APPENDIX 3

Environmental Assessment

S12A Amendment of Plan Application,

Approved Kau Lung Hang Outline Zoning Plan No. S/NE-KLH/11

Proposed Rezoning from "AGR" to "GIC" for a Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) (RCHE) At Various Lots in D.D. 7, Tai Wo, Tai Po, N.T.

Environmental Assessment Report

24 July 2025

Ref No.: C250511W-01

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Project:	Proposed Rezoning from "AGR" to "GIC" for a Proposed "Social Welfare Facilities" (Residential Care Home for the Elderly) (RCHE) at Tai Wo, Tai Po, N.T.
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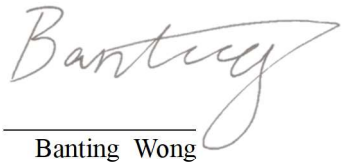

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1 INTRODUCTION

1.1 BACKGROUND

R Lee Architects (the Applicant) intends to develop a 9-storey Residential Care Home for the Elderly (RCHE) (the Development) Various Lots in D.D. 7, Tai Wo, Tai Po, N.T. (the Site).

For a proposed amendment to the approved Kau Lung Hang Outline Zoning Plan No. S/NE-KLH/11, a planning application to the Town Planning Board (TPB) under Section 12A of the Town Planning Ordinance (TPO) is required for rezoning from "AGR" 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 1839.7m^2 and it is located at Various Lots in D.D. 7 in Tai Wo, as shown in **Appendix 1.1**. The site is currently an abandoned farm with concreted ground. The Proposed Development is a 9-storey RCHE which comprises a total of 261 beds and 21 suites. The commencement year of the construction phase is 2027. The anticipated year of construction completion and occupation is 2030.

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 2-1** have been in effect.

Table 2-1 Hong Kong Air Quality Objectives

Pollutant	Averaging time	Concentration limit[1] ($\mu g/m^3$)	Allowable number of exceedances per calendar year
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	40	3
Respirable Suspended Particulates (PM_{10}) [2]	24-hour	75	9
	Annual	30	Not Applicable
Fine Suspended Particulates ($PM_{2.5}$) [3]	24-hour	37.5	18
	Annual	15	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: [1] 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.
[2] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
[3] 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 Fanling Highway. No chimneys were observed within 200m from the Site boundary. The Site is an abandoned agricultural land with concrete paved ground. Groups of Village Houses, the "Tai Wo Village", adjoin closely to the North and East of the Site. While similar Village House Developments, the "Tai Hang Village" located slightly further away to the West. The Tai Wo Village Sewage Pumping Station is located at the North of the Site. As such, local traffic is considered as 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 Tai Po Monitoring Station (situated at Tai Po Government Offices Building, 1 Ting Kok Road). Despite this, in terms of geographical location, this monitoring station is considered the closest to the proposed Project Site. Meanwhile, the nearest CO monitoring station is North Monitoring Station (situated at 19 Pak Wo Road, Sheung Shui, New Territories). The annual average of air pollutants in $\mu g/m^3$ monitored at these stations for the year 2019-2023 are summarized in **Table 2-2** below. In 2023, 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).

Apart from the air quality monitoring record, EPD also provides a set of regional background concentrations for key pollutants in the "Pollutants in the Atmosphere and their Transport over Hong Kong" (PATH) model v3.0. Given that the tentative intake year of the Proposed Development would be in Year 2030 the earliest, the background air quality predicted by PATH v3.0 for Year 2030 will be presented as the future background air quality during the operation phase as a worst-case scenario. The Project site is located at the PATH grid (38,50). The predicted Year 2030 background concentrations at this grid are summarized in **Table 2-3** and compared against the prevailing AQOs. The predicted background concentration in Year 2030 is lower than their respective AQOs except for the 8-hour average O_3 concentrations.

Table 2-2 EPD Air Quality Monitoring Record at Tai Po Monitoring Station & North Monitoring Station in 2019-2023

Pollutant	Averaging Time	Conc. Limits ($\mu g/m^3$)	No. of Exceedances Allowed per calendar year	Concentrations ($\mu g/m^3$) [1]					Remarks
				2019	2020	2021	2022	2023	
PM10	24-hour	75	9	65	58	60	48	53	10th highest conc.
	Annual	30	Not Applicable	**31**	24	26	21	25	/
PM2.5	24-hour	37.5	18	**41**	32	32	30	30	19th highest conc.
	Annual	15	Not Applicable	**20**	15	**16**	14	15	/
NO2	1-hour	200	18	142	106	115	93	95	19th highest conc.
	Annual	40	Not Applicable	36	30	32	27	27	/
SO2	10-minute	500	3	20	19	15	12	27	4th highest conc.
	24-hour	40	3	10	7	8	5	4	4th highest conc.
CO	1-hour	30,000	0	/	1830	2150	1710	2390	North Monitoring Station
	8-hour	10,000	0	/	1238	1550	1304	1231	North Monitoring Station
O3	8-hour	160	9	**197**	**165**	**168**	**188**	**163**	10th highest conc.

Note:

[1] **Bolded** concentrations indicate exceedance of the air quality objectives

Table 2-3 EPD PATH Data (43,50) in 2030

Pollutant	Averaging Time	Conc. Limits ($\mu g/m^3$)	No. of Exceedances Allowed per calendar year	Concentrations ($\mu g/m^3$) [1]		Remarks
				2030[2]	No. of Exceedances	
PM10	24-hour	75	9	51	0	10th highest conc.
	Annual	30	Not Applicable	20	/	/
PM2.5	24-hour	37.5	18	26	4	36th highest conc.
	Annual	15	Not Applicable	12	/	/
NO2	1-hour	200	18	38	0	19th highest conc.
	Annual	40	Not Applicable	9	/	/
SO2	10-minute	500	3	24	0	4th highest conc.
	24-hour	40	3	7	0	4th highest conc.
CO	1-hour	30,000	0	522	0	1st highest conc.
	8-hour	10,000	0	477	0	1st highest conc.
O3	8-hour	160	9	**170**	**18**	10th highest conc.

Note:

[1] **Bolded** concentrations indicate exceedance of the air quality objectives

[2] Extracted from EPD PATH v3.0 at level 1 (0m – 17m)

2.1.2 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 trunk road for active and passive recreational uses, the buffer distance must be greater than 5m and 20m respectively as shown in **Table 2-4** below.

Table 2-4 Guidelines on Usage of Open Space Site

Pollution	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	N/A	Passive recreational uses
Industrial Areas	*Difference in height between Industrial Chimney Exit and the Site*		
	<20m	>200m	Active and passive recreational uses
		5 – 200m	Passive recreational uses
	20 – 30m (*)	>100m	Active and passive recreational uses
		5 – 100m	Passive recreational uses
	30 – 40m	>50m	Active and passive recreational uses
		5 – 50m	Passive recreational uses
	>40m	>10m	Active and passive recreational uses
Construction and Earth Moving	-	<50m	Passive recreational uses
		>50m	Active and passive recreational uses
Odour Sources	-	>200m	Sensitive uses

Remarks:

a) In situations where the height of chimneys is not known, use the set of guidelines marked with an asterisk for preliminary planning purpose and refine as and when more information is available.

b) The buffer distance is the horizontal, shortest distance from the boundary of the industrial lot, the position of existing chimneys or the edge of road kerb, to the boundary of open space sites.

c) The guidelines are generally applicable to major industrial areas but not individual large industrial establishments which are likely to be significant air pollution sources. Consult EPD when planning open space sites close to such establishments.

d) Amenity areas are permitted in any situation.

2.2 REPRESENTATIVE AIR QUALITY SENSITIVE RECEIVERS (ASRS)

Construction Phase ASRs

Within the 500m assessment area, Representative air sensitive receivers (ASRs) that are closest to the Project Site are anticipated to be the most affected and therefore considered the most representative ASRs for the worst-case scenario air quality impact assessment, whilst other ASRs located further away from these first-tier representative ASRs are expected to be less impacted. **Appendix 2.1** shows the locations of Representative ASRs from the proposed RCHE development and details of the identified representative ASRs are summarized in **Table 2-5** below.

Table 2-5 Representative Air Sensitive Receivers (ASRs) from the Proposed Development

ASR ID	Description	Use	No. of Storeys	Assessment Heights of ASRs (mAG) [1]	Approximate Distance to Project Boundary (m)
ASR1	Tai Wo Village Block 5	Residential	3	1.5, 4.3, 7.1	91
ASR2	Tai Wo Village Block 28B	Residential	1	1.5	17
ASR3	Tai Hang Village Block 150	Residential	3	1.5, 4.3, 7.1	94

Note:

[1] Assuming floor to floor height is 2.8m.

Operational Phase ASRs

All openable windows of any premises, office, multi-function room, library and gym of the Proposed Development are identified as air sensitive uses during operational phase. Air sensitive uses with nearest distance to the air pollution sources are identified as representative ASRs of operational phase and shown in **Appendix 2.1**.

2.3 CONSTRUCTION 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.). The nearest ASR is Tai Wo Village Block 28B (i.e., 17m between the Site and ASR). The constructional works of the proposed project will impose potential air quality impacts on the nearby ASRs during the constructional stage (Figure 2.1.1 refers).

