may consider providing a protected lobby, say 2 sq.m in area, at the entrance of each Isolation Room for infection control purpose.	Protected lobbies to the 3 nos. isolation rooms of area not less than 2 sq.m are added as shown on G-06 Rev.C.

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
B) Comments on the Applicant's intention for joining the Premium Concession Scheme	
● While the applicant indicated an intention for joining the Premium Concession Scheme upon TPB's approval of the subject site, please note that our previous comments with regard to the application for joining this Scheme remains valid.	Noted
● It is noted that some non-standard facilities of RCHE, including the Sky Garden, Wellness Centre and Hydrotherapy (on 1/F) and Staff Quarter involving 8 no. of staff rooms (8/F) and Roof Garden and Farming Areas (on Roof/F) are provided for the RCHE. While the applicant stated that the mentioned facilities are for exclusive use of the RCHE and should not be opened for the public use, would the applicant please provide more information on the usage of these functional rooms/areas and the justifications for such provision for our consideration.	Wellness Centre and Hydrotherapy are for rehabilitation use. The Sky Garden and Roof Garden and Farming Areas are for the residents to have outdoor exercises. The staff rooms of Staff Quarter are for the overnight staffs to rest. Also, it can provide spaces for the staffs during the close-loop management if necessary.
● With a view to providing a quality RCHE for service users, the applicant is further reminded to make reference to the attached documents (i) to (iv) in the design of the RCHE – (i) Guidance Note: Guidance_Note_(Eng)_Jan_2022.pdf (ii) Best Practices in Design and Operation of RCHE: Best Practices in Design and Operation (Jan 2015).pdf	Noted

Proposed Rezoning From "R(C)" To "G/IC" for
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S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
(iii) Best Practices Guideline - Basic Provision Schedule Specific Requirements for RCHE: Best_Practices_Guideline_RCHE_March_2020.pdf (iv) A Supplement on Ventilation - Guidelines on Prevention of Communicable Diseases in RCHEs/ Residential Care Homes for Persons with Disabilities: a_supplement_on_ventilation.pdf	Noted
(II) Revised RCHE Design	
● It is noted that most of the beds have either of the lateral sides leaning directly against the wall. To facilitate the caring of the elderly from both sides of the bed, would the applicant please review the design and position the beds with adequate spaces on both sides.	Noted
● While two lifts are provided for the RCHE, to facilitate the escort of the elderly in the event of medical emergency, would the applicant ensure that the capacity of one of the lifts is able to accommodate a stretcher bed measuring 2050mm x 560mm.	We would provide the lifts with bare size: 2900 mm x 2000 mm. Both lifts are able to accommodate a stretcher bed of size 2050mm x 560mm.
● Car parking spaces are located on LG/F. To enhance safety in escorting the elderly during adverse weather, would the applicant please ensure the walkpath from the drop-off point to the entrance of the RCHE be provided with cover and convenient for access.	Two drop-off points inside covered carparks are provided as shown on G-02 Rev.C.

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Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – SWD
(dated 13 DECEMBER 2022)

Comments	Response
• It is noted that the design of the proposed RCHE is at a preliminary stage. If the applicant would like to apply for joining the Premium Concession Scheme for the RCHE development, the design of the RCHE should be satisfactory and agreed by SWD. In this regard, we stand ready to provide further comments at a later stage on the revised layout plan including but not limited to the number of beds to be provided.	Noted

Subject Site

LOT 2826 RP

CAR–PARK
7.33

SEWAGE TREATMENT PLANT ROOM

ENTRANCE LOBBY
7.33

TRANSFORMER ROOM & SWITCH ROOM

CASA PARADIZO

AMBULANCE

MINI–BUS

LGV–01

PC–01

D–PC–01

DROP–OFF POINT & CARPARK

DROP–OFF POINT & CARPARK

AIR–IN FOR STP

AIR–OUT FOR STP

LIFT 1

LIFT LOBBY

LIFT 2

CAR RUN IN/OUT
(EXISTING BROWN AREA)

PAVEMENT

(EXISTING GREEN HATCHED BLACK AREA)

12600 SETBACK

SAN TAM ROAD

B.L. 6167

B.L. 13433

B.L. 6789

B.L. 17535

B.L. 905V

B.L. 7118

B.L. 10050

B.L. 17537

B.L. 2693

B.L. 4123

B.L. 6325

B.L. 6576

B.L. 11894

B.L. 7762

0.40 Channel

0.30 Wall

0.30 Channel

34 Channel

Q. Wall

4500

6000

3000

1 G–02 LG/F PLAN

NO AIR–SENSITIVE USES INCLUDING OPENABLE WINDOW, FRESH AIR INTAKE AND ACTIVE RECREATIONAL USES IN THE OPEN SPACE IS ALLOWED WITHIN THE BUFFER ZONE.

2202

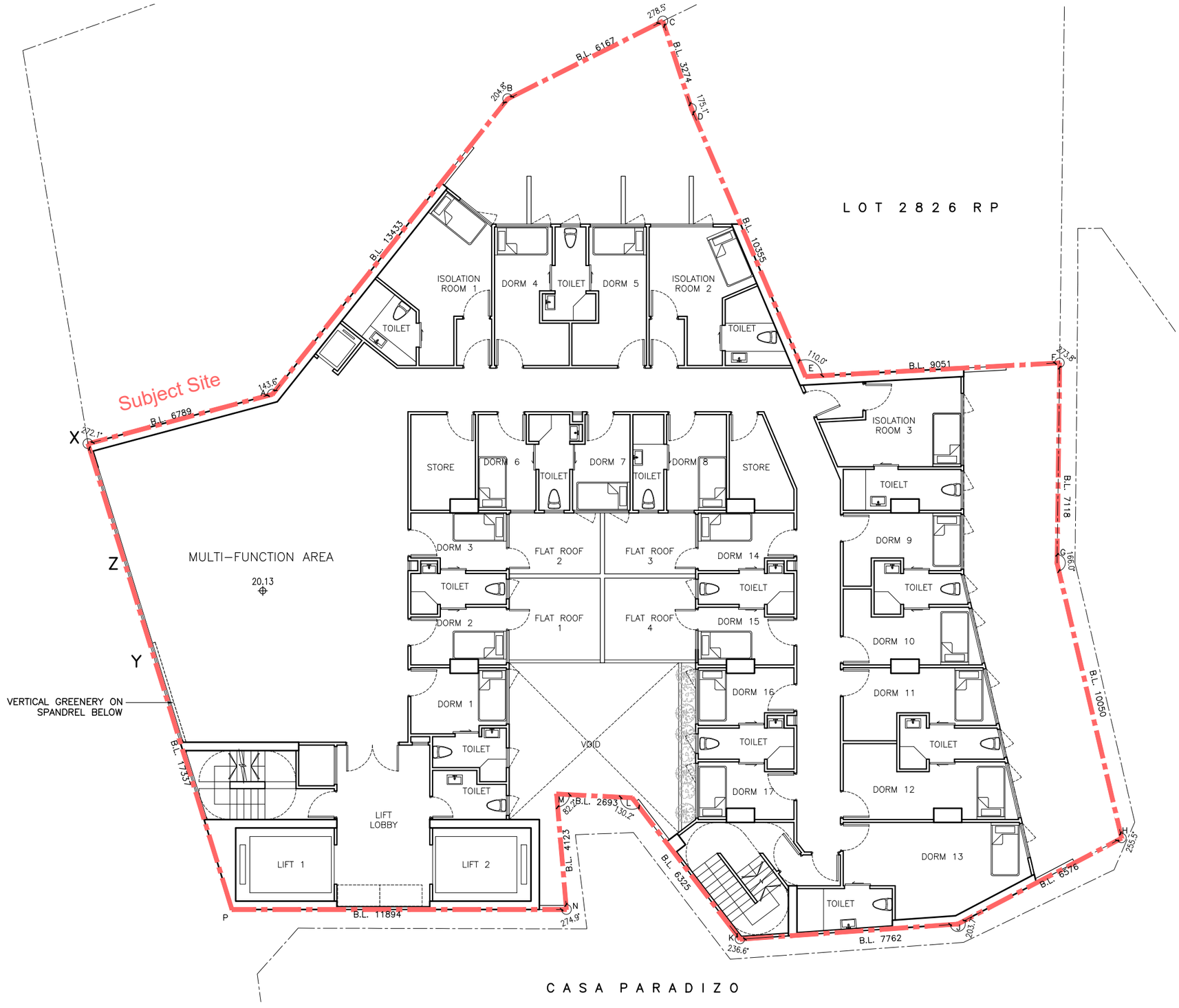
PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY
at 81 SAN TAM ROAD,
YUEN LONG, N.T.

LG/F PLAN
ENTRANCE & CARPARK

G–02 1:150 (A3) 1:225 (A4)

C	DEC. 2022
B	OCT. 2022
A	JULY. 2022

RLEE



CASA PARADIZO

N

1 / G-06 3/F PLAN

NO AIR-SENSITIVE USES INCLUDING OPENABLE WINDOW, FRESH AIR INTAKE AND ACTIVE RECREATIONAL USES IN THE OPEN SPACE IS ALLOWED WITHIN THE BUFFER ZONE.

2202

PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY
at 81 SAN TAM ROAD,
YUEN LONG, N.T.

3/F PLAN
RCHE

G-06 1:150 (A3) 1:225 (A4)

C	DEC. 2022	
B	OCT. 2022	
A	JULY. 2022	

Do not scale drawing.
Contractors are required to verify exact dimensions on site.
The drawings show the design intent of the architect only, contractors are required to submit shop drawings where appropriate.
The design remains to be the property of "RLee Architects (HK) Ltd" unless otherwise specified.
This drawing is not for construction purposes unless expressedly certified.

RLEE

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC"
FOR A PROPOSED "SOCIAL WELFARE FACILITIES"
(RESIDENTIAL CARE HOMES FOR THE ELDERLY)
(RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD,
SAN TIN, N.T.

RESPONSE-TO-COMMENT - CEDD

Proposed Rezoning From "R(C)" To "G/IC" for
a Proposed "Social Welfare Facilities" (Residential Care Homes for The Elderly) (RCHE)
Lot 4823 in D.D.104, 81 San Tam Road, San Tin, N.T.
S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – CEDD
(dated 13 DECEMBER 2022)

Comments	Response
2. Comments of the Head of Geotechnical Engineering Office, Civil Engineering and Development Department (H(GEO), CEDD) as follow:	
2. Section 4. As shown in Figure 2, it is noted that there are four registered man-made slopes (i.e. Features No. 2SE-C/C312, 2SE-C/F94, 2SE-C/R113 and 2SE-C/R114) within and adjacent to the application site. The applicant should provide cross-sections with the proposed construction works (including excavation & lateral support, foundation and site formation, if any) across the application site showing the aforementioned registered man-made geotechnical features.	The replacement and additional pages for Geotechnical Planning Review Report attached has included four registered man-made features (2SE-C/C312, 2SE-C/F94, 2SE-C/R113 and 2SE-C/R114). Cross-sections across the application site has also been included.
3. Section 3, 7 and 8(1). As mentioned in the GPRR, the existing 3-storey house with a car ramp will be demolished and re-developed into a 10-storey building with an approximate height of 29.6 m, together with the access point at ground level of the building lowered from +12 mPD to +7.33 mPD. In view of the proposed building and site formation works would be carried out immediately adjacent to man-made geotechnical features no. 2SE-C/C312 and 2SE-C/F94, please request the applicant to double check on the validity of the slope (2SE-C/F94) would be undisturbed" (section7) and, "…existing gentle slope (2SE-C/F94) in front would remain unchanged." (Section 8). The applicant should clearly state whether any necessary slope upgrading works and slope stability assessment of the concerned slope should be carried out prior to commencement of works.	The replacement and additional pages for Geotechnical Planning Review Report attached has included the necessary slope upgrading works and slope stability assessment of the concerned slope 2SE-C/C 312 and 2SE-C/F94.

Proposed Rezoning From "R(C)" To "G/IC" for
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S12A Application for Planning Application No. Y/YL-NTM/9
Response-to-Comment – CEDD
(dated 13 DECEMBER 2022)

Comments	Response
4. Further to para. 3 above, the applicant is advised that they should clarify with LandsD on whether necessary land allocation would be required for any slope upgrading works.	Noted. All slope upgrading works would be carried out within our site boundary. Therefore, no land allocation by LandsD is required.
5. Section 8(2). We note that the applicant would carry out a detailed investigation and assessment on the three existing man-made slope features no. 2SE-C/C312, 2SE-C/F94, 2SE-C/R113 and 2SE-C/R114 that may affect or be affected by the proposed development, and to carry out slope upgrading works if found necessary. Please remind the applicant to include slope feature no. 2SE-C/C312 in their future assessment with consideration of our comments in para.2 above.	The replacement and additional pages for Geotechnical Planning Review Report attached has included the necessary slope upgrading works and slope stability assessment of all features.

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC"
FOR A PROPOSED "SOCIAL WELFARE FACILITIES"
(RESIDENTIAL CARE HOMES FOR THE ELDERLY)
(RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD,
SAN TIN, N.T.

Replacement and Additional Pages for Geotechnical Planning Review Report for Planning Application

JAN 2023

RLEE

RLEE Architects (HK) Ltd

1.0 INTRODUCTION

This report is to present geotechnical assessments to support the planning application for a proposed rezoning from "R(C)" to G/IC" for a proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE)

The following geotechnical aspects are covered on this appraisal report:

1. Desk study and background information search of existing structures and geotechnical features located in the vicinity of the site.

2. A review of the site conditions and findings of the geotechnical investigation.

3. Brief assessment of the geotechnical feasibility of this planning application.

4. A proposed sequence of construction and / or mitigation measures which are likely to be carried out in connection with this planning application.

2.0 THE SITE

The Application Site locates at **No.81 San Tam Road, Lot no. 4823 in D.D. 104**, with a site area of about 736.3 m^2. The Site is accessible from San Tam Road at level +7.33 mPd from the West. It adjoins an access road to "Crescendo" to the North and a low-rise residential development "Casa Paradiso" to the South. To the East is a small mountain full of greenery.

Please refer to ***Figure 1*** for the Location Plan of the Application Site.

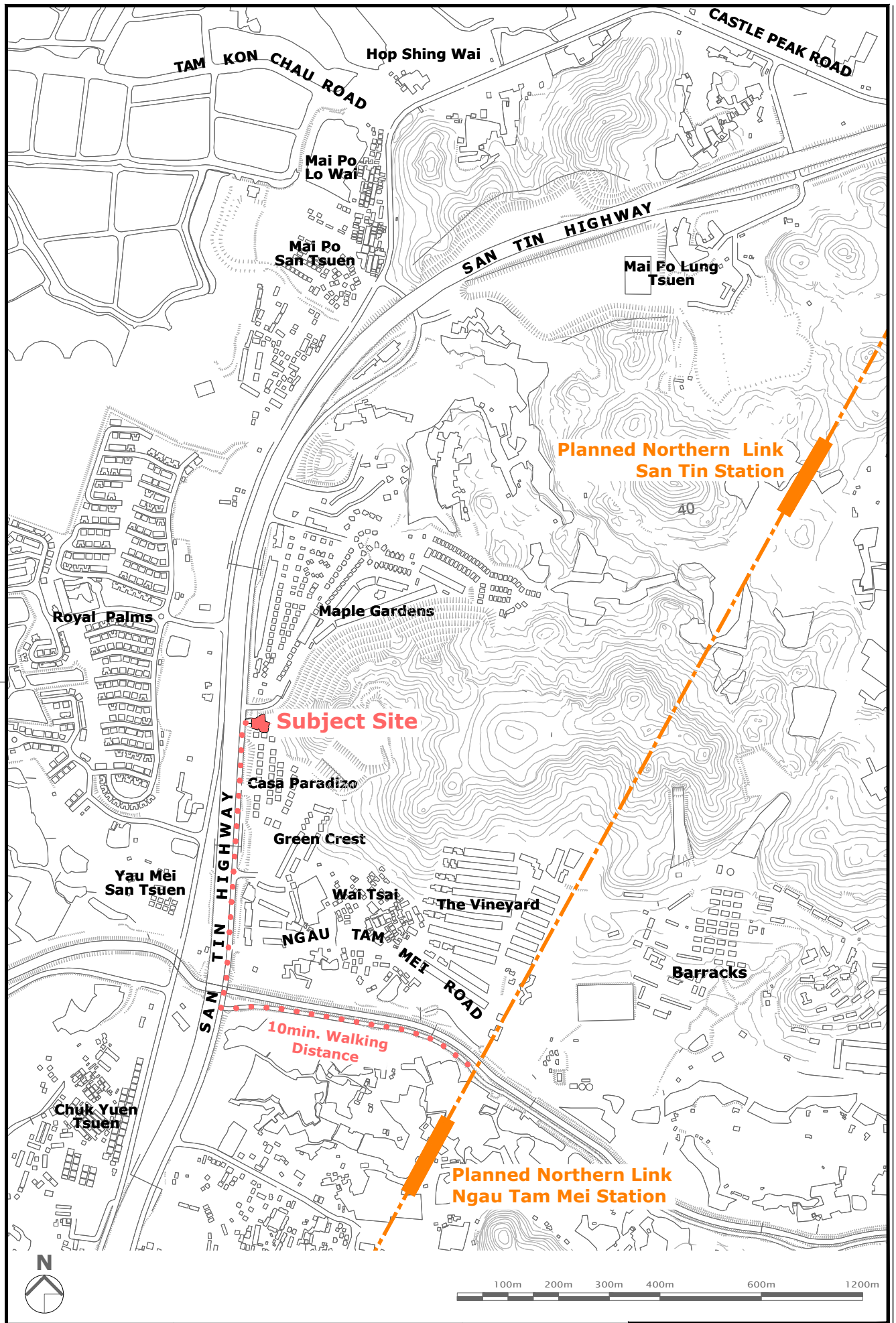


FIGURE NO.	TITLE	SCALE
1	LOCATION PLAN	1:10000
		DATE JUL 2022

RLEE

3.0 EXISTING & PROPOSED DESIGN

There is an existing House of 3 storeys high from carpark, the main roof level is +21.00 mPd. It situates on a platform of level +12.0 mPd with a car ramp leading from the existing Brown area of level +7.33 mPd, which gain access from San Tam Road to the West.

The existing House is proposed to be demolished and re-developed into a RCHE by first of all, lowering of the access point to a level of +7.33 mPd, then follow up a 10-storeys building with main roof at level of + 36.93 mPd.

4.0 EXISTING GEOTECHNICAL FEATURES

According to the information obtained from the Hong Kong Slope Safety (HKSS) website, there are four registered features of 2SE – C/C 312, 2SE – C/F 94, 2SE – C/R 113 and 2SE – C/R 114 located in the vicinity of the proposed application site.

For ease of reference, the registered slope plan downloaded from HKSS website is shown in Figure 2.

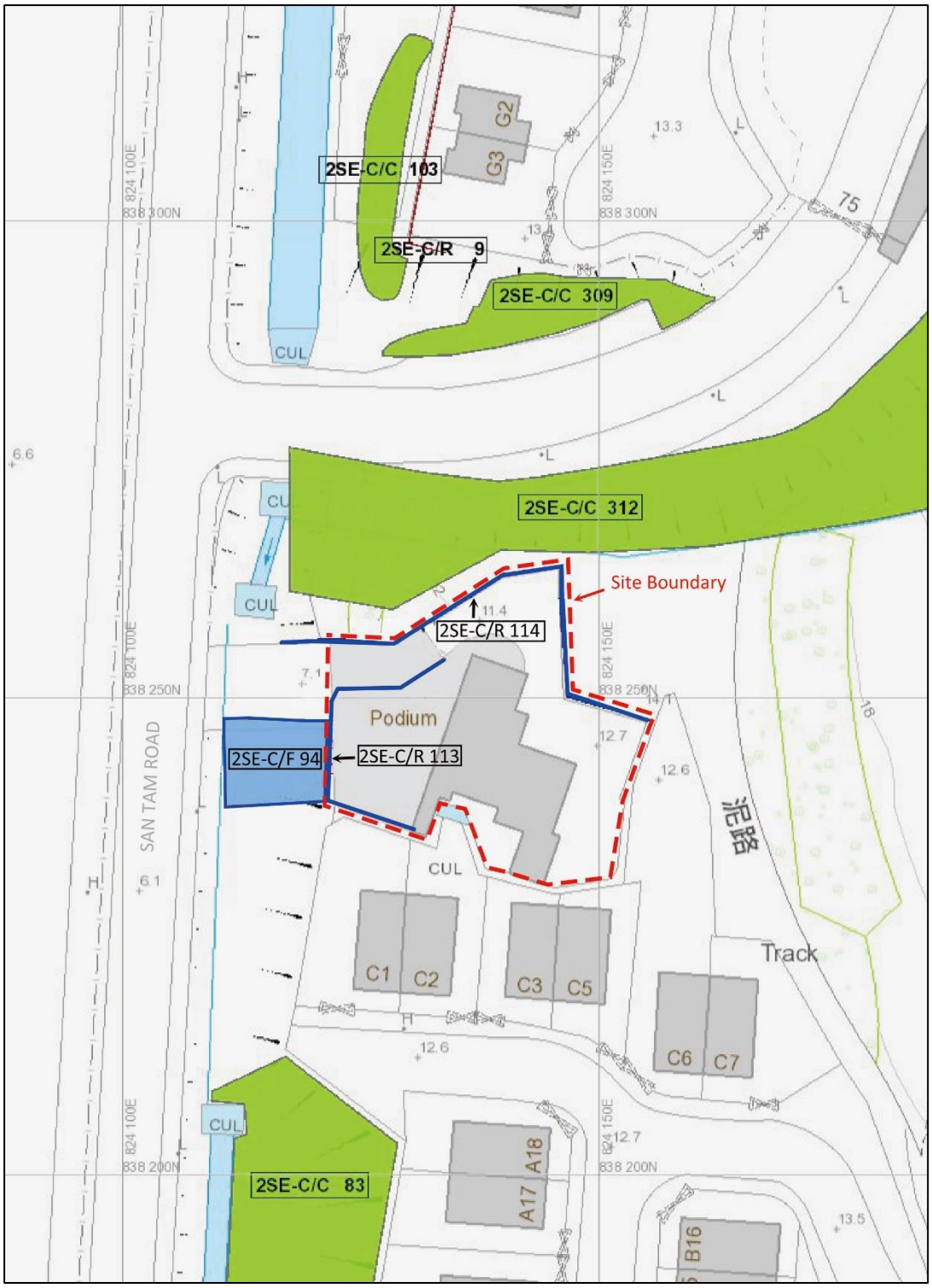

2SE-C/C 103
2SE-C/R 9
2SE-C/C 309
2SE-C/C 312
Site Boundary
2SE-C/R 114
2SE-C/F 94
2SE-C/R 113
Podium
2SE-C/C 83
SAN TAM ROAD
CUL
Track
泥路
C1
C2
C3
C5
C6
C7
A17
A18
B16
G2
G3
824 100E
824 150E
838 300N
838 250N
838 200N

Figure 2

A brief description on these geotechnical features is given below and the detail information is attached in Appendix 1.

Feature No. 2SE – C/C 312

Feature No. 2SE – C/C 312 adjoins the proposed site to the North. The feature consists of a slope of Max. 18 m high, 85 m long and with an average angle of 26 deg. There are existing 400 mm surface channels located at the berm & crest and a 900 mm channel at the toe of the feature. The consequence-to-life category is 1, according to HKSS website of the GEO. The maintenance responsibility of the feature belongs to Lot 2086 in DD 105.

Feature No. 2SE – C/F 94

Feature No. 2SE – C/F 94 adjoins the proposed site at the West. The feature consists of a slope of Max. 3.5 m high, 9m long and with an average angle of 20 deg. There is an existing 225 mm surface channel located at the toe of the feature. The consequence-to-life category is 1, according to HKSS website of the GEO. The maintenance responsibility of the feature belongs to Lot 4823 in DD 104.

Feature No. 2SE – C/R 113

Feature No. 2SE – C/R 113 is a R.C. Retaining Wall to the West & North of the site. It is app. 6.2 m high, 34.5m long and with a face angle of 90 deg. The consequence-to-life category is 1, according to HKSS website of the GEO. The maintenance responsibility of the feature belongs to Lot 4823 in DD 104.

Feature No. 2SE – C/R 114

Feature No. 2SE – C/R 114 is a R.C. Retaining Wall to the North of the site. It is app. 2.2 m high, 53.5 m long and with a face angle of 90 deg. The consequence-to-life category is 1, according to HKSS website of the GEO. The maintenance responsibility of the feature belongs to Lot 4823 in DD 104.

5.0 DESK STUDY AND BACKGROUND INFORMATION SEARCH

We have searched record files in the Buildings Department & the Geotechnical Engineering Office concerning this site and there are corresponding records for the existing House on the site. The information would be helpful and be utilized in the Detail Design of the new RCHE Development.

6.0 GEOTECHNICAL INVESTIGATION WORK

6.1 Outline of Site Geology

According to the Geological Map of San Tin (Sheet 2), the site is generally underlain by coarse ash crystal TUFF, which is consistent with the findings from the completed boreholes of the adjacent lot.

6.2 Information Retrieval

According to record, the site has carried out Geotechnical Investigation Works in year 2013. The works consist of 5 boreholes and a number of trial pits within the site.

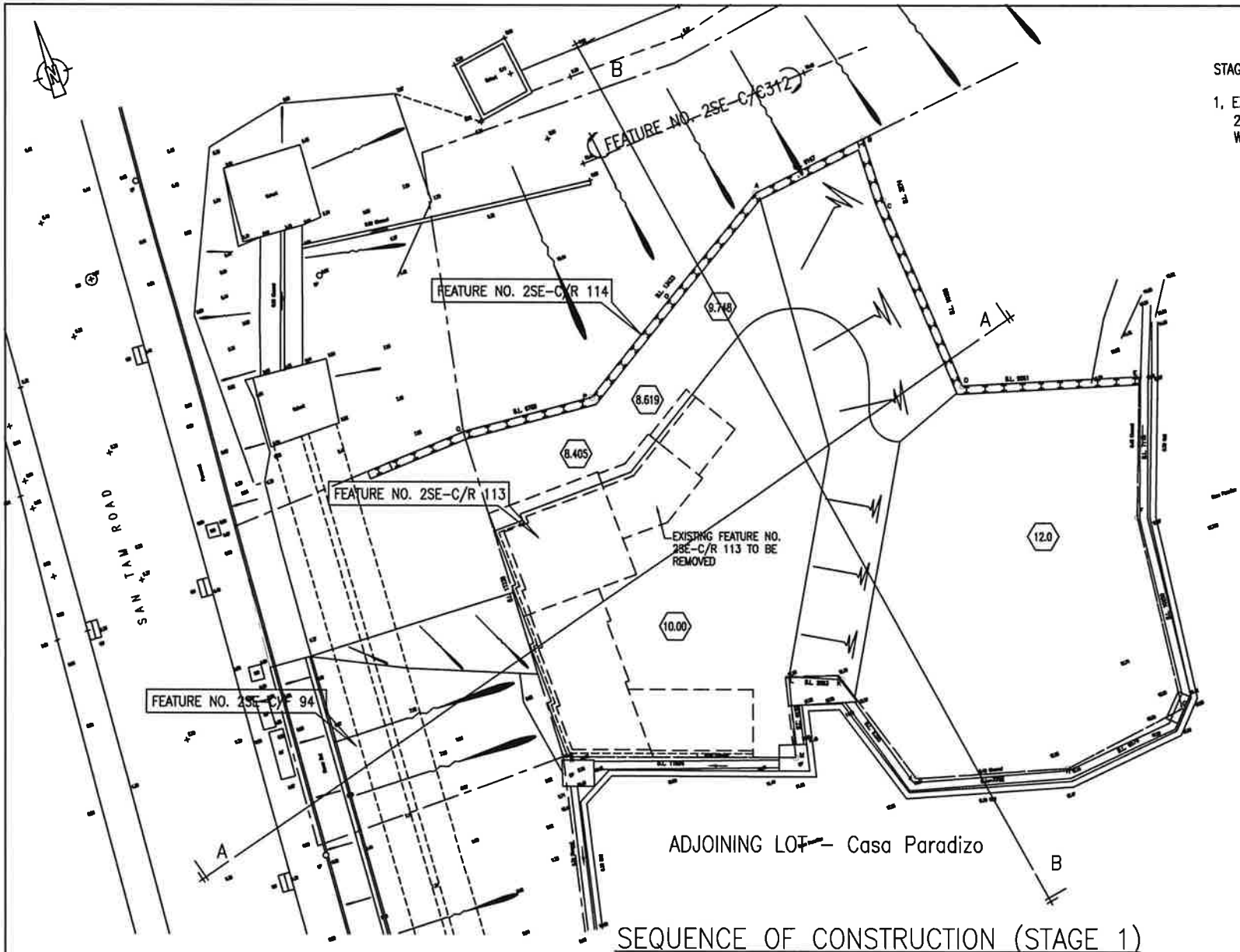
The borehole records are shown in Appendix 2. The information would be utilized in the Detail Design of the new RCHE Development.

7.0 PROPOSED SEQUENCE OF CONSTRUCTION

In order to suit the new RCHE design, The Soldier Pile Retaining Wall (2SE – C/R 114) would be abandoned while the R.C. Retaining Wall (2SE – C/R 113) would be removed during construction. The stability of the feature 2SE-C/C 312 & 2SE-C/F94 will be reviewed in the design of the proposed development. If it is found not to be up to the required standard, those can be propped by a new supplementary retaining wall inside the proposed development. The supplementary wall will be integrated with the proposed building structure so that it is strong enough to lend support to those features.

The sequence of construction (Drawing GA-1 to GA-7) involves basically the following steps:

1. After existing buildings are demolished, excavate and remove the feature No. 2SE-C/R 113 down to the formation level which are match with existing ground level.
2. Install foundation socketed h-piles and pipe pile / sheet pile cofferdam.
3. Carry out ELS works sequentially down to the final excavation level at the western half of the site.
4. Construct the pile caps and structure with the cofferdam.
5. Employing the completed structure as stiff support, carry out ELS works for the remaining part of the site sequentially down to the final excavation level.
6. Construct the remaining pile cap and other related retaining structures.
7. Construct the superstructure above ground floor in the usual manner.

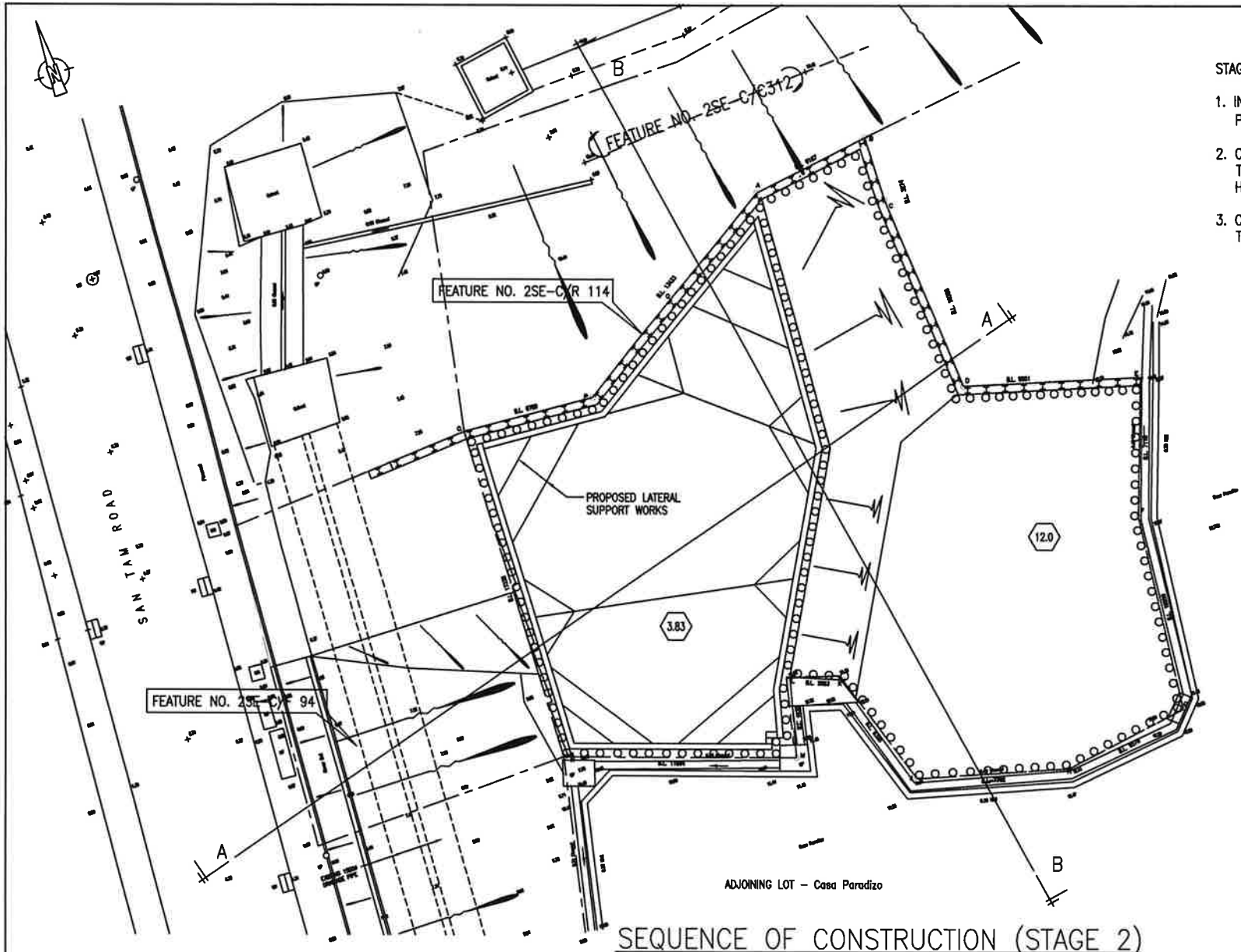


STAGE 1:

1, EXCAVATE AND REMOVE THE FEATRURE NO. 2SE-C/R 113 DOWN TO THE FORMATION LEVEL WHICH ARE MATCH WITH EXISTING GROUND LEVEL.