Given that the distance between the Site boundary and Tai Wo Village Block 28B is close (i.e., about 17m distance), the Site should erect of higher hoarding (e.g., at least 3m high at the near side facing Tai Wo Village Block 28B) to minimise the construction dust impact.

Considering the size of site formation and excavation is in a small scale, the amount of excavated material and number of dump trunk would be limited. No significant dust impact from the construction works is anticipated.

In order to further minimize the potential dust emissions and for good site practice, relevant mitigation measures under the Air Pollution Control (Construction Dust) Regulation should 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.

It is also suggested that the contractor should set up a communication channel (e.g. regular meeting) with the village office of Tai Wo Village to have a better dust control management, if necessary. With implementation of the recommended mitigation measures, no adverse air quality impacts during construction are anticipated.

No concurrent project in the surrounding area. Given that there is no adverse air quality impact during the construction, no cumulative air quality impact due to the project thus be anticipated.

2.4 OPERATIONAL AIR QUALITY IMPACT

2.4.1 Vehicular 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 2023 published by the Transport Department (TD), Tai Wo Service Road East at the West of the Project site has no classification. Considering the Road is similar to a local distributor, 5m buffer distance thus be recommended as reference to HKPSG. Fanling Highway at the West of the Project site is classified as Expressway, 20m buffer distance is recommended as reference to HKPSG. No air-sensitive uses including openable window, fresh air intake and recreational use in the open space is located within the said buffer distances, no adverse air quality impact is anticipated. 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 recreational uses in open space is 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.

2.4.2 Industrial Air Quality Impact

It is confirmed that there is no chimney emission sources in 200m from the Site boundary by desktop review and site survey on 10 June 2025. Thus, no adverse air quality impact to the proposed RCHE development due to industrial source emissions is anticipated.

No industrial chimney is proposed from the Proposed Development. As such, no adverse air quality impact to the surrounding ASRs due to industrial source emissions from the Proposed Development is anticipated.

2.4.3 Sewage Pumping Station

A sewage pumping station with 298 m^3/day ADWF (Tai Wo Village Sewage Pumping Station) was observed within 200m from the Site boundary as given in **Appendix 2.1**. Given that the retention tank is located underground and enclosed, together with the negative pressure generated in the pumping station with the flowing of sewerage, no adverse odour

nuisance attributed from the sewerage is anticipated.

2.4.4 Air Quality Impact from Proposed Kitchen

Cooking Fume/odour from the proposed kitchen.

Kitchen will be provided at the Proposed Project. Oily fume and cooking odour emissions will potentially arising from the kitchen. In order to minimise the potential oily fume and odour emissions from the canteen/kitchen, the following considerations of positioning the exhaust outlets of the kitchen as recommended in the Control of Oil Fume and Cooling Odour from Restaurants and Food Business published by the Environmental Protection Department (EPD) shall be considered during the detailed design stage:

- locate the outlets at such a place where the ventilation is good and the emissions from them can be adequately dispersed without hindrance.
- provide sufficient separate distance from any sensitive receptor in the vicinity so that the emissions will not cause, or contribute to, an odour nuisance or other type of air pollution to the public.
- ensure the emission from the exhaust system will be directed vertically upwards, unless it can be demonstrated by an environmental professional that other direction is more advantageous in preventing the emission from causing air pollution problems.
- ensure the emission from the exhaust system will not be restricted or deflected by, for example, the use of plates or caps.

In order to minimise the impact of oily fume and cooling odour, the Applicant is committed to install a grease filter (as shown in **Appendix 2.2**) to control oily fume and cooking odour. Operation and maintenance of the exhaust system as well as the air pollution control equipment should be carried out by competent staff with sufficient training and relevant skills, and should be done in accordance with the manufacturer's specifications and specified procedures. To ensure proper performance, qualified professionals should be employed to undertake regular monitoring, inspection, cleaning and maintenance of components.

The tentative location of the Kitchen exhaust has been designed as far as possible all nearby ASRs. Considering that at source mitigation measure (e.g. grease filter) would be applied, no adverse odour impact from the proposed kitchen is anticipated.

2.4.5 Air Quality Impact from Proposed Carpark

There will be an enclosed carpark on the G/F of the Proposed Development. The proposed carpark will be designed in accordance with EPD's Practice Note for Professional Persons ProPECC PN 2/96 "Control of Air Pollution in Car Parks" so as to ensure the exhaust air discharged to the atmosphere from the carpark would not cause excessive impact to neighbouring air sensitive uses. The exhaust outlets of the carpark will be located away from the nearby ASRs as far as practicable. Therefore, no adverse air quality impact arising from the proposed carpark on the nearby ASRs is 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 Tai Wo Village and Tai Hang Village. Fanling Highway and East Rail Line is located at the Western side of the development nearby which will generate major road traffic and railway noise impact.

Two sewage pumping stations named Tai Wo Village Sewage Pumping Station and Tai Hang Sewage Pumping Station are located within 300m assessment area of the Project. No other existing fixed noise sources are identified within the assessment area.

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, their locations and room sizes 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 are 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. The openable window shall be well-gasketted with at least 6mm thick window pane.

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 Chapter 9 of HKPSG.

In setting the ANL, reference was made to the Area Sensitive Rating ("ASR") in Table 1 of

IND-TM reflecting the type of area where the NSRs are situated. The proposed development and surrounding existing residential developments are considered low density residential area. According to Traffic Census 2023, Fanling Highway would be the major road (IF). As roadside noise barrier are built along Fanling Highway, the road traffic noise from Fanling Highway at low floor is not noticeable to the NSRs, and railway noise from East Rail Line is the dominant noise source. An ASR of "A" is considered representative of the noise sensitive uses. 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.

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, whichever lower, will be finally adopted.

3.2.3 Railway Noise Assessment Criteria

Railway noise is controlled by the 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"). The ASR of NSRs is determined in **Section 3.2.2**.

Moreover, noise standards are recommended in the *Hong Kong Planning Standards and Guidelines* (HKPSG) for planning against noise impact from railway noise. As stated in Table 4.1 of Chapter 9 of HKPSG, the criteria for railway noise impact on domestic premises (habitable rooms) is L_{Amax} 85dB(A) at night (2300-0700) and $L_{Aeq,24hr}$ 65dB(A). These criteria apply to uses which rely on openable windows for ventilation. The ANL and HKPSG noise standards for railway noise impact are summarized in **Table 3-3**.

Table 3-3 Noise Assessment Criteria for Railway Noise Impact

Period	Noise Criteria	
	NCO	HKPSG
Day and Evening	$L_{Aeq,30min}$ = 60 dB(A)	N/A
Night	$L_{Aeq,30min}$ = 50 dB(A)	L_{Amax} = 85 dB(A)
Full Day	N/A	$L_{Aeq,24hr}$ = 65 dB(A)

3.2.4 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).
- Minimizing noise from Construction Activities (ProPECC PN 1/24)

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 modelling 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.

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 2030. Traffic forecast for year 2045 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 3-4** and **Appendix 1.1**.

Table 3-4 Year 2045 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
A1	Tai Wo Service Road West	NB	Impervious	50	220	31%	270	26%
A2	Tai Wo Service Road West	SB	Impervious	50	315	31%	260	26%
B	Access Road	2-way	Impervious	50	60	10%	70	16%
C1	Tai Wo Service Road West	NB	Impervious	50	210	32%	240	28%
C2	Tai Wo Service Road West	SB	Impervious	50	360	29%	265	25%
D	Access Road	2-way	Impervious	50	60	29%	100	26%
E1	Tai Wo Service Road West	NB	Impervious	50	160	33%	155	28%
E2	Tai Wo Service Road West	SB	Impervious	50	350	29%	255	25%
F1	Fanling Highway	NB	Pervious	100	5705	22%	6025	24%
F2	Fanling Highway	SB	Pervious	100	7070	25%	5935	19%
G	Access Road	2-way	Impervious	50	60	28%	65	12%
H	Tai Wo Service Road East	2-way	Impervious	50	55	41%	60	18%
I	Access Road	2-way	Impervious	50	15	27%	35	15%

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 operable windows 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 3-5 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	8/F	
W01	69.0	71.2	72.2	72.8	72.8	72.6	73.1	70
W02	67.6	69.9	70.9	71.3	71.5	71.5	70.4	70
W03	67.1	69.4	70.5	70.9	71.3	71.4	69.6	70
W04	66.7	69.0	70.2					70
W05	56.4	57.4	56.0	55.3	55.6	57.7	58.0	70
W06	55.8	56.2	55.8	55.4	55.1	56.4	56.4	70
W07	55.6	56.0	55.8	55.1	54.8	56.2		70
W08	55.1	55.9	55.7	54.7	54.3	55.7	56.3	70
W09	54.7	55.6	55.5	54.2	53.6	54.8		70
W10	53.4	54.4	54.2	54.1	54.7	56.0		70
W11	53.7	54.7	54.2	54.4	55.3	56.8		70
W12	54.2	55.0	54.4	54.7	55.6	57.0		70
W13	54.9	56.2	55.9	54.9	55.4	56.8		70
W14	60.0	62.0	62.8	63.9	64.3	64.9		70
W15	61.4	63.4	64.3	65.2	65.8	66.5		70
W16	61.9	63.9	64.8	66.2	66.9	67.5		70
W17	62.5	64.5	65.4					70
W18	59.0	59.3	56.8	55.7	55.9	55.6		70
W19	62.6	64.3	64.4	65.0	65.6	66.0		70
W20	65.3	66.0	66.2	66.9	67.7	68.1		70
W21	65.3	66.0	66.4	67.2	67.7	68.4		70
W22	65.7	66.2	66.8	67.6	68.1	68.7		70
W23	66.0	66.5	67.1	67.9	68.4	69.1		70
W24	66.1	66.6	67.3	68.3	68.7	69.4		70
W25	66.9	67.7	68.8	70.0	70.2	70.4		70

Remarks:

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

North-East Façade

South-East Façade

Void in South-East 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 North-East façade, vertical architectural fin is provided. The fin extends 1.5m 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).

Sound absorption material is proposed on the back side of architectural fin.

At the South-East façade, enhanced acoustic balcony will be provided to reduce the noise impact. Enhanced acoustic balcony shall have a depth of more than 1000mm, solid parapet height of not less than 1450mm, full-height side wall, and balcony ceiling lined with Sound Absorptive Material (SAM). Referring to PN_INMD, the proposed acoustic balcony configuration can offer an additional traffic noise reduction of 11dB(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 3-6 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	8/F	
W01	58.0	60.2	61.2	61.8	61.8	61.6	62.1	70
W02	56.6	58.9	59.9	60.3	60.5	60.5	70.4	70
W03	56.1	58.4	59.5	59.9	60.3	60.4	69.6	70
W04	55.7	58.0	59.2					70
W05	56.4	57.4	56.0	55.3	55.6	57.7	58.0	70
W06	55.8	56.2	55.8	55.4	55.1	56.4	56.4	70
W07	55.6	56.0	55.8	55.1	54.8	56.2		70
W08	55.1	55.9	55.7	54.7	54.3	55.7	56.3	70
W09	54.7	55.6	55.5	54.2	53.6	54.8		70

W10	53.4	54.4	54.2	54.1	54.7	56.0		70
W11	53.7	54.7	54.2	54.4	55.3	56.8		70
W12	54.2	55.0	54.4	54.7	55.6	57.0		70
W13	54.9	56.2	55.9	54.9	55.4	56.8		70
W14	60.0	62.0	62.8	63.9	64.3	64.9		70
W15	61.4	63.4	64.3	65.2	65.8	66.5		70
W16	61.9	63.8	64.8	66.2	66.9	67.5		70
W17	62.5	64.4	65.4					70
W18	58.9	59.3	56.7	55.7	55.9	55.6		70
W19	62.6	64.3	64.4	65.0	65.6	66.0		70
W20	62.6	63.0	63.2	63.9	64.7	65.1		70
W21	63.4	63.7	63.4	64.2	64.7	65.4		70
W22	59.0	59.3	59.6	59.9	60.5	61.3		70
W23	63.5	63.5	64.1	64.9	65.4	66.1		70
W24	59.4	59.8	60.0	60.4	60.9	61.9		70
W25	57.9	58.7	59.8	61.0	61.2	61.4		70

Remarks:

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

	North-East Façade
	South-East Façade
	Void in South-East Façade
60.9	*Underlined cells indicate façades with fins and acoustic windows*
62.1	*Underlined cells indicate façades with enhanced acoustic balcony*

3.4 FIXED SOURCE NOISE ASSESSMENT

3.4.1 Fixed Noise Source of the Proposed Development

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 six (6) nos. of cooling towers located on the open rooftop having direct line of sight to NSRs. The noise may potentially affect Tai Wo Village and Tai Hang Village in the close proximity. The representative NSRs of fixed noise assessment is given in **Table 3-7** and **Appendix 3.2**.

Table 3-7 Representative Fixed Noise Sensitive Receivers (NSRs) from the Proposed Development

NSR ID	Description	Use	No. of Storeys	Assessment Heights of NSRs (mAG) [1]	Approximate Distance to Fixed Noise Sources (m)
N01	Tai Wo Village Block 5	Residential	3	1.2, 4.0, 6.8	133
N02	Tai Wo Village Block 28B	Residential	1	1.2	49
N03	Tai Hang Village Block 150	Residential	3	1.2, 4.0, 6.8	106

Note:
[1] Assuming floor to floor height is 2.8m.

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 will be 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 adverse noise impact from these outdoor units is not anticipated.

3.4.2 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. Background noise measurement should be conducted in due course to define the noise standards for assessing the planned fixed noise sources for the proposed development. The sound power level and noise mitigation requirements such as the use of silencer, noise enclosure and acoustic lining will be stipulated in the contract specification governing the equipment selection by the design and build contractor. The Contractor should ensure the fixed noise criteria under Section 3.2.2 is fulfilled.

3.4.3 Fixed Noise Source from the Existing Development

Two existing sewage pumping stations named Tai Wo Village Sewage Pumping Station and Tai Hang Sewage Pumping Station are identified within 300m assessment area of the Project. The location of the sewage pumping stations and representative NSRs is shown in **Appendix 3.2**.

Provided that the existing sewage pumping stations are designed to be located in close proximity to the existing residential development and the fixed plants for the stations are properly designed to meet the maximum permissible SWL, no operational phase noise impacts would be anticipated.

3.5 RAILWAY NOISE IMPACT

3.5.1 Assessment Model

The U.K. Department of Transport's procedure "Calculation of Railway Noise 1995 (CRN)" is used to predict the half hour Leq,30min noise levels generated from railways at selected representative NSRs. The track was divided into segments and the noise level of each segment was eventually integrated into the overall noise level of the whole railway tracks. The input parameter in CRN is the train noise source term sound exposure level (SEL) at a distance of 25m from the nearside railhead.

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 CRN.

3.5.2 Train Operation Parameters

The source term adopted in this noise assessment was made reference from Table 6.13 of the approved EIA Report "AEIAR-165/2012 - Shatin to Central Link - Mong Kok East to Hung Hom Section".

Details of the train operation parameters and assumption of the East Rail Line to be adopted in the railway noise assessment are listed in **Table 3-8** below.

Table 3-8 Air-borne Railway Noise Parameters, Correction Factors, and Assumptions

Parameters	Approach
Train Type	SP1900 or equivalent, train length of 9-car [1]
Source Term SEL_{ref}	Train Noise: 75.3dB(A) L_{max} at 130kph measured at 25m away from the ballast track for SP1900 [1]
Distance Correction for Wheel/Rail Noise	-10 log(d'/25), where d' = Slant Distance to NSR (d'>=10m)
Train Frequency Effect	+10 log(N), where N = Train Frequency per 30 min per Direction
Ground Effect	Hard Ground, no absorption
Air Absorption Effect	Nil (Close proximity with NSR in HK environment)
Trackside Barrier Height	2m above ground level [2]
Barrier Effect	Shadow Zone: -21dB(A) for $\delta > 2.5$m where δ is the Path Difference in meter $-7.75 \log(5.2 + 203\ \delta)$ dB(A) for $0 \leq \delta < 2.5$m Illuminated Zone: 0dB(A) for $\delta > 0.4$m $0.88 + 2.14 \log(10\text{-}3 + \delta)$dB(A) for $0 \leq \delta < 0.4$m

Reflection Effect	Reflection from opposite buildings/structures and façade reflections are accounted by ray tracing with multiple reflections in the 3D noise model.
Speed Effect	+20 log(V/120), where V = Train Speed
Angle of View Effect	+10 log(πθ/180 - cos2αsinθ) - 5 where θ= Angle of View and α= Acute angle between a line drawn through the NSR, parallel to the track, and the line bisecting the angle of view, θ
Correction for Rail Joints / Crossing	As a conservative assumption, +7.0dB(A) correction is applied to rail insulation joints. The insulation joint is a discontinuity in track with very localized noise source. It can be represented by a 2m rail segment. No turnout or crossings are located within 300m assessment area.
Train Operating Hours	05:30 to 01:10, including non-passenger trains [2]
Train Frequency (07:00 - 23:00)	Max 30 per hour per direction [1]
Train Frequency (23:00 - 07:00)	Max 24 per hour per direction [1]
Train Frequency per 24hrs	EMU 850 trains in both directions[1]

Notes:
[1] Information with reference to the Approved EIA Report "AEIAR-165/2012 - Shatin to Central Link - Mong Kok East to Hung Hom Section".
*[2] Information with reference to MTR Reply Letter Dated 19 June 2025 attached in **Appendix 3.3**.*
[3] The correction is refer to "Section 4.5.5 of the Approved Tai Wai to Ma On Shan EIA Report, KCRC East Rail Extension, Oct 1999".

3.5.3 Railway Noise Impact for Baseline Scenario

Based on the proposed assessment methodology and the assumptions presented in **Table 3-8**, the unmitigated railway noise levels were predicted and are summarised in **Table 3-9** to **Table 3-10**.