SEQUENCE OF CONSTRUCTION (STAGE 1)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION – STAGE 1	Drn.: E.C.	Chd.: R.L.	ARCHITECT: RLEE
		Scale: 1:300	Date: 1/2023	
		Drawing No.: GA-1	Rev.:	

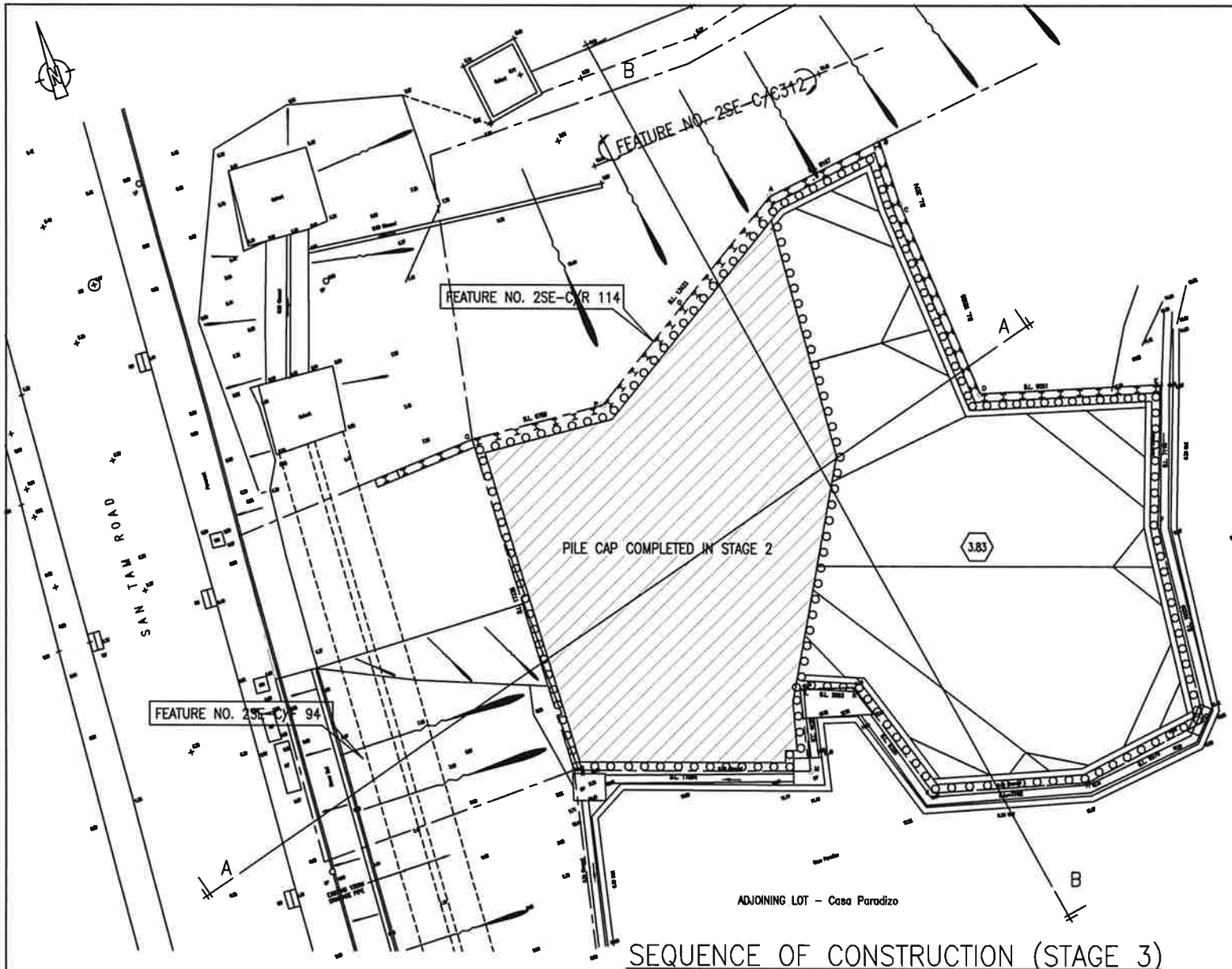


STAGE 2:

1. INSTALL FOUNDATION SOCKETED H-PILES AND PIPE PILE / SHEET PILE COFFERDAM.
2. CARRY OUT ELS WORKS SEQUENTIALLY DOWN TO THE FINAL EXCAVATION LEVEL AT THE WESTERN HALF OF THE SITE.
3. CONSTRUCT THE PILE CAPS AND STRUCTURE WITH THE COFFERDAM.

SEQUENCE OF CONSTRUCTION (STAGE 2)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION – STAGE 2	Drn.: E.C.	Chd.: R.L.	ARCHITECT: RLEE www.rlee.com.hk
		Scale: 1:300	Date: 1/2023	
		Drawing No.: GA-2	Rev.:	



STAGE 3:

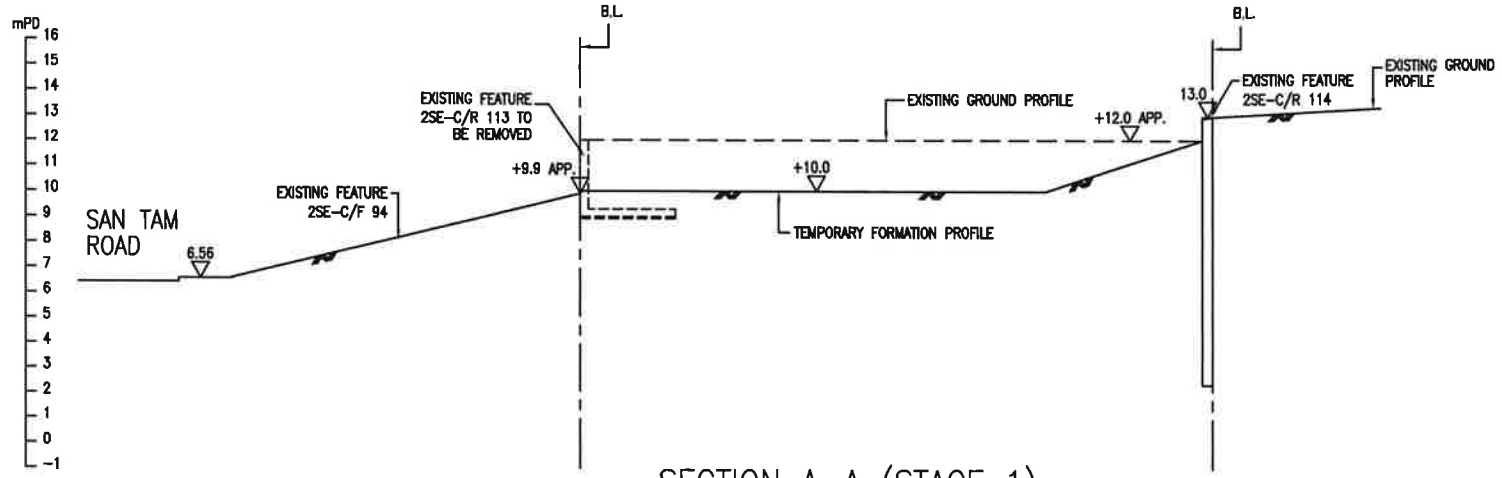
1, EMPLOYING THE COMPLETED STRUCTURE AS STIFF SUPPORT, CARRY OUT ELS WORKS FOR THE REMAINING PART OF THE SITE SEQUENTIALLY DOWN TO THE FINAL EXCAVATION LEVEL.

2. CONSTRUCT THE REMAINING PILE CAP AND OTHER RELATED RETAINING STRUCTURES.

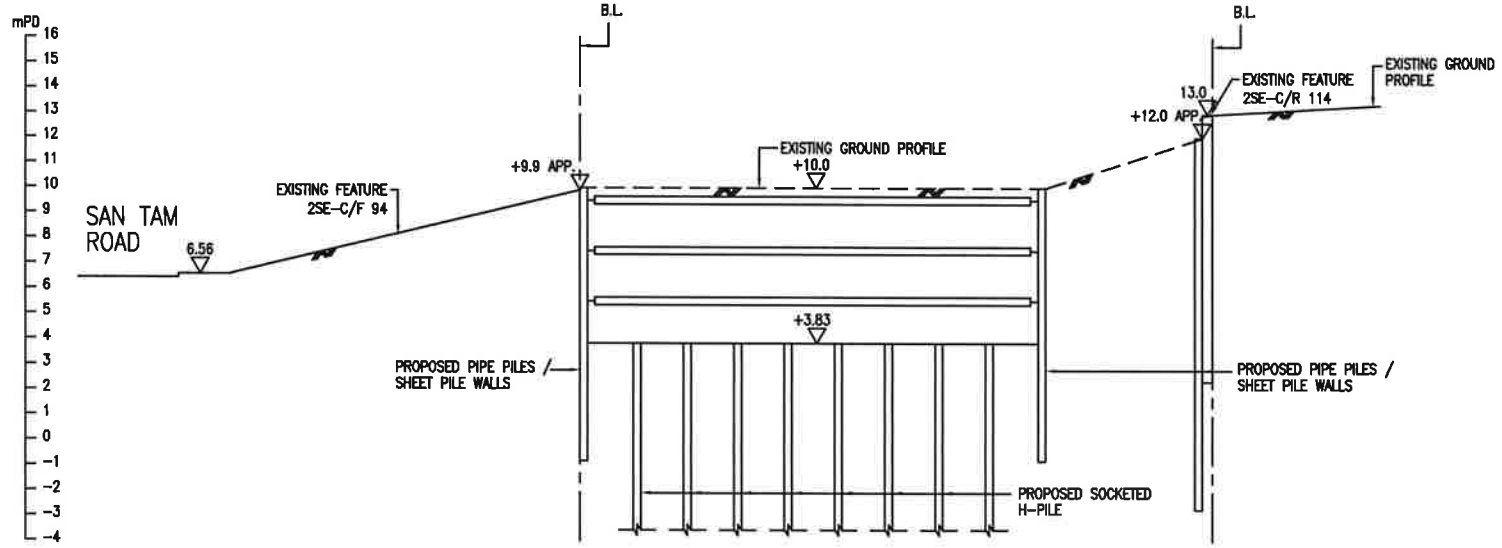
3. CONSTRUCT THE SUPERSTRUCTURE ABOVE GROUND FLOOR IN THE USUAL MANNER.

SEQUENCE OF CONSTRUCTION (STAGE 3)

Project	Drawing Title	Drn.	Chd.	ARCHITECT
LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	SEQUENCE OF CONSTURCTION – STAGE 3	E.C.	R.L.	RLEE www.rlee.com.hk
		Scale 1:300	Date 1/2023	
		Drawing No. GA-3	Rev.	

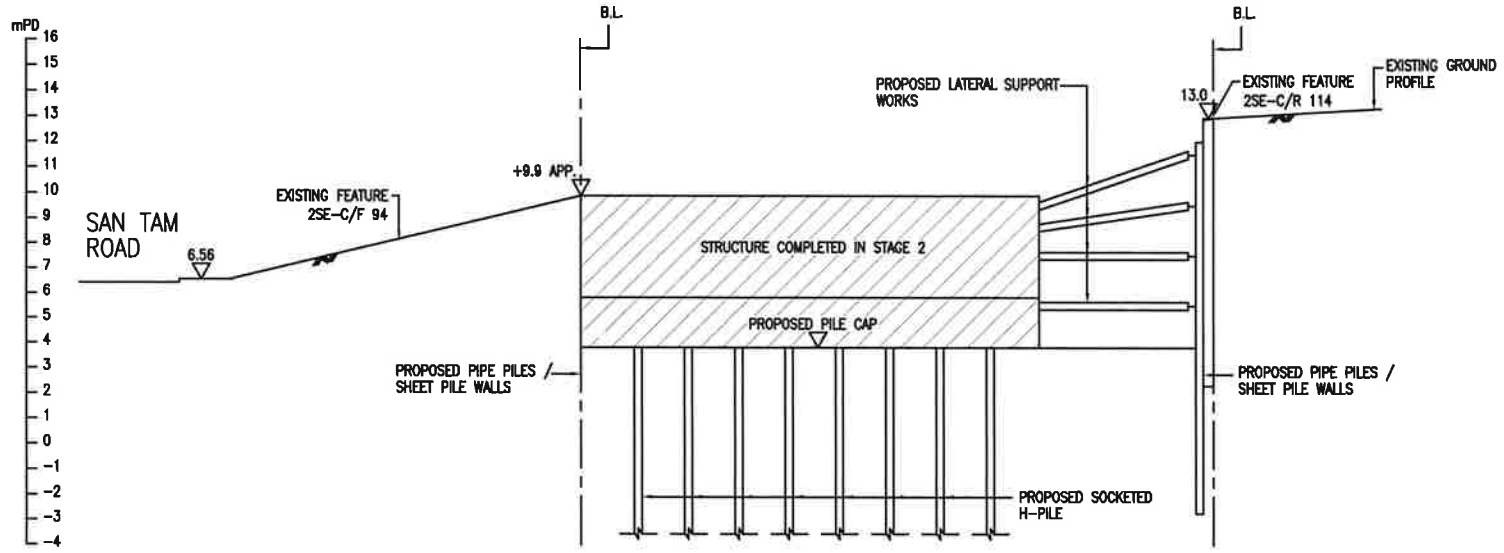


SECTION A-A (STAGE 1)



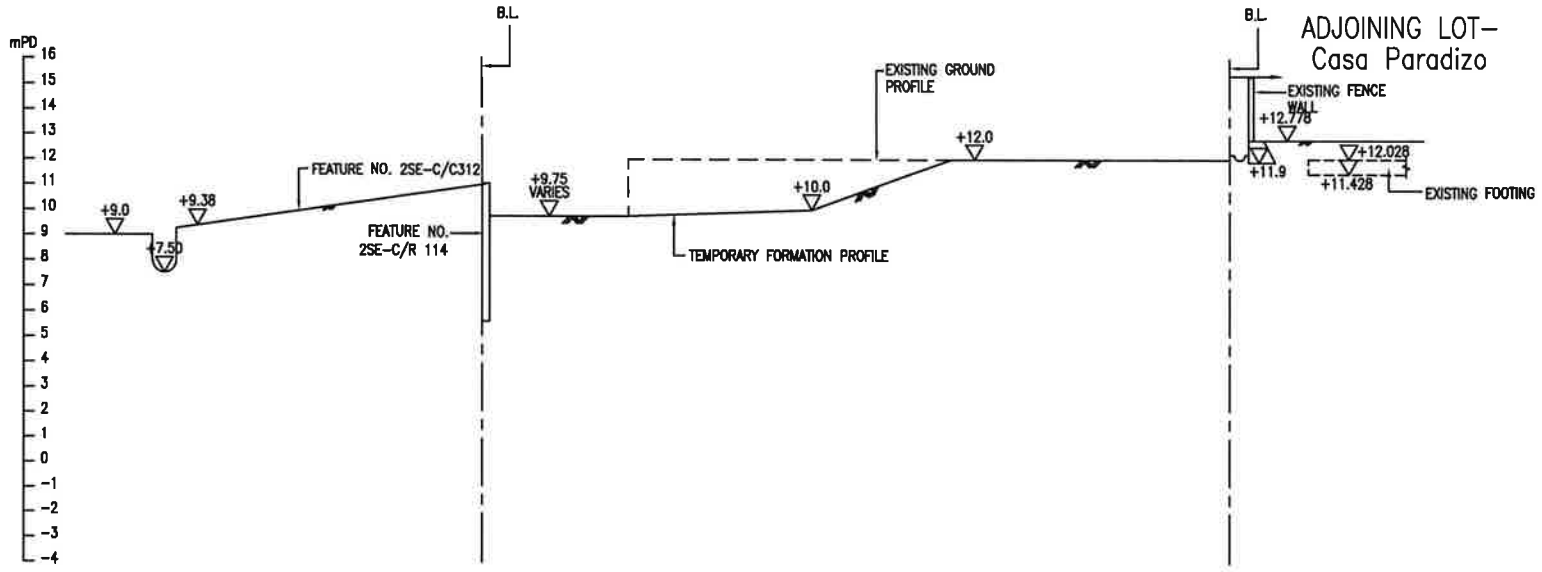
SECTION A-A (STAGE 2)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION - SECTION A-A (STAGE 1 AND STAGE 2)	Drn. E.C. / Chd. R.L.	Scale 1:300 / Date 1/2023	ARCHITECT: RLEE www.rlee.com.hk
		Drawing No. GA-4	Rev.	

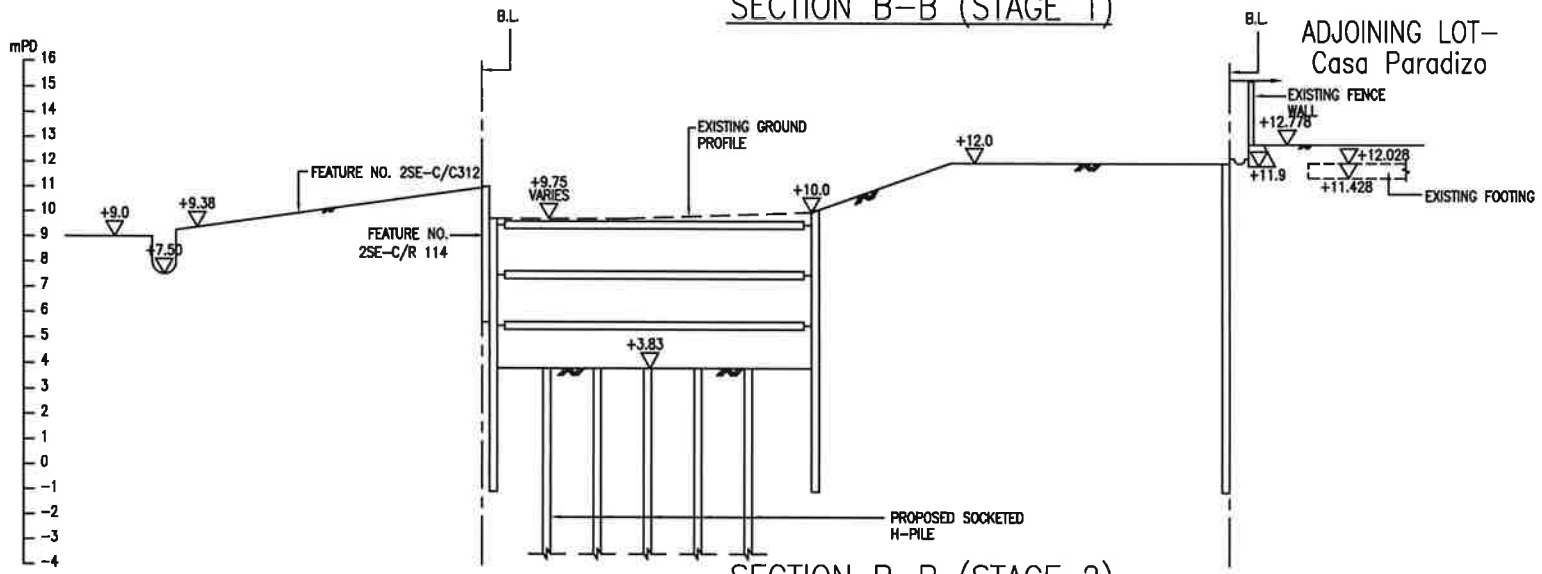


SECTION A-A (STAGE 3)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION - SECTION A-A (STAGE 3)	Drn. E.C.	Chd. R.L.	ARCHITECT: RLEE www.rlee.com.hk
		Scale 1:300	Date 1/2023	
		Drawing No. GA-5	Rev.	

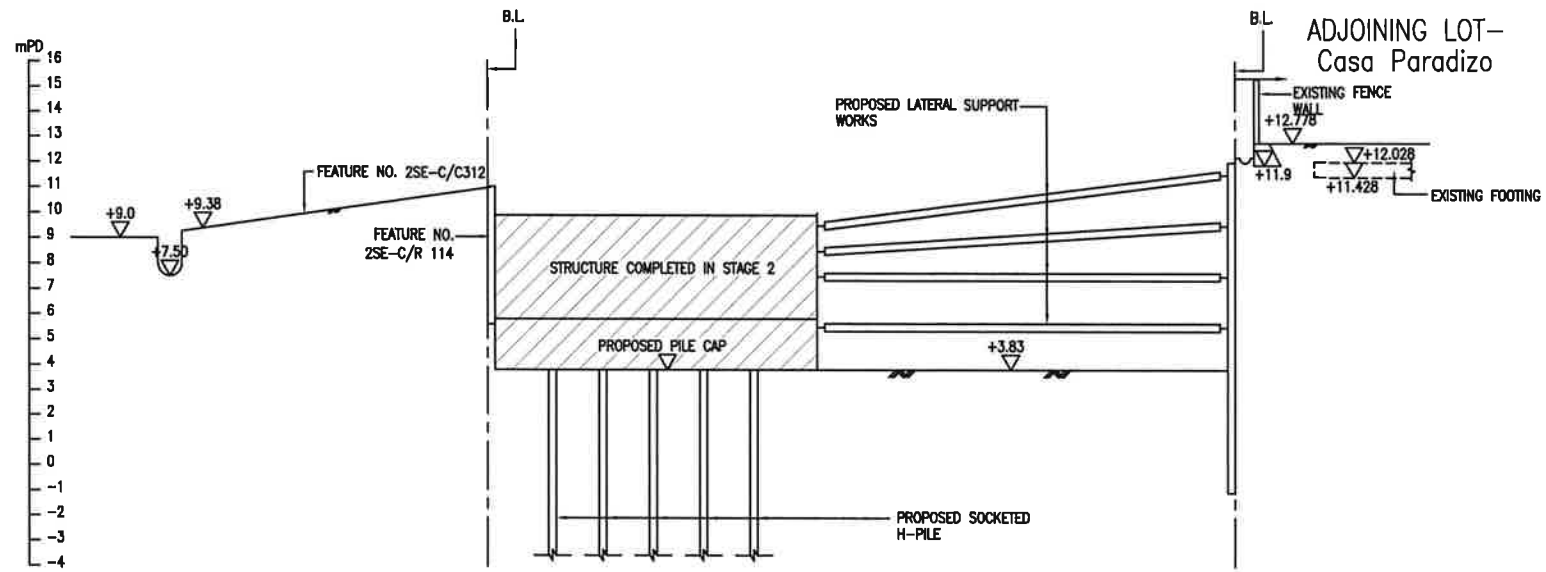


SECTION B-B (STAGE 1)



SECTION B-B (STAGE 2)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION - SECTION B-B(STAGE 1 AND STAGE 2)	Drn.: E.C.	Chd.: R.L.	ARCHITECT: RLEE www.rlee.com.hk
		Scale: 1:300	Date: 1/2023	
		Drawing No.: GA-6	Rev.:	



SECTION B-B (STAGE 3)

Project: LOT NO. 4823 IN D.D. 104, YUEN LONG, NEW TERRITORIES	Drawing Title: SEQUENCE OF CONSTURCTION - SECTION B-B (STAGE 3)	Drn. E.C.	Chd. R.L.	ARCHITECT: RLEE www.rlee.com.hk
		Scale 1:300	Date 1/2023	
		Drawing No. GA-7	Rev.	

8.0 CONCLUSION

A review of the site conditions and the geotechnical works likely to be carried out for the proposed planning application has been carried out and the following conclusion can be made.

1. It is envisaged that the proposed planning application is geotechnically feasible. Since the existing retaining walls (2SE – C/R 113 & 2SE – C/R 114) would be modified & be buttressed by the new permanent basement structures. The stability of the feature 2SE-C/C 312 & 2SE-C/F94 will be reviewed in the design of the proposed development. If it is found not to be up to the required standard, those can be propped by a new supplementary retaining wall inside the proposed development. The supplementary wall will be integrated with the proposed building structure so that it is strong enough to lend support to those features. No additional adverse effect will be induced on the adjacent ground and geotechnical features.

2. A detailed investigation and assessment of all existing slopes located in the vicinity to the site such as 2SE – C/C 312, 2SE – C/F 94, 2SE – C/R 113 and 2SE – C/R 114 will be carried out to ensure that the stability of the existing geotechnical features is complying with current geotechnical standards and will not induce any adverse effect on the proposed development. If necessary, appropriate measures including recommendation and implementation of any stabilization / upgrading / preventive works in order to acquire a safe geotechnical environment will be employed in detail in future studies.

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOMES FOR THE ELDERLY) (RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD, SAN TIN, N.T.

Additional Pages to

APPENDIX 1

BASIC INFORMATION

Location: D.D.105 Lot 2086, Ngau Tam Mei, Yuen Long

Date of Formation: post-1977

Date of Construction/ Modification: 01-12-2013

Approximate Coordinates: Easting : 824196 Northing : 838284

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest: Undeveloped green belt

Distance of Facility from Crest (m): 0

Facility at Toe: Residential building

Distance of Facility from Toe (m): 0

Consequence-to-life Category: 1

Remarks: N/A

SLOPE PART

(1) Max. Height (m): 18 Length (m): 85 Average Angle (deg): 26

WALL PART

N/A

MAINTENANCE RESPONSIBILITY

Private Feature Party: DD105 LOT 2086 Agent: N/A

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 07-09-2016

Data Source: AP

Slope Part Drainage: (1) Position: Berm Size(mm): 400
(2) Position: Crest Size(mm): 400
(3) Position: Toe Size(mm): 900

Wall Part Drainage: N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 100 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: 3 Min. Berm Width (m): 0.6
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

N/A

SERVICES

N/A

STAGE 1 STUDY REPORT

Inspected On:
Weather:
District: N/A

Section No: 1-1
Height(m):
Type of Toe Facility: Residential building

Distance from Toe(m): 0
Type of Crest Facility: Undeveloped green belt

Distance from Crest(m): 0
Consequence Category:
Engineering Judgement:

Section No: 2-2
Type of Toe Facility:

Distance from Toe(m):
Type of Crest Facility:

Distance from Crest(m):
Consequence Category:
Engineering Judgement:

Sign of Seepage:

Criterion A satisfied:

Sign of Distress:

Criterion D satisfied:

Non-routine maintenance required:

Note:

Masonry wall/Masonry facing:

Note:

Consequence category (for critical section):

Observations: N/A

Emergency Action Required:

Action By: N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A

Action By: N/A

Further Study:

Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:

Action By: N/A

Non-routine Maintenance:

Action By: N/A

PHOTO

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOMES FOR THE ELDERLY) (RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD, SAN TIN, N.T.

RESPONSE-TO-COMMENT - TD

Summary Table of 'Responses to Comments'

Comments of TD on 2022.12.02	
Comments	**Responses**
a) Please review the location of proposed ingress/ egress for vehicular access in order to improve sight line.	Please find attached Drawing in Appendix I which shows the Subject Lot (i.e. Lot 4823 in DD104) is sandwiched by Lot 2086 in DD 105 to the North and Lot 4764 in DD 104 to the South. Please note that the Brown Area for the Subject Lot has been designated under the Lease and the vehicular access (X, Y through Z) location at San Tam Road is also designated under the Lease. Due to the land issue, the location of the proposed vehicular access point will be maintained. It is noted that trees and shrubs along San Tam Road are regularly maintained and trimmed by LCSD to improve sight line. In addition, similar vehicular access of other developments along San Tam Road are observed and no major Traffic Accidents has been noted so far. The Applicant would also install safety measures such as traffic signs to alert drivers drive slowly and be aware of long vehicles ahead, if necessary.
b) Please indicate the location of pedestrian entrance(s) for the concerned development.	Please find attached **Figure 2.1 (Rev.A)** in the revised TIA report showing the location of pedestrian entrance for the proposed development for your information.
c) Based on the design year of 2030, a set of planning assumptions should be agreed with PlanD given that there are various on-going developments under planning application stage in the vicinity.	PlanD's agreement on the latest planning data in the vicinity has been sought. Please find PlanD's email dated 23 December 2022 attached in Appendix II for your information. Please refer to Section 4.3 and **Figure 4.1 (Rev.A)** for the planned developments considered in the assessment for your reference.

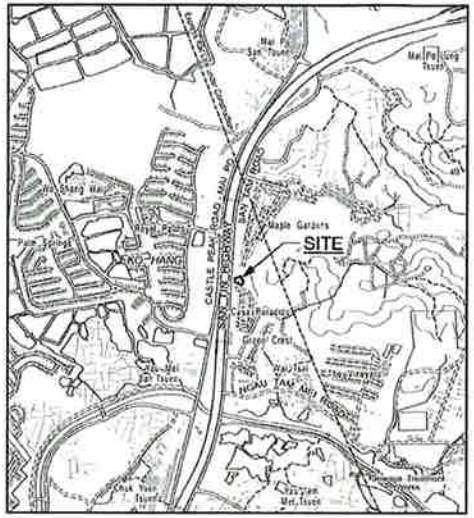
Comments of TD on 2022.12.02	
Comments	**Responses**
d) Swept path analysis should be carried out at critical turning location(s) at ingress/ egress, parking spaces and loading/ unloading areas to demonstrate sufficient space for vehicles manoeuvring of the types of vehicle allowed within the subject site.	Please find attached **Figure SP-01** to **SP-02** in Appendix III showing the swept path at ingress/ egress, parking spaces and loading/ unloading areas.
e) Table 2.3 – • Please specify the headroom of the of the types of vehicle in the table • Please include the picking up and setting down point for ambulance	Please find the revised Table 2.3 with information of headroom of the types of vehicle in the table for your information. Please refer to **Figure 2.1 (Rev.A)** for the proposed picking-up/setting down point for ambulance, and **Figure SP-03** showing the swept path of ambulance ingressing and egressing the site.
f) Table 3.1 – Please include Fairview Peak Interchange in the table and subsequent assessment.	Junction assessment of Fairview Park Interchange is included in the revised TIA report.
g) Section 3.2.2 – To ensure the traffic flow would not be underestimated during COVID epidemic situations, suitable rectifying factors shall be applied to the existing traffic flow to pro-rata the normal traffic condition for subsequent assessment in Year 2030.	Noted. Covid-19 factor is now applied to the existing traffic flows of the revised TIA report. Please refer to Section 3.2.3 to 3.2.4 for the derivation of Covid-19 factor.
h) Figure 2.1 – Please specify the clear width of proposed ingress/ egress, driveway and footpath.	Please find the **Figure 2.1 (Rev.A)** with marked width of proposed ingress/ egress, driveway and footpath for your information.
i) Adequate headroom should be allowed for the type(s) of vehicle to access.	Noted.

Comments of TD on 2022.12.02	
Comments	**Responses**
j) Please ensure vehicles would not encroach to the opposite lane of San Tam Road when entering/ leaving the subject site.	Please find attached drawing **Figure SP-01** to **SP-03** in Appendix III showing the swept path of vehicles for your kind information and consideration. Swept path analysis of ambulance is illustrated diagrammatically in **Figure SP-03** in Appendix III. Although the swept path of ambulance will encroach slightly onto the opposite traffic lane when egressing from the proposed development and making a left-turn, it is envisaged that the time required for encroachment will be very short. Also, the alignment of section of Sam Tam Road outside the proposed development is straight and clear sightline could be provided for the proposed run-in/out of the proposed development. Hence, for emergency purpose, it is considered that the arrangement is acceptable from traffic engineering point of view. Other than that, please note that 8m vehicle will encroach to the opposite lane of San Tam Road when egressing the subject site. Therefore, mitigation measure such as traffic sign will be installed inside the proposed development to ban left turn of vehicle longer than 7m when leaving the site in order to ease the problem.
k) No vehicle is allowed to queue back to or reverse onto/from public road at any time during the planning approval period.	Noted.

Appendix I

PLAN I

LOCATION



SCALE 1:20000

SIDE	DISTANCE IN METRES	BEARING ° ' "	PI.	CORNER MARKED BY
X A	8.789	93 53 38		
A B	13.433	57 27 48		
B C	6.167	82 18 08		
C D	3.274	180 47 15		
D E	10.355	175 51 27		
E F	9.051	105 50 37		
F G	7.118	199 40 20		
G H	10.050	185 42 40		
H J	6.576	261 15 10		
J K	7.762	284 55 50		
K L	6.325	341 33 50		
L M	2.693	291 48 10		
M N	4.123	194 02 10		
N P	11.894	288 55 00		
P X	17.336	1 44 54		

COLOURED PINK AREA 736.3 SQUARE METRES (ABOUT)

SCALE 1:1 000

metres 20 0 20 40 60 80 100 metres

DRAFT

District Lands Office, Yuen Long
Lands Department

Plan Prepared by District Survey Office, Yuen Long

LOT No. 4823 IN DEMARCATION DISTRICT No. 104

File No. DLOYL515/YLT/2012C, DSO/YL/W/794/2012
Survey Sheet No. 2-SE-17A
Layout Plan No. ------
Reference Plan No. ------
ALS Plan No. ------

PLAN No. YL14882-DIb

Date : 13/03/2014

Appendix II

寄件者: gtllam@pland.gov.hk
傳送時間: 2022 年 12 月 23 日 18:09
收件者: Agnes Lee
副本: evonneli@ctaconsultants.com; 'Horace Mak'
主旨: Re: S12A amendment of OZP no. S/YL-NTM/12 - Proposed RCHE at 81 San TamRoad, San Tin, NT

Dear Agnes,

My comments on the draft list of planned development is enclosed for your follow-up.

Regards,

Gary Lam
TP/YLE1
FS&YLE District Planning Office, PlanD
Tel: 3168 4043

From: "Agnes Lee" <agneslee@ctaconsultants.com>
To: <gtllam@pland.gov.hk>
Cc: "'Horace Mak'" <horacemak@ctaconsultants.com>, <evonneli@ctaconsultants.com>
Date: 08/12/2022 11:48
Subject: S12A amendment of OZP no. S/YL-NTM/12 - Proposed RCHE at 81 San Tam Road, San Tin, NT

Dear Gary,

I refer to the TD's Comment item (c) (Annex I refers) on the Application No. Y/YL-NTM/9 that "**Based on the design year of 2030, a set of planning assumptions should be agreed with PlanD given that there are various on-going developments under planning application stage in the vicinity.**"

Attached please find the list of planned developments in the vicinity obtained from OZP portal for your information and agreement. The site location of the proposed development has also been attached for your easy reference. Kindly please confirm the planning data in the table as requested by TD. Thank you.