The building layout and orientation has been duly considered. Whereas practicable, the operable windows are oriented away from railway track. Notwithstanding the above, the predicted railway noise level at nighttime exceeded the noise criteria stipulated in NCO, noise mitigation measures are required to abate the rail noise impact during operational phase.

The worst-case scenario for $L_{Aeq,\ 30min}$ in both daytime and nighttime period are below 65dB(A). Therefore, quantitative assessment for $L_{Aeq,\ 24hr}$ will not be required in this railway noise impact assessment.

The source term of train noise 75.3 dB(A) L_{max} is measured at 130kph measured at 25m away from the rail track. The nearest NSR is located at more than 25m from the rail. The L_{max} at the NSRs are expected to be lower than $L_{max,2300-0700}$ standard, 85dB(A) established under HKPSG. Therefore, quantitative assessment will not be required for L_{max} in this railway noise impact assessment.

Table 3-9 Predicted Railway Noise Impact for Unmitigated Scenario against NCO, Day and Evening

Window ID	Predicted Noise Level $L_{Aeq, 30min}$, dBA							Noise Criteria, dBA
	2/F	3/F	4/F	5/F	6/F	7/F	8/F	
W01	55.7	55.8	55.0	54.0	54.1	53.8	54.6	60
W02	53.4	53.9	53.3	52.1	51.9	51.1	48.0	60
W03	52.4	53.2	52.6	52.0	51.6	50.6	47.0	60
W04	51.8	53.1	52.4					60
W05	45.8	46.1	45.5	44.0	42.7	42.3	41.1	60
W06	46.4	46.5	46.3	45.9	44.5	43.9	41.1	60
W07	46.0	46.1	46.0	45.6	44.3	43.7		60
W08	45.0	45.1	45.1	44.6	43.4	43.1	41.0	60
W09	43.7	43.8	43.9	43.2	42.3	42.0		60
W10	44.7	44.7	44.3	44.1	43.9	43.3		60
W11	45.3	45.3	44.7	44.6	44.4	44.0		60
W12	45.5	45.6	44.9	44.7	44.5	44.0		60
W13	45.7	45.9	45.4	44.2	43.8	43.2		60
W14	45.3	45.7	44.6	43.3	43.1	42.4		60
W15	45.7	46.1	45.2	44.8	44.6	44.0		60
W16	46.4	47.1	46.1	47.0	46.8	46.0		60
W17	47.2	48.0	47.4					60
W18	45.8	45.9	44.3	41.7	41.5	40.9		60
W19	47.5	48.2	47.0	45.2	44.8	44.3		60
W20	52.1	53.1	53.3	52.8	53.1	53.3		60
W21	52.4	53.5	53.6	53.1	53.4	53.6		60
W22	52.8	53.8	53.9	53.5	53.8	54.0		60
W23	53.2	54.2	54.2	53.9	54.1	54.2		60
W24	53.8	54.9	54.7	54.6	54.9	54.9		60
W25	55.6	56.8	56.8	56.9	56.9	56.6		60

Remarks:

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

North-East Façade

South-East Façade

Void in South-East Façade

Table 3-10 Predicted Railway Noise Impact for Unmitigated Scenario against NCO, Night

Window ID	Predicted Noise Level $L_{Aeq, 30min}$, dBA							Noise Criteria, dBA
	2/F	3/F	4/F	5/F	6/F	7/F	8/F	
W01	54.7	54.8	54.0	53.0	53.1	52.8	53.6	50
W02	52.4	52.9	52.3	51.1	50.9	50.1	47.0	50
W03	51.4	52.2	51.6	51.0	50.6	49.6	46.0	50
W04	50.8	52.1	51.4					50
W05	44.8	45.1	44.5	43.0	41.7	41.3	40.1	50
W06	45.4	45.5	45.3	44.9	43.5	42.9	40.1	50
W07	45.0	45.1	45.0	44.6	43.3	42.7		50
W08	44.0	44.1	44.1	43.6	42.4	42.1	40.0	50
W09	42.7	42.8	42.9	42.2	41.3	41.0		50
W10	43.7	43.7	43.3	43.1	42.9	42.3		50
W11	44.3	44.3	43.7	43.6	43.4	43.0		50
W12	44.5	44.6	43.9	43.7	43.5	43.0		50
W13	44.7	44.9	44.4	43.2	42.8	42.2		50
W14	44.3	44.7	43.6	42.3	42.1	41.4		50
W15	44.7	45.1	44.2	43.8	43.6	43.0		50
W16	45.4	46.1	45.1	46.0	45.8	45.0		50
W17	46.2	47.0	46.4					50
W18	44.8	44.9	43.3	40.7	40.5	39.9		50
W19	46.5	47.2	46.0	44.2	43.8	43.3		50
W20	51.1	52.1	52.3	51.8	52.1	52.3		50
W21	51.4	52.5	52.6	52.1	52.4	52.6		50
W22	51.8	52.8	52.9	52.5	52.8	53.0		50
W23	52.2	53.2	53.2	52.9	53.1	53.2		50
W24	52.8	53.9	53.7	53.6	53.9	53.9		50
W25	54.6	55.8	55.8	55.9	55.9	55.6		50

Remarks:

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

North-East Façade

South-East Façade

Void in South-East Façade

3.5.4 Railway Noise Impact for Mitigated Scenario

Practicable noise mitigation noise measures have been incorporated in the building layout design, in accordance with Innovative Noise Mitigation Designs promulgated by EPD https://www.epd.gov.hk/epd/Innovative/greeny/eng/index.html, including:

At the North-East façade, vertical architectural fin is provided. The fin extends 1.5m 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. Referring to PN_INMD, the proposed acoustic window configuration can offer an additional traffic noise reduction of 6dB(A).

Sound absorption material is proposed on the back side of architectural fin.

At the South-East façade, enhanced acoustic balcony will be provided to reduce the noise impact. Enhanced acoustic balcony shall have a depth of more than 1000mm, solid parapet height of not less than 1450mm, full-height side wall, and balcony ceiling lined with Sound Absorptive Material (SAM). Referring to PN_INMD, the proposed acoustic balcony configuration can offer an additional traffic noise reduction of 11dB(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 3-11 Predicted Railway Noise Impact for Mitigated Scenario against NCO, Night

Window ID	Predicted Noise Level $L_{Aeq, 30min}$, dBA							Noise Criteria, dBA
	2/F	3/F	4/F	5/F	6/F	7/F	8/F	
W01	43.7	43.8	43.0	42.0	42.1	41.8	42.6	50
W02	41.4	41.9	41.3	40.1	39.9	39.1	47.0	50
W03	40.4	41.2	40.6	40.0	39.6	38.6	46.0	50
W04	39.8	41.1	40.4					50
W05	44.8	45.1	44.5	43.0	41.7	41.3	40.1	50
W06	45.4	45.5	45.3	44.9	43.5	42.9	40.1	50
W07	45.0	45.0	45.0	44.6	43.3	42.7		50
W08	44.0	44.0	44.1	43.6	42.4	42.1	40.0	50
W09	42.7	42.8	42.8	42.2	41.3	41.0		50
W10	43.7	43.7	43.3	43.1	42.9	42.3		50

W11	44.3	44.3	43.7	43.6	43.4	43.0		50
W12	44.5	44.6	43.9	43.7	43.5	43.0		50
W13	44.7	44.9	44.4	43.2	42.8	42.2		50
W14	44.3	44.7	43.6	42.3	42.1	41.4		50
W15	44.7	45.1	44.2	43.8	43.6	43.0		50
W16	45.4	46.1	45.1	46.0	45.8	45.0		50
W17	46.2	47.0	46.4					50
W18	44.8	44.9	43.2	40.7	40.5	39.9		50
W19	46.5	47.2	46.0	44.2	43.8	43.3		50
W20	48.1	49.1	49.3	48.8	49.1	49.3		50
W21	49.4	50.1	49.7	49.1	49.4	49.6		50
W22	44.5	45.3	45.1	44.4	44.5	44.8		50
W23	49.4	50.2	50.2	49.9	50.1	50.2		50
W24	44.8	45.8	45.4	44.8	45.0	45.2		50
W25	45.6	46.8	46.8	46.9	46.9	46.6		50

Remarks:

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

	North-East Façade
	South-East Façade
	Void in South-East Façade
60.9	*Underlined cells indicate façades with fins and acoustic windows*
62.1	*Underlined cells indicate façades with enhanced acoustic balcony*

3.6 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 PN1/24 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 PN 2/24, Construction Site Drainage; and
- Practice Note for Professional Persons ProPECC Note PN 1/23, Drainage Plans subject to Comment by the Environmental Protection Department.
- ETWB TC(W) No. 5/2005 "Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works
- Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)
- WSD Conditions for Working within Gathering Grounds

4.3 IDENTIFICATION OF WATER SENSITIVE RECEIVERS

The project site is located within the Northeast of New Territories and within the catchment of the Tolo Harbour and Channel Water Control Zone. The project site is also located within the WSD water gathering grounds (WGG).

A nearby existing Foul Manhole 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 Tolo Harbour and Channel Water Control Zone,

subject to the estimated discharge quantity. Standards for effluents discharged into the coastal waters of Tolo Harbour and Channel Water Control Zone is annexed in TM-DSS.