Best regards,
Agnes Lee

CTA Consultants Limited
Unit 2108, 21/F, Westlands Centre, 20 Westlands Road, Quarry Bay, H. K.
Tel: (852) 2214 0849 Fax: (852) 2214 0817
Email : cta@ctaconsultants.com
[attachment "Annex I.pdf" deleted by Gary Tat Leung LAM/PLAND/HKSARG] [attachment "Planned developments in the vicinity.pdf" deleted by Gary Tat Leung LAM/PLAND/HKSARG] [attachment "FIG_1.1 SITE LOCATION PLAN.pdf" deleted by Gary Tat Leung LAM/PLAND/HKSARG]

Planned Developments in the Vicinity

Application No.	Type	Key Development Parameters
Ongoing S12A Applications in the Vicinity		
Y/YL-NTM/5	Residential	1,980 residential units
Y/YL-NTM/6	Residential	1,990 residential units + 6,485m² GFA for commercial
Y/YL-MP/6	Residential	• 3,090 residential units • 2,363m² retail GFA • 6-classroom kindergarten • 100-place RCHE • Neighbourhood Elderly Centre (NEC)
Y/YL-ST/1	Residential	• 2,075m² Retail GFA • 4,176 residential units • 100-place child care centre • 6-classroom kindergarten
Y/YL-NSW/7	Residential	• 900m² Retail GFA • 1,997 residential units • 6~~4~~-classroom kindergarten • 100-place child care centre
Y/YL-NTM/8	Residential	• 6,276 residential units • 67,000m² GFA for GIC facilities
Y/YL-MP/6	Residential	3,090 residential units
Y/YL-MP/7	Residential	1,228 residential units
Y/YL-MP/8	Residential	1,249 residential units
Y/YL-NSW/8	Residential	• 6,825 residential units • 750m² retail GFA • 4 nos. of GIC facilities = NEC, 100-place CCC, 100-place RCHE, 80-place Day Care Cntre for Elderly
Y/YL-NSW/9	Residential	• 3,115 residential units • ~~3,000~~ 6000m² Retail GFA • 1 Primary school • ~~3 Kindergartens~~ • 1 relocated soy sauce factory
~~Y/YL-NSW/6~~	~~Residential~~	• ~~4,329 private housing~~ • ~~640 public housing~~
Approved S16 Applications in the Vicinity		
A/YL-MP/247	Residential	Domestic GFA about 16,200m² for 105 houses
A/YL-MP/287	Residential	Domestic GFA about 7,540m² for 65 houses
A/YL-NSW/274	Residential	Domestic GFA about 70,328m² for ~~1,955~~ 1,518 flats
A/YL-NTM/178 -2	Residential	Domestic GFA about ~~46,365m² for 322 houses~~ 45,197m² for 320 houses
~~A/YL-NTM/432~~	~~Residential~~	~~Domestic GFA about 28,840m² for 1,208 flats~~
A/YL-MP/291	Residential	268 houses
A/YL-NSW/241	Retail	37,171 m² retail GFA

Y/YL-NTM/7
12,575m²
39,215m²
for commercial
NEC
CCC

Appendix III

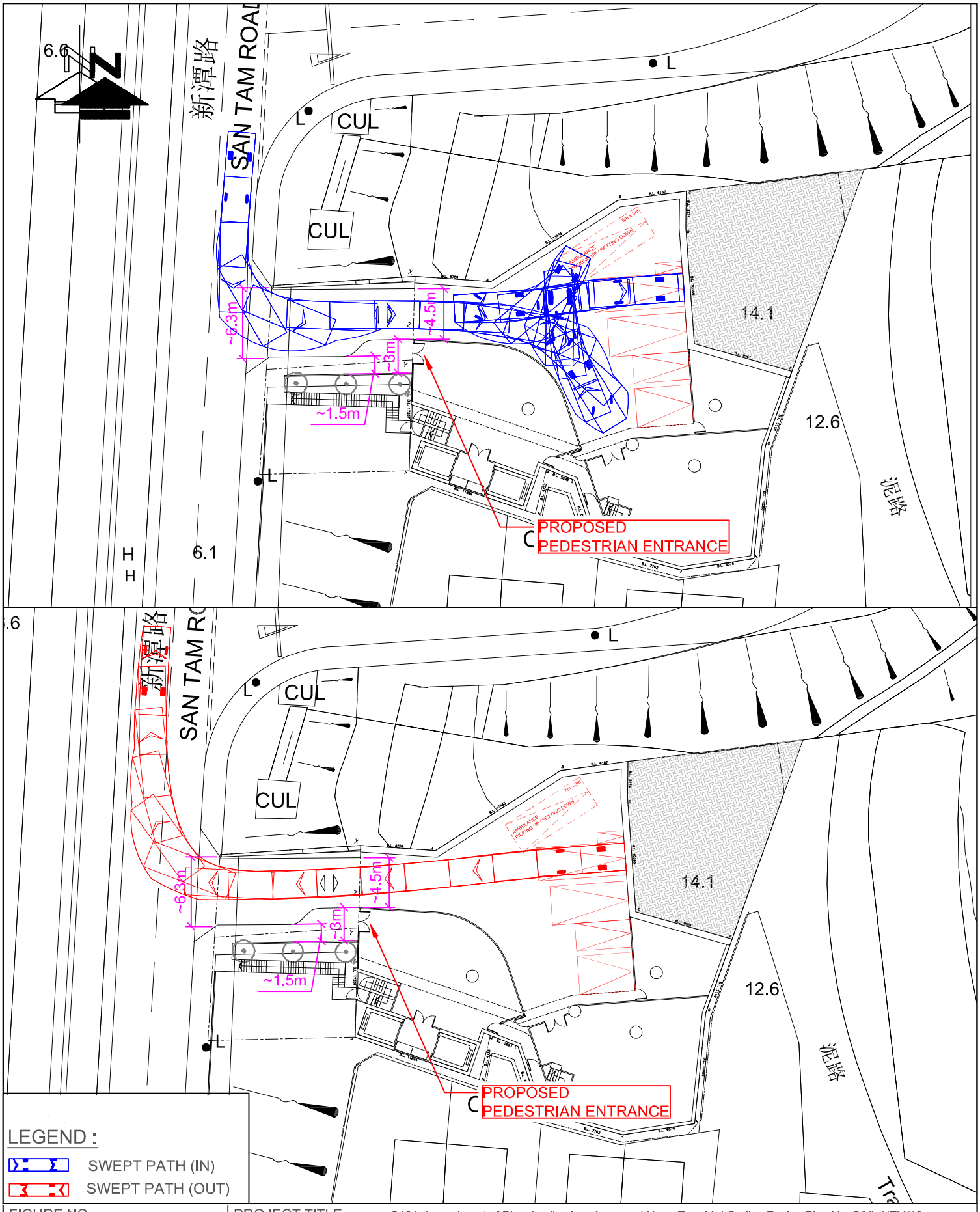


FIGURE NO.: SP-01	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	
PROJECT NO.: 22069HK	DRAWING TITLE: SWEPT PATH ANALYSIS OF 8M VEHICLE	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 350 @A4 / DATE: 03 JAN 2023		

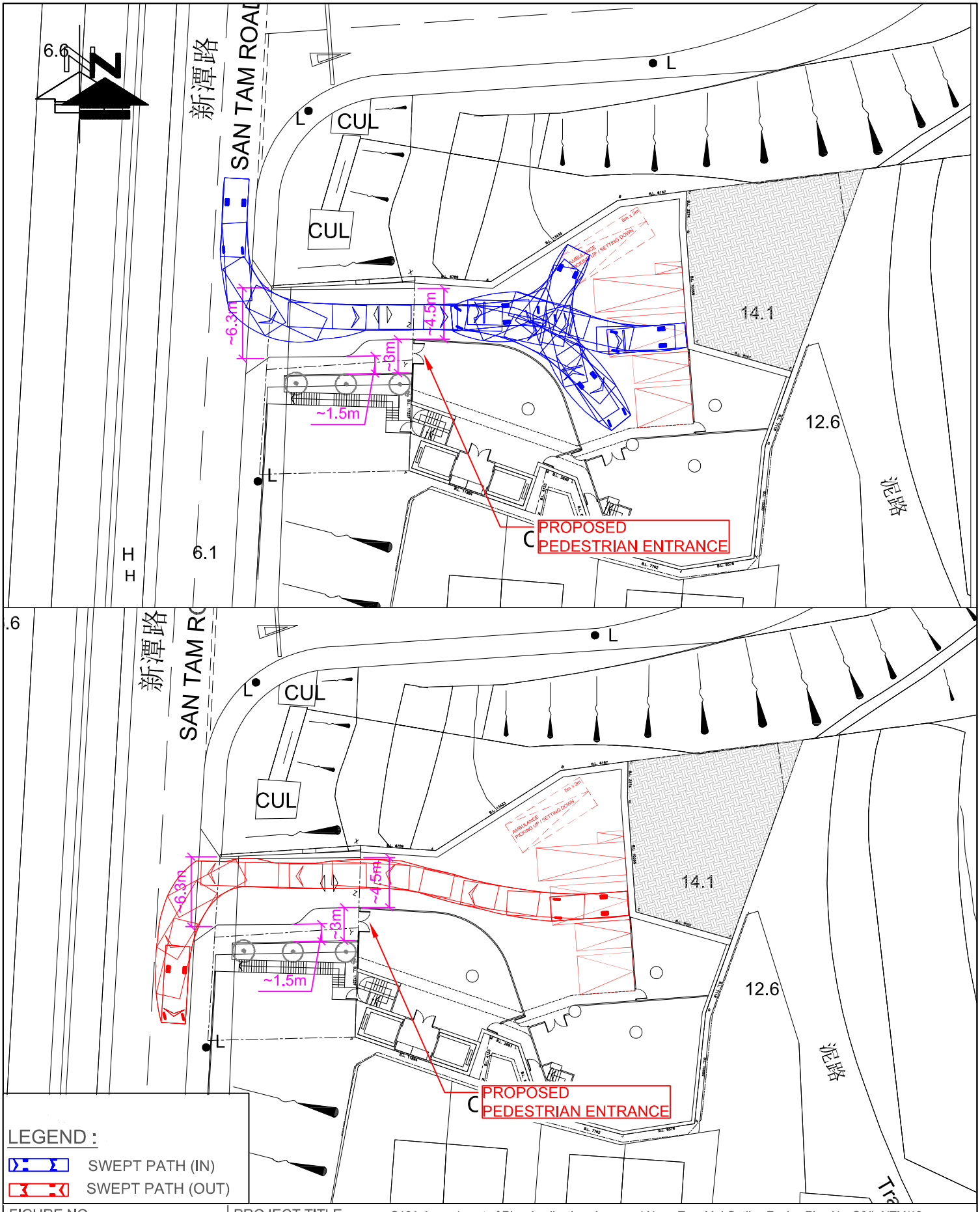


FIGURE NO.: SP-02	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	
PROJECT NO.: 22069HK	DRAWING TITLE: SWEPT PATH ANALYSIS OF 7M VEHICLE	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 350 @A4 / DATE: 03 JAN 2023		

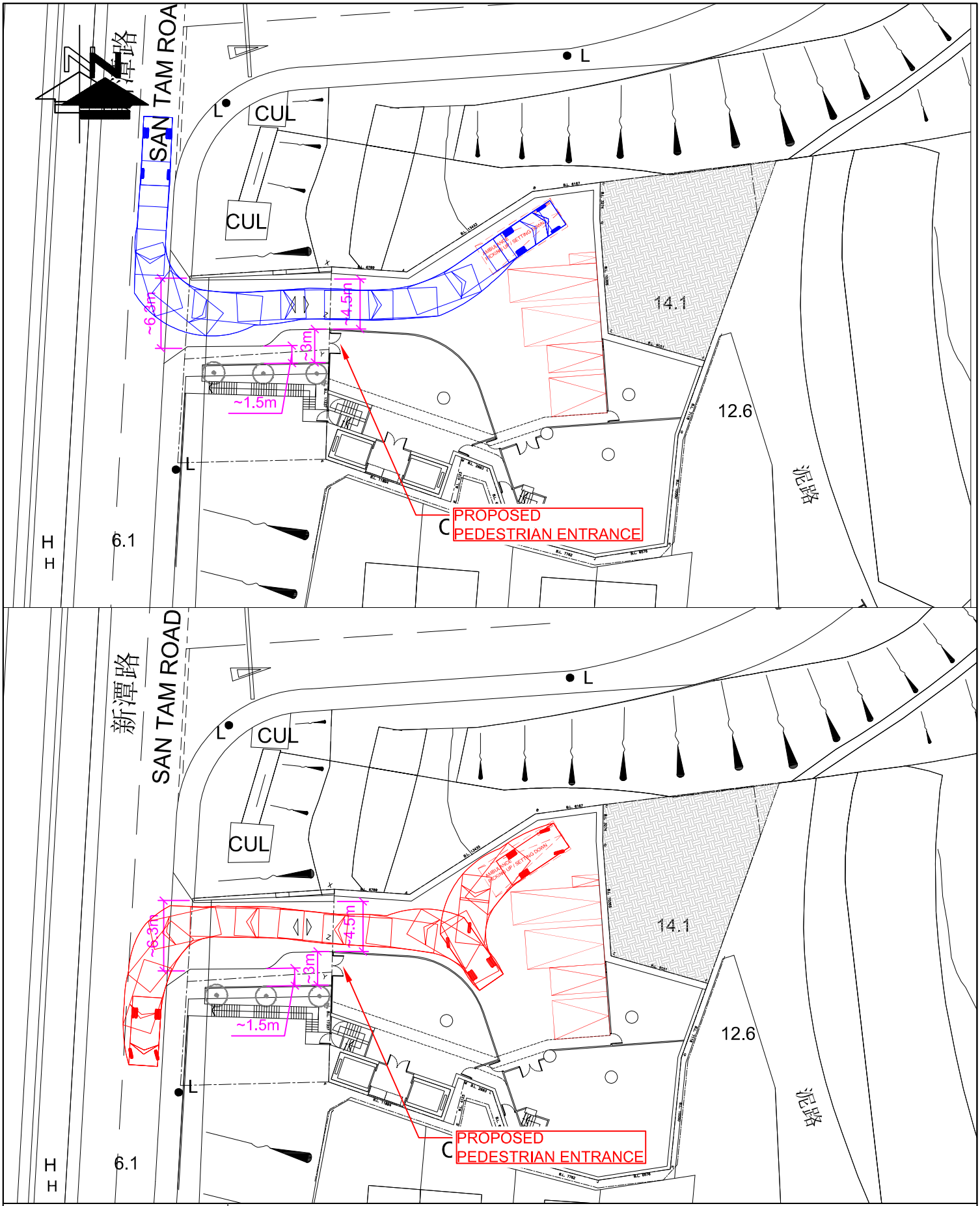


FIGURE NO.: SP-03	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	
PROJECT NO.: 22069HK	DRAWING TITLE: SWEPT PATH ANALYSIS OF AMBULANCE	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 400 @A4 / DATE: 03 JAN 2023		

S12A AMENDMENT OF PLAN APPLICATION
APPROVED NGAU TAM MEI
OUTLINE ZONING PLAN NO. S/YL-NTM/12

PROPOSED REZONING FROM "R(C)" TO "G/IC"
FOR A PROPOSED "SOCIAL WELFARE FACILITIES"
(RESIDENTIAL CARE HOMES FOR THE ELDERLY)
(RCHE)

AT LOT 4823 IN D.D.104, 81 SAN TAM ROAD,
SAN TIN, N.T.

REVISED TRAFFIC IMPACT ASSESSMENT

RLEE

RLEE Architects (HK) Ltd

S12A Amendment of Plan Application,

Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12

Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities"

(Residential Care Homes for the Elderly) (RCHE)

At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.

Traffic Impact Assessment

January 2023

CTA Consultants Limited
志達顧問有限公司

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LIST OF FIGURES

1. INTRODUCTION

1.1 Background

1.1.1 The application site is located at Lot no. 4823 in D.D. 104, San Tin, Yuen Long, New Territories. The site location is shown in **Figure 1.1**.

1.1.2 The applicant intends to convert an existing house to proposed Residential Care Home for the Elderly (RCHE). A Section 12A application to the approved Ngau Tam Mei Outline Zoning Plan S/YL-NTM/12 to rezone the site from "R(C)" to "G/IC" is required.

1.1.3 In support of the aforesaid application, a traffic impact assessment is required to review and appraise any possible traffic impact induced by the proposed development on the adjacent road network.

1.1.4 CTA Consultants Limited (CTA) was therefore commissioned as the traffic consultant to prepare the Traffic Impact Assessment (TIA) and provide technical justifications in supporting the application from traffic engineering point of view.

1.2 Study Objectives

1.2.1 Main objectives of this study are listed below:

- To assess the existing and proposed traffic arrangement & provision of internal transport facilities at the subject site;
- To assess the existing traffic condition in the vicinity of the proposed development;
- To estimate traffic trips related to the proposed development;
- To carry out forecasts about traffic demand of the adjacent road network in design year 2030;
- To appraise any possible traffic impact induced by the proposed development on the adjacent road network;
- To recommend traffic improvement measures to alleviate any foreseeable traffic problem to the surrounding road network, if any.

2. THE PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 The application site is located at Lots no. 4823 in D.D. 104, San Tin, Yuen Long, New Territories. The site location is shown in **Figure 1.1**.

2.2 Development Proposal

2.2.1 Parameters of the proposed development are listed in **Table 2.1**.

Table 2.1 Parameters of the Proposed Development

	Proposed Scheme
Proposed Use	Residential Care Home for the Elderly (RCHE)
Site Area	About 736.3 m^2
Total Accountable GFA	About 5,400 m^2
No. of Storeys	10
No. of Beds	142

2.2.2 It is anticipated that the proposed development will be completed in year 2027. Therefore, design year 2030 (i.e., 3 years after the planned completion year of the proposed development) is adopted for the Traffic Impact Assessment.

2.3 Provision of Internal Transport Facilities

2.3.1 It is revealed that there is no parking standard for “Residential Home for Elderly” in HKPSG, therefore, the parking provision of other existing RCHEs has been referenced and are summarized in **Table 2.2** below:

Table 2.2 Examples of Existing RCHE

Name of RCHE	Location	No. of beds	No. of Staff	Observed no. of Parking Provision	Parking Facilities[(1)(2)(3)] (Category 1/2/3)
Assemblies of God Holy Light Church Aged Home	91 Sung Ching Sun Tsuen, Tai Tong Road, Yuen Long	60	19	Nil	Category 1
Chinese Christian Worker's Fellowship Wah Hei Elderly Home (Comet Mansion	G/F & M/F, Shop 27, Comet Mansion, 45-67 Fung Cheung Road, Yuen Long	105	29	Nil	Category 1
Pok Oil Hospital Jockey Club Care and Attention Home	Lot 1392 & 837 R.P. in D.D. 115, Au Tau, Yuen Long	213	124	Nil	Category 2
Po Leung Kuk Tin Yan Home for the Elderly cum Green Joy Day Care Centre for the Elderly	3/F and 4/F, Ancillary Facilities Block, Tin Yan Estate, Tin Shui Wai	106	74	Nil	Category 2
Yan Oi Tong Tin Ka Ping Care and Attention Home	G/F & 1/F, Wah Ping House, Long Ping Estate, Yuen Long	85	51	Nil	Category 2
T.W.G.Hs. Y. C. Liang Memorial Home for the Elderly	G/F & 1/F, Yiu Yat House, Tin Yiu Estate, Tin Shui Wai	88	47	Nil	Category 1
Caritas Ying Shui Home	3/F, Ying Shui House, Shui Pin Wai Estate, Yuen Long	75	47	Nil	Category 2
Salvation Army Kam Tin Residence for Senior Citizens (The)	103 Kam Tin Road, Yuen Long	150	81	1 car parking space + 1 light bus parking spaces	Category 3
Pok Oi Hospital Yeung Chun Pui Care and Attention Home	58 Sha Chau Lei Tsuen, Ha Tsuen, Yuen Long	143	92	2 car parking spaces + 1 light bus parking spaces	Category 3
Pok Oi Hospital Tai Kwan Care & Attention Home	G/F-3/F & KW307, Shui Kwok House, Tin Shui Estate, Tin Shui Wai, Yuen Long	109	75	Nil	Category 2
Ching Chung Taoist Association of Hong Kong Limited Ching Chung Care and Attention Home for the Aged	57 Sha Chau Lei Chuen, Ping Ha Road, Yuen Long	120	61	1 car parking space + 1 light bus parking spaces	Category 3

Notes:

(1) Category 1 refers to homes with nil provision of car parking spaces within the Site and no public car parking spaces can be found in the close proximity.

(2) Category 2 refers to homes with nil provision of car parking spaces within the Site but may use the public car parking spaces of nearby car park.

(3) Category 3 refers to homes with provision of car parking spaces within the Site.

Proposed Internal Transport Facilities Provision

2.3.2 With reference to **Table 2.2** above, only one to two private parking spaces are provided by other RCHE. Taking reference to Salvation Army Kam Tin Residence for Senior Citizens, it has 1 car parking space and 1 light bus parking spaces for 150 beds are sufficient for their daily operation needs. Taking into consideration that 142 beds will be provided in our proposed development, the parking provision should be sufficient for the daily operation needs of the proposed development. The internal transport facilities provisions are proposed and summarized as **Table 2.3** below:

Table 2.3 Proposed Provisions of Internal Transport Facilities

Type	Proposed Dimensions	Proposed Number of Spaces
Private Car	5m(L) x 2.5m(W) x 2.4m(H)	1
Private Cars for Disabilities	5m(L) x 3.5m(W) x 2.4m(H)	1
Minibus	8m(L) x 3m(W) x 3.6m(H)	1
Light Goods Vehicle (LGV)	7m(L) x 3.5m(W) x 3.6m(H)	1
Motorcycle	2.4m(L) x 1m(W) x 2.4m(H)	1

Note:

The provision of PV parking space for disabilities is determined by referring to "Parking for persons with disabilities" stipulated in the latest HKPSG that 1 accessible parking space should be provided for 1-50 parking spaces

2.3.3 The ground floor layout plan of the proposed development showing the proposed internal transport provision is shown in **Figures 2.1 (Rev.A)**.

2.4 Public Transport Services in the Vicinity

2.4.1 Numerous road-based public transport services, for instance, franchised buses and GMB are also provided in vicinity of the proposed development. Details of the current services of franchised buses and GMB routes within the catchment area of 500 meters are listed in **Table 2.4** and shown in **Figure 2.2**.

Table 2.4 Public Transport Services in the Vicinity

Service	Route	Origin - Destination	Frequency (mins)
Franchised Bus	76K	Sheung Shui (Ching Ho) – Long Ping Estate	20 - 30
GMB	76	Yuen Long (Fook Hong Street) – Siu Hom Tsuen	15 - 20
	75	Yuen Long (Fook Hong Street) – Ha Wah Tsuen	15 - 20
	37	Yuen Long (Fook Hong Street) – Yau Tam Mei Village Office	12 - 15

3. EXISTING TRAFFIC CONDITION

3.1 Existing Road Network

3.1.1 The existing road network in the vicinity of the proposed development with critical junctions is illustrated diagrammatically in **Figure 3.1**. The proposed development will be mainly served by San Tam Road.

3.1.2 San Tam Road is an undivided two-lane two-way rural road. It is the major road connecting Castle Peak Road – Mai Po and San and Tin Highway.

3.2 Critical Junctions

3.2.1 Five junctions are identified to be critical for the Traffic Impact Assessment due to the proposed development. Relevant details are listed in **Table 3.1** and shown in **Figure 3.1**. Existing junction layouts are shown in **Figures 3.2** to **Figure 3.6,** and **Figure RC-01** respectively.

Table 3.1 Identified Critical Junctions

Ref.	Junction	Type	Figure No.
A	San Tam Road / Castle Peak Road – Mai Po	Priority	3.2
B	San Tam Road / Access Road	Priority	3.3
C	San Tam Road / Ngau Tam Mei Road	Priority	3.4
D	San Tam Road / Chun Shin Road	Priority	3.5
E	San Tam Road / Chuk Yau Road	Priority	3.6
F	Fairview Park Interchange	Roundabout	RC-01

3.2.2 In order to study the existing traffic condition of the above critical junctions, traffic survey in the form of manual-classified count was carried out during the Weekday AM and PM peak periods on a typical weekday on 13 June 2022 from 07:30AM to 09:30AM and 17:30PM to 19:30PM respectively. The survey provides most up-to-date details of the traffic condition within the study area. Based on the observed traffic flows, it reveals

that Weekday AM peak hour occurred from 08:15AM to 09:15AM, and PM peak hour occurred from 17:30PM to 18:30PM.

3.2.3 Due to effect of COVID-19, the surveyed traffic flows may be much less that of the normal conditions. The COVID-19 factor has been derived by comparing the selected ATC core station with the ATC 2015-2019 record flow as shown in **Table RC-1**. A percentage of 1.33% per annum is found and applied to ATC 2019 record flows to generate a year 2021 reference flows as shown in **Table RC-2**.

Table RC-1 Historical Traffic Data from the ATC

Station	Road Name	2015	2016	2017	2018	2019	2015 to 2019
5016	San Tin Highway, Castle Peak Road & San Tam Road	86,180	92,230	90,650	86,230	90,860	1.33%

Table RC-2 Comparison of 2021 Reference Flows and ATC 2021 Record Flow

Station	Road Name	ATC 2019 Record Flow	2021 Reference Flows (2019ATC Record Flow x 1.33%)	ATC 2021 Record Flow
5016	San Tin Highway, Castle Peak Road & San Tam Road	90,860	93,295	86,620

3.2.4 To compare with 2021 reference flows with ATC 2021 record flows and hence the COVID-19 factor of 1.08 is adopted and applied to 2022 existing traffic flows, e.g.:

COVID-19 factor:
2019 ATC record flow x adopted growth factor from 2015-2019 ATC record flow /2021 ATC record flow =1.08

3.2.5 The 2022 traffic flows are presented in **Figure 3.7 (Rev.A)**. The operational performances of the critical junctions are listed in **Table 3.3** below.

Table 3.3 Operational Performances of Critical Junctions in 2022

Ref.	Junction	Method of Control	Year 2022 DFC (1)	
			AM Peak	PM Peak
A	Castle Peak Road - Mai Po / San Tam Road	Priority	0.20	0.22
B	San Tam Road / Access Road	Priority	0.03	0.03
C	San Tam Road / Ngau Tam Mei Road	Priority	0.33	0.38
D	San Tam Road / Chun Shin Road	Priority	0.09	0.08
E	San Tam Road / Chuk Yau Road	Priority	0.56	0.43
F	Fairview Park Interchange	Roundabout	0.80	0.79

Note:

(1) DFC = Design Ratio of Flow to Capacity for Priority Junction/Roundabout

3.3 Road Link Assessment

3.3.1 Apart from junction capacity assessment, road link assessments were also carried out for the identified road links as illustrated in **Figure 3.8.** Performance of these road links were assessed in terms of traffic volume/ capacity (V/C) ratio and the results are presented in **Table 3.4**.

Table 3.4 Road Link Assessment in Observed Year 2022

Road Section	Index	Direction	Capacity (pcu/hr) (C)(1)(2)	AM Peak		PM Peak	
				Flow (pcu/hr) (V)	Flow / Capacity (V/C)	Flow (pcu/hr) (V)	Flow / Capacity (V/C)
San Tam Road (Between Junction A and Junction B)	LA	Two-way	1,332	205	0.15	230	0.17
San Tam Road (Between Junction B and Junction C)	LB	Two-way	1,332	270	0.20	270	0.20

San Tam Road (Between Junction C and Junction D)	LC	Two-way	1,332	535	0.40	560	0.42
San Tam Road (Between Junction D and Junction E)	LD	Two-way	1,332	600	0.45	595	0.45

Notes:

(1) Reference has been made to the TPDM Volume 2 Chapter 2.4 for the lane capacity.
(2) PCU factor of 1.2 has been applied to the calculation of the Lane capacity.

3.3.2 The junction assessment and road link assessment results in **Table 3.3** and **Table 3.4** indicate that all critical junctions and critical links are at present operating with ample capacities during the AM and PM peak hours.

4. FUTURE TRAFFIC CONDITION & TRAFFIC IMPACT ASSESSMENT

4.1 Design Year

4.1.1 It is anticipated that the proposed development would be completed in 2027 tentatively. In order to assess the possible traffic impacts to the local road network due to the proposed development, year 2030 (i.e., 3 years after completion) has been adopted as the design year for this study.

4.2 Traffic Forecast

4.2.1 To estimate the reference traffic flow in year 2030 (without the proposed development) in the local road network, an appropriate growth factor was identified for the area in the first instance. The following approaches have been adopted to derive the growth factor for the traffic assessment.

Historical Trend

4.2.2 Numerous traffic-count stations are located in the vicinity of the proposed development. The traffic counts reported in the Annual Traffic Census (ATC), which is published by Transport Department, over a period of five years, i.e., 2015 to 2020 are summarized in **Table 4.1**.

Table 4.1 Historical Traffic Data from Annual Traffic Census (ATC)

ATC Stn.	Road Name	Annual Average Daily Traffic (AADT)						Avg. Annual Growth Rate (2015-2019)
		2015	2016	2017	2018	2019	2020	
5016	San Tin Highway, Castle Peak Rd & San Tam Rd (From Kam Tin Road to Fairview Park Boulevard)	86,180	92,230	90,650	86,230	90,860	81,870	1.33%

5257	Castle Peak Rd - Tam Mi,Mai Po & San Tin (From Fairview Paark Boulevard to Lok Ma Chau Road)	10,510 *	10,940 *	10,770 *	11,980	11,910	11,420 *	3.18%
5297	San Tam Rd (From Castle Peak Road - Mai Po to Fairview Park Boulevard RA)	6,140 *	6,400 *	6,300 *	8,540	7,530	7,220 *	5.23%
5505	San Tam Road (From Fairview Park Boulevard RA to End)	12,090	12,590*	12,390*	12,700*	13,330	13,420	2.47%
5508	San Tin Highway (From Fairview Park Boulevard to Lok Ma Chau Road)	85,910	90760*	90,110*	92,980*	80,460	82,010	-1.63%
Total		**200,830**	**212,920**	**210,220**	**212,430**	**204,090**	**195,940**	**0.40%**

Notes:
1.*AADT estimated by Growth factor
2. Due to Covid-19, the data for 2020 are considered not accurate and not included.

Planning Data

4.2.3 Reference has also been made to the "Projections of Population Distribution 2019-2029" published by Planning Department's Working Group on Population Distribution Projections. The annual growth rates of the Tertiary Planning Units in the vicinity are summarized in **Table 4.2**.

Table 4.2 Projected Populations of Selected Tertiary Planning Units

Tertiary Planning Units (TPU)	Projected Population		Annual Average Growth Rate (2019-2025)
	2019	2025	
543&546	4,300	5,000	2.55%
544	3,000	3,000	0.00%
541	19,400	18,200	-1.60%
542	13,800	14,100	0.36%
525	1,400	1,600	2.25%

526	11,200	12,400	1.71%
Total	**53,100**	**54,300**	**0.37%**

4.2.4 Reference has also been made to the latest 2019-Based Territorial Population Employment Data Matrices (TPEDM) planning data published by the Planning Department for projection of population and employment within the study district. The average annual growth rates in terms of population and employment from 2019 to 2031 are tabulated in **Table 4.3**.

Table 4.3 2019-Based Planning Data from 2019 to 2031

Yuen Long				
Data	**Year**			**Average Annual Growth Rate (2019-2031)**
	2019	**2026**	**2031**	
Population	175,150	172,350	159,850	-0.76%
Employment	68,100	70,700	70,250	0.26%
Total	**243,250**	**243,050**	**230,100**	**-0.46%**

Adopted Growth Rate

4.2.5 A.A.D.T. of ATC indicates that the traffic flow of the local road network has an average annual growth rate of +0.40% from year 2015 to year 2019.

4.2.6 The population projections of selected Tertiary Planning Units show that an annual growth rate of 0.37% is expected in the study area.

4.2.7 Whilst, the planning data indicates that the population and employment of the study area are expected to grow with an average annual growth rate of -0.46%.

4.2.8 As a conservative approach, annual growth rate **+1% p.a.** is adopted for this traffic impact assessment. It is deemed sufficient to allow for any unexpected future growth as a result of some changes in land use or development in the study area.

4.3 Reference Traffic Flow in Year 2030

4.3.1 The year 2030 reference traffic flow is estimated by applying the adopted growth rate to the year 2022 surveyed traffic flow.

Planned Developments in the Vicinity

4.3.2 To fully reflect the traffic growth that would contribute to the adjacent road network, latest planning data has been obtained from Planning Department. The future planned developments in the vicinity provided and agreed by Planning Department are summarized in below **Table 4.4**.

Table 4.4 Planned Developments in the Vicinity

Application No.	Type	Key Development Parameters[(1)]
Ongoing S12A Applications in the Vicinity[(1)]		
Y/YL-NTM/5	Residential	1,980 residential units
Y/YL-NTM/6	Residential	• 1,990 residential units • 6,485m^2 commercial GFA
Y/YL-NTM/7	Residential	• 12,575 residential units • 39,265m^2 commercial GFA • Neighbourhood Elderly Centre (NEC) • Child Care Centre (CCC)
Y/YL-MP/6	Residential	• 3,090 residential units • 2,363m^2 retail GFA • 6-classroom kindergarten • 100-place RCHE • Neighbourhood Elderly Centre (NEC)
Y/YL-ST/1	Residential	• 2,075m^2 Retail GFA • 4,176 residential units • 100-place child care centre • 6-classroom kindergarten
Y/YL-NSW/7	Residential	• 900m^2 Retail GFA • 1,997 residential units • 4-classroom kindergarten • 100-place child care centre
Y/YL-NTM/8	Residential	• 6,276 residential units • 67,000m^2 GFA for GIC facilities
Y/YL-MP/6	Residential	3,090 residential units
Y/YL-MP/7	Residential	1,228 residential units

Y/YL-MP/8	Residential	1,249 residential units
Y/YL-NSW/8	Residential	• 6,825 residential units • 750m^2 retail GFA • 4 nos. of GIC facilities - 1 no. of NEC - 100-place CCC - 100-place RCHE - 80-place Day Care Centre for Elderly
Y/YL-NSW/9	Residential	• 3,115 residential units • 6,000m^2 Retail GFA • 1 Primary school • 3 Kindergartens • 1 relocated soy sauce factory
Approved S16 Applications in the Vicinity(1)		
A/YL-MP/247	Residential	Domestic GFA about 16,200m^2 for 105 houses
A/YL-MP/287	Residential	Domestic GFA about 7,540m^2 for 65 houses
A/YL-NSW/274	Residential	Domestic GFA about 70,328m^2 for 1,518 flats
A/YL-NTM/178-2	Residential	Domestic GFA about 45,197m^2 for 300 houses
A/YL-MP/291	Residential	268 houses
A/YL-NSW/241	Retail	37,171 m^2 retail GFA

Note:

(1) Information provided and agreed by Planning Department on email dated 23 December 2022.

4.3.3 Given the information listed out in **Table 4.4**, traffic trips generation of the future planned developments have been taken into consideration based on the completion year of the planned developments. Therefore, the future planned developments that have been included in the assessment of 2030 Reference traffic flow are listed out in **Table 4.5** and diagrammatically shown in **Figure 4.1 (Rev.A)**.

Table 4.5 Selected Future Planned Developments for Assessment

Application No.	Type	Key Development Parameters(1)
Ongoing S12A Applications in the Vicinity(1)		
Y/YL-NTM/6	Residential	• 1,990 residential units • 6,485m^2 commercial GFA
Approved S16 Applications in the Vicinity(1)		
A/YL-MP/247	Residential	Domestic GFA about 16,200m^2 for 105 houses
A/YL-MP/287	Residential	Domestic GFA about 7,540m^2 for 65 houses
A/YL-NSW/274	Residential	Domestic GFA about 70,328m^2 for 1,518 flats

A/YL-NTM/178-2	Residential	Domestic GFA about 45,197m^2 for 300 houses
A/YL-MP/291	Residential	268 houses
A/YL-NSW/241	Retail	37,171 m^2 retail GFA

Note:

(1) Information provided and agreed by Planning Department on email dated 23 December 2022.

4.3.4 The traffic trips generated and attracted by the selected developments in vicinity are summarized in the **Table 4.6**.

Table 4.6 Estimated Traffic Generations & Attractions of the Selected Developments in Vicinity

Application No.	Key Development Parameters	Estimated Trip Generation (pcu/hr)			
		AM Peak		PM Peak	
		Gen.	Att.	Gen.	Att.
Y/YL-NTM/6	1,990 residential units	60(1)	60(1)	45(1)	55(1)
A/YL-MP/247	Domestic GFA about 16,200m^2 for 105 houses	29(2)	19(2)	17(2)	25(2)
A/YL-MP/287	Domestic GFA about 7,540m^2 for 65 houses	15(2)	8(2)	7(2)	10(2)
A/YL-NSW/274	Domestic GFA about 70,328m^2 for 1,518 flats	95(2)	65(2)	46(2)	61(2)
A/YL-NTM/178-2	Domestic GFA about 45,197m^2 for 300 houses	84(2)	54(2)	50(2)	72(2)
A/YL-MP/291	268 houses	87(1)	70(1)	76(1)	109(1)
A/YL-NSW/241	37,171 m^2 retail GFA	86(1)	91(1)	116(1)	133(1)

Notes:

(1) Information as obtained from submitted TIA reports.

(2) Traffic Trips have been estimated by the trip generation and attraction rates as stipulated in Volume 1 Chapter 3 Annex C Table 1 of the latest T.P.D.M.

4.3.5 The 2030 reference traffic flows are presented in **Figure 4.2 (Rev.A)**.

2030 Reference Flows (without proposed development) = **2022 Traffic Flows** x **Adopted Growth Factor i.e. +1 % p.a. for 8 years** + **Adjacent Developments**

4.4 Traffic Trips of the Proposed Development

4.4.1 It is noted that traffic rates of both generation and attraction for proposed development uses are not specified in the latest Transport Planning & Design Manual (TPDM).

4.4.2 The estimation of traffic trips related to the proposed development is based on in-house surveys carried out at Tung Wah Group of Hospitals - Wong Cho Tong Social Service Building and summarized in the **Table 4.7**.

Table 4.7 In-house Traffic Trip Rates of Proposed Development

Use	Units / Parameters	AM Peak		PM Peak	
		Gen.	Att.	Gen.	Att.
Traffic Trip Rate					
TWGHs Wong Cho Tong Social Service Building – IN/OUT of Building	(pcu/hr)	14	11	14	11
TWGHs Wong Cho Tong Social Service Building – Loading/Unloading activities of Building	(pcu/hr)	10	8	10	8
Total Trip	(pcu/hr)	24	19	24	19
Adopted Traffic Trip Rates (278 beds)	**(pcu/hr/bed)**	**0.0863**	**0.0684**	**0.0432**	**0.0576**

4.4.3 Based on the in-house traffic trip rates related to the proposed development, the estimated traffic trips of the proposed development are calculated and shown in below **Table 4.8**.

Table 4.8 Traffic Trips of the Proposed Development

Proposed Development	Parameter	Trip Generation (pcu/hr)			
		Weekday AM Peak		Weekday PM Peak	
		Gen.	Att.	Gen.	Att.
RCHE	142 beds	12	10	6	8

4.5 Traffic Forecast for Design Year 2030

4.5.1 The net traffic trips of the proposed development are superimposed onto the year 2030 reference traffic flow (without the proposed development) as shown in **Figure 4.2 (Rev.A)** to derive the year 2030 design traffic flow (with the proposed development).

Year 2030 Design Flow (with the Proposed Development) = **Year 2030 Reference Flow (without the Proposed Development)** + **Traffic Trips of the Proposed Development**

4.5.2 The traffic flow during AM and PM peak periods in the design year 2030 (with the proposed development) are shown in **Figure 4.3 (Rev.A)**.

4.6 Operational Assessment

4.6.1 To assess traffic impacts due to the proposed development, operational assessment of the critical junctions identified in Chapter 3 are carried out for both reference (without the proposed development) and design (with the proposed development) scenarios in year 2028. The results are summarized in **Table 4.9**.

Table 4.9 Operational Performance of Critical Junctions in Year 2030

Ref.	Junction	Method of Control	Year 2030 DFC (1)			
			Reference Scenario (Without the Proposed Development)		Design Scenario (With the Proposed Development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Castle Peak Road - Mai Po / San Tam Road	Priority	0.29	0.29	0.30	0.29
B	San Tam Road / Access Road	Priority	0.03	0.04	0.03	0.04
C	San Tam Road / Ngau Tam Mei Road	Priority	0.36	0.42	0.36	0.42
D	San Tam Road / Chun Shin Road	Priority	0.16	0.10	0.16	0.10
E	San Tam Road / Chuk Yau Road	Priority	0.63	0.48	0.63	0.48
F	Fairview Park Interchange	Roundabout	**1.27**	**1.03**	**1.28**	**1.04**

Note:

(1) DFC = Design Ratio of Flow to Capacity for Priority Junction/Roundabout

Table 4.10 Road Link Assessment in Reference Year 2030

Road Section	Index	Direction	Capacity (pcu/hr) (C)[(1)(2)]	AM Peak		PM Peak	
				Flow (pcu/hr) (V)	Flow / Capacity (V/C)	Flow (pcu/hr) (V)	Flow / Capacity (V/C)
San Tam Road (Between Junction A and Junction B)	LA	Two-way	1,332	270	0.20	290	0.22
San Tam Road (Between Junction B and Junction C)	LB	Two-way	1,332	360	0.27	345	0.26
San Tam Road (Between Junction C and Junction D)	LC	Two-way	1,332	645	0.48	665	0.50
San Tam Road (Between Junction D and Junction E)	LD	Two-way	1,332	745	0.56	705	0.53

Notes:

(1) Reference has been made to the T.P.D.M. Volume 2 Chapter 2.4 for the lane capacity.
(2) PCU factor of 1.2 has been applied to the calculation of the Lane capacity.

Table 4.11 Road Link Assessment in Design Year 2030

Road Section	Index	Direction	Capacity (pcu/hr) (C)[1][2]	AM Peak		PM Peak	
				Flow (pcu/hr) (V)	Flow / Capacity (V/C)	Flow (pcu/hr) (V)	Flow / Capacity (V/C)
San Tam Road (Between Junction A and Junction B)	LA	Two-way	1,332	275	0.21	290	0.22
San Tam Road (Between Junction B and Junction C)	LB	Two-way	1,332	375	0.28	360	0.27
San Tam Road (Between Junction C and Junction D)	LC	Two-way	1,332	660	0.50	670	0.50
San Tam Road (Between Junction D and Junction E)	LD	Two-way	1,332	760	0.57	720	0.54

Notes:
(1) Reference has been made to the TPDM Volume 2 Chapter 2.4 for the lane capacity.
(2) PCU factor of 1.2 has been applied to the calculation of the Lane capacity.

4.6.2 The junction assessment and road link assessment results in **Table 4.9, 4.10** and **4.11** reveal that all the junctions and critical links will operate with ample capacities in both reference and design scenarios in year 2030, except the junction of Fairview Park Interchange (F).

4.7 Proposed Junction Improvement Scheme

4.7.1 Junction improvement were proposed for Fairview Park Interchange under approved planning application no. A/YL-NSW/241. It is proposed local widening for the approaching arm of San Tin Highway southbound slip road and the approaching arm of

San Tam Road southbound. The proposed junction improvement under A/YL-NSW/241 is shown in **Figure RC-02**.

4.7.2 Junction improvement were proposed for Fairview Park Interchange under approved planning application no. A/YL-NSW/241. It is proposed local widening for the approaching arm of San Tin Highway southbound slip road and the approaching arm of San Tam Road southbound. The proposed junction improvement under A/YL-NSW/241 is shown in **Figure RC-02**.

4.7.3 The assessment result after the mitigation measure is presented in **Table 4.12**

Table 4.12 Operational Performance in 2030 Reference Case and Design Case – for the Improvement Proposal under no. A/YL-NSW/241 for Junction F

Ref.	Junction	Method of Control	Year 2030 DFC(1)		Year 2030 DFC (1)	
			Reference Scenario (With Proposed Improvement under no. A/YL-NSW/241)		Design Scenario (With Proposed Improvement under no. A/YL-NSW/241)	
			AM Peak	AM Peak	AM Peak	PM Peak
F	Fairview Park Interchange	Roundabout	1.27	1.03	1.28	1.04

Note:
(1) DFC = Design Ratio of Flow to Capacity for Priority Junction/Roundabout

4.7.4 Apart from the junction improvement scheme proposed under the approved A/YL-NSW/241, numerous on-going planning applications (e.g. Y/YL-NSW/7, Y/YL-MP/6, Y/YL-MP/7, Y/YL-MP/8, etc.) in the vicinity have also proposed further improvement schemes for the junction of Fairview Park Interchange. Also, it is noticeable that the traffic trips generation of the proposed development is very minimal and have insignificant impact to the local road network. Hence, it is envisaged that the proposed improvement schemes under other planning applications will allow the junction of Fairview Park Interchange to accommodate the traffic trips of the proposed development. Insurmountable impact to the adjacent road network will not be occurred.

5. SUMMARY AND CONCLUSION

5.1 Summary

5.1.1 The application site intends to redevelop to Residential Care Home for the Elderly (RCHE).

5.1.2 CTA Consultants Limited (CTA), are therefore commissioned as the traffic consultant to prepare the Traffic Impact Assessment (TIA) and provide technical justifications in supporting the application from traffic engineering point of view.

5.1.3 To appraise the existing traffic condition, a vehicular survey in the form of manual-classified count was conducted at the surrounding road network of the proposed development. Current operational performance of the critical junctions and critical road links have been assessed with the observed traffic flow. The results reveal that all critical junctions and critical road links are at present operating within its capacities.

5.1.4 Assessment of operational performance of the critical junctions and critical road links indicates that all critical junctions and critical road links will still operate within their capacities in both reference and design scenarios in year 2030, except for the junction of Fairview Park Interchange (F).

5.1.5 Junction improvement for Fairview Park Interchange (F) is proposed under the approved planning application no. A/YL-NSW/241. In addition, further improvement is also proposed under various on-going applications. Considered that the traffic generation of the proposed development is very minimal and would not have significant impact to the adjacent road network, the junction improvement works by other planning applications would be able to accommodate the traffic flows of the proposed development.

5.1.6 The traffic generated by the proposed development would induce insignificant impact on the surrounding road network. Therefore, the application is supported from the traffic points of view.

5.2 Conclusion

5.2.1 In conclusion, this Traffic Impact Assessment (TIA) study demonstrated that the related traffic trips related to the proposed development can be absorbed by the nearby road network and no significant traffic impact will be induced.

5.2.2 Therefore, the proposed redevelop of RCHE is reckoned feasible from traffic engineering point of view.

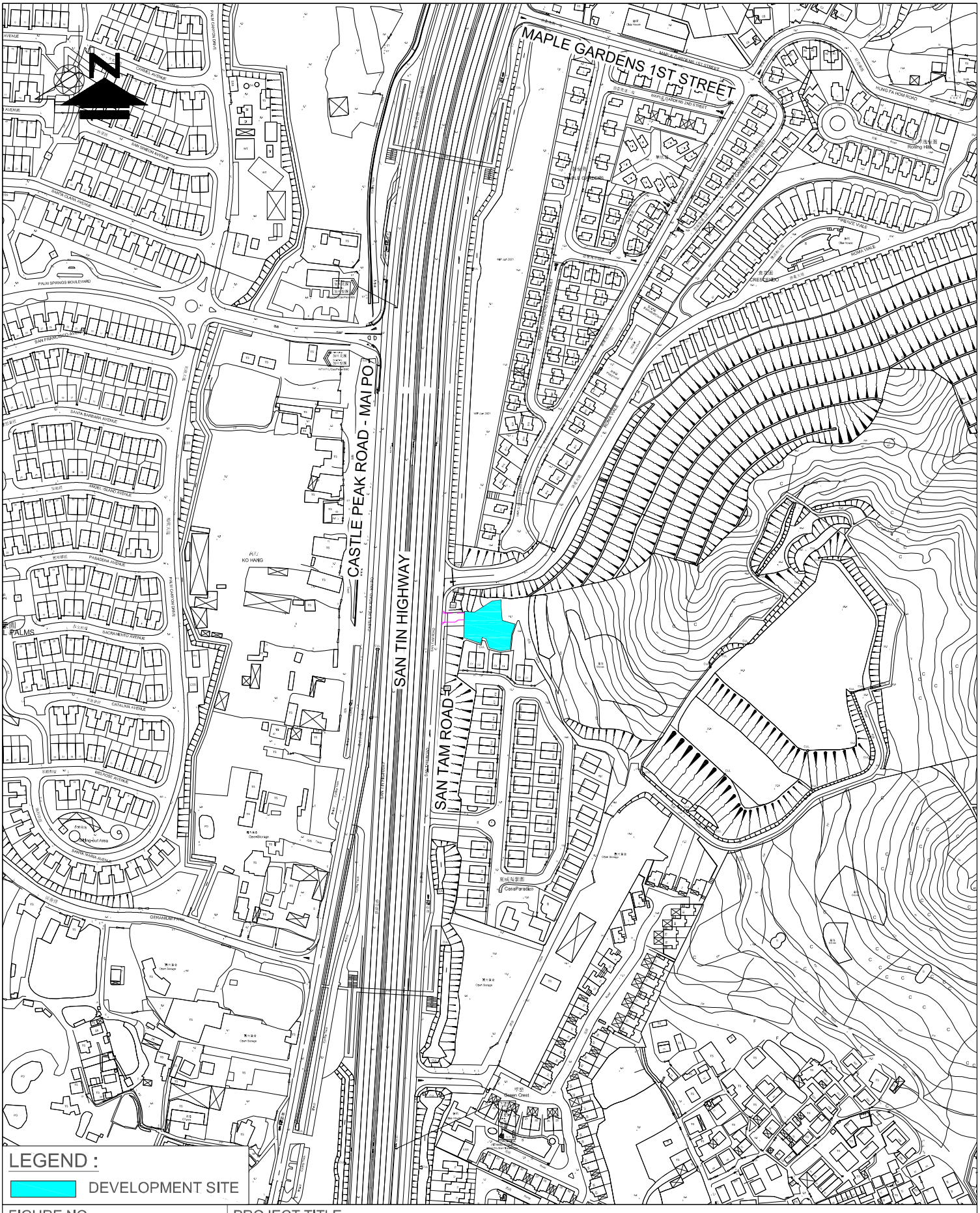


FIGURE NO.: 1.1	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: SITE LOCATION PLAN
SCALE: 1 : 3250 @A4 / DATE: 05 JUL 2022	CTA Consultants Limited 志達顧問有限公司

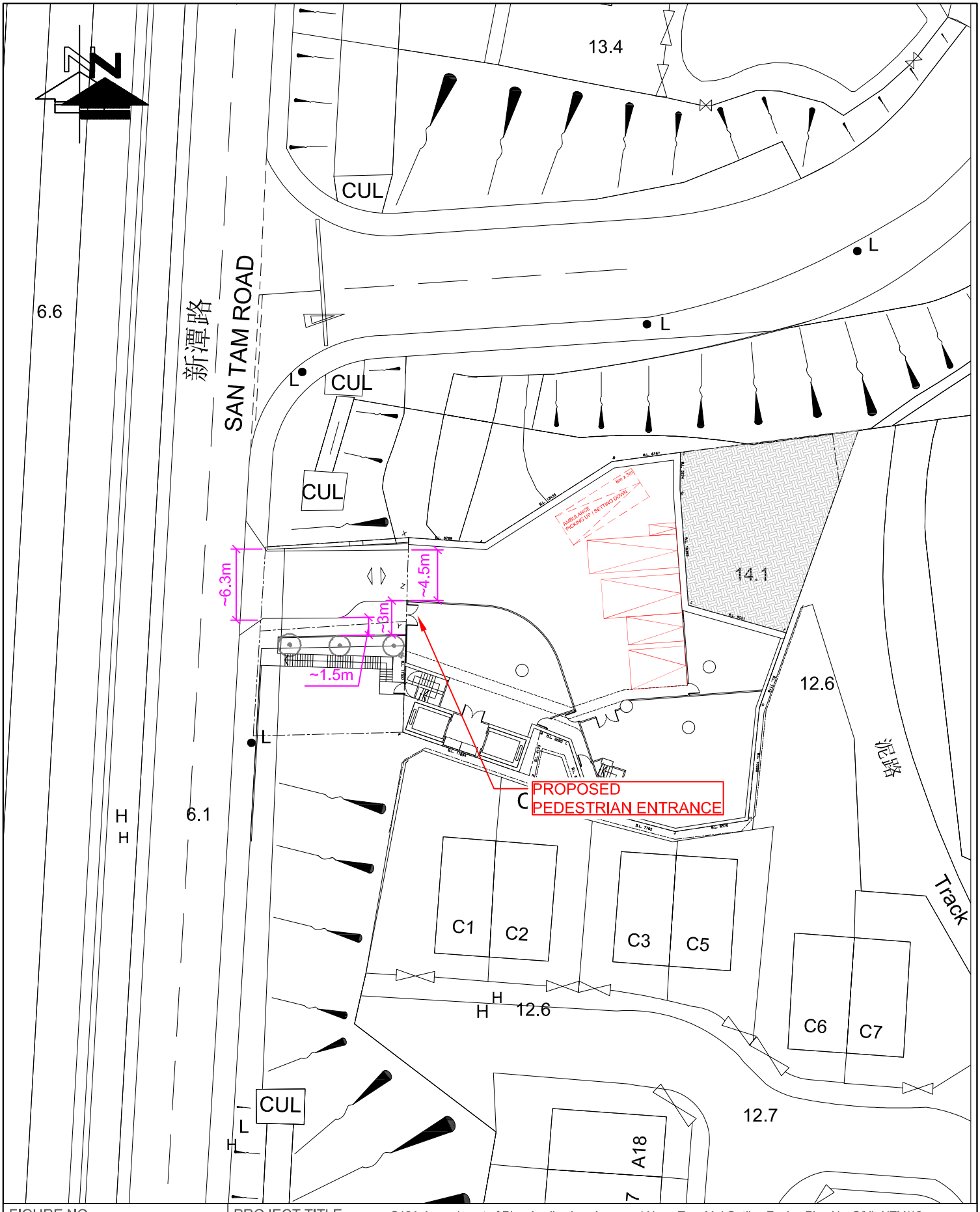


FIGURE NO.: 2.1(REV.A)	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	
PROJECT NO.: 22069HK	DRAWING TITLE: GROUND FLOOR PLAN	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 350 @A4 / DATE: 03 JAN 2023		

LEGEND :

- DEVELOPMENT SITE
- BUS STOP
- GMB STOP

FIGURE NO.: 2.2	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: PUBLIC TRANSPORT SERVICES IN THE VICINITY
SCALE: 1 : 5400 @A4 / DATE: 06 JUL 2022	CTA Consultants Limited 志達顧問有限公司

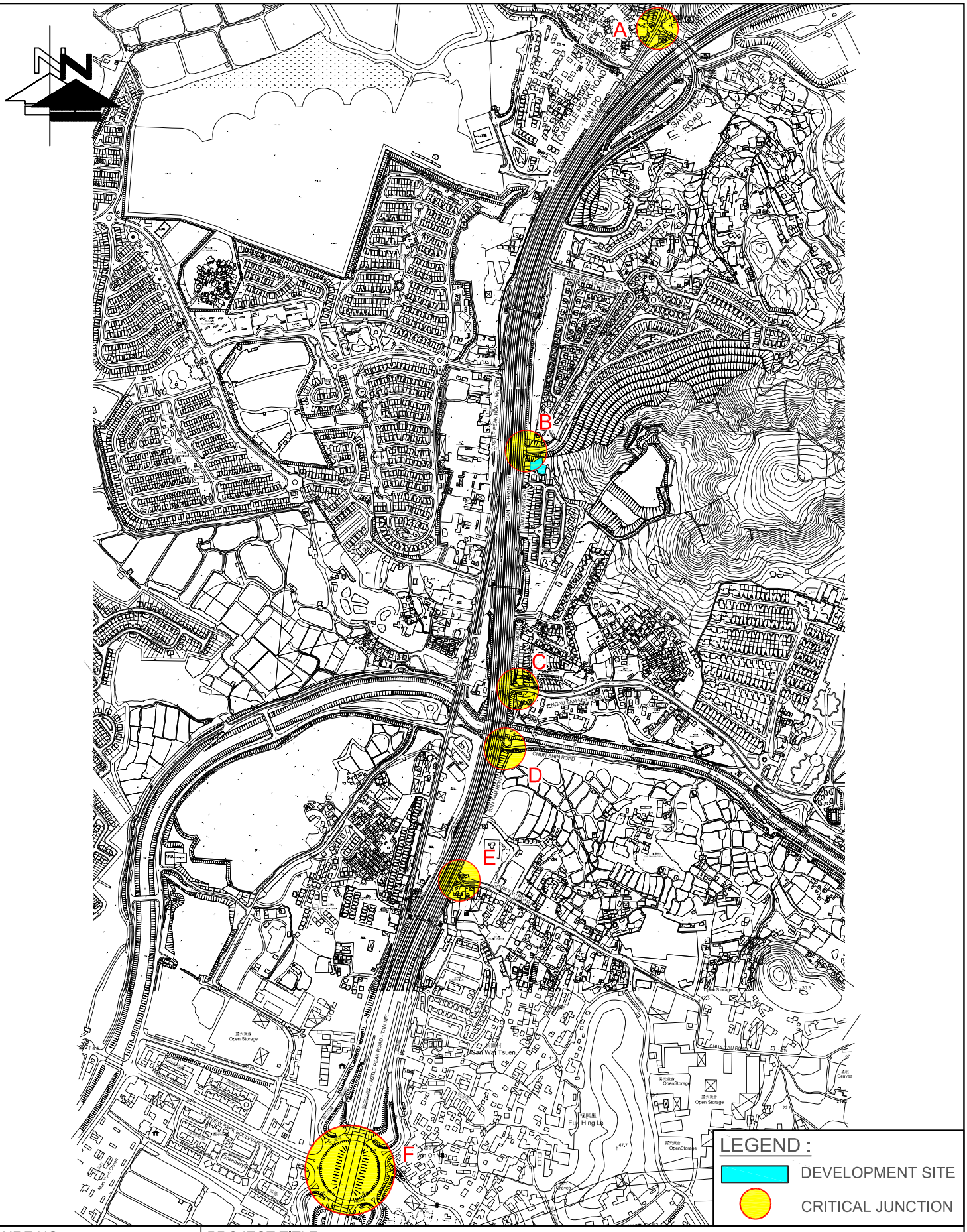


FIGURE NO.: 3.1(REV A)	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: IDENTIFIED CRITICAL JUNCTIONS
SCALE: 1 : 10000 @A4 / DATE: 08 DEC 2022	CTA Consultants Limited 志達顧問有限公司

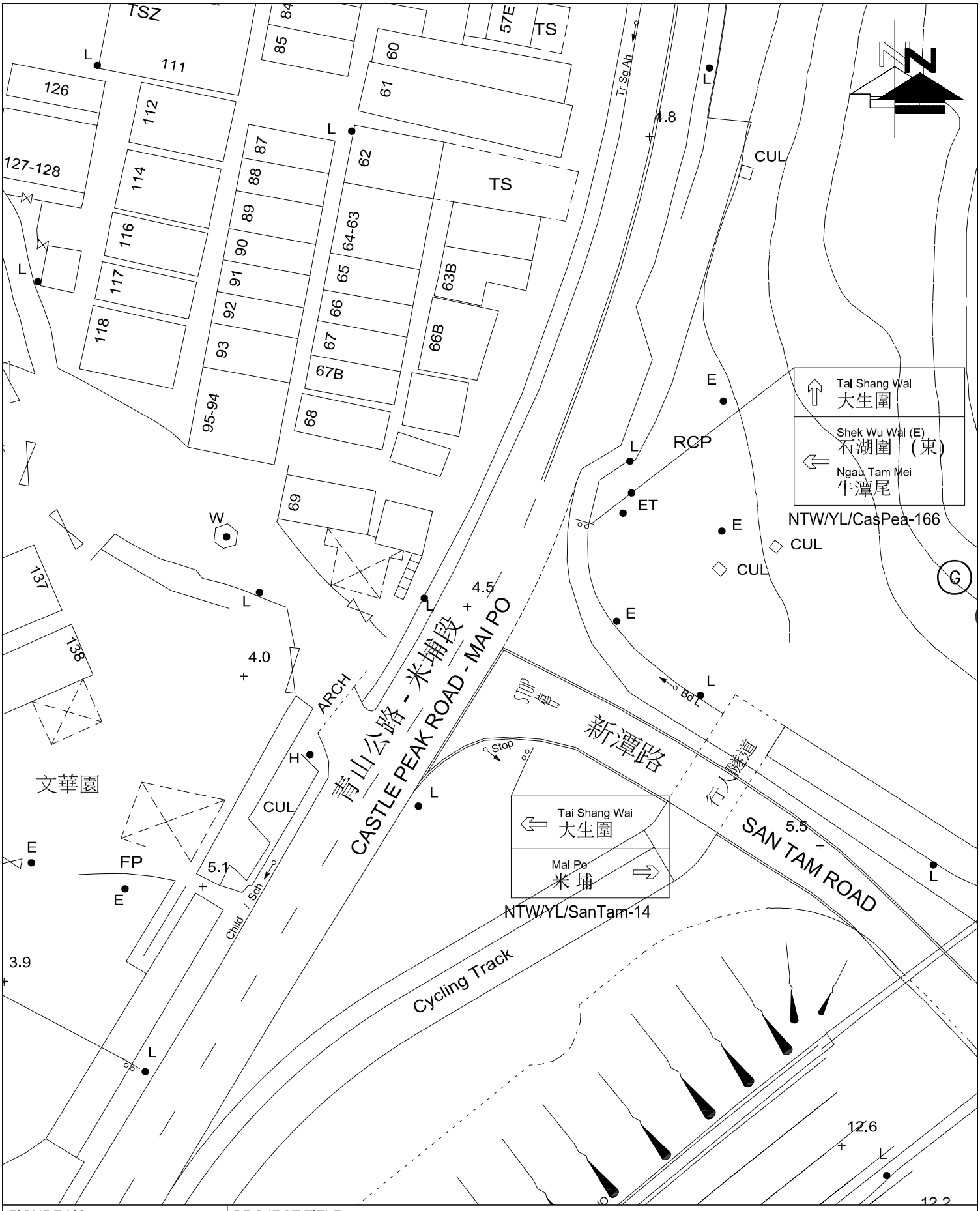


FIGURE NO.: 3.2	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / CASTLE PEAK ROAD - MAI PO (A)
SCALE: 1 : 500 @A4 / DATE: 28 JUN 2022		CTA Consultants Limited 志達顧問有限公司

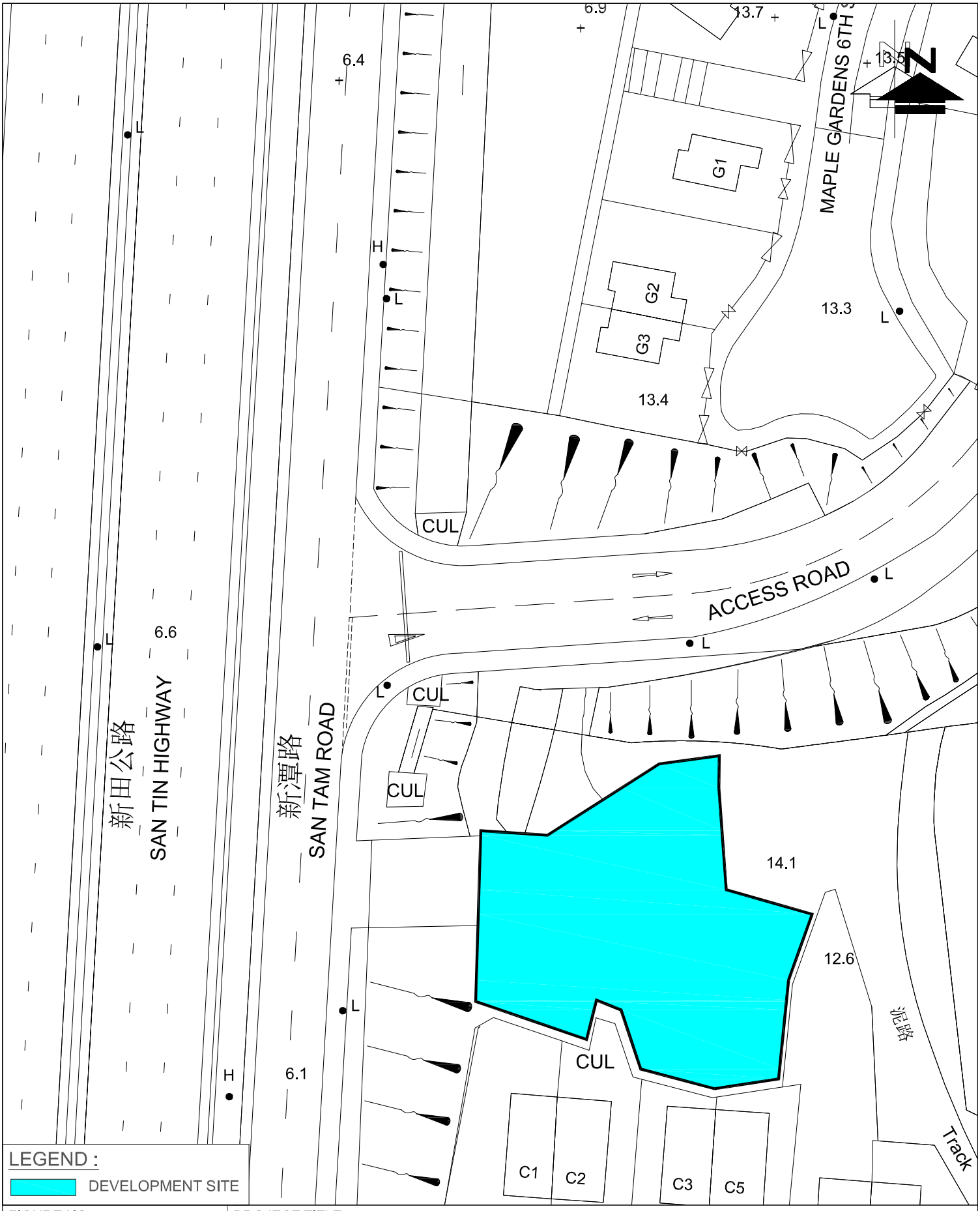


FIGURE NO.: 3.3	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / ACCESS ROAD (B)
SCALE: 1 : 500 @A4 / DATE: 28 JUN 2022		CTA Consultants Limited 志達顧問有限公司

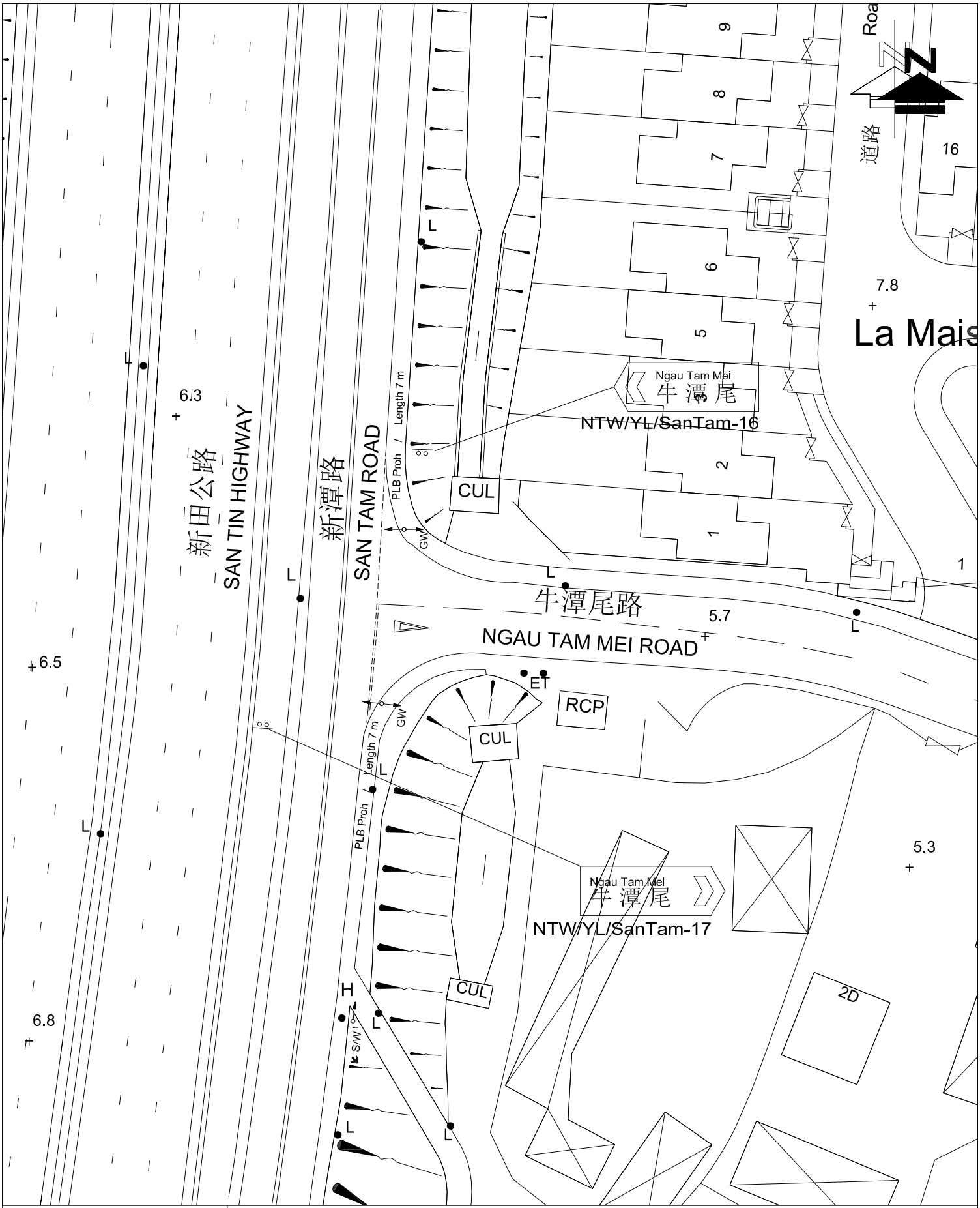


FIGURE NO.: 3.4	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	
PROJECT NO.: 22069HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / NGAU TAM MEI ROAD (C)	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 500 @A4 / DATE: 28 JUN 2022		

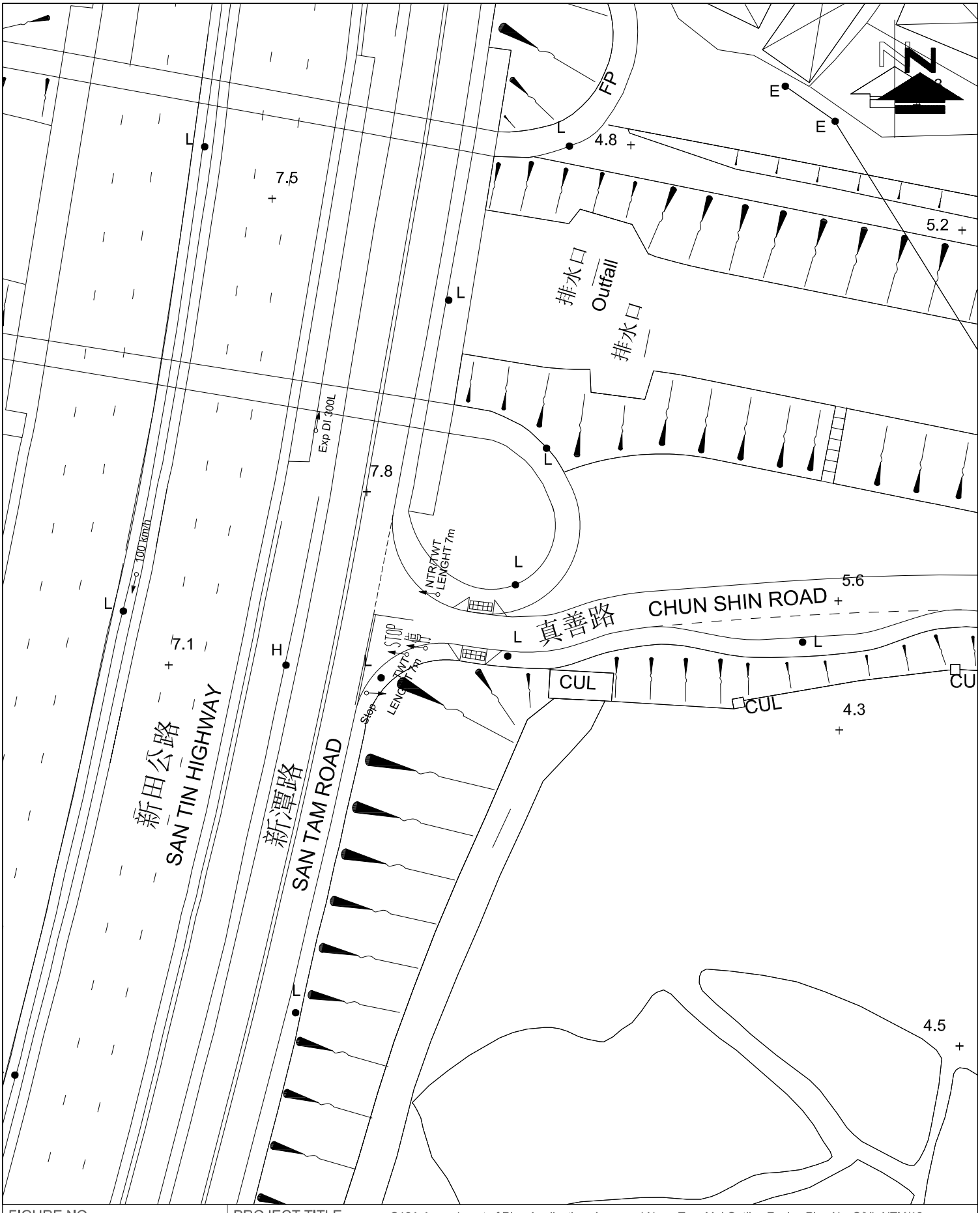


FIGURE NO.: 3.5	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / CHUN SHIN ROAD (D)
SCALE: 1 : 500 @A4 / DATE: 28 JUN 2022		CTA Consultants Limited 志達顧問有限公司