For the marine and river environment, the nearest EPD Water Quality Monitoring Stations (WQMS) to the Project site are TM3 and TR6 respectively. The latest summary of baseline condition of subject WQMS in 2023 is extracted, reference from "Marine Water Quality in Hong Kong in 2023" and "River Water Quality in Hong Kong in 2023" by EPD.

The Tolo Harbour and Channel WCZ is highly land-locked, and hence its water body is generally subject to a natural hydrological phenomenon of water column stratification and associated formation of bottom layer water masses with relatively low DO level in summer period due to restricted water exchange with the open waters. In 2023, the overall marine WQO compliance rate for this WCZ was 71%, mainly ascribed to the influence on the DO WQO compliance rate caused by the aforesaid natural hydrological phenomenon. On the other hand, the bacteriological WQO for secondary contact recreational uses in the WCZ has been consistently achieved, indicating a good water quality suitable for the beneficial uses.

Upon the implementation of the Tolo Harbour Action Plan since the mid-1980s, there has been substantial improvement in the water quality in Tolo Harbour in the past three decades.

Table 4-1 Summary of Marine and River Water Quality in 2023

Parameter	TM3 (Marine)	TR6 (River)
Temperature (°C)	24.9 (18.0 - 30.3)	NA
Salinity	30.5 (20.9 - 32.7)	NA
Dissolved Oxygen (mg/L)	7.0 (4.8 - 8.6)	5.6 (4.3 - 8.0)
Dissolved Oxy gen (% Saturation)	101 (76 - 135)	NA
Chemical Oxygen Demand (mg/L)	NA	15 (9 - 36)
Oil & Grease (mg/L)	NA	<0.5 (<0.5 - <0.5)
pH	7.8 (7.3 - 8.3)	7.5 (7.0 - 7.9)
Secchi Disc Depth (m)	2.4 (1.1 - 3.7)	NA
Turbidity (NTU)	1.6 (0.4 - 3.8)	NA
Suspended Solids (mg/L)	5.3	7.8

	(2.5 - 16.3)	(2.5 - 16.0)
5-day Biochemical Ox y gen Demand (mg/L)	1.7 (0.4 - 3.3)	1.5 (0.2 - 3.6)
Ammonia Nitrogen (mg/L)	0.027 (0.005 - 0.086)	0.345 (0.060 - 1.500)
Unionised Ammonia (mg/L)	0.001 (<0.001 - 0.004)	NA
Nitrite Nitrogen (mg/L)	0.005 (<0.002 - 0.017)	NA
Nitrate Nitrogen (mg/L)	0.035 (0.003 - 0.237)	0.340 (0.082 - 0.860)
Total Inorganic Nitrogen (mg/L)	0.07 (0.01 - 0.33)	NA
Total Kjeldahl Nitrogen (mg/L)	0.47 (0.26 - 0.89)	0.52 (0.24 - 1.60)
Total Nitrogen (mg/L)	0.51 (0.27 - 0.92)	NA
Orthophosphate Phosphorus (mg/L)	0.004 (<0.002 - 0.009)	0.042 (<0.002 – 0.100)
Total Phosphorus (mg/L)	0.05 (0.03 - 0.07)	0.11 (0.06 - 0.17)
Silica (as SiO2) (mg/L)	1.08 (0.06 - 5.33)	NA
Chlorophy ll-a (µg/L)	7.6 (3.3 - 23.3)	NA
E.coli (count/100mL)	11 (<1 - 210)	4 549 (500 - 24 000)
Faecal Coliforms (count/100mL)	43 (2 - 1700)	10 445 (2 800 - 36 000)
Sulphide (mg/L)	NA	<0.02 (<0.02 - <0.02)
Aluminium (µg/L)	NA	<50 (<50 - <50)
Cadmium (µg/L)	NA	<0.1 (<0.1 - <0.1)
Chromium (µg/L)	NA	<1 (<1 – 3)

Copper (µg/L)	NA	2 (1 – 7)
Lead (µg/L)	NA	<1 (<1 - <1)
Zinc (µg/L)	NA	<10 (<10 – 10)

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. The Water Sensitive Receivers (WSRs) identified within 500m of the Project boundary that may potentially be affected are shown in **Appendix 4.1** and the representative WSRs are listed in **Table 4-2** below.

Table 4-2Representative Water Sensitive Receivers (WSRs)

WSR ID	Description	Status	Approximate Distance from The Project Boundary (m)
WSR1	Nam Wa Po Nullah	Active	167
WSR2	Tributary of Nam Wa Po Nullah	Active	178
WSR3	Trench Drain	Active	74
WSR4	Trench Drain	Active	134
WSR5	Tai Po WGG	Active	Within Project boundary

4.4 WATER QUALITY IMPACTS DURING CONSTRUCTION PHASE

Proposed construction works mainly involve excavation of soil, piling and building construction works. Key water pollution sources include:

4.4.1 General Construction Activities

General construction activities, including wheel washing, dust suppression from excavation and pilling works, concrete casting and utility installation, may generate wastewater which would contain high concentration of SS. Various construction works may also generate debris and waste such as packaging, construction materials and general refuse. Uncontrolled discharge of site effluents and waste generated from the construction works would lead to deterioration in water quality. Adoption of the guidelines and good site practices for handling and disposal of construction discharges as specified in below mitigation section would minimize the potential impacts.

4.4.2 Sediment Laden Runoff from Rainfall and Wind Erosion

In particular, sediment laden runoff into receiving water courses during and immediate after rainstorm events is of major concern. During rainstorms, surface runoff would wash away the soil particles on unpaved lands and areas with exposed topsoil. Sediment laden runoff and wind-blown dust would result in deteriorating water quality with increase of SS levels and turbidity and may result in induced effects on aquatic ecological resources. It is important that proper site practice and good site management (as specified in the ProPECC PN 2/24 "Construction Site Drainage") to be followed to prevent site runoff with high level of SS from entering the surrounding waters. With the implementation of appropriate measures to control runoff and drainage from the construction site, disturbance of water bodies would be avoided and deterioration in water quality would be minimal.

4.4.3 Spillage of Chemicals

Accidental spillage and the storage of chemicals used on-site, such as petroleum products, surplus adhesives, spent lubrication oil, grease and mineral oil, spent acid and alkaline solutions/solvent and other chemicals, may contaminate the surface soils. The contaminated soil particles may be washed away by construction site runoff or stormwater drainage and eventually may affect nearby water bodies. The potential impacts could however be mitigated by practical mitigation measures and good site practices as given in below mitigation section.

4.4.4 Sewage from the Construction Workforce

Sewage effluents will arise from the sanitary facilities provided for the on-site construction workforce. The characteristics of sewage would include high levels of BOD5, Ammonia and E. coli counts. This temporary sewage can be handled by providing adequate portable chemical toilets. Provided that sewage is not discharged directly into storm drains or inland waters adjacent to the construction site, and temporary sanitary facilities are used and properly maintained, it is unlikely that sewage generated from the sites would have a significant water quality impact.

4.4.5 Construction Works in Close Proximity of Nearby Water Bodies

Construction activities within or in close vicinity to nearby water bodies may affect the water quality due to potential release of wastewater which is generally with high concentration of SS and elevated pH. Mitigation measures shall be implemented to control the release of wastewater into the adjacent water environment. With proper implementation of appropriate construction runoff control practices as referred to ProPECC PN 2/24 "Construction Site Drainage" and the provision of mitigation measures as described in the ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works", it is anticipated that no unacceptable adverse water quality impacts would be arising from the construction works nearby the water bodies.

4.5 WATER QUALITY MITIGATIONS DURING CONSTRUCTION PHASE

4.5.1 Dust Suppression

Water used in dust suppression should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be leaded to silt removal facilities before being discharged to the storm drain.

4.5.2 Wheel Washing Water

All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing facility should be provided at every site exit if practicable and wheel-wash overflow shall be directed to silt removal facilities before being discharged to the storm drain. The site boundary between the wheel washing facility and the public road should be placed with sand bunds to prevent wheel-wash overflow from entering public road drains.

4.5.3 Wastewater from Concrete Casting

Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an on-line standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal.

4.5.4 Rubbish and Litter

Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the works area. It is recommended to clean the construction sites on a regular basis. Adequate refuse collection points shall be provided on-site.

4.5.5 Construction Site Runoff

The site practices outlined in ProPECC PN 2/24 "Construction Site Drainage" should be followed as far as practicable to minimise surface runoff and the chance of erosion. It is expected that the following measures recommended will effectively control runoff from the works sites and avoid water pollution downstream and shall be implemented during construction phase.

Surface runoff from construction sites should be discharged into storm drains via sand/silt removal facilities such as sedimentation basin/tank. The treated effluent discharge from construction stages should be sited away from natural water course. Earth bunds or waterfilled barriers with geotextile sheet should be provided on site boundaries to intercept surface runoff from outside the site so that it will not wash across the site and to prevent surface runoff flowing out of the site. Bunds or sandbags should also be used within the site to direct surface runoff into the silt removal facilities. Stagnant surface runoff should be

pumped to the silt removal facilities before discharged into storm drains.

Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system without having previously passed through sedimentation tank, and to prevent storm runoff from getting into foul sewers. Discharge of surface runoff into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.

Silt removal facilities and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to prevent local flooding.

Surface excavation should be carefully programmed to avoid wet-season operation. If it is unavoidable, any exposed top soils should be covered with a tarpaulin or other means. For the purpose of preventing soil erosion, temporary exposed slope surfaces should be covered e.g. by tarpaulin, as excavation proceeds. Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms.

Open stockpiles (e.g. aggregates, sand and fill material) should also be covered with a tarpaulin to avoid erosion during rainstorms. The washing of material from the stockpiles directly into the storm drains should be prevented by passing the runoff through sedimentation tank. Arrangements should always be in place in such a way that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.

4.5.6 Spillage of Chemicals

Chemical waste, as defined under the Waste Disposal (Chemical Waste) (General) Regulation, includes any substance being scrap material, or unwanted substances specified under Schedule 1 of the Regulation. Substances likely to be generated by construction activities arise from the maintenance of construction plant and equipment of the Project. These include, but not limited to the following:

- Lubricating oil and waste fuel (diesel) from construction plant with improper maintenance;

- Spent solvents from equipment cleaning activities.

Due to the scale of an active work front of the Project, it is anticipated that no maintenance shop for construction plant and equipment would be operated on-site and storage fuel on-site is minimal. Drainage traps such as grease traps and petrol interceptors will be installed at each of the drainage outlets to filter out chemical pollutants from surface runoff.

Mitigation such as providing drip tray/proper storage of chemical containers will be strictly implemented during the construction works. In case of any leakage on bare ground, oil and grease decontamination kit will be available on-site for clean-up of oil leakage. Any fuels should be stored in bunded areas such that spillage can be easily collected. The contractor shall prepare an oil / chemical clean-up plan in the Waste Management Plan before the commencement of construction works. It should ensure that leakages or spillages are contained and cleaned up immediately. Once spillage is identified on-site, the

clean-up procedures should be carried out as below:

- Contact the site agent and/or foreman immediately and report the spillage;
- Identify the source of spillage and determine nature of the material;
- Stop leakage immediately where possible;
- Identify all current and potential affected areas according to the flow of spillage and stop the spillage from flowing to other works areas;
- Contain the surface runoff of spillage by using bunds made from available materials;
- After the surface runoff of spillage is contained, remove the materials (including contaminated soil where necessary) using pumps and/or absorbent materials; and
- Dispose of the materials, including the contaminated soil, as chemical waste

Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance (Cap. 354). The contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for disposal of chemical wastes. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance (Cap. 354) details the requirements to deal with chemical wastes. General requirements are given as follows:

- Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and
- Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area

4.5.7 Sewage Effluent from Construction Workforce

Portable chemical toilets would be provided for handling the sewage effluent generated by the workforce. The number of the chemical toilets required for the construction sites would be subject to later detailed design, the capacity of the chemical toilets, and contractor's site practices. A licensed contractor would be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.

Domestic sewage generated by the construction workforce should be appropriately managed to avoid potential adverse impacts of uncontrolled sewage discharge into nearby water courses. Portable chemical toilets shall be appropriately located on-site in proximity to all major works areas where they shall remain and be maintained in good working order for the convenience of the workforce during the construction phase.

The provision of temporary toilet facilities within the water gathering ground, if any, is subject to approval of the Director of Water Supplies. As a minimum requirement, temporary toilet facilities must be located more than 30m from any watercourse.

Notices would be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site would be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.

4.5.8 Construction Works in Close Proximity of Nearby Water Bodies

The practices outlined in ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should also be adopted where applicable to minimize the water quality impacts upon any natural streams or surface water systems. Relevant mitigation measures from the ETWB TC (Works) No. 5/2005 should be followed. Examples are shown below -

- Construction works close to the inland waters should be carried out in dry season as far as practicable where the flow in the surface channel or stream is low.
- The use of less or smaller construction plants may be specified in areas close to the water courses to reduce the disturbance to the surface water.
- Temporary storage of materials (e.g. equipment, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works.
- Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.
- Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.
- Proper shoring may need to be erected in order to prevent soil or mud from slipping into the watercourses.
- Fencing should be erected on the sides facing the nearest stream course to trap all wind-blown litters such as paper, plastic bags, bottles and boxes within the site from entering the nearby water bodies.

4.5.9 Conditions for Working within Gathering Ground

The Contractor shall comply with the "Conditions for Working within Gathering Ground" during Project construction as listed below -

- Adequate measures shall be taken to ensure that no pollution or siltation happens to the gathering grounds. The whole of the foul water drainage during the construction period shall be conveyed by suitable means for proper discharge outside the gathering grounds.

- No earth, building materials, fuel, soil or toxic materials and other materials which may cause contamination to the gathering grounds are allowed to be stockpile on site.

- All surplus spoils shall be protected and removed off the gathering grounds as soon as possible.

- Temporary drains with silt traps shall be constructed along the boundary of the site prior to the commencement of any earthworks and shall be properly maintained during the progress of the works.

- Regular cleaning of the silt traps shall be carried out to ensure that they function properly at all times.

- All excavated or filled surfaces, which are prone to erosion, shall be protected from erosion at all times.

- Facilities for washing the wheels of vehicles before leaving the site shall be provided. The effluent and washed off spoils from the wheels of vehicles shall be properly treated and disposed of e.g. connected to the temporary drains with silt traps.

- Any construction plant which may cause pollution to the gathering grounds due to leakage of oil or duel shall be removed from the gathering grounds immediately.

- Any soil contaminated with fuel leaked from plant shall be removed off site and the voids arising from removal of contaminated soil shall be replaced by suitable material to the satisfaction of the Water Authority.

- Portable toilets of the closed chemical type may be provided on site subject to approval of the Water Authority. The portable toilets and associated facilities shall be properly maintained to prevent pollution of water courses. Any portable toilets so provided shall be cleaned with waste collected at least 3 time per week or more frequent as required by the Water Authority. Sludge and waste water including cleanup water from the toilet shall be conveyed outside the gathering grounds for proper disposal. A portable toilet shall be kerbed on all sides and located at least 30 m away from any water course.

- Appropriate measures shall be taken to prevent damage to or overturning of the portable toilets by, say strong wind or vandalism, leading to discharge of sewage into the gathering grounds.

- If serious malfunction occurs and the portable toilets are to be closed, the Water Authority shall be informed of the problems and the proposed remedy,

- If, a result of operation of the toilet, the water quality condition or the aesthetic condition of any nearby water course deteriorates of there appears foul seepage into the gathering grounds, the toilet shall be closed down immediately pending completion or remedial measures to the satisfaction of the Water Authority.

- The Contractor shall be responsible for cleaning frequently any waterworks access roads and associated drainage works of mud and debris arising from the construction

activities.

- Site formation plan including details of silt traps shall be submitted to the Water Authority for approval prior to commencement of works.
- All waterworks access roads must be maintained unobstructed at all times.
- No structure or temporary works shall be erected in the catchwaters without prior approval of the Water Authority.
- The Contractor shall not run any vehicles in any waterworks access roads unless with the prior approval of the Water Authority. He shall apply to the Water Authority for its approval with details of his vehicles for using the access. Unless otherwise approved, the Contractor shall limit the gross weight of the vehicles imposed on the waterworks access to 5 tonnes and the axle load to 3 tonnes.
- The approval for using the access may be withdrawn on written notice to the Contractor by the Water Authority at its absolute discretion.
- The Contractor shall pay to the government on demand the cost of repair and reinstatement to any waterworks installation or access road that shall or may be necessary at any time during the term as a result of damage caused by any works or other activities under his charge, and shall indemnify the Government against any claim, action or demand arising therefrom.
- The Contractor shall enter and remain on and use the access at his own risk and he shall indemnify the Government against all claims, costs damages and expense arising from the use of the access.
- The use and storage of pesticides, larvicidal oil, rodenticide, toxicants, flammable solvents, tar and petroleum oil are strictly prohibited with WGG.

4.6 WATER QUALITY IMPACTS AND MITIGATIONS DURING OPERATION PHASE

4.6.1 Sewage Generation from the Residents of RCHE

Potential Impact

The Project is to build a residential care home for elderly, accommodating at most 294 nos. of bedspaces. Sewage from the residents as well as staff and visitors will be generated from bathing and showers, toilet flushing, pantry, toilet basins, etc. A summary table of sewage impact assessment is given in **Table 4-3** below. Proposed sewage discharge pathway is shown in **Appendix 4.2**.

Table 4-3 Summary of Sewage Impact Assessment

Site	Use	Global Unit Flow Factor (m^3/person/day)	No. of Residents/Employees	ADWF (m3/day)
Tai Wo, Tai Po	RCHE (Institutional and special class)	0.19	282 residents	53.58
	RCHE J11 (Community, Social & Personal Service)	0.28	90 staff [1]	25.2
	Visitor	0.08	81 per day [2]	6.48
Total			453	85.26

Remarks:

[1] About 2 times as recommended by Code of Practice for Resident Care Home

[2] Assuming number of visits for each resident is twice a week:282 x 2/7=81

Mitigation Measures

The *ProPECC Note PN 1/23* 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 1/23*.