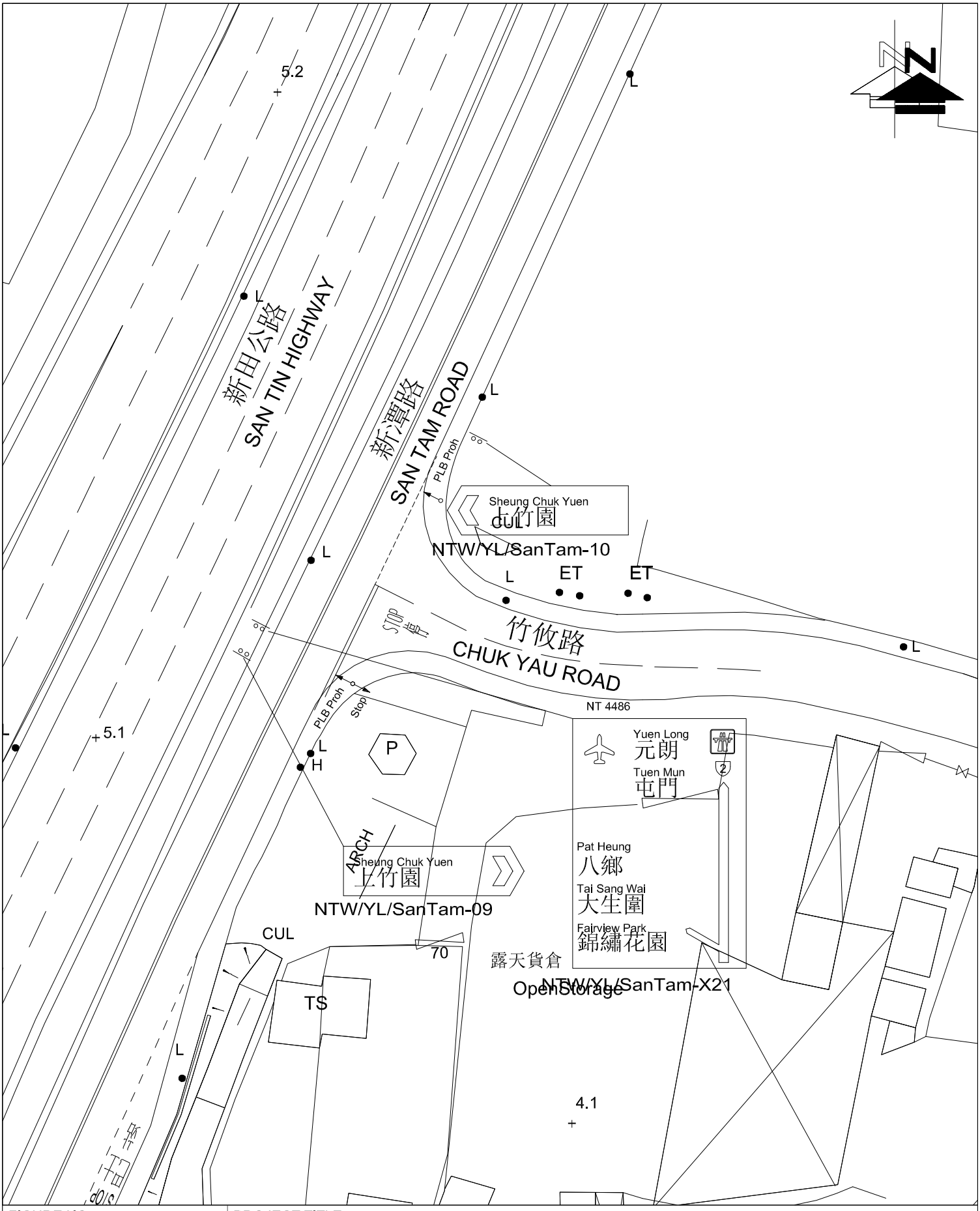


FIGURE NO.: 3.6	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SAN TAM ROAD / CHUK YAU ROAD (E)
SCALE: 1 : 500 @A4	DATE: 28 JUN 2022	CTA Consultants Limited 志達顧問有限公司

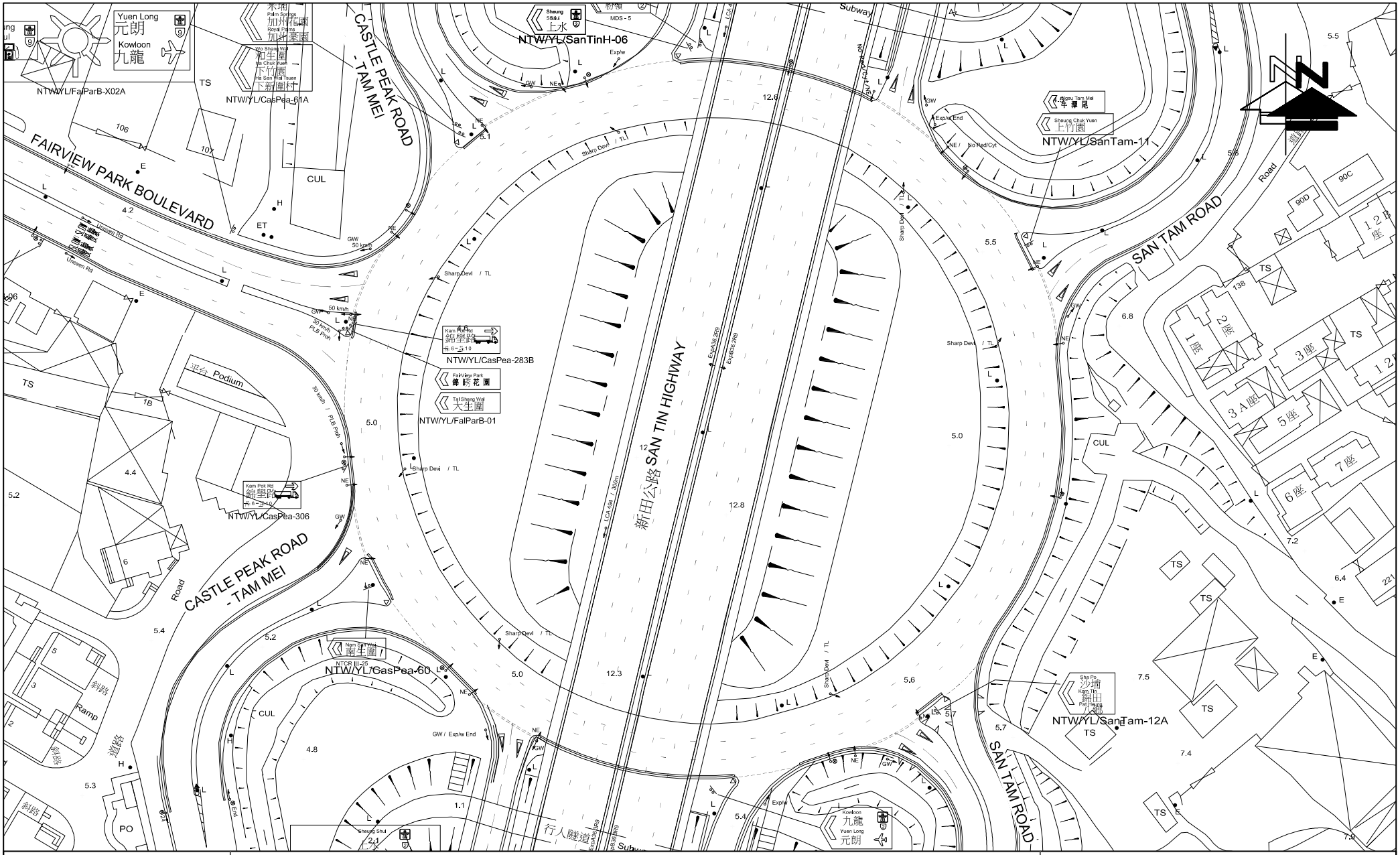


FIGURE NO.: RC-01	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 22069HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF FAIRVIEW PARK INTERCHANGE (F)	
SCALE: 1 : 1000 @A4	DATE: 08 DEC 2022	

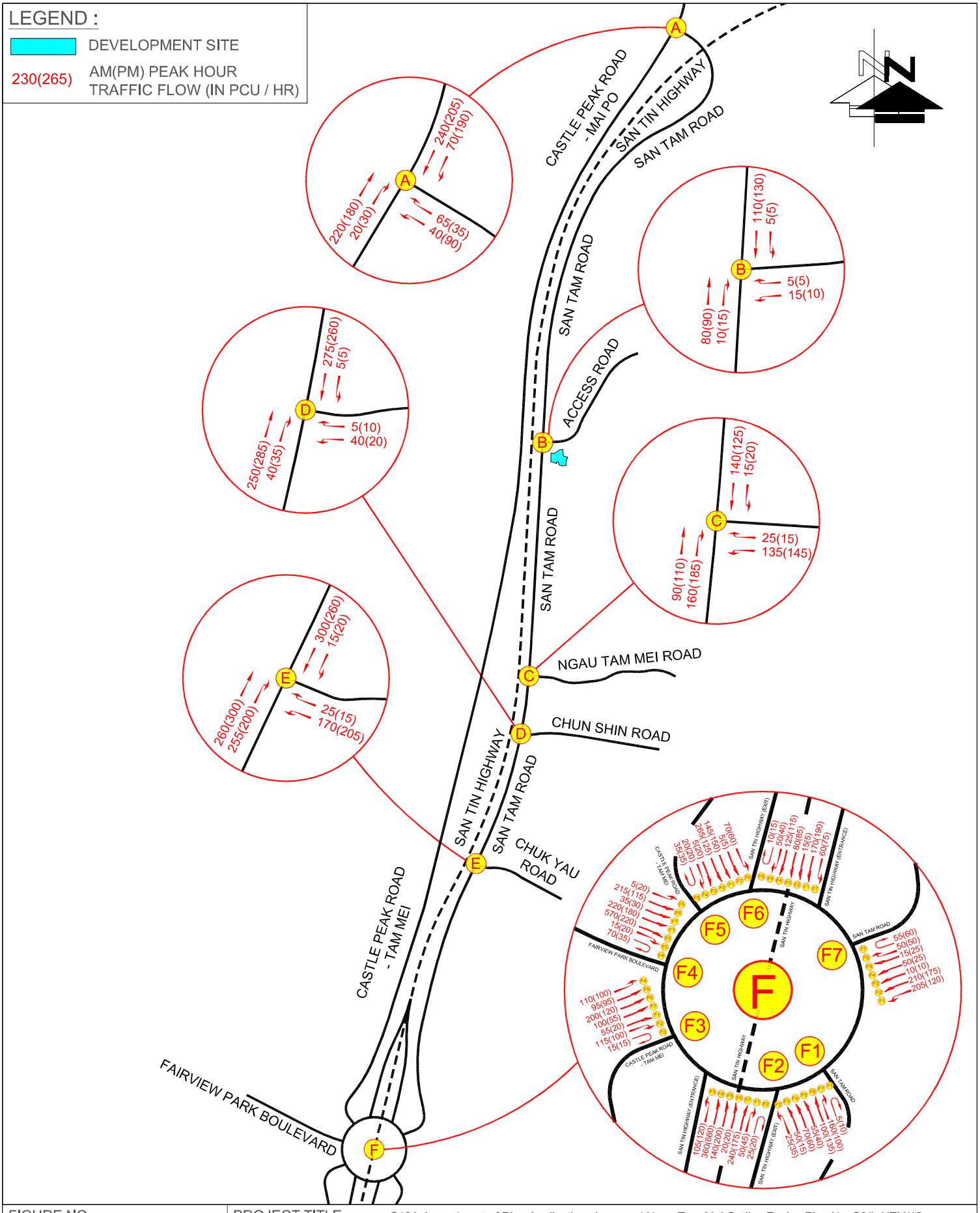


FIGURE NO.: 3.7(REV A)	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: 2022 OBSERVED TRAFFIC FLOWS
SCALE: N.T.S. @A4 / DATE: 21 DEC 2022	CTA Consultants Limited 志達顧問有限公司

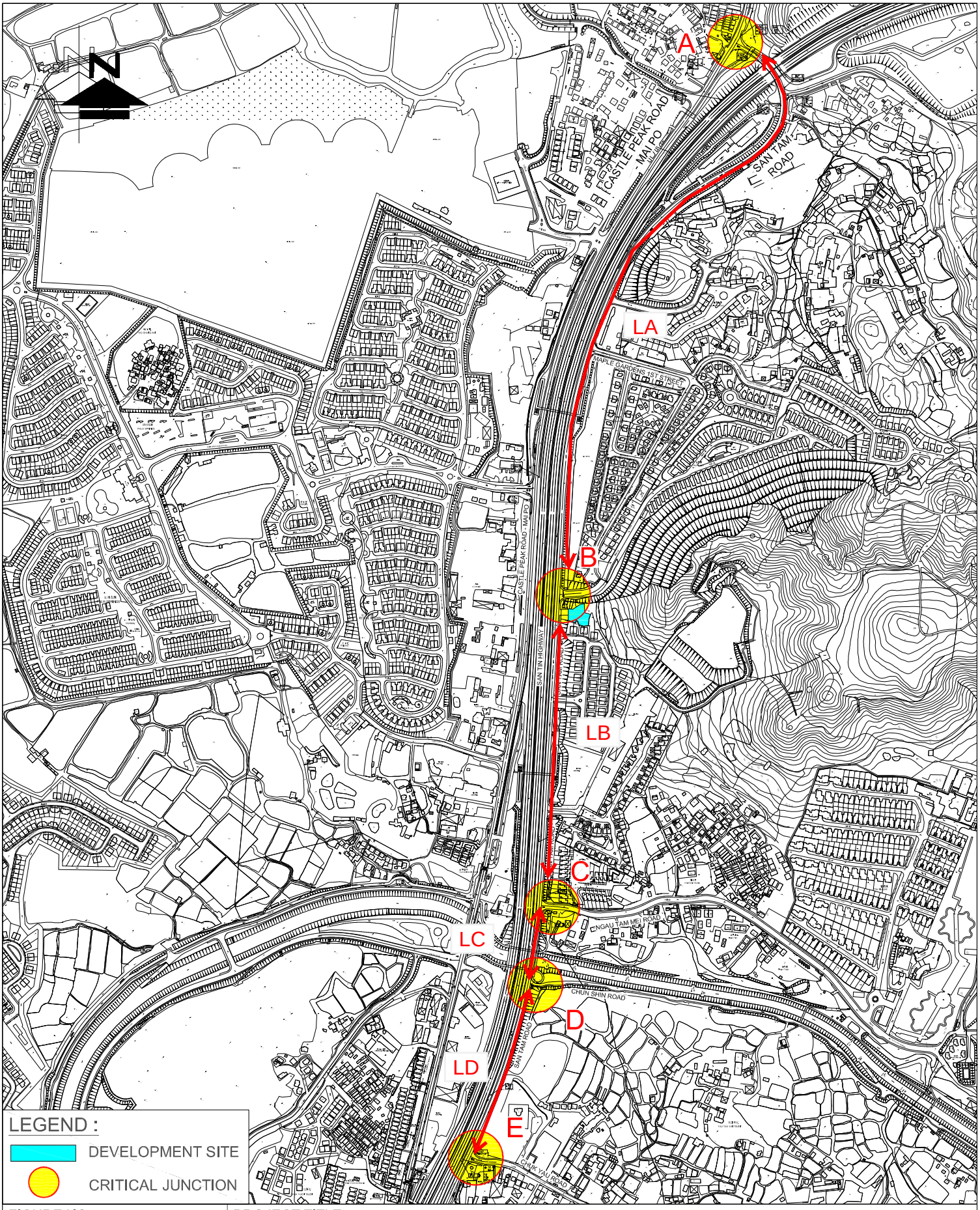


FIGURE NO.: 3.8	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: INDEX PLAN FOR LINK FLOW
SCALE: 1 : 7500 @A4 / DATE: 13 JUL 2022	CTA Consultants Limited 志達顧問有限公司

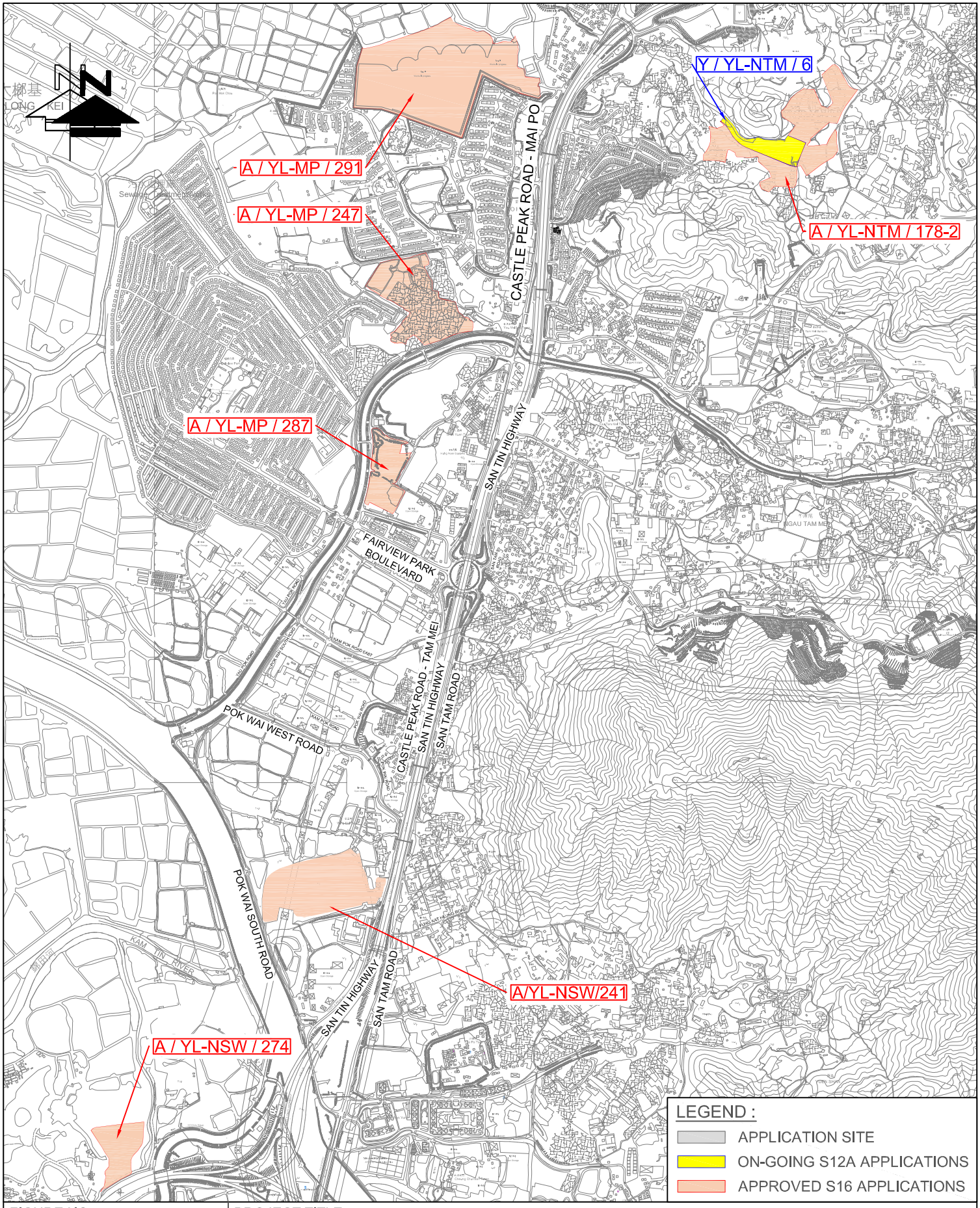


FIGURE NO.: 4.1(REV.A)	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: ADJACENT DEVELOPMENT IN THE VICINITY
SCALE: 1 : 20000 @A4 / DATE: 28 Dec 2022	CTA Consultants Limited 志達顧問有限公司

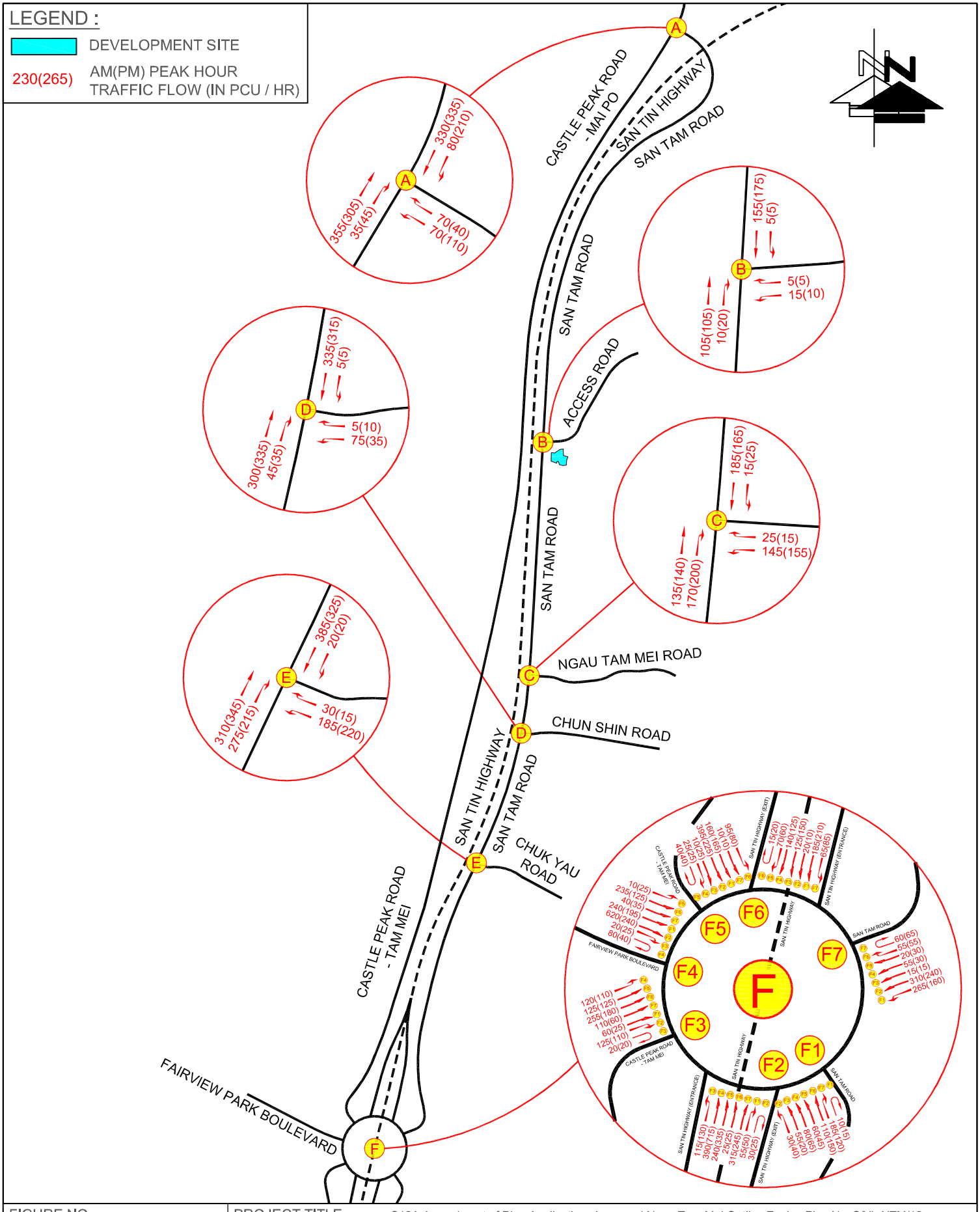


FIGURE NO.: 4.2(REV A)	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	2030 REFERENCE TRAFFIC FLOWS
SCALE: N.T.S. @A4 / DATE: 21 DEC 2022		CTA Consultants Limited 志達顧問有限公司

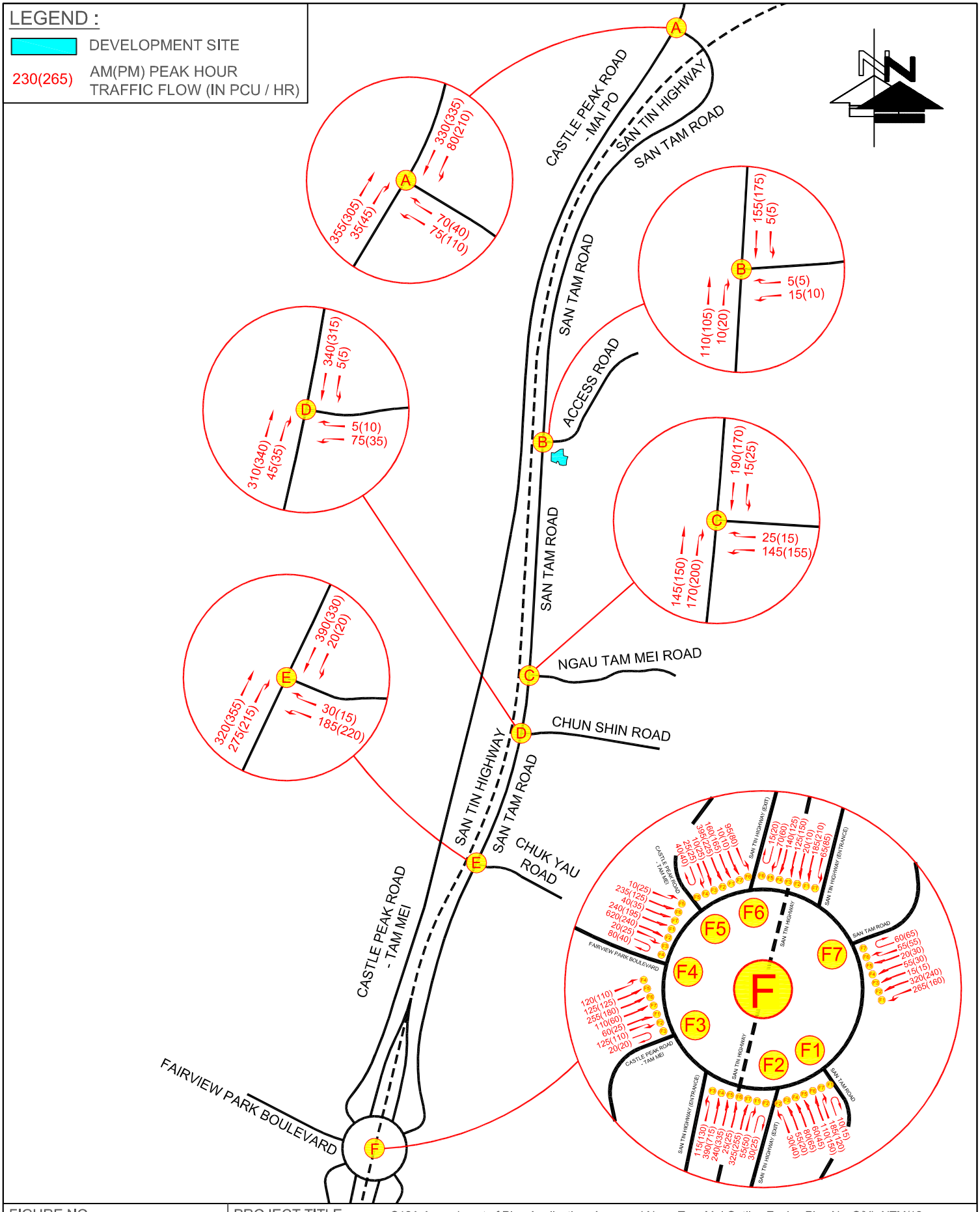


FIGURE NO.: 4.3(REV A)	PROJECT TITLE:	S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE:	2030 DESIGN TRAFFIC FLOWS
SCALE: N.T.S. @A4 / DATE: 21 DEC 2022		CTA Consultants Limited 志達顧問有限公司

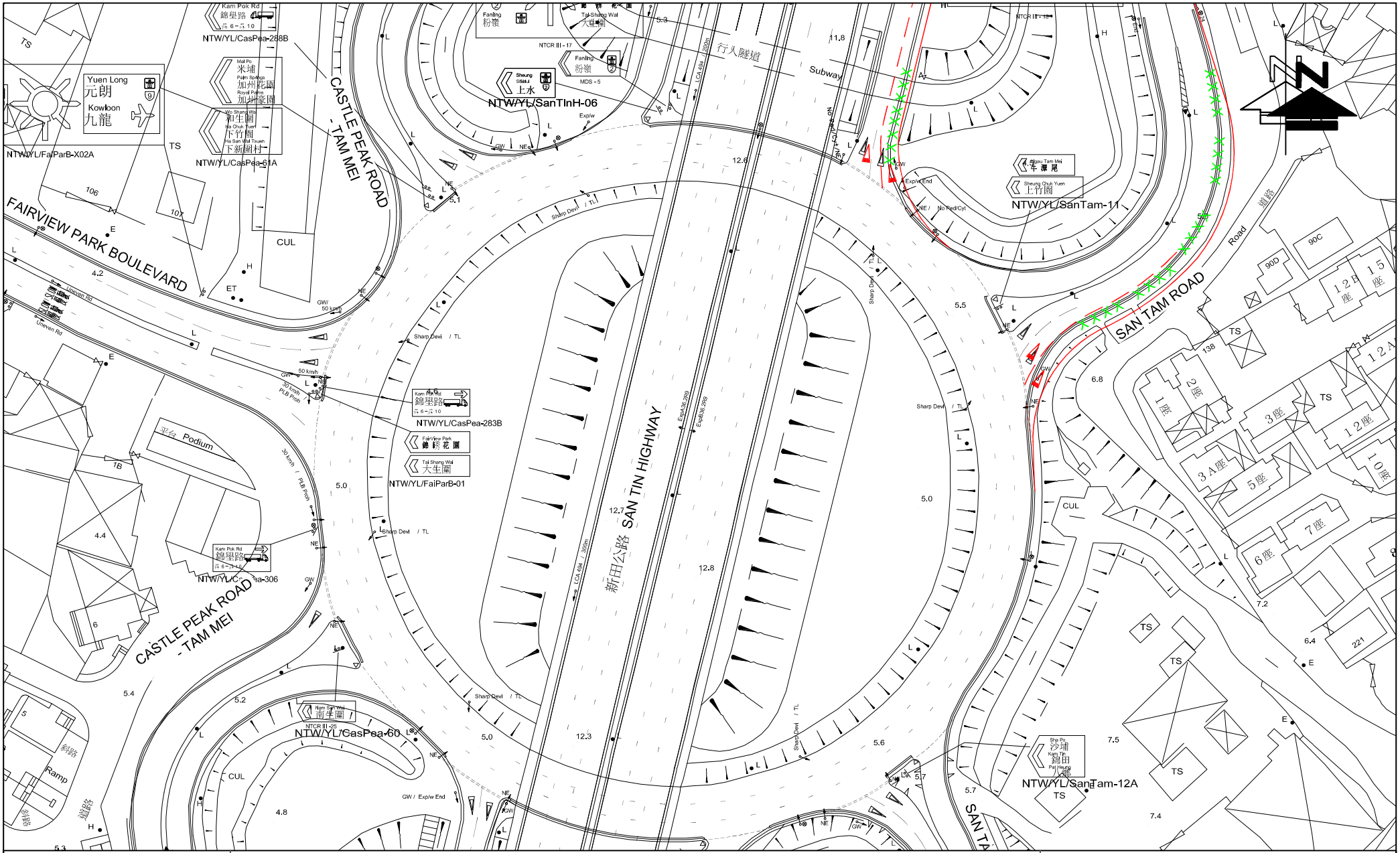


FIGURE NO.: RC-02	PROJECT TITLE: S12A Amendment of Plan Application, Approved Ngau Tam Mei Outline Zoning Plan No. S/YL-NTM/12 Proposed Rezoning from "R(C)" to "G/IC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Lot 4823 in DD 104, 81 San Tam Road, San Tin, N.T.
PROJECT NO.: 22069HK	DRAWING TITLE: PROPOSED IMPROVEMENT JUNCTION LAYOUT OF FAIRVIEW PARK INTERCHANGE (F) UNDER PLANNING APPLICATION NO.A/YL-NSW/241
SCALE: 1 : 1000 @A4 / DATE: 28 DEC 2022	CTA Consultants Limited 志達顧問有限公司

Appendix 1

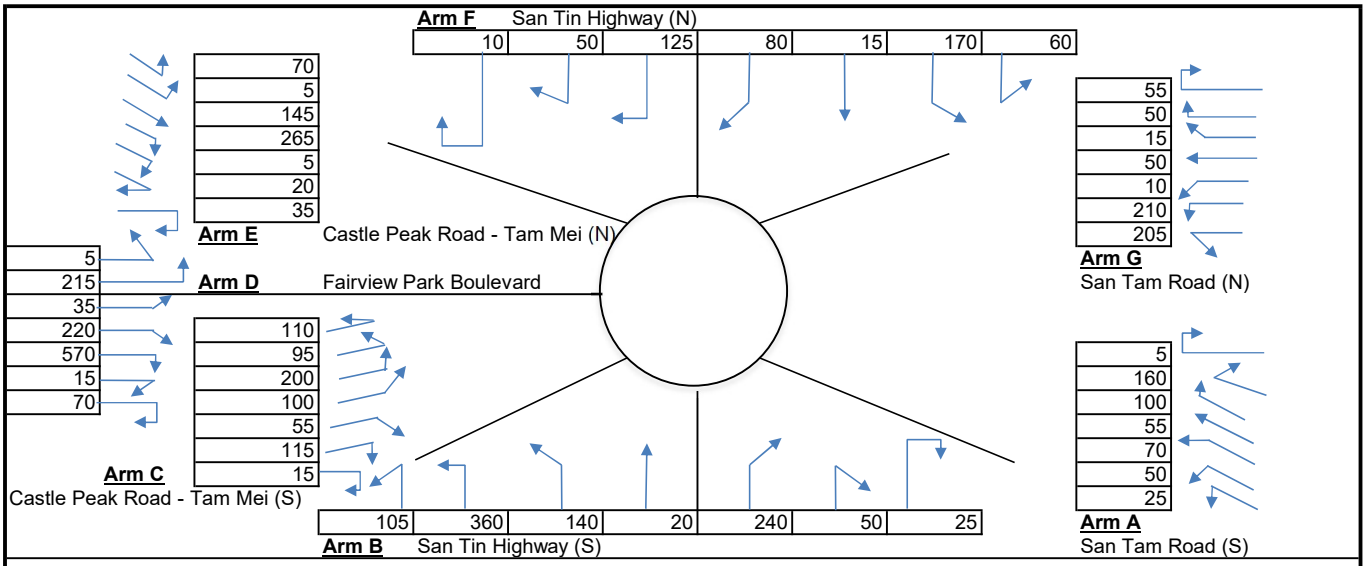
Junction Calculation Sheets

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : OBSERVED CASE

Scenario : AM PEAK Date : 2021



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	465	940	690	1130	545	510	595
Qc	=	Circulating flow across entry (pcu/hr)	1805	1045	1705	1590	2325	2205	2060

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	1006.66	1521.40	866.28	1535.22	728.46	942.22	959.36
DFC	=	Entry Flow/Capacity = Q/Qe	0.46	0.62	0.80	0.74	0.75	0.54	0.62

DFC of Critical Approach = 0.80

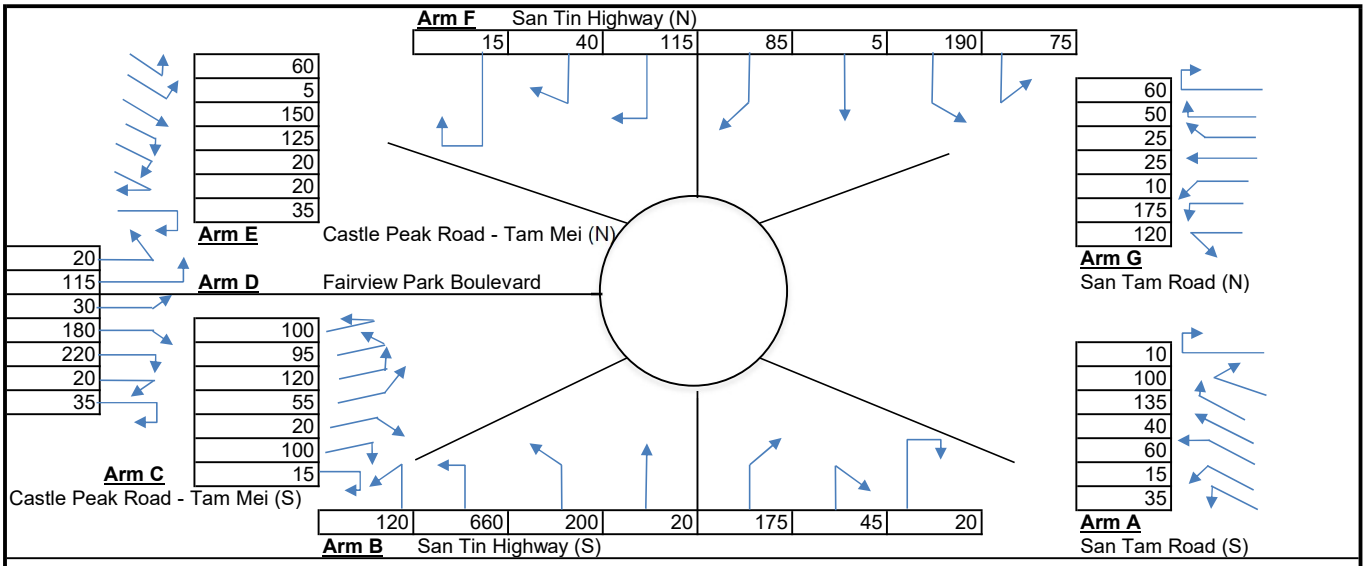
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : OBSERVED CASE

Scenario : PM PEAK Date : 2022



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	395	1240	505	620	415	525	465
Qc	=	Circulating flow across entry (pcu/hr)	1215	930	1885	1375	1540	1440	1465

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	1270.29	1574.58	791.41	1646.82	1071.86	1307.48	1228.67
DFC	=	Entry Flow/Capacity = Q/Qe	0.31	0.79	0.64	0.38	0.39	0.40	0.38

DFC of Critical Approach = 0.79

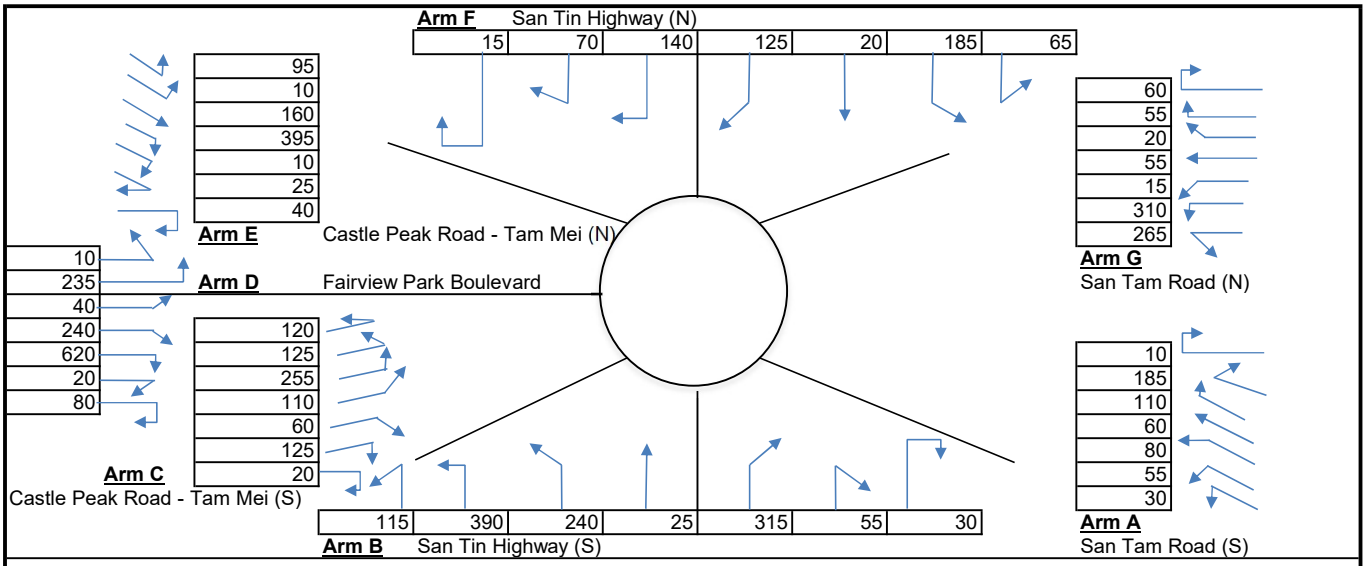
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : REFERENCE CASE

Scenario : AM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	530	1170	815	1245	735	620	780
Qc	=	Circulating flow across entry (pcu/hr)	2250	1250	2060	1985	2665	2610	2445

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	807.82	1426.60	718.63	1330.18	579.72	748.85	785.10
DFC	=	Entry Flow/Capacity = Q/Qe	0.66	0.82	1.13	0.94	1.27	0.83	0.99

DFC of Critical Approach = 1.27

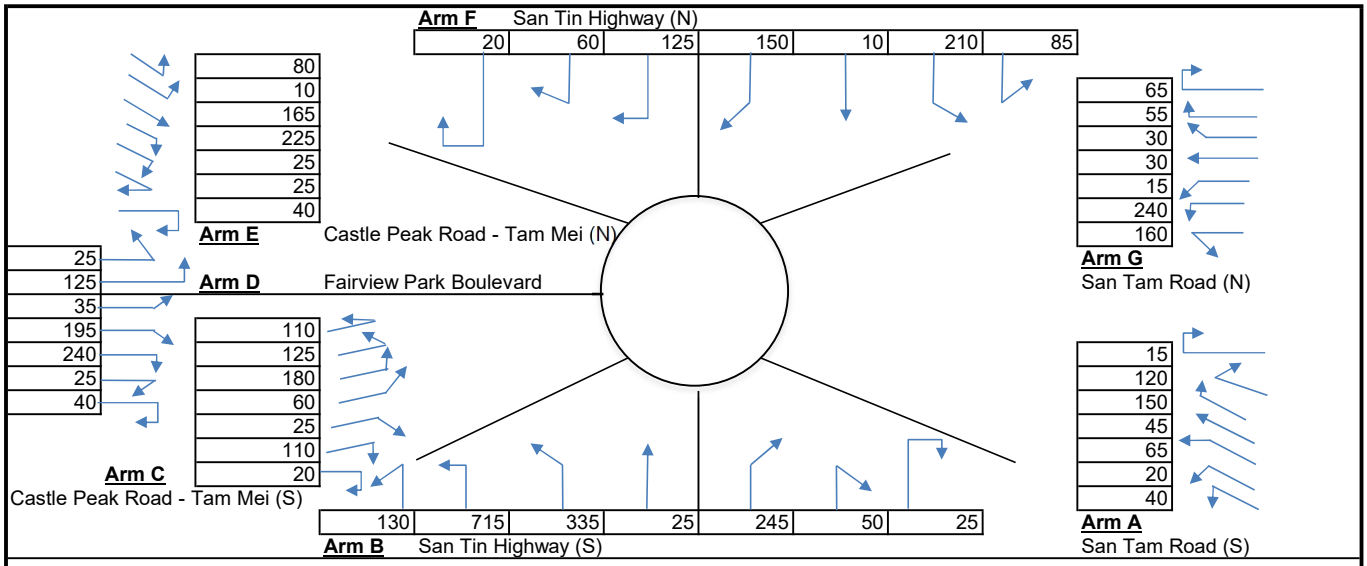
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : REFERENCE CASE

Scenario : PM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	455	1525	630	685	570	660	595
Qc	=	Circulating flow across entry (pcu/hr)	1575	1140	2280	1800	1825	1760	1800

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	1109.43	1477.47	627.12	1426.21	947.18	1154.69	1077.04
DFC	=	Entry Flow/Capacity = Q/Qe	0.41	1.03	1.00	0.48	0.60	0.57	0.55

DFC of Critical Approach = 1.03

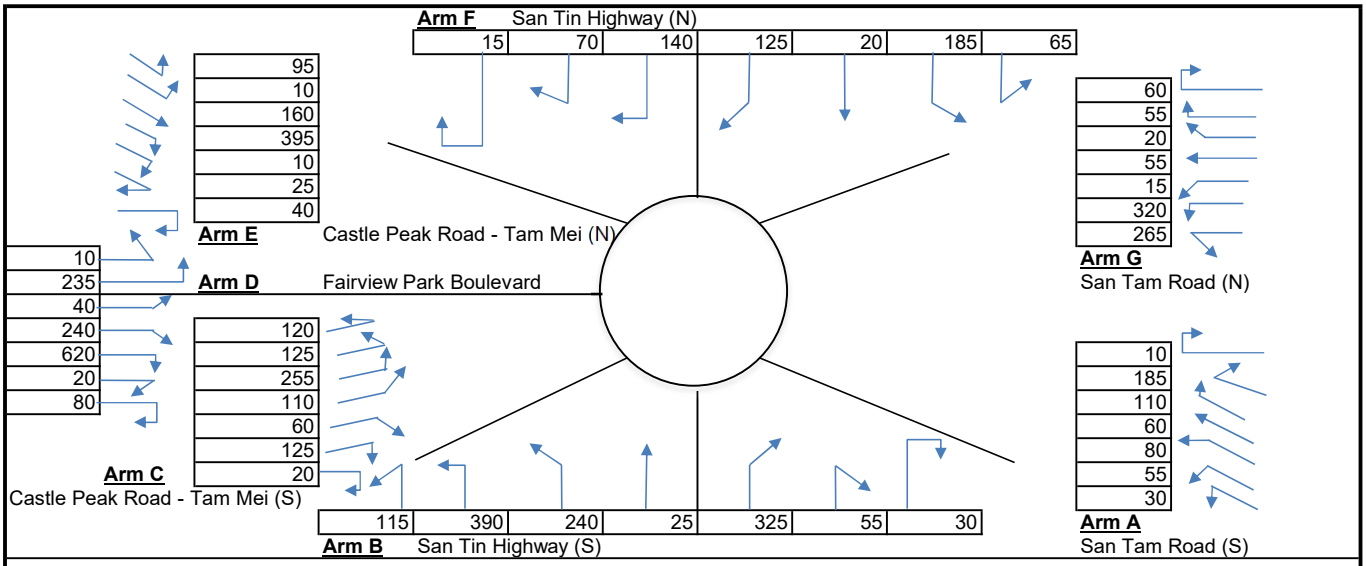
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : DESIGN CASE

Scenario : AM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	530	1180	815	1245	735	620	790
Qc	=	Circulating flow across entry (pcu/hr)	2260	1250	2070	1995	2675	2620	2445

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	803.35	1426.60	714.47	1324.99	575.35	744.07	785.10
DFC	=	Entry Flow/Capacity = Q/Qe	0.66	0.83	1.14	0.94	1.28	0.83	1.01

DFC of Critical Approach = 1.28

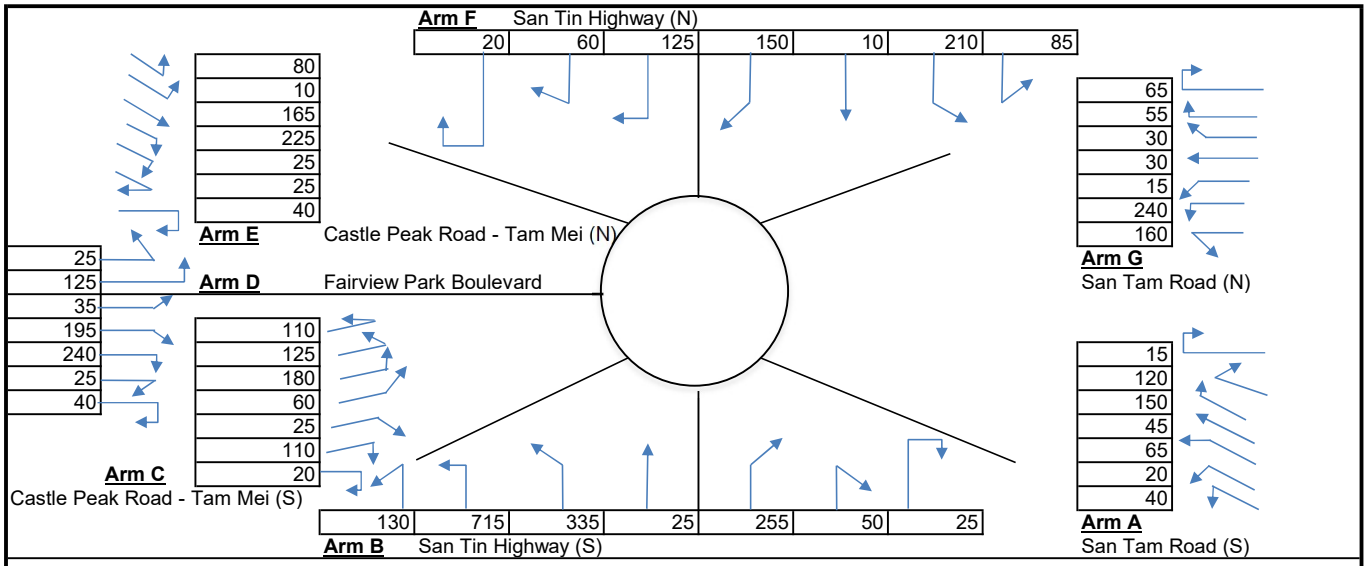
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Design Year : DESIGN CASE

Scenario : PM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	6.3	5.5
E	=	Entry width (m)	7.8	9	5.8	10	10	7.3	8
L	=	Effective length of flare (m)	5	10	5	10	5	4.5	10
R	=	Entry radius	20	20	25	20	20	18	20
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	41	57
Q	=	Entry flow (pcu/hr)	455	1535	630	685	570	660	595
Qc	=	Circulating flow across entry (pcu/hr)	1575	1140	2290	1810	1835	1770	1800

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.36	0.40
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	0.96	0.91
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	6.88	6.89
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2085.98	2087.33
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.50	0.50
Qe	=	Capacity = K*(F-Fc*Qc)	1109.43	1477.47	622.96	1421.02	942.81	1149.92	1077.04
DFC	=	Entry Flow/Capacity = Q/Qe	0.41	1.04	1.01	0.48	0.60	0.57	0.55

DFC of Critical Approach = 1.04

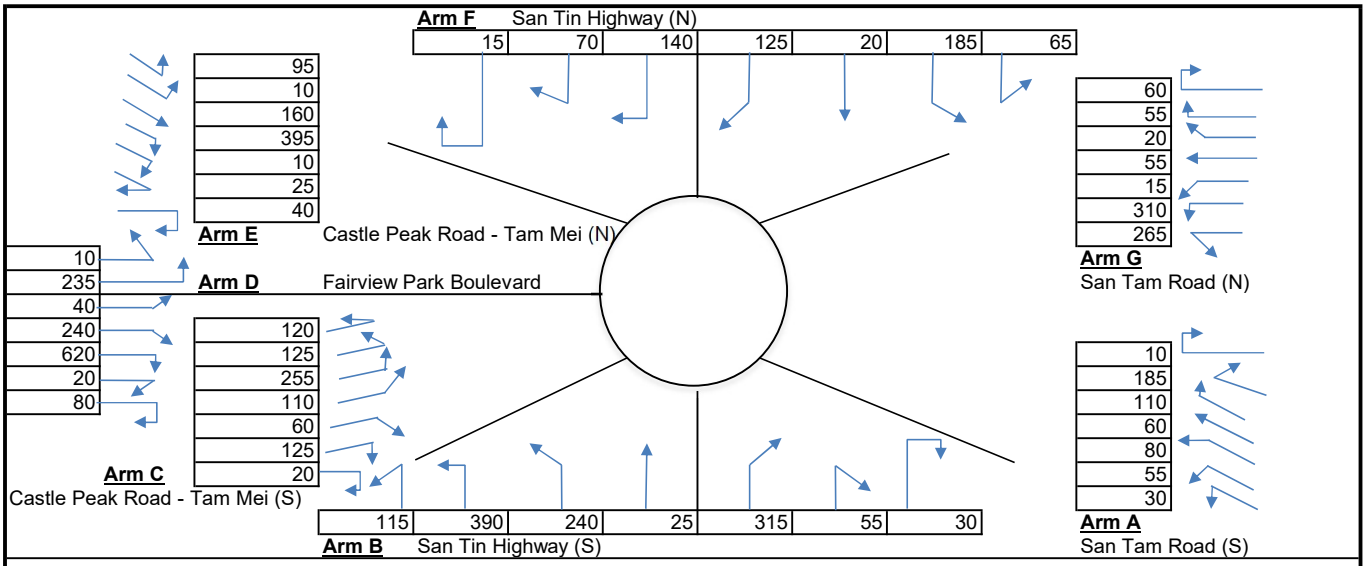
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Reference Year : REFERENCE CASE (WITH IMPROVEMENT)

Scenario : AM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	7.3	7.3
E	=	Entry width (m)	7.8	9	5.8	10	10	11	11
L	=	Effective length of flare (m)	5	10	5	10	5	20	20
R	=	Entry radius	20	20	25	20	20	25	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	25	35
Q	=	Entry flow (pcu/hr)	530	1170	815	1245	735	620	780
Qc	=	Circulating flow across entry (pcu/hr)	2250	1250	2060	1985	2665	2610	2445

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.30	0.30
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	1.03	0.99
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	9.62	9.62
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2916.11	2916.11
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.61	0.61
Qe	=	Capacity = K*(F-Fc*Qc)	807.82	1426.60	718.63	1330.18	579.72	1348.36	1403.40
DFC	=	Entry Flow/Capacity = Q/Qe	0.66	0.82	1.13	0.94	1.27	0.46	0.56

DFC of Critical Approach = 1.27

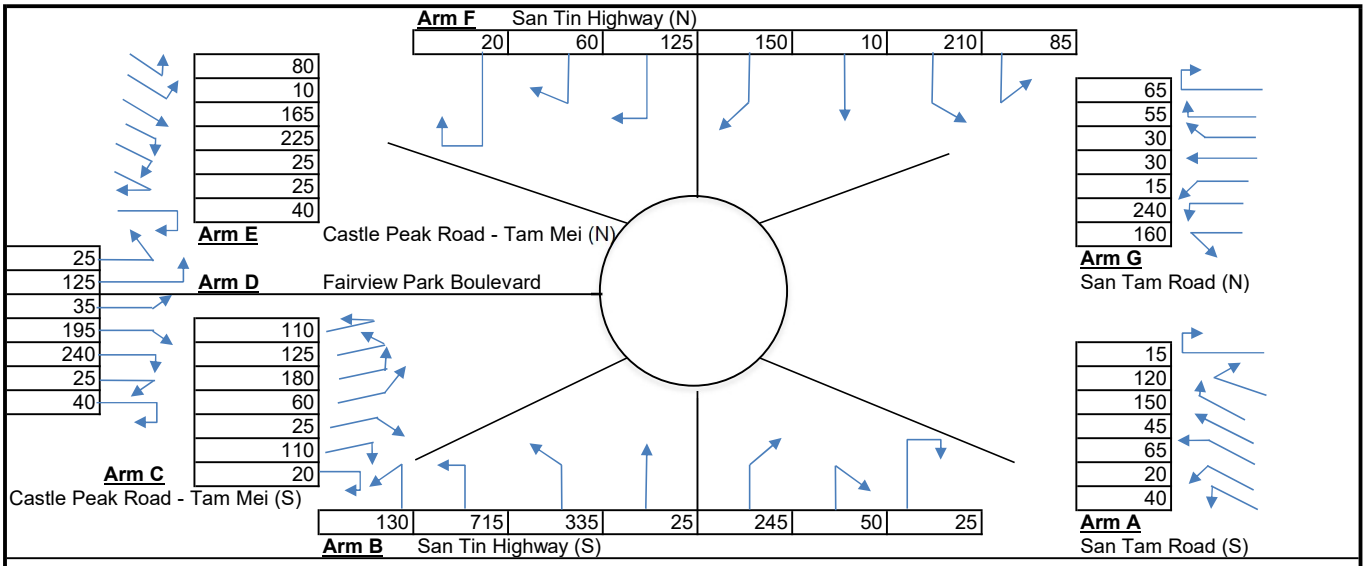
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Reference Year : REFERENCE CASE (WITH IMPROVEMENT)

Scenario : PM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	7.3	7.3
E	=	Entry width (m)	7.8	9	5.8	10	10	11	11
L	=	Effective length of flare (m)	5	10	5	10	5	20	20
R	=	Entry radius	20	20	25	20	20	25	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	25	35
Q	=	Entry flow (pcu/hr)	455	1525	630	685	570	660	595
Qc	=	Circulating flow across entry (pcu/hr)	1575	1140	2280	1800	1825	1760	1800

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.30	0.30
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	1.03	0.99
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	9.62	9.62
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2916.11	2916.11
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.61	0.61
Qe	=	Capacity = K*(F-Fc*Qc)	1109.43	1477.47	627.12	1426.21	947.18	1884.69	1796.64
DFC	=	Entry Flow/Capacity = Q/Qe	0.41	1.03	1.00	0.48	0.60	0.35	0.33

DFC of Critical Approach = 1.03

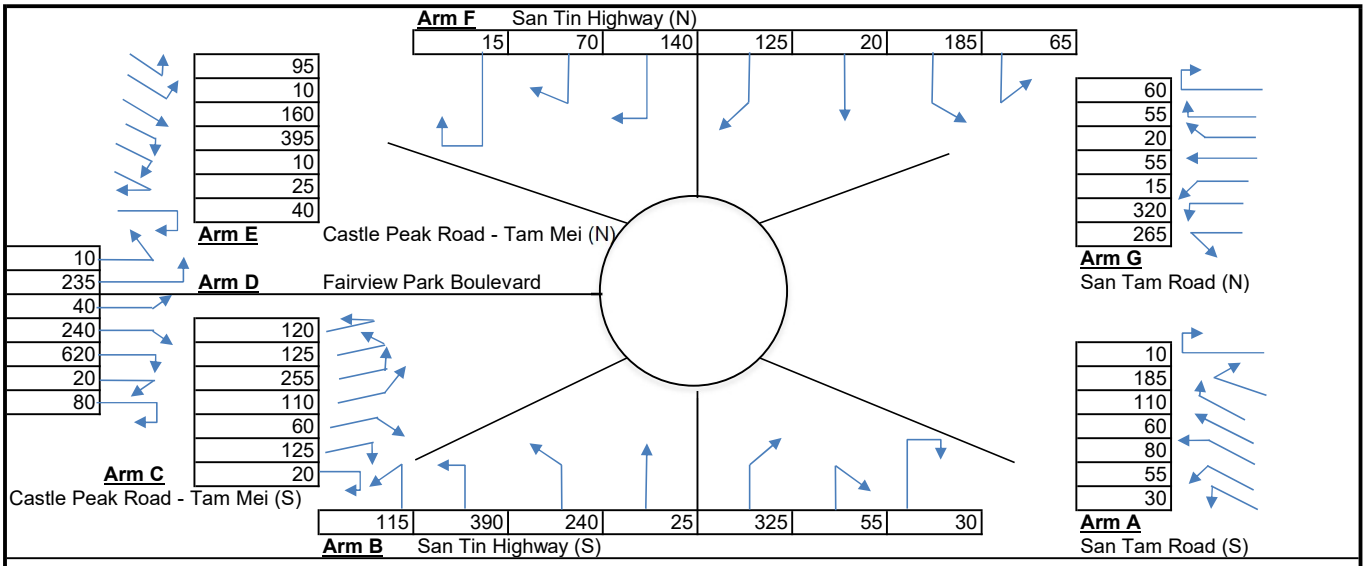
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Reference Year : DESIGN CASE (WITH IMPROVEMENT)

Scenario : AM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	7.3	7.3
E	=	Entry width (m)	7.8	9	5.8	10	10	11	11
L	=	Effective length of flare (m)	5	10	5	10	5	20	20
R	=	Entry radius	20	20	25	20	20	25	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	25	35
Q	=	Entry flow (pcu/hr)	530	1180	815	1245	735	620	790
Qc	=	Circulating flow across entry (pcu/hr)	2260	1250	2070	1995	2675	2620	2445

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.30	0.30
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	1.03	0.99
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	9.62	9.62
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2916.11	2916.11
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.61	0.61
Qe	=	Capacity = K*(F-Fc*Qc)	803.35	1426.60	714.47	1324.99	575.35	1342.05	1403.40
DFC	=	Entry Flow/Capacity = Q/Qe	0.66	0.83	1.14	0.94	1.28	0.46	0.56

DFC of Critical Approach = 1.28

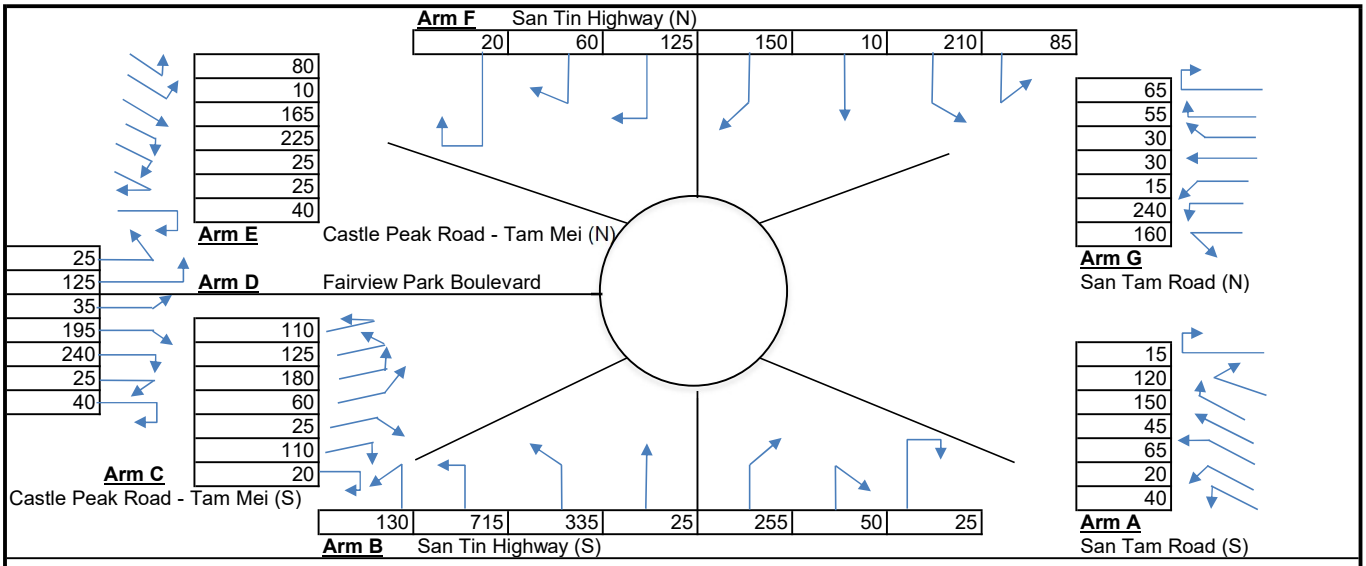
CTA

Roundabout Junction Calculation

Roundabout Junction: (F) Fairview Park Interchange

Reference Year : DESIGN CASE (WITH IMPROVEMENT)

Scenario : PM PEAK Date : 2030



Input Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
V	=	Approach half width (m)	5.5	6	5	7	5	7.3	7.3
E	=	Entry width (m)	7.8	9	5.8	10	10	11	11
L	=	Effective length of flare (m)	5	10	5	10	5	20	20
R	=	Entry radius	20	20	25	20	20	25	25
D	=	Inscribed circle diameter (m)	140	140	140	140	140	140	140
A	=	Entry angle (degree)	50	65	50	55	50	25	35
Q	=	Entry flow (pcu/hr)	455	1535	630	685	570	660	595
Qc	=	Circulating flow across entry (pcu/hr)	1575	1140	2290	1810	1835	1770	1800

Output Parameters			Arm A	Arm B	Arm C	Arm D	Arm E	Arm F	Arm G
S	=	Sharepness of flare = 1.6*(E-V)/L	0.74	0.48	0.26	0.48	1.60	0.30	0.30
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.93	0.88	0.94	0.91	0.93	1.03	0.99
X_2	=	V+((E-V)/(1+2*S))	6.43	7.53	5.53	8.53	6.19	9.62	9.62
M	=	Exp((D-60)/10)	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96	2980.96
F	=	303*X_2	1948.42	2281.78	1675.32	2584.78	1875.71	2916.11	2916.11
Td	=	1+(0.5/(1+M))	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fc	=	0.21*Td*(1+0.2*X_2)	0.48	0.53	0.44	0.57	0.47	0.61	0.61
Qe	=	Capacity = K*(F-Fc*Qc)	1109.43	1477.47	622.96	1421.02	942.81	1878.38	1796.64
DFC	=	Entry Flow/Capacity = Q/Qe	0.41	1.04	1.01	0.48	0.60	0.35	0.33

DFC of Critical Approach = 1.04

CTA

Junctions 8

PICADY 8 - Priority Intersection Module

Version: 8.0.5.523 [19102,19/06/2015]

Filename: Junction 8 .arc8
Path: \\CTA_NAS01\Project\CTA Consultants Limited\CTA - Project\22069HK (ykl) - Prop Rezoning for Prop RCHE at 81 San Tam Rd, San Tin\Calculation
Report generation date: 28/12/2022 14:30:42

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2022 Observed							
Junction A - Stream B-AC	0.25	7.82	0.20	A	0.28	7.32	0.22	A
Junction A - Stream C-A	-	-	-	-	-	-	-	-
Junction A - Stream C-B	0.04	7.28	0.04	A	0.07	7.94	0.07	A
Junction A - Stream A-B	-	-	-	-	-	-	-	-
Junction A - Stream A-C	-	-	-	-	-	-	-	-
Junction B - Stream B-AC	0.03	5.35	0.03	A	0.03	5.51	0.02	A
Junction B - Stream C-A	-	-	-	-	-	-	-	-
Junction B - Stream C-B	0.02	6.72	0.02	A	0.03	6.85	0.03	A
Junction B - Stream A-B	-	-	-	-	-	-	-	-
Junction B - Stream A-C	-	-	-	-	-	-	-	-
Junction C - Stream B-AC	0.34	7.07	0.26	A	0.33	6.78	0.25	A
Junction C - Stream C-A	-	-	-	-	-	-	-	-
Junction C - Stream C-B	0.48	9.97	0.33	A	0.60	10.71	0.38	B
Junction C - Stream A-B	-	-	-	-	-	-	-	-
Junction C - Stream A-C	-	-	-	-	-	-	-	-
Junction D - Stream B-AC	0.10	7.08	0.09	A	0.07	7.57	0.06	A
Junction D - Stream C-A	-	-	-	-	-	-	-	-
Junction D - Stream C-B	0.09	7.77	0.09	A	0.08	7.62	0.08	A
Junction D - Stream A-B	-	-	-	-	-	-	-	-
Junction D - Stream A-C	-	-	-	-	-	-	-	-
Junction E - Stream B-AC	0.54	9.08	0.35	A	0.58	8.68	0.37	A
Junction E - Stream C-A	-	-	-	-	-	-	-	-
Junction E - Stream C-B	1.25	16.38	0.56	C	0.76	12.49	0.43	B
Junction E - Stream A-B	-	-	-	-	-	-	-	-
Junction E - Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2030 Design							
Junction A - Stream B-AC	0.42	9.51	0.30	A	0.40	8.73	0.29	A

Junction A - Stream C-A	-	-	-	-	-	-	-	-
Junction A - Stream C-B	0.09	8.10	0.08	A	0.12	8.92	0.11	A
Junction A - Stream A-B	-	-	-	-	-	-	-	-
Junction A - Stream A-C	-	-	-	-	-	-	-	-
Junction B - Stream B-AC	0.03	5.48	0.03	A	0.03	5.65	0.03	A
Junction B - Stream C-A	-	-	-	-	-	-	-	-
Junction B - Stream C-B	0.02	6.85	0.02	A	0.04	7.06	0.04	A
Junction B - Stream A-B	-	-	-	-	-	-	-	-
Junction B - Stream A-C	-	-	-	-	-	-	-	-
Junction C - Stream B-AC	0.39	7.50	0.28	A	0.37	7.15	0.27	A
Junction C - Stream C-A	-	-	-	-	-	-	-	-
Junction C - Stream C-B	0.55	10.64	0.36	B	0.71	11.70	0.42	B
Junction C - Stream A-B	-	-	-	-	-	-	-	-
Junction C - Stream A-C	-	-	-	-	-	-	-	-
Junction D - Stream B-AC	0.19	7.78	0.16	A	0.11	7.74	0.10	A
Junction D - Stream C-A	-	-	-	-	-	-	-	-
Junction D - Stream C-B	0.11	8.14	0.10	A	0.08	7.84	0.08	A
Junction D - Stream A-B	-	-	-	-	-	-	-	-
Junction D - Stream A-C	-	-	-	-	-	-	-	-
Junction E - Stream B-AC	0.71	10.91	0.42	B	0.68	9.61	0.41	A
Junction E - Stream C-A	-	-	-	-	-	-	-	-
Junction E - Stream C-B	1.68	20.48	0.63	C	0.91	14.09	0.48	B
Junction E - Stream A-B	-	-	-	-	-	-	-	-
Junction E - Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2030 Reference							
Junction A - Stream B-AC	0.40	9.47	0.29	A	0.40	8.73	0.29	A
Junction A - Stream C-A	-	-	-	-	-	-	-	-
Junction A - Stream C-B	0.09	8.10	0.08	A	0.12	8.92	0.11	A
Junction A - Stream A-B	-	-	-	-	-	-	-	-
Junction A - Stream A-C	-	-	-	-	-	-	-	-
Junction B - Stream B-AC	0.03	5.48	0.03	A	0.03	5.65	0.03	A
Junction B - Stream C-A	-	-	-	-	-	-	-	-
Junction B - Stream C-B	0.02	6.85	0.02	A	0.04	7.06	0.04	A
Junction B - Stream A-B	-	-	-	-	-	-	-	-
Junction B - Stream A-C	-	-	-	-	-	-	-	-
Junction C - Stream B-AC	0.39	7.47	0.28	A	0.37	7.12	0.27	A
Junction C - Stream C-A	-	-	-	-	-	-	-	-
Junction C - Stream C-B	0.55	10.60	0.36	B	0.71	11.65	0.42	B
Junction C - Stream A-B	-	-	-	-	-	-	-	-
Junction C - Stream A-C	-	-	-	-	-	-	-	-
Junction D - Stream B-AC	0.19	7.76	0.16	A	0.11	7.74	0.10	A
Junction D - Stream C-A	-	-	-	-	-	-	-	-
Junction D - Stream C-B	0.11	8.12	0.10	A	0.08	7.84	0.08	A
Junction D - Stream A-B	-	-	-	-	-	-	-	-
Junction D - Stream A-C	-	-	-	-	-	-	-	-
Junction E - Stream B-AC	0.70	10.83	0.42	B	0.68	9.56	0.41	A
Junction E - Stream C-A	-	-	-	-	-	-	-	-
Junction E - Stream C-B	1.67	20.34	0.63	C	0.91	14.03	0.48	B
Junction E - Stream A-B	-	-	-	-	-	-	-	-
Junction E - Stream A-C	-	-	-	-	-	-	-	-

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2030 Design, AM " model duration: 8:00 - 9:30
"D9 - 2030 Design, PM" model duration: 8:00 - 9:30
"D10 - 2022 Observed, AM" model duration: 8:00 - 9:30
"D11 - 2022 Observed, PM" model duration: 8:00 - 9:30
"D12 - 2030 Reference, AM" model duration: 8:00 - 9:30
"D13 - 2030 Reference, PM" model duration: 8:00 - 9:30

Run using Junctions 8.0.5.523 at 28/12/2022 14:30:30

File summary

Title	(untitled)
Location	
Site Number	
Date	21/6/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	user
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