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 from sewage generation of the Proposed Development is anticipated.

4.6.2 Surface Runoff from Roads, Paved Areas and Landscaped Areas

Potential Impact

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

uncontrolled.

Mitigation Measures

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 to reduce the suspended solid or other unwanted pollutants or waste fall into the stormwater drain.

Fertilizer and pesticide would not be used for landscaping to avoid adverse water quality impact.

With implementation of stormwater best management practices including provision of trapped gullies and catch-pits, adverse impacts to the water quality is not anticipated.

4.6.3 Water Quality Impact from the Kitchen of RCHE

Effluent discharge from the kitchen of the Proposed Development during operational phase should comply with the WPCO. Grease traps are required to be installed for any restaurants to separate greasy materials from the effluent before entering the communal sewers in accordance to "Grease Traps for Restaurants and Food Processors" published by EPD. The operator should ensure the grease traps are properly designed, installed and maintained in order to ensure the greasy materials are removed effectively before discharging to the sewerage system. Materials filtered out from the grease trap should be handled and disposed of properly to ensure the kitchen hygiene and environmental quality.

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. Deep excavation is not anticipated for basement construction. 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	ESTIMATED QUANTITY OF WASTE GENERATION
INERT C&D WASTE	• CONCRETE FROM DEMOLITION OF EXISTING PROPERTY • EXCAVATED MATERIALS (EXCLUDING TOPSOIL)	~5,810 m^3

WASTE TYPE	POSSIBLE WASTE GENERATED FROM THE PROJECT	ESTIMATED QUANTITY OF WASTE GENERATION
NON-INERT C&D WASTE	• FELLED TREES • REMOVED PLANT • TOPSOIL • DISCARDED FURNITURE • DAMAGED SCAFFOLDING BAMBOO • WOOD FORMWORK • USED PACKAGING MATERIALS	~200 m^3
GENERAL REFUSE	• WASTEPAPER • FOOD DEBRIS • PACKAGING MATERIAL	~33 kg per day
CHEMICAL WASTE	• SPENT LUBRICATING OIL • PAINT	Anticipated to be limited

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;
- help to discharge duty of care obligations; and
- propose measures for implementing the typical hierarchy of waste management.

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. On-site sorting of construction waste is preferred. Construction waste delivery to Civil Engineering and Development Department (CEDD) managed public fill reception points and/or sorting facilities should be the last resort of waste management. 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. 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.

Recycling of any tree and vegetation waste generated from the construction works in Y. Park should be considered to 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 construction and 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.

6.1 AIR QUALITY

Construction Phase

Potential air quality impact during construction phase would be fugitive dust generated from wind erosion of the excavated areas and stockpiles, and dusty construction activities. Given the nature and limited scale of the proposed construction works, potential air quality impact would be minor and localised. With the implementation of regular site watering and good construction practices for dust minimization, construction dust impacts are not expected to be significant on the surrounding sensitive receivers. Requirements of *Air Pollution Control (Construction Dust) Regulation* and *EPD's Recommended Pollution Control Clauses for Construction Contracts* are proposed to be incorporated into the contract.

Operation Phase

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.

A sewage pumping station is identified within 200m from the site boundary. Given that the retention tank of the sewage pumping station is located underground and enclosed, together with the negative pressure generated in the pumping station with the flowing of sewerage, no adverse odour nuisance attributed from the sewerage is anticipated.

Oily fume and cooking emissions from the kitchen of the Proposed Project will potentially arise. No adverse odour impact is anticipated after consideration of positioning the exhaust outlets and installation of a grease filter.

No adverse air quality impact from the proposed carpark is anticipated given that the small scale of the carpark and sufficient ventilation will be provided. The exhaust outlets of the carpark will be located away from the nearby ASRs as far as practicable.

6.2 NOISE

Construction Phase

Various construction activities will be the key noise sources generated during the construction phase. No adverse construction noise impact is anticipated with the implementation of mitigation measures such as recommendations in ProPECC PN1/24 and on-site practice mentioned in Section **3.6**.

Operation Phase

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

Railway would be another major source of noise nuisance during the Project operation. The mitigation measures for road traffic noise are also applicable to railway noise. The predicted railway noise impact with mitigation measures would comply with the stipulated noise criteria.

Cooling towers located on the open rooftop of the Proposed Development are considered as the dominated fixed noise sources during the operation phase of the Project. As the specification of the cooling towers will be designed by the design and build contractor in the future, background noise measurement should be conducted in due course to define the noise standards for assessing the planned fixed noise sources. The sound power level and noise mitigation requirements such as the use of silencer, noise enclosure and acoustic lining will be stipulated in the contract specification governing the equipment selection by the design and build contractor.

Two sewage pumping stations are identified within 300m from the site boundary. Provided that the identified sewage pumping stations are in close proximity to the existing residential development and the fixed plants for the stations are properly designed to meet the maximum permissible SWL.

Considering the above, no operational phase noise impact is anticipated.

6.3 WATER QUALITY

Construction Phase

Major construction activities such as excavation of soil, piling and building works will be the key water pollution sources generated during the construction phase. No adverse construction water quality impact is anticipated with the implementation of mitigation measures such as implementation of the site practices outlined in ProPECC PN 2/24 "Construction Site Drainage" and ETWB TC (Works) No.5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works", provision of silt removal facilities, proper collection and storage of chemicals and provision of portable chemical toilets.

Operation Phase

Sewage generation, surface runoff from roads, paved area and landscape areas will be the key water pollution sources generated during the operation phase. With a properly designed sewerage and drainage system, no insurmountable water quality impacts would be generated from the operation phase of the Proposed Development.

6.4 WASTE MANAGEMENT

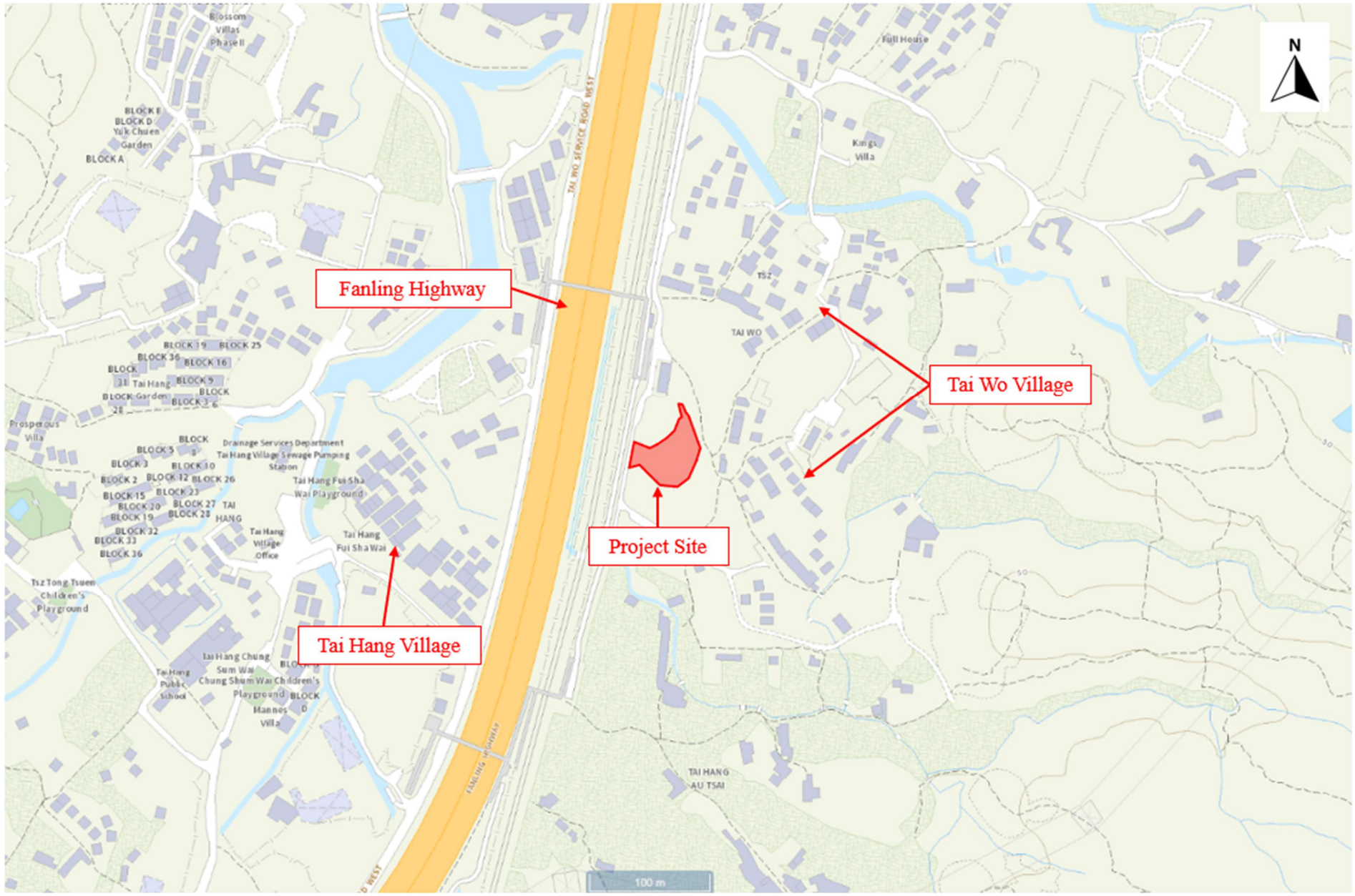
Construction Phase

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.