(Default Analysis Set) - 2030 Design, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 Design, AM	2030 Design	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	9.24	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	5.94	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	9.07	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.91	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	16.28	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	410.00	100.000
A	B	ONE HOUR	✓	145.00	100.000
A	C	ONE HOUR	✓	390.00	100.000
B	A	ONE HOUR	✓	160.00	100.000
B	B	ONE HOUR	✓	20.00	100.000
B	C	ONE HOUR	✓	120.00	100.000
C	A	ONE HOUR	✓	205.00	100.000
C	B	ONE HOUR	✓	170.00	100.000
C	C	ONE HOUR	✓	315.00	100.000
D	A	ONE HOUR	✓	345.00	100.000
D	B	ONE HOUR	✓	80.00	100.000
D	C	ONE HOUR	✓	355.00	100.000
E	A	ONE HOUR	✓	410.00	100.000
E	B	ONE HOUR	✓	215.00	100.000
E	C	ONE HOUR	✓	595.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	80.000	330.000
	B	70.000	0.000	75.000
	C	355.000	35.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.20	0.80
	B	0.48	0.00	0.52
	C	0.91	0.09	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	155.000
	B	5.000	0.000	15.000
	C	110.000	10.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.97
	B	0.25	0.00	0.75
	C	0.92	0.08	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	15.000	190.000
	B	25.000	0.000	145.000
	C	145.000	170.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.07	0.93
	B	0.15	0.00	0.85
	C	0.46	0.54	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	390.000
	B	30.000	0.000	185.000
	C	320.000	275.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.05	0.95
	B	0.14	0.00	0.86
	C	0.54	0.46	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	340.000
	B	5.000	0.000	75.000
	C	310.000	45.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.06	0.00	0.94
	C	0.87	0.13	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.30	9.51	0.42	A
A	C-A	-	-	-	-
A	C-B	0.08	8.10	0.09	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.03	5.48	0.03	A
B	C-A	-	-	-	-
B	C-B	0.02	6.85	0.02	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.28	7.50	0.39	A
C	C-A	-	-	-	-
C	C-B	0.36	10.64	0.55	B
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.16	7.78	0.19	A
D	C-A	-	-	-	-
D	C-B	0.10	8.14	0.11	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.42	10.91	0.71	B
E	C-A	-	-	-	-
E	C-B	0.63	20.48	1.68	C
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	109.16	108.26	0.00	589.85	0.185	0.22	7.461	A
A	C-A	267.26	267.26	0.00	-	-	-	-	-
A	C-B	26.35	26.13	0.00	511.89	0.051	0.05	7.407	A
A	A-B	60.23	60.23	0.00	-	-	-	-	-
A	A-C	248.44	248.44	0.00	-	-	-	-	-
B	B-AC	15.06	14.97	0.00	697.36	0.022	0.02	5.275	A
B	C-A	82.81	82.81	0.00	-	-	-	-	-
B	C-B	7.53	7.47	0.00	548.22	0.014	0.01	6.657	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	116.69	116.69	0.00	-	-	-	-	-
C	B-AC	127.98	127.09	0.00	696.96	0.184	0.22	6.309	A
C	C-A	109.16	109.16	0.00	-	-	-	-	-
C	C-B	127.98	126.76	0.00	540.84	0.237	0.31	8.670	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	143.04	143.04	0.00	-	-	-	-	-
D	B-AC	60.23	59.77	0.00	583.27	0.103	0.11	6.871	A
D	C-A	233.38	233.38	0.00	-	-	-	-	-
D	C-B	33.88	33.60	0.00	517.84	0.065	0.07	7.431	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	255.97	255.97	0.00	-	-	-	-	-
E	B-AC	161.86	160.50	0.00	630.64	0.257	0.34	7.636	A
E	C-A	240.91	240.91	0.00	-	-	-	-	-
E	C-B	207.03	204.35	0.00	508.31	0.407	0.67	11.753	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	293.61	293.61	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	130.35	130.07	0.00	568.26	0.229	0.29	8.211	A
A	C-A	319.14	319.14	0.00	-	-	-	-	-
A	C-B	31.46	31.41	0.00	499.84	0.063	0.07	7.684	A
A	A-B	71.92	71.92	0.00	-	-	-	-	-
A	A-C	296.66	296.66	0.00	-	-	-	-	-
B	B-AC	17.98	17.96	0.00	689.42	0.026	0.03	5.361	A
B	C-A	98.89	98.89	0.00	-	-	-	-	-
B	C-B	8.99	8.98	0.00	543.23	0.017	0.02	6.737	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	139.34	139.34	0.00	-	-	-	-	-
C	B-AC	152.83	152.58	0.00	684.56	0.223	0.28	6.764	A
C	C-A	130.35	130.35	0.00	-	-	-	-	-
C	C-B	152.83	152.47	0.00	534.41	0.286	0.39	9.417	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	170.81	170.81	0.00	-	-	-	-	-
D	B-AC	71.92	71.80	0.00	569.62	0.126	0.14	7.229	A
D	C-A	278.68	278.68	0.00	-	-	-	-	-
D	C-B	40.45	40.39	0.00	506.94	0.080	0.09	7.715	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	305.65	305.65	0.00	-	-	-	-	-
E	B-AC	193.28	192.79	0.00	604.85	0.320	0.46	8.726	A
E	C-A	287.67	287.67	0.00	-	-	-	-	-
E	C-B	247.22	246.04	0.00	495.56	0.499	0.97	14.356	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	350.60	350.60	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	159.65	159.16	0.00	538.05	0.297	0.42	9.489	A
A	C-A	390.86	390.86	0.00	-	-	-	-	-
A	C-B	38.54	38.46	0.00	483.18	0.080	0.09	8.094	A
A	A-B	88.08	88.08	0.00	-	-	-	-	-
A	A-C	363.34	363.34	0.00	-	-	-	-	-
B	B-AC	22.02	21.99	0.00	678.43	0.032	0.03	5.483	A
B	C-A	121.11	121.11	0.00	-	-	-	-	-
B	C-B	11.01	10.99	0.00	536.32	0.021	0.02	6.852	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	170.66	170.66	0.00	-	-	-	-	-
C	B-AC	187.17	186.77	0.00	667.16	0.281	0.39	7.487	A
C	C-A	159.65	159.65	0.00	-	-	-	-	-
C	C-B	187.17	186.58	0.00	525.52	0.356	0.54	10.602	B
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	209.19	209.19	0.00	-	-	-	-	-
D	B-AC	88.08	87.90	0.00	550.61	0.160	0.19	7.774	A
D	C-A	341.32	341.32	0.00	-	-	-	-	-
D	C-B	49.55	49.45	0.00	491.88	0.101	0.11	8.135	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	374.35	374.35	0.00	-	-	-	-	-
E	B-AC	236.72	235.76	0.00	567.08	0.417	0.70	10.836	B
E	C-A	352.33	352.33	0.00	-	-	-	-	-
E	C-B	302.78	300.10	0.00	477.94	0.634	1.64	19.933	C
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	429.40	429.40	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	159.65	159.64	0.00	538.03	0.297	0.42	9.513	A
A	C-A	390.86	390.86	0.00	-	-	-	-	-
A	C-B	38.54	38.53	0.00	483.18	0.080	0.09	8.096	A
A	A-B	88.08	88.08	0.00	-	-	-	-	-
A	A-C	363.34	363.34	0.00	-	-	-	-	-
B	B-AC	22.02	22.02	0.00	678.42	0.032	0.03	5.483	A
B	C-A	121.11	121.11	0.00	-	-	-	-	-
B	C-B	11.01	11.01	0.00	536.32	0.021	0.02	6.852	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	170.66	170.66	0.00	-	-	-	-	-
C	B-AC	187.17	187.16	0.00	667.09	0.281	0.39	7.500	A
C	C-A	159.65	159.65	0.00	-	-	-	-	-
C	C-B	187.17	187.16	0.00	525.52	0.356	0.55	10.637	B
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	209.19	209.19	0.00	-	-	-	-	-
D	B-AC	88.08	88.08	0.00	550.61	0.160	0.19	7.783	A
D	C-A	341.32	341.32	0.00	-	-	-	-	-
D	C-B	49.55	49.54	0.00	491.88	0.101	0.11	8.138	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	374.35	374.35	0.00	-	-	-	-	-
E	B-AC	236.72	236.69	0.00	566.62	0.418	0.71	10.909	B
E	C-A	352.33	352.33	0.00	-	-	-	-	-
E	C-B	302.78	302.61	0.00	477.94	0.634	1.68	20.475	C
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	429.40	429.40	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	130.35	130.82	0.00	568.22	0.229	0.30	8.240	A
A	C-A	319.14	319.14	0.00	-	-	-	-	-
A	C-B	31.46	31.54	0.00	499.84	0.063	0.07	7.689	A
A	A-B	71.92	71.92	0.00	-	-	-	-	-
A	A-C	296.66	296.66	0.00	-	-	-	-	-
B	B-AC	17.98	18.01	0.00	689.42	0.026	0.03	5.363	A
B	C-A	98.89	98.89	0.00	-	-	-	-	-
B	C-B	8.99	9.01	0.00	543.23	0.017	0.02	6.738	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	139.34	139.34	0.00	-	-	-	-	-
C	B-AC	152.83	153.22	0.00	684.45	0.223	0.29	6.783	A
C	C-A	130.35	130.35	0.00	-	-	-	-	-
C	C-B	152.83	153.40	0.00	534.41	0.286	0.41	9.462	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	170.81	170.81	0.00	-	-	-	-	-
D	B-AC	71.92	72.09	0.00	569.61	0.126	0.15	7.240	A
D	C-A	278.68	278.68	0.00	-	-	-	-	-
D	C-B	40.45	40.55	0.00	506.94	0.080	0.09	7.720	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	305.65	305.65	0.00	-	-	-	-	-
E	B-AC	193.28	194.21	0.00	604.27	0.320	0.48	8.800	A
E	C-A	287.67	287.67	0.00	-	-	-	-	-
E	C-B	247.22	249.83	0.00	495.56	0.499	1.03	14.803	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	350.60	350.60	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	109.16	109.45	0.00	589.79	0.185	0.23	7.498	A
A	C-A	267.26	267.26	0.00	-	-	-	-	-
A	C-B	26.35	26.40	0.00	511.89	0.051	0.05	7.417	A
A	A-B	60.23	60.23	0.00	-	-	-	-	-
A	A-C	248.44	248.44	0.00	-	-	-	-	-
B	B-AC	15.06	15.08	0.00	697.35	0.022	0.02	5.278	A
B	C-A	82.81	82.81	0.00	-	-	-	-	-
B	C-B	7.53	7.54	0.00	548.22	0.014	0.01	6.660	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	116.69	116.69	0.00	-	-	-	-	-
C	B-AC	127.98	128.24	0.00	696.78	0.184	0.23	6.336	A
C	C-A	109.16	109.16	0.00	-	-	-	-	-
C	C-B	127.98	128.35	0.00	540.84	0.237	0.31	8.735	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	143.04	143.04	0.00	-	-	-	-	-
D	B-AC	60.23	60.35	0.00	583.25	0.103	0.12	6.888	A
D	C-A	233.38	233.38	0.00	-	-	-	-	-
D	C-B	33.88	33.95	0.00	517.84	0.065	0.07	7.442	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	255.97	255.97	0.00	-	-	-	-	-
E	B-AC	161.86	162.37	0.00	630.12	0.257	0.35	7.704	A
E	C-A	240.91	240.91	0.00	-	-	-	-	-
E	C-B	207.03	208.33	0.00	508.31	0.407	0.70	12.054	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	293.61	293.61	0.00	-	-	-	-	-

(Default Analysis Set) - 2030 Design, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 Design, PM	2030 Design	PM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	8.77	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	6.46	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	9.61	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.78	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	11.75	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	545.00	100.000
A	B	ONE HOUR	✓	150.00	100.000
A	C	ONE HOUR	✓	350.00	100.000
B	A	ONE HOUR	✓	180.00	100.000
B	B	ONE HOUR	✓	15.00	100.000
B	C	ONE HOUR	✓	125.00	100.000
C	A	ONE HOUR	✓	195.00	100.000
C	B	ONE HOUR	✓	170.00	100.000
C	C	ONE HOUR	✓	350.00	100.000
D	A	ONE HOUR	✓	320.00	100.000
D	B	ONE HOUR	✓	45.00	100.000
D	C	ONE HOUR	✓	375.00	100.000
E	A	ONE HOUR	✓	350.00	100.000
E	B	ONE HOUR	✓	235.00	100.000
E	C	ONE HOUR	✓	570.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	210.000	335.000
	B	40.000	0.000	110.000
	C	305.000	45.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.39	0.61
	B	0.27	0.00	0.73
	C	0.87	0.13	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	175.000
	B	5.000	0.000	10.000
	C	105.000	20.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.97
	B	0.33	0.00	0.67
	C	0.84	0.16	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	25.000	170.000
	B	15.000	0.000	155.000
	C	150.000	200.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.13	0.87
	B	0.09	0.00	0.91
	C	0.43	0.57	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	330.000
	B	15.000	0.000	220.000
	C	355.000	215.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.06	0.94
	B	0.06	0.00	0.94
	C	0.62	0.38	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	315.000
	B	10.000	0.000	35.000
	C	340.000	35.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.22	0.00	0.78
	C	0.91	0.09	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.29	8.73	0.40	A
A	C-A	-	-	-	-
A	C-B	0.11	8.92	0.12	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.03	5.65	0.03	A
B	C-A	-	-	-	-
B	C-B	0.04	7.06	0.04	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.27	7.15	0.37	A
C	C-A	-	-	-	-
C	C-B	0.42	11.70	0.71	B
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.10	7.74	0.11	A
D	C-A	-	-	-	-
D	C-B	0.08	7.84	0.08	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.41	9.61	0.68	A
E	C-A	-	-	-	-
E	C-B	0.48	14.09	0.91	B
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.93	112.06	0.00	628.50	0.180	0.22	6.959	A
A	C-A	229.62	229.62	0.00	-	-	-	-	-
A	C-B	33.88	33.58	0.00	491.45	0.069	0.07	7.858	A
A	A-B	158.10	158.10	0.00	-	-	-	-	-
A	A-C	252.21	252.21	0.00	-	-	-	-	-
B	B-AC	11.29	11.23	0.00	675.40	0.017	0.02	5.420	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	15.06	14.94	0.00	545.01	0.028	0.03	6.789	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	131.75	131.75	0.00	-	-	-	-	-
C	B-AC	127.98	127.12	0.00	716.67	0.179	0.22	6.097	A
C	C-A	112.93	112.93	0.00	-	-	-	-	-
C	C-B	150.57	149.05	0.00	542.45	0.278	0.38	9.117	A
C	A-B	18.82	18.82	0.00	-	-	-	-	-
C	A-C	127.98	127.98	0.00	-	-	-	-	-
D	B-AC	33.88	33.62	0.00	551.01	0.061	0.06	6.955	A
D	C-A	255.97	255.97	0.00	-	-	-	-	-
D	C-B	26.35	26.14	0.00	521.90	0.050	0.05	7.258	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	237.15	237.15	0.00	-	-	-	-	-
E	B-AC	176.92	175.52	0.00	676.73	0.261	0.35	7.162	A
E	C-A	267.26	267.26	0.00	-	-	-	-	-
E	C-B	161.86	160.07	0.00	517.91	0.313	0.45	10.011	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	248.44	248.44	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	134.85	134.58	0.00	607.22	0.222	0.28	7.614	A
A	C-A	274.19	274.19	0.00	-	-	-	-	-
A	C-B	40.45	40.38	0.00	475.44	0.085	0.09	8.274	A
A	A-B	188.79	188.79	0.00	-	-	-	-	-
A	A-C	301.16	301.16	0.00	-	-	-	-	-
B	B-AC	13.48	13.47	0.00	666.06	0.020	0.02	5.516	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	17.98	17.96	0.00	539.39	0.033	0.03	6.903	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	157.32	157.32	0.00	-	-	-	-	-
C	B-AC	152.83	152.59	0.00	705.96	0.216	0.27	6.502	A
C	C-A	134.85	134.85	0.00	-	-	-	-	-
C	C-B	179.80	179.33	0.00	536.34	0.335	0.50	10.070	B
C	A-B	22.47	22.47	0.00	-	-	-	-	-
C	A-C	152.83	152.83	0.00	-	-	-	-	-
D	B-AC	40.45	40.39	0.00	535.85	0.076	0.08	7.266	A
D	C-A	305.65	305.65	0.00	-	-	-	-	-
D	C-B	31.46	31.42	0.00	511.80	0.061	0.06	7.493	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	283.18	283.18	0.00	-	-	-	-	-
E	B-AC	211.26	210.80	0.00	658.82	0.321	0.47	8.027	A
E	C-A	319.14	319.14	0.00	-	-	-	-	-
E	C-B	193.28	192.65	0.00	507.04	0.381	0.60	11.426	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	296.66	296.66	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	165.15	164.70	0.00	577.42	0.286	0.40	8.713	A
A	C-A	335.81	335.81	0.00	-	-	-	-	-
A	C-B	49.55	49.43	0.00	453.29	0.109	0.12	8.910	A
A	A-B	231.21	231.21	0.00	-	-	-	-	-
A	A-C	368.84	368.84	0.00	-	-	-	-	-
B	B-AC	16.52	16.49	0.00	653.13	0.025	0.03	5.654	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	22.02	21.99	0.00	531.62	0.041	0.04	7.063	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	192.68	192.68	0.00	-	-	-	-	-
C	B-AC	187.17	186.80	0.00	690.90	0.271	0.37	7.137	A
C	C-A	165.15	165.15	0.00	-	-	-	-	-
C	C-B	220.20	219.39	0.00	527.88	0.417	0.70	11.638	B
C	A-B	27.53	27.53	0.00	-	-	-	-	-
C	A-C	187.17	187.17	0.00	-	-	-	-	-
D	B-AC	49.55	49.45	0.00	514.58	0.096	0.11	7.738	A
D	C-A	374.35	374.35	0.00	-	-	-	-	-
D	C-B	38.54	38.46	0.00	497.83	0.077	0.08	7.836	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	346.82	346.82	0.00	-	-	-	-	-
E	B-AC	258.74	257.89	0.00	633.28	0.409	0.68	9.568	A
E	C-A	390.86	390.86	0.00	-	-	-	-	-
E	C-B	236.72	235.53	0.00	491.99	0.481	0.90	13.969	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	363.34	363.34	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	165.15	165.14	0.00	577.40	0.286	0.40	8.732	A
A	C-A	335.81	335.81	0.00	-	-	-	-	-
A	C-B	49.55	49.54	0.00	453.29	0.109	0.12	8.916	A
A	A-B	231.21	231.21	0.00	-	-	-	-	-
A	A-C	368.84	368.84	0.00	-	-	-	-	-
B	B-AC	16.52	16.51	0.00	653.12	0.025	0.03	5.654	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	22.02	22.02	0.00	531.62	0.041	0.04	7.063	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	192.68	192.68	0.00	-	-	-	-	-
C	B-AC	187.17	187.17	0.00	690.83	0.271	0.37	7.146	A
C	C-A	165.15	165.15	0.00	-	-	-	-	-
C	C-B	220.20	220.18	0.00	527.88	0.417	0.71	11.697	B
C	A-B	27.53	27.53	0.00	-	-	-	-	-
C	A-C	187.17	187.17	0.00	-	-	-	-	-
D	B-AC	49.55	49.54	0.00	514.56	0.096	0.11	7.741	A
D	C-A	374.35	374.35	0.00	-	-	-	-	-
D	C-B	38.54	38.53	0.00	497.83	0.077	0.08	7.837	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	346.82	346.82	0.00	-	-	-	-	-
E	B-AC	258.74	258.72	0.00	633.18	0.409	0.68	9.612	A
E	C-A	390.86	390.86	0.00	-	-	-	-	-
E	C-B	236.72	236.67	0.00	491.99	0.481	0.91	14.093	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	363.34	363.34	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	134.85	135.28	0.00	607.19	0.222	0.29	7.634	A
A	C-A	274.19	274.19	0.00	-	-	-	-	-
A	C-B	40.45	40.57	0.00	475.44	0.085	0.09	8.280	A
A	A-B	188.79	188.79	0.00	-	-	-	-	-
A	A-C	301.16	301.16	0.00	-	-	-	-	-
B	B-AC	13.48	13.50	0.00	666.05	0.020	0.02	5.516	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	17.98	18.01	0.00	539.39	0.033	0.03	6.907	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	157.32	157.32	0.00	-	-	-	-	-
C	B-AC	152.83	153.19	0.00	705.86	0.217	0.28	6.519	A
C	C-A	134.85	134.85	0.00	-	-	-	-	-
C	C-B	179.80	180.58	0.00	536.34	0.335	0.51	10.141	B
C	A-B	22.47	22.47	0.00	-	-	-	-	-
C	A-C	152.83	152.83	0.00	-	-	-	-	-
D	B-AC	40.45	40.55	0.00	535.83	0.076	0.08	7.269	A
D	C-A	305.65	305.65	0.00	-	-	-	-	-
D	C-B	31.46	31.53	0.00	511.80	0.061	0.07	7.496	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	283.18	283.18	0.00	-	-	-	-	-
E	B-AC	211.26	212.09	0.00	658.70	0.321	0.48	8.077	A
E	C-A	319.14	319.14	0.00	-	-	-	-	-
E	C-B	193.28	194.42	0.00	507.04	0.381	0.63	11.559	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	296.66	296.66	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.93	113.20	0.00	628.44	0.180	0.22	6.989	A
A	C-A	229.62	229.62	0.00	-	-	-	-	-
A	C-B	33.88	33.96	0.00	491.45	0.069	0.07	7.870	A
A	A-B	158.10	158.10	0.00	-	-	-	-	-
A	A-C	252.21	252.21	0.00	-	-	-	-	-
B	B-AC	11.29	11.31	0.00	675.38	0.017	0.02	5.422	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	15.06	15.08	0.00	545.01	0.028	0.03	6.795	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	131.75	131.75	0.00	-	-	-	-	-
C	B-AC	127.98	128.22	0.00	716.52	0.179	0.22	6.121	A
C	C-A	112.93	112.93	0.00	-	-	-	-	-
C	C-B	150.57	151.06	0.00	542.45	0.278	0.39	9.211	A
C	A-B	18.82	18.82	0.00	-	-	-	-	-
C	A-C	127.98	127.98	0.00	-	-	-	-	-
D	B-AC	33.88	33.94	0.00	550.97	0.061	0.07	6.965	A
D	C-A	255.97	255.97	0.00	-	-	-	-	-
D	C-B	26.35	26.40	0.00	521.90	0.050	0.05	7.268	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	237.15	237.15	0.00	-	-	-	-	-
E	B-AC	176.92	177.40	0.00	676.58	0.261	0.36	7.218	A
E	C-A	267.26	267.26	0.00	-	-	-	-	-
E	C-B	161.86	162.53	0.00	517.91	0.313	0.46	10.148	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	248.44	248.44	0.00	-	-	-	-	-

(Default Analysis Set) - 2022 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2022 Observed, AM	2022 Observed	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	7.73	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	5.81	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	8.52	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.41	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	13.21	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	260.00	100.000
A	B	ONE HOUR	✓	105.00	100.000
A	C	ONE HOUR	✓	240.00	100.000
B	A	ONE HOUR	✓	115.00	100.000
B	B	ONE HOUR	✓	20.00	100.000
B	C	ONE HOUR	✓	95.00	100.000
C	A	ONE HOUR	✓	155.00	100.000
C	B	ONE HOUR	✓	160.00	100.000
C	C	ONE HOUR	✓	250.00	100.000
D	A	ONE HOUR	✓	280.00	100.000
D	B	ONE HOUR	✓	45.00	100.000
D	C	ONE HOUR	✓	290.00	100.000
E	A	ONE HOUR	✓	315.00	100.000
E	B	ONE HOUR	✓	195.00	100.000
E	C	ONE HOUR	✓	515.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	70.000	190.000
	B	65.000	0.000	40.000
	C	220.000	20.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.27	0.73
	B	0.62	0.00	0.38
	C	0.92	0.08	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	110.000
	B	5.000	0.000	15.000
	C	85.000	10.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.04	0.96
	B	0.25	0.00	0.75
	C	0.89	0.11	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	15.000	140.000
	B	25.000	0.000	135.000
	C	90.000	160.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.10	0.90
	B	0.16	0.00	0.84
	C	0.36	0.64	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	15.000	300.000
	B	25.000	0.000	170.000
	C	260.000	255.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.05	0.95
	B	0.13	0.00	0.87
	C	0.50	0.50	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	275.000
	B	5.000	0.000	40.000
	C	250.000	40.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.11	0.00	0.89
	C	0.86	0.14	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.20	7.82	0.25	A
A	C-A	-	-	-	-
A	C-B	0.04	7.28	0.04	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.03	5.35	0.03	A
B	C-A	-	-	-	-
B	C-B	0.02	6.72	0.02	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.26	7.07	0.34	A
C	C-A	-	-	-	-
C	C-B	0.33	9.97	0.48	A
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.09	7.08	0.10	A
D	C-A	-	-	-	-
D	C-B	0.09	7.77	0.09	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.35	9.08	0.54	A
E	C-A	-	-	-	-
E	C-B	0.56	16.38	1.25	C
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	79.05	78.46	0.00	607.95	0.130	0.15	6.792	A
A	C-A	165.63	165.63	0.00	-	-	-	-	-
A	C-B	15.06	14.94	0.00	534.60	0.028	0.03	6.925	A
A	A-B	52.70	52.70	0.00	-	-	-	-	-
A	A-C	143.04	143.04	0.00	-	-	-	-	-
B	B-AC	15.06	14.97	0.00	708.42	0.021	0.02	5.191	A
B	C-A	63.99	63.99	0.00	-	-	-	-	-
B	C-B	7.53	7.47	0.00	555.46	0.014	0.01	6.569	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	82.81	82.81	0.00	-	-	-	-	-
C	B-AC	120.46	119.64	0.00	708.25	0.170	0.20	6.107	A
C	C-A	67.76	67.76	0.00	-	-	-	-	-
C	C-B	120.46	119.35	0.00	548.92	0.219	0.28	8.359	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	105.40	105.40	0.00	-	-	-	-	-
D	B-AC	33.88	33.63	0.00	585.47	0.058	0.06	6.520	A
D	C-A	188.21	188.21	0.00	-	-	-	-	-
D	C-B	30.11	29.87	0.00	528.41	0.057	0.06	7.218	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	207.03	207.03	0.00	-	-	-	-	-
E	B-AC	146.81	145.67	0.00	659.37	0.223	0.28	6.992	A
E	C-A	195.74	195.74	0.00	-	-	-	-	-
E	C-B	191.98	189.70	0.00	523.52	0.367	0.57	10.710	B
E	A-B	11.29	11.29	0.00	-	-	-	-	-
E	A-C	225.86	225.86	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	94.39	94.24	0.00	594.52	0.159	0.19	7.194	A
A	C-A	197.78	197.78	0.00	-	-	-	-	-
A	C-B	17.98	17.95	0.00	526.96	0.034	0.04	7.072	A
A	A-B	62.93	62.93	0.00	-	-	-	-	-
A	A-C	170.81	170.81	0.00	-	-	-	-	-
B	B-AC	17.98	17.96	0.00	702.65	0.026	0.03	5.257	A
B	C-A	76.41	76.41	0.00	-	-	-	-	-
B	C-B	8.99	8.98	0.00	551.87	0.016	0.02	6.630	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	98.89	98.89	0.00	-	-	-	-	-
C	B-AC	143.84	143.62	0.00	698.57	0.206	0.26	6.482	A
C	C-A	80.91	80.91	0.00	-	-	-	-	-
C	C-B	143.84	143.53	0.00	544.05	0.264	0.35	8.980	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	125.86	125.86	0.00	-	-	-	-	-
D	B-AC	40.45	40.40	0.00	573.82	0.071	0.08	6.748	A
D	C-A	224.74	224.74	0.00	-	-	-	-	-
D	C-B	35.96	35.90	0.00	519.57	0.069	0.07	7.443	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	247.22	247.22	0.00	-	-	-	-	-
E	B-AC	175.30	174.94	0.00	639.78	0.274	0.37	7.732	A
E	C-A	233.73	233.73	0.00	-	-	-	-	-
E	C-B	229.24	228.36	0.00	513.73	0.446	0.79	12.574	B
E	A-B	13.48	13.48	0.00	-	-	-	-	-
E	A-C	269.69	269.69	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	115.61	115.36	0.00	575.89	0.201	0.25	7.813	A
A	C-A	242.22	242.22	0.00	-	-	-	-	-
A	C-B	22.02	21.98	0.00	516.40	0.043	0.04	7.281	A
A	A-B	77.07	77.07	0.00	-	-	-	-	-
A	A-C	209.19	209.19	0.00	-	-	-	-	-
B	B-AC	22.02	21.99	0.00	694.66	0.032	0.03	5.351	A
B	C-A	93.59	93.59	0.00	-	-	-	-	-
B	C-B	11.01	10.99	0.00	546.91	0.020	0.02	6.716	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	121.11	121.11	0.00	-	-	-	-	-
C	B-AC	176.16	175.82	0.00	685.07	0.257	0.34	7.064	A
C	C-A	99.09	99.09	0.00	-	-	-	-	-
C	C-B	176.16	175.66	0.00	537.33	0.328	0.48	9.939	A
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	154.14	154.14	0.00	-	-	-	-	-
D	B-AC	49.55	49.46	0.00	557.61	0.089	0.10	7.084	A
D	C-A	275.26	275.26	0.00	-	-	-	-	-
D	C-B	44.04	43.96	0.00	507.34	0.087	0.09	7.768	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	302.78	302.78	0.00	-	-	-	-	-
E	B-AC	214.70	214.06	0.00	611.59	0.351	0.53	9.041	A
E	C-A	286.27	286.27	0.00	-	-	-	-	-
E	C-B	280.76	278.98	0.00	500.19	0.561	1.23	16.138	C
E	A-B	16.52	16.52	0.00	-	-	-	-	-
E	A-C	330.31	330.31	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	115.61	115.60	0.00	575.88	0.201	0.25	7.821	A
A	C-A	242.22	242.22	0.00	-	-	-	-	-
A	C-B	22.02	22.02	0.00	516.40	0.043	0.04	7.281	A
A	A-B	77.07	77.07	0.00	-	-	-	-	-
A	A-C	209.19	209.19	0.00	-	-	-	-	-
B	B-AC	22.02	22.02	0.00	694.66	0.032	0.03	5.351	A
B	C-A	93.59	93.59	0.00	-	-	-	-	-
B	C-B	11.01	11.01	0.00	546.91	0.020	0.02	6.716	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	121.11	121.11	0.00	-	-	-	-	-
C	B-AC	176.16	176.16	0.00	685.01	0.257	0.34	7.073	A
C	C-A	99.09	99.09	0.00	-	-	-	-	-
C	C-B	176.16	176.15	0.00	537.33	0.328	0.48	9.967	A
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	154.14	154.14	0.00	-	-	-	-	-
D	B-AC	49.55	49.54	0.00	557.60	0.089	0.10	7.084	A
D	C-A	275.26	275.26	0.00	-	-	-	-	-
D	C-B	44.04	44.04	0.00	507.34	0.087	0.09	7.770	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	302.78	302.78	0.00	-	-	-	-	-
E	B-AC	214.70	214.68	0.00	611.34	0.351	0.54	9.075	A
E	C-A	286.27	286.27	0.00	-	-	-	-	-
E	C-B	280.76	280.67	0.00	500.19	0.561	1.25	16.380	C
E	A-B	16.52	16.52	0.00	-	-	-	-	-
E	A-C	330.31	330.31	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	94.39	94.63	0.00	594.50	0.159	0.19	7.204	A
A	C-A	197.78	197.78	0.00	-	-	-	-	-
A	C-B	17.98	18.01	0.00	526.96	0.034	0.04	7.075	A
A	A-B	62.93	62.93	0.00	-	-	-	-	-
A	A-C	170.81	170.81	0.00	-	-	-	-	-
B	B-AC	17.98	18.00	0.00	702.64	0.026	0.03	5.259	A
B	C-A	76.41	76.41	0.00	-	-	-	-	-
B	C-B	8.99	9.00	0.00	551.87	0.016	0.02	6.633	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	98.89	98.89	0.00	-	-	-	-	-
C	B-AC	143.84	144.17	0.00	698.48	0.206	0.26	6.497	A
C	C-A	80.91	80.91	0.00	-	-	-	-	-
C	C-B	143.84	144.32	0.00	544.05	0.264	0.36	9.016	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	125.86	125.86	0.00	-	-	-	-	-
D	B-AC	40.45	40.54	0.00	573.81	0.071	0.08	6.751	A
D	C-A	224.74	224.74	0.00	-	-	-	-	-
D	C-B	35.96	36.04	0.00	519.57	0.069	0.08	7.445	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	247.22	247.22	0.00	-	-	-	-	-
E	B-AC	175.30	175.92	0.00	639.45	0.274	0.38	7.776	A
E	C-A	233.73	233.73	0.00	-	-	-	-	-
E	C-B	229.24	230.96	0.00	513.73	0.446	0.83	12.807	B
E	A-B	13.48	13.48	0.00	-	-	-	-	-
E	A-C	269.69	269.69	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	79.05	79.21	0.00	607.91	0.130	0.15	6.813	A
A	C-A	165.63	165.63	0.00	-	-	-	-	-
A	C-B	15.06	15.08	0.00	534.60	0.028	0.03	6.929	A
A	A-B	52.70	52.70	0.00	-	-	-	-	-
A	A-C	143.04	143.04	0.00	-	-	-	-	-
B	B-AC	15.06	15.08	0.00	708.41	0.021	0.02	5.193	A
B	C-A	63.99	63.99	0.00	-	-	-	-	-
B	C-B	7.53	7.54	0.00	555.46	0.014	0.01	6.569	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	82.81	82.81	0.00	-	-	-	-	-
C	B-AC	120.46	120.68	0.00	708.09	0.170	0.21	6.130	A
C	C-A	67.76	67.76	0.00	-	-	-	-	-
C	C-B	120.46	120.78	0.00	548.92	0.219	0.28	8.414	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	105.40	105.40	0.00	-	-	-	-	-
D	B-AC	33.88	33.94	0.00	585.45	0.058	0.06	6.527	A
D	C-A	188.21	188.21	0.00	-	-	-	-	-
D	C-B	30.11	30.17	0.00	528.41	0.057	0.06	7.228	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	207.03	207.03	0.00	-	-	-	-	-
E	B-AC	146.81	147.18	0.00	659.01	0.223	0.29	7.037	A
E	C-A	195.74	195.74	0.00	-	-	-	-	-
E	C-B	191.98	192.92	0.00	523.52	0.367	0.59	10.922	B
E	A-B	11.29	11.29	0.00	-	-	-	-	-
E	A-C	225.86	225.86	0.00	-	-	-	-	-

(Default Analysis Set) - 2022 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2022 Observed, PM	2022 Observed	PM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	7.44	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	6.18	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	8.89	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.60	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	10.49	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	395.00	100.000
A	B	ONE HOUR	✓	125.00	100.000
A	C	ONE HOUR	✓	210.00	100.000
B	A	ONE HOUR	✓	135.00	100.000
B	B	ONE HOUR	✓	15.00	100.000
B	C	ONE HOUR	✓	105.00	100.000
C	A	ONE HOUR	✓	145.00	100.000
C	B	ONE HOUR	✓	160.00	100.000
C	C	ONE HOUR	✓	295.00	100.000
D	A	ONE HOUR	✓	265.00	100.000
D	B	ONE HOUR	✓	30.00	100.000
D	C	ONE HOUR	✓	320.00	100.000
E	A	ONE HOUR	✓	280.00	100.000
E	B	ONE HOUR	✓	220.00	100.000
E	C	ONE HOUR	✓	500.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	190.000	205.000
	B	35.000	0.000	90.000
	C	180.000	30.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.48	0.52
	B	0.28	0.00	0.72
	C	0.86	0.14	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	130.000
	B	5.000	0.000	10.000
	C	90.000	15.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.04	0.96
	B	0.33	0.00	0.67
	C	0.86	0.14	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	125.000
	B	15.000	0.000	145.000
	C	110.000	185.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.14	0.86
	B	0.09	0.00	0.91
	C	0.37	0.63	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	260.000
	B	15.000	0.000	205.000
	C	300.000	200.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.07	0.93
	B	0.07	0.00	0.93
	C	0.60	0.40	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	260.000
	B	10.000	0.000	20.000
	C	285.000	35.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.33	0.00	0.67
	C	0.89	0.11	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.22	7.32	0.28	A
A	C-A	-	-	-	-
A	C-B	0.07	7.94	0.07	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.02	5.51	0.03	A
B	C-A	-	-	-	-
B	C-B	0.03	6.85	0.03	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.25	6.78	0.33	A
C	C-A	-	-	-	-
C	C-B	0.38	10.71	0.60	B
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.06	7.57	0.07	A
D	C-A	-	-	-	-
D	C-B	0.08	7.62	0.08	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.37	8.68	0.58	A
E	C-A	-	-	-	-
E	C-B	0.43	12.49	0.76	B
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	94.11	93.45	0.00	662.47	0.142	0.16	6.320	A
A	C-A	135.51	135.51	0.00	-	-	-	-	-
A	C-B	22.59	22.40	0.00	514.16	0.044	0.05	7.319	A
A	A-B	143.04	143.04	0.00	-	-	-	-	-
A	A-C	154.33	154.33	0.00	-	-	-	-	-
B	B-AC	11.29	11.23	0.00	686.85	0.016	0.02	5.328	A
B	C-A	67.76	67.76	0.00	-	-	-	-	-
B	C-B	11.29	11.21	0.00	552.25	0.020	0.02	6.654	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	97.87	97.87	0.00	-	-	-	-	-
C	B-AC	120.46	119.67	0.00	727.11	0.166	0.20	5.919	A
C	C-A	82.81	82.81	0.00	-	-	-	-	-
C	C-B	139.28	137.94	0.00	550.53	0.253	0.33	8.698	A
C	A-B	15.06	15.06	0.00	-	-	-	-	-
C	A-C	94.11	94.11	0.00	-	-	-	-	-
D	B-AC	22.59	22.41	0.00	541.45	0.042	0.04	6.934	A
D	C-A	214.56	214.56	0.00	-	-	-	-	-
D	C-B	26.35	26.14	0.00	530.85	0.050	0.05	7.129	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	195.74	195.74	0.00	-	-	-	-	-
E	B-AC	165.63	164.38	0.00	692.12	0.239	0.31	6.807	A
E	C-A	225.86	225.86	0.00	-	-	-	-	-
E	C-B	150.57	149.00	0.00	529.12	0.285	0.39	9.433	A
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	195.74	195.74	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.37	112.20	0.00	648.66	0.173	0.21	6.709	A
A	C-A	161.82	161.82	0.00	-	-	-	-	-
A	C-B	26.97	26.93	0.00	502.55	0.054	0.06	7.568	A
A	A-B	170.81	170.81	0.00	-	-	-	-	-
A	A-C	184.29	184.29	0.00	-	-	-	-	-
B	B-AC	13.48	13.47	0.00	679.76	0.020	0.02	5.402	A
B	C-A	80.91	80.91	0.00	-	-	-	-	-
B	C-B	13.48	13.47	0.00	548.03	0.025	0.03	6.733	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	116.87	116.87	0.00	-	-	-	-	-
C	B-AC	143.84	143.63	0.00	718.78	0.200	0.25	6.258	A
C	C-A	98.89	98.89	0.00	-	-	-	-	-
C	C-B	166.31	165.92	0.00	545.98	0.305	0.43	9.462	A
C	A-B	17.98	17.98	0.00	-	-	-	-	-
C	A-C	112.37	112.37	0.00	-	-	-	-	-
D	B-AC	26.97	26.93	0.00	527.80	0.051	0.05	7.187	A
D	C-A	256.21	256.21	0.00	-	-	-	-	-
D	C-B	31.46	31.42	0.00	522.48	0.060	0.06	7.330	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	233.73	233.73	0.00	-	-	-	-	-
E	B-AC	197.78	197.39	0.00	677.65	0.292	0.41	7.489	A
E	C-A	269.69	269.69	0.00	-	-	-	-	-
E	C-B	179.80	179.29	0.00	520.42	0.345	0.52	10.537	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	233.73	233.73	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	137.63	137.35	0.00	629.46	0.219	0.28	7.312	A
A	C-A	198.18	198.18	0.00	-	-	-	-	-
A	C-B	33.03	32.97	0.00	486.50	0.068	0.07	7.936	A
A	A-B	209.19	209.19	0.00	-	-	-	-	-
A	A-C	225.71	225.71	0.00	-	-	-	-	-
B	B-AC	16.52	16.50	0.00	669.95	0.025	0.03	5.508	A
B	C-A	99.09	99.09	0.00	-	-	-	-	-
B	C-B	16.52	16.49	0.00	542.20	0.030	0.03	6.847	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	143.13	143.13	0.00	-	-	-	-	-
C	B-AC	176.16	175.84	0.00	707.12	0.249	0.33	6.771	A
C	C-A	121.11	121.11	0.00	-	-	-	-	-
C	C-B	203.69	203.03	0.00	539.70	0.377	0.60	10.671	B
C	A-B	22.02	22.02	0.00	-	-	-	-	-
C	A-C	137.63	137.63	0.00	-	-	-	-	-
D	B-AC	33.03	32.97	0.00	508.71	0.065	0.07	7.567	A
D	C-A	313.79	313.79	0.00	-	-	-	-	-
D	C-B	38.54	38.47	0.00	510.91	0.075	0.08	7.620	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	286.27	286.27	0.00	-	-	-	-	-
E	B-AC	242.22	241.55	0.00	657.14	0.369	0.58	8.649	A
E	C-A	330.31	330.31	0.00	-	-	-	-	-
E	C-B	220.20	219.29	0.00	508.39	0.433	0.75	12.410	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	286.27	286.27	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	137.63	137.62	0.00	629.45	0.219	0.28	7.318	A
A	C-A	198.18	198.18	0.00	-	-	-	-	-
A	C-B	33.03	33.03	0.00	486.50	0.068	0.07	7.938	A
A	A-B	209.19	209.19	0.00	-	-	-	-	-
A	A-C	225.71	225.71	0.00	-	-	-	-	-
B	B-AC	16.52	16.52	0.00	669.95	0.025	0.03	5.508	A
B	C-A	99.09	99.09	0.00	-	-	-	-	-
B	C-B	16.52	16.51	0.00	542.20	0.030	0.03	6.847	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	143.13	143.13	0.00	-	-	-	-	-
C	B-AC	176.16	176.16	0.00	707.06	0.249	0.33	6.780	A
C	C-A	121.11	121.11	0.00	-	-	-	-	-
C	C-B	203.69	203.67	0.00	539.70	0.377	0.60	10.711	B
C	A-B	22.02	22.02	0.00	-	-	-	-	-
C	A-C	137.63	137.63	0.00	-	-	-	-	-
D	B-AC	33.03	33.03	0.00	508.70	0.065	0.07	7.567	A
D	C-A	313.79	313.79	0.00	-	-	-	-	-
D	C-B	38.54	38.53	0.00	510.91	0.075	0.08	7.620	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	286.27	286.27	0.00	-	-	-	-	-
E	B-AC	242.22	242.21	0.00	657.07	0.369	0.58	8.677	A
E	C-A	330.31	330.31	0.00	-	-	-	-	-
E	C-B	220.20	220.17	0.00	508.39	0.433	0.76	12.486	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	286.27	286.27	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.37	112.64	0.00	648.64	0.173	0.21	6.719	A
A	C-A	161.82	161.82	0.00	-	-	-	-	-
A	C-B	26.97	27.03	0.00	502.55	0.054	0.06	7.570	A
A	A-B	170.81	170.81	0.00	-	-	-	-	-
A	A-C	184.29	184.29	0.00	-	-	-	-	-
B	B-AC	13.48	13.50	0.00	679.75	0.020	0.02	5.405	A
B	C-A	80.91	80.91	0.00	-	-	-	-	-
B	C-B	13.48	13.51	0.00	548.03	0.025	0.03	6.737	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	116.87	116.87	0.00	-	-	-	-	-
C	B-AC	143.84	144.15	0.00	718.70	0.200	0.25	6.270	A
C	C-A	98.89	98.89	0.00	-	-	-	-	-
C	C-B	166.31	166.94	0.00	545.98	0.305	0.44	9.513	A
C	A-B	17.98	17.98	0.00	-	-	-	-	-
C	A-C	112.37	112.37	0.00	-	-	-	-	-
D	B-AC	26.97	27.03	0.00	527.78	0.051	0.05	7.192	A
D	C-A	256.21	256.21	0.00	-	-	-	-	-
D	C-B	31.46	31.53	0.00	522.48	0.060	0.06	7.335	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	233.73	233.73	0.00	-	-	-	-	-
E	B-AC	197.78	198.43	0.00	677.55	0.292	0.42	7.523	A
E	C-A	269.69	269.69	0.00	-	-	-	-	-
E	C-B	179.80	180.67	0.00	520.42	0.345	0.54	10.622	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	233.73	233.73	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	94.11	94.28	0.00	662.44	0.142	0.17	6.337	A
A	C-A	135.51	135.51	0.00	-	-	-	-	-
A	C-B	22.59	22.63	0.00	514.16	0.044	0.05	7.326	A
A	A-B	143.04	143.04	0.00	-	-	-	-	-
A	A-C	154.33	154.33	0.00	-	-	-	-	-
B	B-AC	11.29	11.31	0.00	686.83	0.016	0.02	5.328	A
B	C-A	67.76	67.76	0.00	-	-	-	-	-
B	C-B	11.29	11.31	0.00	552.25	0.020	0.02	6.654	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	97.87	97.87	0.00	-	-	-	-	-
C	B-AC	120.46	120.67	0.00	726.98	0.166	0.20	5.941	A
C	C-A	82.81	82.81	0.00	-	-	-	-	-
C	C-B	139.28	139.68	0.00	550.53	0.253	0.34	8.770	A
C	A-B	15.06	15.06	0.00	-	-	-	-	-
C	A-C	94.11	94.11	0.00	-	-	-	-	-
D	B-AC	22.59	22.63	0.00	541.40	0.042	0.04	6.941	A
D	C-A	214.56	214.56	0.00	-	-	-	-	-
D	C-B	26.35	26.40	0.00	530.85	0.050	0.05	7.136	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	195.74	195.74	0.00	-	-	-	-	-
E	B-AC	165.63	166.02	0.00	691.99	0.239	0.32	6.851	A
E	C-A	225.86	225.86	0.00	-	-	-	-	-
E	C-B	150.57	151.10	0.00	529.12	0.285	0.40	9.536	A
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	195.74	195.74	0.00	-	-	-	-	-

(Default Analysis Set) - 2030 Reference, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 Reference, AM	2030 Reference	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	9.20	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	5.94	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	9.03	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.89	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	16.17	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	410.00	100.000
A	B	ONE HOUR	✓	140.00	100.000
A	C	ONE HOUR	✓	390.00	100.000
B	A	ONE HOUR	✓	160.00	100.000
B	B	ONE HOUR	✓	20.00	100.000
B	C	ONE HOUR	✓	115.00	100.000
C	A	ONE HOUR	✓	200.00	100.000
C	B	ONE HOUR	✓	170.00	100.000
C	C	ONE HOUR	✓	305.00	100.000
D	A	ONE HOUR	✓	340.00	100.000
D	B	ONE HOUR	✓	80.00	100.000
D	C	ONE HOUR	✓	345.00	100.000
E	A	ONE HOUR	✓	405.00	100.000
E	B	ONE HOUR	✓	215.00	100.000
E	C	ONE HOUR	✓	585.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	80.000	330.000
	B	70.000	0.000	70.000
	C	355.000	35.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.20	0.80
	B	0.50	0.00	0.50
	C	0.91	0.09	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	155.000
	B	5.000	0.000	15.000
	C	105.000	10.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.97
	B	0.25	0.00	0.75
	C	0.91	0.09	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	15.000	185.000
	B	25.000	0.000	145.000
	C	135.000	170.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.08	0.93
	B	0.15	0.00	0.85
	C	0.44	0.56	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	385.000
	B	30.000	0.000	185.000
	C	310.000	275.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.05	0.95
	B	0.14	0.00	0.86
	C	0.53	0.47	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	335.000
	B	5.000	0.000	75.000
	C	300.000	45.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.06	0.00	0.94
	C	0.87	0.13	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.29	9.47	0.40	A
A	C-A	-	-	-	-
A	C-B	0.08	8.10	0.09	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.03	5.48	0.03	A
B	C-A	-	-	-	-
B	C-B	0.02	6.85	0.02	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.28	7.47	0.39	A
C	C-A	-	-	-	-
C	C-B	0.36	10.60	0.55	B
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.16	7.76	0.19	A
D	C-A	-	-	-	-
D	C-B	0.10	8.12	0.11	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.42	10.83	0.70	B
E	C-A	-	-	-	-
E	C-B	0.63	20.34	1.67	C
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	105.40	104.53	0.00	586.27	0.180	0.22	7.459	A
A	C-A	267.26	267.26	0.00	-	-	-	-	-
A	C-B	26.35	26.13	0.00	511.89	0.051	0.05	7.407	A
A	A-B	60.23	60.23	0.00	-	-	-	-	-
A	A-C	248.44	248.44	0.00	-	-	-	-	-
B	B-AC	15.06	14.97	0.00	697.60	0.022	0.02	5.273	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	7.53	7.47	0.00	548.22	0.014	0.01	6.657	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	116.69	116.69	0.00	-	-	-	-	-
C	B-AC	127.98	127.10	0.00	698.43	0.183	0.22	6.292	A
C	C-A	101.64	101.64	0.00	-	-	-	-	-
C	C-B	127.98	126.76	0.00	541.64	0.236	0.31	8.653	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	139.28	139.28	0.00	-	-	-	-	-
D	B-AC	60.23	59.77	0.00	584.35	0.103	0.11	6.857	A
D	C-A	225.86	225.86	0.00	-	-	-	-	-
D	C-B	33.88	33.60	0.00	518.65	0.065	0.07	7.419	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	252.21	252.21	0.00	-	-	-	-	-
E	B-AC	161.86	160.50	0.00	632.17	0.256	0.34	7.611	A
E	C-A	233.38	233.38	0.00	-	-	-	-	-
E	C-B	207.03	204.35	0.00	509.11	0.407	0.67	11.714	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	289.85	289.85	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	125.86	125.59	0.00	564.53	0.223	0.28	8.196	A
A	C-A	319.14	319.14	0.00	-	-	-	-	-
A	C-B	31.46	31.41	0.00	499.84	0.063	0.07	7.684	A
A	A-B	71.92	71.92	0.00	-	-	-	-	-
A	A-C	296.66	296.66	0.00	-	-	-	-	-
B	B-AC	17.98	17.96	0.00	689.72	0.026	0.03	5.358	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	8.99	8.98	0.00	543.23	0.017	0.02	6.737	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	139.34	139.34	0.00	-	-	-	-	-
C	B-AC	152.83	152.58	0.00	686.34	0.223	0.28	6.741	A
C	C-A	121.36	121.36	0.00	-	-	-	-	-
C	C-B	152.83	152.47	0.00	535.37	0.285	0.39	9.393	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	166.31	166.31	0.00	-	-	-	-	-
D	B-AC	71.92	71.80	0.00	570.92	0.126	0.14	7.210	A
D	C-A	269.69	269.69	0.00	-	-	-	-	-
D	C-B	40.45	40.39	0.00	507.91	0.080	0.09	7.699	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	301.16	301.16	0.00	-	-	-	-	-
E	B-AC	193.28	192.80	0.00	606.75	0.319	0.46	8.685	A
E	C-A	278.68	278.68	0.00	-	-	-	-	-
E	C-B	247.22	246.05	0.00	496.52	0.498	0.96	14.301	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	346.11	346.11	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	154.14	153.68	0.00	534.13	0.289	0.40	9.451	A
A	C-A	390.86	390.86	0.00	-	-	-	-	-
A	C-B	38.54	38.46	0.00	483.18	0.080	0.09	8.094	A
A	A-B	88.08	88.08	0.00	-	-	-	-	-
A	A-C	363.34	363.34	0.00	-	-	-	-	-
B	B-AC	22.02	21.99	0.00	678.79	0.032	0.03	5.480	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	11.01	10.99	0.00	536.32	0.021	0.02	6.852	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	170.66	170.66	0.00	-	-	-	-	-
C	B-AC	187.17	186.77	0.00	669.40	0.280	0.38	7.452	A
C	C-A	148.64	148.64	0.00	-	-	-	-	-
C	C-B	187.17	186.58	0.00	526.70	0.355	0.54	10.565	B
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	203.69	203.69	0.00	-	-	-	-	-
D	B-AC	88.08	87.90	0.00	552.22	0.160	0.19	7.747	A
D	C-A	330.31	330.31	0.00	-	-	-	-	-
D	C-B	49.55	49.45	0.00	493.07	0.100	0.11	8.113	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	368.84	368.84	0.00	-	-	-	-	-
E	B-AC	236.72	235.77	0.00	569.61	0.416	0.70	10.752	B
E	C-A	341.32	341.32	0.00	-	-	-	-	-
E	C-B	302.78	300.13	0.00	479.11	0.632	1.63	19.811	C
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	423.89	423.89	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	154.14	154.13	0.00	534.11	0.289	0.40	9.474	A
A	C-A	390.86	390.86	0.00	-	-	-	-	-
A	C-B	38.54	38.53	0.00	483.18	0.080	0.09	8.096	A
A	A-B	88.08	88.08	0.00	-	-	-	-	-
A	A-C	363.34	363.34	0.00	-	-	-	-	-
B	B-AC	22.02	22.02	0.00	678.79	0.032	0.03	5.480	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	11.01	11.01	0.00	536.32	0.021	0.02	6.852	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	170.66	170.66	0.00	-	-	-	-	-
C	B-AC	187.17	187.16	0.00	669.33	0.280	0.39	7.465	A
C	C-A	148.64	148.64	0.00	-	-	-	-	-
C	C-B	187.17	187.16	0.00	526.70	0.355	0.55	10.600	B
C	A-B	16.52	16.52	0.00	-	-	-	-	-
C	A-C	203.69	203.69	0.00	-	-	-	-	-
D	B-AC	88.08	88.08	0.00	552.22	0.160	0.19	7.756	A
D	C-A	330.31	330.31	0.00	-	-	-	-	-
D	C-B	49.55	49.54	0.00	493.07	0.100	0.11	8.116	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	368.84	368.84	0.00	-	-	-	-	-
E	B-AC	236.72	236.69	0.00	569.16	0.416	0.70	10.826	B
E	C-A	341.32	341.32	0.00	-	-	-	-	-
E	C-B	302.78	302.61	0.00	479.11	0.632	1.67	20.341	C
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	423.89	423.89	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	125.86	126.31	0.00	564.50	0.223	0.29	8.223	A
A	C-A	319.14	319.14	0.00	-	-	-	-	-
A	C-B	31.46	31.54	0.00	499.84	0.063	0.07	7.689	A
A	A-B	71.92	71.92	0.00	-	-	-	-	-
A	A-C	296.66	296.66	0.00	-	-	-	-	-
B	B-AC	17.98	18.01	0.00	689.71	0.026	0.03	5.359	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	8.99	9.01	0.00	543.23	0.017	0.02	6.740	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	139.34	139.34	0.00	-	-	-	-	-
C	B-AC	152.83	153.21	0.00	686.23	0.223	0.29	6.760	A
C	C-A	121.36	121.36	0.00	-	-	-	-	-
C	C-B	152.83	153.39	0.00	535.37	0.285	0.41	9.440	A
C	A-B	13.48	13.48	0.00	-	-	-	-	-
C	A-C	166.31	166.31	0.00	-	-	-	-	-
D	B-AC	71.92	72.09	0.00	570.91	0.126	0.15	7.218	A
D	C-A	269.69	269.69	0.00	-	-	-	-	-
D	C-B	40.45	40.55	0.00	507.91	0.080	0.09	7.704	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	301.16	301.16	0.00	-	-	-	-	-
E	B-AC	193.28	194.20	0.00	606.19	0.319	0.47	8.759	A
E	C-A	278.68	278.68	0.00	-	-	-	-	-
E	C-B	247.22	249.80	0.00	496.52	0.498	1.02	14.742	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	346.11	346.11	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	105.40	105.67	0.00	586.20	0.180	0.22	7.498	A
A	C-A	267.26	267.26	0.00	-	-	-	-	-
A	C-B	26.35	26.40	0.00	511.89	0.051	0.05	7.417	A
A	A-B	60.23	60.23	0.00	-	-	-	-	-
A	A-C	248.44	248.44	0.00	-	-	-	-	-
B	B-AC	15.06	15.08	0.00	697.59	0.022	0.02	5.274	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	7.53	7.54	0.00	548.22	0.014	0.01	6.660	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	116.69	116.69	0.00	-	-	-	-	-
C	B-AC	127.98	128.24	0.00	698.25	0.183	0.23	6.317	A
C	C-A	101.64	101.64	0.00	-	-	-	-	-
C	C-B	127.98	128.35	0.00	541.64	0.236	0.31	8.718	A
C	A-B	11.29	11.29	0.00	-	-	-	-	-
C	A-C	139.28	139.28	0.00	-	-	-	-	-
D	B-AC	60.23	60.35	0.00	584.33	0.103	0.12	6.871	A
D	C-A	225.86	225.86	0.00	-	-	-	-	-
D	C-B	33.88	33.95	0.00	518.65	0.065	0.07	7.430	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	252.21	252.21	0.00	-	-	-	-	-
E	B-AC	161.86	162.37	0.00	631.65	0.256	0.35	7.678	A
E	C-A	233.38	233.38	0.00	-	-	-	-	-
E	C-B	207.03	208.32	0.00	509.11	0.407	0.70	12.021	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	289.85	289.85	0.00	-	-	-	-	-

(Default Analysis Set) - 2030 Reference, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 Reference, PM	2030 Reference	PM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
A	A	San Tam Road / Castle Peak Road - Mai Po	T-Junction	Two-way	A,B,C	8.77	A
B	B	San Tam Road / Access Road	T-Junction	Two-way	A,B,C	6.46	A
C	C	San Tam Road / Ngau Tam Mei Road	T-Junction	Two-way	A,B,C	9.57	A
D	D	San Tam Road / Chun Shin Road	T-Junction	Two-way	A,B,C	7.78	A
E	E	San Tam Road / Chuk Yau Road	T-Junction	Two-way	A,B,C	11.70	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Junction	Arm	Arm	Name	Description	Arm Type
A	**A**	A	(untitled)		Major
A	**B**	B	(untitled)		Minor
A	**C**	C	(untitled)		Major
B	**A**	A	untitled		Major
B	**B**	B	untitled		Minor
B	**C**	C	untitled		Major
C	**A**	A	untitled		Major
C	**B**	B	untitled		Minor
C	**C**	C	untitled		Major
D	**A**	A	untitled		Major
D	**B**	B	untitled		Minor
D	**C**	C	untitled		Major
E	**A**	A	untitled		Major
E	**B**	B	untitled		Minor
E	**C**	C	untitled		Major

Major Arm Geometry

Junction	Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	**C**	8.20		0.00		2.20	0.00		
B	**C**	6.90		0.00		2.20	0.00		
C	**C**	6.80		0.00		2.20	0.00		
D	**C**	6.65		0.00		2.20	0.00		
E	**C**	7.00		0.00		2.20	0.00		

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Junction	Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
A	B	One lane	5.00										50	50
B	B	One lane	5.00										50	50
C	B	One lane	5.00										50	50
D	B	One lane	3.12										50	50
E	B	One lane	4.84										50	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
A	B-A	622.329	0.102	0.259	0.163	0.370
A	B-C	786.649	0.109	0.276	-	-
A	C-B	573.963	0.201	0.201	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B	B-A	622.329	0.109	0.275	0.173	0.393
B	B-C	786.649	0.116	0.293	-	-
B	C-B	573.963	0.214	0.214	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
C	B-A	622.329	0.109	0.277	0.174	0.395
C	B-C	786.649	0.116	0.294	-	-
C	C-B	573.963	0.215	0.215	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
E	B-A	614.024	0.107	0.270	0.170	0.386
E	B-C	776.151	0.114	0.288	-	-
E	C-B	573.963	0.213	0.213	-	-

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
D	B-A	524.736	0.093	0.235	0.148	0.335
D	B-C	663.287	0.099	0.250	-	-
D	C-B	573.963	0.216	0.216	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Junction	Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	A	ONE HOUR	✓	545.00	100.000
A	B	ONE HOUR	✓	150.00	100.000
A	C	ONE HOUR	✓	350.00	100.000
B	A	ONE HOUR	✓	180.00	100.000
B	B	ONE HOUR	✓	15.00	100.000
B	C	ONE HOUR	✓	125.00	100.000
C	A	ONE HOUR	✓	190.00	100.000
C	B	ONE HOUR	✓	170.00	100.000
C	C	ONE HOUR	✓	340.00	100.000
D	A	ONE HOUR	✓	320.00	100.000
D	B	ONE HOUR	✓	45.00	100.000
D	C	ONE HOUR	✓	370.00	100.000
E	A	ONE HOUR	✓	345.00	100.000
E	B	ONE HOUR	✓	235.00	100.000
E	C	ONE HOUR	✓	560.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.000	210.000	335.000
	B	40.000	0.000	110.000
	C	305.000	45.000	0.000

Turning Proportions (PCU) - Junction A (for whole period)

		To		
		A	B	C
From	A	0.00	0.39	0.61
	B	0.27	0.00	0.73
	C	0.87	0.13	0.00

Turning Counts / Proportions (PCU/hr) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	175.000
	B	5.000	0.000	10.000
	C	105.000	20.000	0.000

Turning Proportions (PCU) - Junction B (for whole period)

		To		
		A	B	C
From	A	0.00	0.03	0.97
	B	0.33	0.00	0.67
	C	0.84	0.16	0.00

Turning Counts / Proportions (PCU/hr) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.000	25.000	165.000
	B	15.000	0.000	155.000
	C	140.000	200.000	0.000

Turning Proportions (PCU) - Junction C (for whole period)

		To		
		A	B	C
From	A	0.00	0.13	0.87
	B	0.09	0.00	0.91
	C	0.41	0.59	0.00

Turning Counts / Proportions (PCU/hr) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.000	20.000	325.000
	B	15.000	0.000	220.000
	C	345.000	215.000	0.000

Turning Proportions (PCU) - Junction E (for whole period)

		To		
		A	B	C
From	A	0.00	0.06	0.94
	B	0.06	0.00	0.94
	C	0.62	0.38	0.00

Turning Counts / Proportions (PCU/hr) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.000	5.000	315.000
	B	10.000	0.000	35.000
	C	335.000	35.000	0.000

Turning Proportions (PCU) - Junction D (for whole period)

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.22	0.00	0.78
	C	0.91	0.09	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction A (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction A (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction B (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction B (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction C (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction C (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction E (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction E (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Average PCU Per Vehicle - Junction D (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction D (for whole period)

		To		
		A	B	C
From	A	0.0	0.0	0.0
	B	0.0	0.0	0.0
	C	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Junction	Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
A	B-AC	0.29	8.73	0.40	A
A	C-A	-	-	-	-
A	C-B	0.11	8.92	0.12	A
A	A-B	-	-	-	-
A	A-C	-	-	-	-
B	B-AC	0.03	5.65	0.03	A
B	C-A	-	-	-	-
B	C-B	0.04	7.06	0.04	A
B	A-B	-	-	-	-
B	A-C	-	-	-	-
C	B-AC	0.27	7.12	0.37	A
C	C-A	-	-	-	-
C	C-B	0.42	11.65	0.71	B
C	A-B	-	-	-	-
C	A-C	-	-	-	-
D	B-AC	0.10	7.74	0.11	A
D	C-A	-	-	-	-
D	C-B	0.08	7.84	0.08	A
D	A-B	-	-	-	-
D	A-C	-	-	-	-
E	B-AC	0.41	9.56	0.68	A
E	C-A	-	-	-	-
E	C-B	0.48	14.03	0.91	B
E	A-B	-	-	-	-
E	A-C	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.93	112.06	0.00	628.50	0.180	0.22	6.959	A
A	C-A	229.62	229.62	0.00	-	-	-	-	-
A	C-B	33.88	33.58	0.00	491.45	0.069	0.07	7.858	A
A	A-B	158.10	158.10	0.00	-	-	-	-	-
A	A-C	252.21	252.21	0.00	-	-	-	-	-
B	B-AC	11.29	11.23	0.00	675.40	0.017	0.02	5.420	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	15.06	14.94	0.00	545.01	0.028	0.03	6.789	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	131.75	131.75	0.00	-	-	-	-	-
C	B-AC	127.98	127.12	0.00	718.01	0.178	0.22	6.084	A
C	C-A	105.40	105.40	0.00	-	-	-	-	-
C	C-B	150.57	149.06	0.00	543.26	0.277	0.38	9.099	A
C	A-B	18.82	18.82	0.00	-	-	-	-	-
C	A-C	124.22	124.22	0.00	-	-	-	-	-
D	B-AC	33.88	33.62	0.00	551.22	0.061	0.06	6.952	A
D	C-A	252.21	252.21	0.00	-	-	-	-	-
D	C-B	26.35	26.14	0.00	521.90	0.050	0.05	7.258	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	237.15	237.15	0.00	-	-	-	-	-
E	B-AC	176.92	175.52	0.00	678.02	0.261	0.35	7.144	A
E	C-A	259.73	259.73	0.00	-	-	-	-	-
E	C-B	161.86	160.08	0.00	518.72	0.312	0.45	9.992	A
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	244.68	244.68	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	134.85	134.58	0.00	607.22	0.222	0.28	7.614	A
A	C-A	274.19	274.19	0.00	-	-	-	-	-
A	C-B	40.45	40.38	0.00	475.44	0.085	0.09	8.274	A
A	A-B	188.79	188.79	0.00	-	-	-	-	-
A	A-C	301.16	301.16	0.00	-	-	-	-	-
B	B-AC	13.48	13.47	0.00	666.06	0.020	0.02	5.516	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	17.98	17.96	0.00	539.39	0.033	0.03	6.903	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	157.32	157.32	0.00	-	-	-	-	-
C	B-AC	152.83	152.59	0.00	707.59	0.216	0.27	6.483	A
C	C-A	125.86	125.86	0.00	-	-	-	-	-
C	C-B	179.80	179.33	0.00	537.30	0.335	0.50	10.043	B
C	A-B	22.47	22.47	0.00	-	-	-	-	-
C	A-C	148.33	148.33	0.00	-	-	-	-	-
D	B-AC	40.45	40.39	0.00	536.11	0.075	0.08	7.262	A
D	C-A	301.16	301.16	0.00	-	-	-	-	-
D	C-B	31.46	31.42	0.00	511.80	0.061	0.06	7.493	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	283.18	283.18	0.00	-	-	-	-	-
E	B-AC	211.26	210.80	0.00	660.40	0.320	0.46	7.999	A
E	C-A	310.15	310.15	0.00	-	-	-	-	-
E	C-B	193.28	192.66	0.00	507.99	0.380	0.60	11.393	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	292.17	292.17	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	165.15	164.70	0.00	577.42	0.286	0.40	8.713	A
A	C-A	335.81	335.81	0.00	-	-	-	-	-
A	C-B	49.55	49.43	0.00	453.29	0.109	0.12	8.910	A
A	A-B	231.21	231.21	0.00	-	-	-	-	-
A	A-C	368.84	368.84	0.00	-	-	-	-	-
B	B-AC	16.52	16.49	0.00	653.13	0.025	0.03	5.654	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	22.02	21.99	0.00	531.62	0.041	0.04	7.063	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	192.68	192.68	0.00	-	-	-	-	-
C	B-AC	187.17	186.80	0.00	692.94	0.270	0.37	7.108	A
C	C-A	154.14	154.14	0.00	-	-	-	-	-
C	C-B	220.20	219.39	0.00	529.06	0.416	0.70	11.593	B
C	A-B	27.53	27.53	0.00	-	-	-	-	-
C	A-C	181.67	181.67	0.00	-	-	-	-	-
D	B-AC	49.55	49.45	0.00	514.92	0.096	0.11	7.732	A
D	C-A	368.84	368.84	0.00	-	-	-	-	-
D	C-B	38.54	38.46	0.00	497.83	0.077	0.08	7.836	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	346.82	346.82	0.00	-	-	-	-	-
E	B-AC	258.74	257.90	0.00	635.28	0.407	0.68	9.517	A
E	C-A	379.85	379.85	0.00	-	-	-	-	-
E	C-B	236.72	235.54	0.00	493.17	0.480	0.90	13.908	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	357.83	357.83	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	165.15	165.14	0.00	577.40	0.286	0.40	8.732	A
A	C-A	335.81	335.81	0.00	-	-	-	-	-
A	C-B	49.55	49.54	0.00	453.29	0.109	0.12	8.916	A
A	A-B	231.21	231.21	0.00	-	-	-	-	-
A	A-C	368.84	368.84	0.00	-	-	-	-	-
B	B-AC	16.52	16.51	0.00	653.12	0.025	0.03	5.654	A
B	C-A	115.61	115.61	0.00	-	-	-	-	-
B	C-B	22.02	22.02	0.00	531.62	0.041	0.04	7.063	A
B	A-B	5.51	5.51	0.00	-	-	-	-	-
B	A-C	192.68	192.68	0.00	-	-	-	-	-
C	B-AC	187.17	187.17	0.00	692.87	0.270	0.37	7.117	A
C	C-A	154.14	154.14	0.00	-	-	-	-	-
C	C-B	220.20	220.18	0.00	529.06	0.416	0.71	11.652	B
C	A-B	27.53	27.53	0.00	-	-	-	-	-
C	A-C	181.67	181.67	0.00	-	-	-	-	-
D	B-AC	49.55	49.54	0.00	514.91	0.096	0.11	7.735	A
D	C-A	368.84	368.84	0.00	-	-	-	-	-
D	C-B	38.54	38.53	0.00	497.83	0.077	0.08	7.837	A
D	A-B	5.51	5.51	0.00	-	-	-	-	-
D	A-C	346.82	346.82	0.00	-	-	-	-	-
E	B-AC	258.74	258.72	0.00	635.19	0.407	0.68	9.560	A
E	C-A	379.85	379.85	0.00	-	-	-	-	-
E	C-B	236.72	236.67	0.00	493.17	0.480	0.91	14.028	B
E	A-B	22.02	22.02	0.00	-	-	-	-	-
E	A-C	357.83	357.83	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	134.85	135.28	0.00	607.19	0.222	0.29	7.634	A
A	C-A	274.19	274.19	0.00	-	-	-	-	-
A	C-B	40.45	40.57	0.00	475.44	0.085	0.09	8.280	A
A	A-B	188.79	188.79	0.00	-	-	-	-	-
A	A-C	301.16	301.16	0.00	-	-	-	-	-
B	B-AC	13.48	13.50	0.00	666.05	0.020	0.02	5.516	A
B	C-A	94.39	94.39	0.00	-	-	-	-	-
B	C-B	17.98	18.01	0.00	539.39	0.033	0.03	6.907	A
B	A-B	4.49	4.49	0.00	-	-	-	-	-
B	A-C	157.32	157.32	0.00	-	-	-	-	-
C	B-AC	152.83	153.19	0.00	707.49	0.216	0.28	6.500	A
C	C-A	125.86	125.86	0.00	-	-	-	-	-
C	C-B	179.80	180.57	0.00	537.30	0.335	0.51	10.113	B
C	A-B	22.47	22.47	0.00	-	-	-	-	-
C	A-C	148.33	148.33	0.00	-	-	-	-	-
D	B-AC	40.45	40.55	0.00	536.09	0.075	0.08	7.265	A
D	C-A	301.16	301.16	0.00	-	-	-	-	-
D	C-B	31.46	31.53	0.00	511.80	0.061	0.07	7.496	A
D	A-B	4.49	4.49	0.00	-	-	-	-	-
D	A-C	283.18	283.18	0.00	-	-	-	-	-
E	B-AC	211.26	212.08	0.00	660.27	0.320	0.48	8.048	A
E	C-A	310.15	310.15	0.00	-	-	-	-	-
E	C-B	193.28	194.42	0.00	507.99	0.380	0.63	11.521	B
E	A-B	17.98	17.98	0.00	-	-	-	-	-
E	A-C	292.17	292.17	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Junction	Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
A	B-AC	112.93	113.20	0.00	628.44	0.180	0.22	6.989	A
A	C-A	229.62	229.62	0.00	-	-	-	-	-
A	C-B	33.88	33.96	0.00	491.45	0.069	0.07	7.870	A
A	A-B	158.10	158.10	0.00	-	-	-	-	-
A	A-C	252.21	252.21	0.00	-	-	-	-	-
B	B-AC	11.29	11.31	0.00	675.38	0.017	0.02	5.422	A
B	C-A	79.05	79.05	0.00	-	-	-	-	-
B	C-B	15.06	15.08	0.00	545.01	0.028	0.03	6.795	A
B	A-B	3.76	3.76	0.00	-	-	-	-	-
B	A-C	131.75	131.75	0.00	-	-	-	-	-
C	B-AC	127.98	128.22	0.00	717.87	0.178	0.22	6.109	A
C	C-A	105.40	105.40	0.00	-	-	-	-	-
C	C-B	150.57	151.06	0.00	543.26	0.277	0.39	9.190	A
C	A-B	18.82	18.82	0.00	-	-	-	-	-
C	A-C	124.22	124.22	0.00	-	-	-	-	-
D	B-AC	33.88	33.94	0.00	551.18	0.061	0.07	6.960	A
D	C-A	252.21	252.21	0.00	-	-	-	-	-
D	C-B	26.35	26.40	0.00	521.90	0.050	0.05	7.268	A
D	A-B	3.76	3.76	0.00	-	-	-	-	-
D	A-C	237.15	237.15	0.00	-	-	-	-	-
E	B-AC	176.92	177.40	0.00	677.87	0.261	0.36	7.202	A
E	C-A	259.73	259.73	0.00	-	-	-	-	-
E	C-B	161.86	162.53	0.00	518.72	0.312	0.46	10.127	B
E	A-B	15.06	15.06	0.00	-	-	-	-	-
E	A-C	244.68	244.68	0.00	-	-	-	-	-