Operation Phase

General refuse and clinical waste will be the major wastes generated during operation phase. With a properly designed waste collection and disposal system, no adverse waste impact is anticipated.

APPENDIX 1.1. SITE LAYOUT PLAN & SURROUNDING ENVIRONMENT



PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 1.1.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: SITE LAYOUT PLAN AND SURROUNDING ENVIRONMENT	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

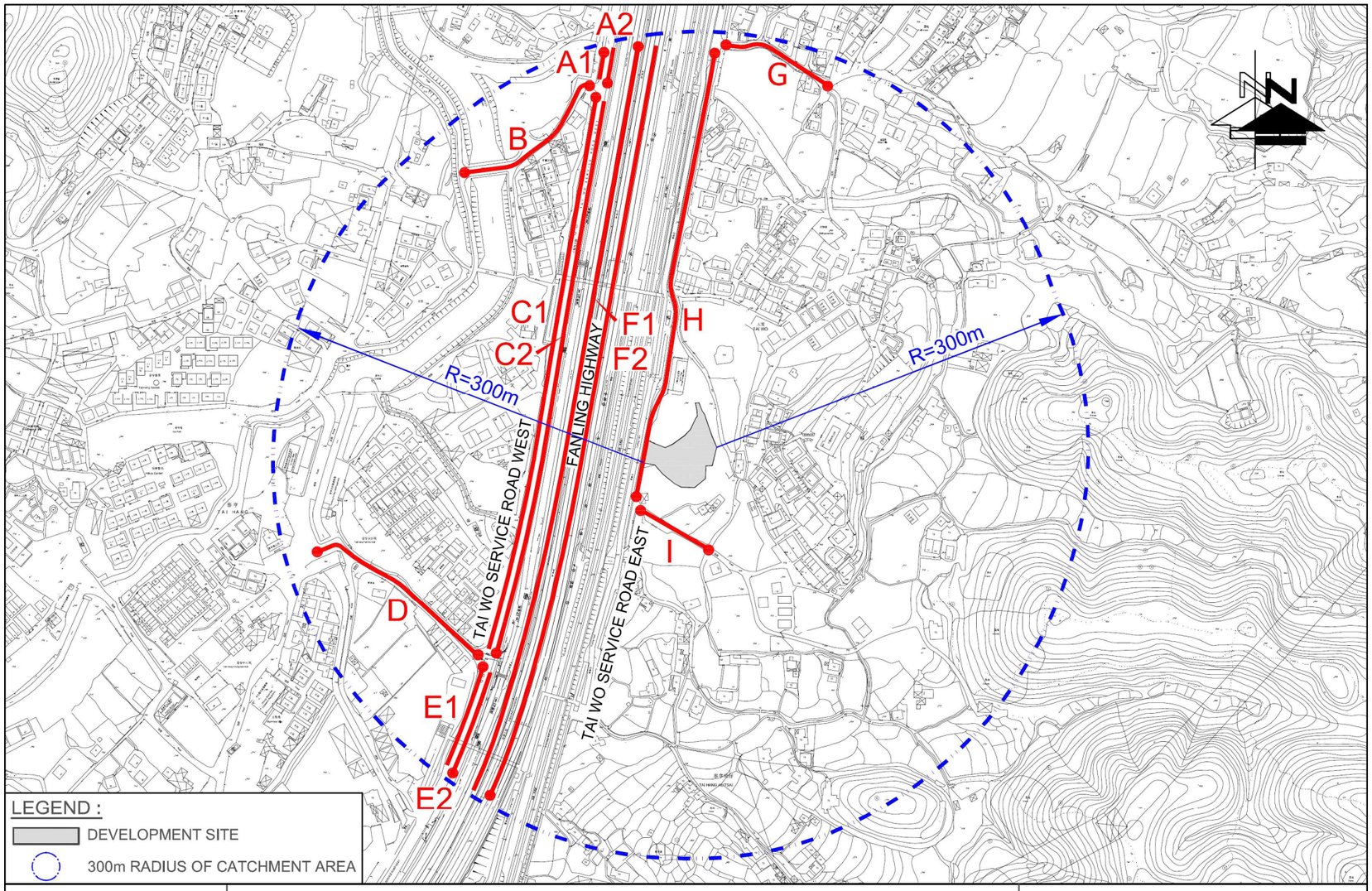
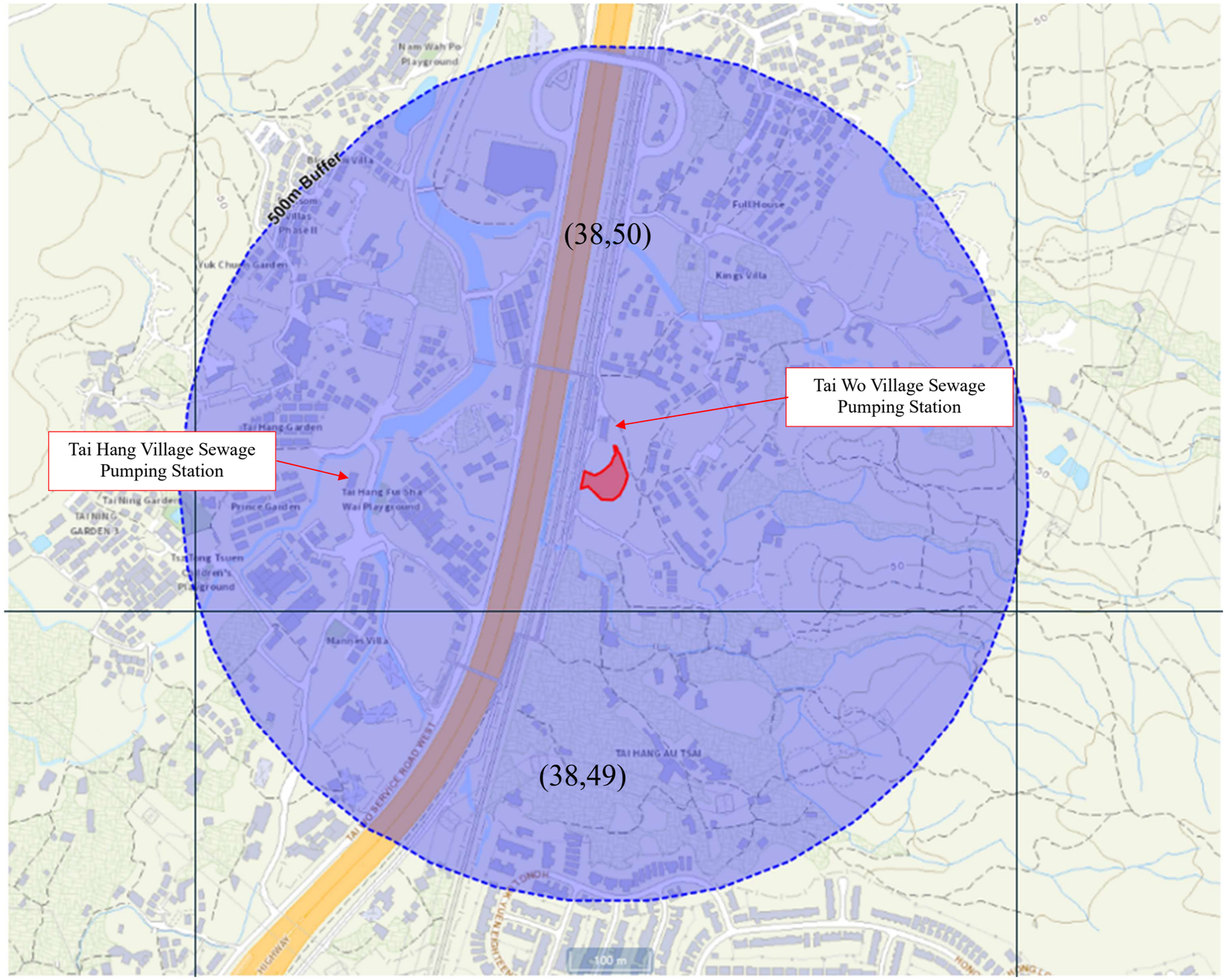


FIGURE NO.: 2	PROJECT TITLE: Proposed Re-zoning for Proposed "Social Welfare Facilities" Residential Care Home for the Elderly (RCHE) at Various Lots in D.D.7 Tai Wo, Tai Po, NT	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25037HK	DRAWING TITLE: INDEX PLAN FOR TNIA (300m)	
SCALE: 1 : 4000 @A4 / DATE: 25 JUN 2025		

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 1.1.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Frankie Yuen
DRAWING TITLE: LOCATION OF ADJACENT ROADS	SCALE: N.T.S.	REV: A			CHECKED BY: Eddy Ng
					APPROVED BY: Banting Wong

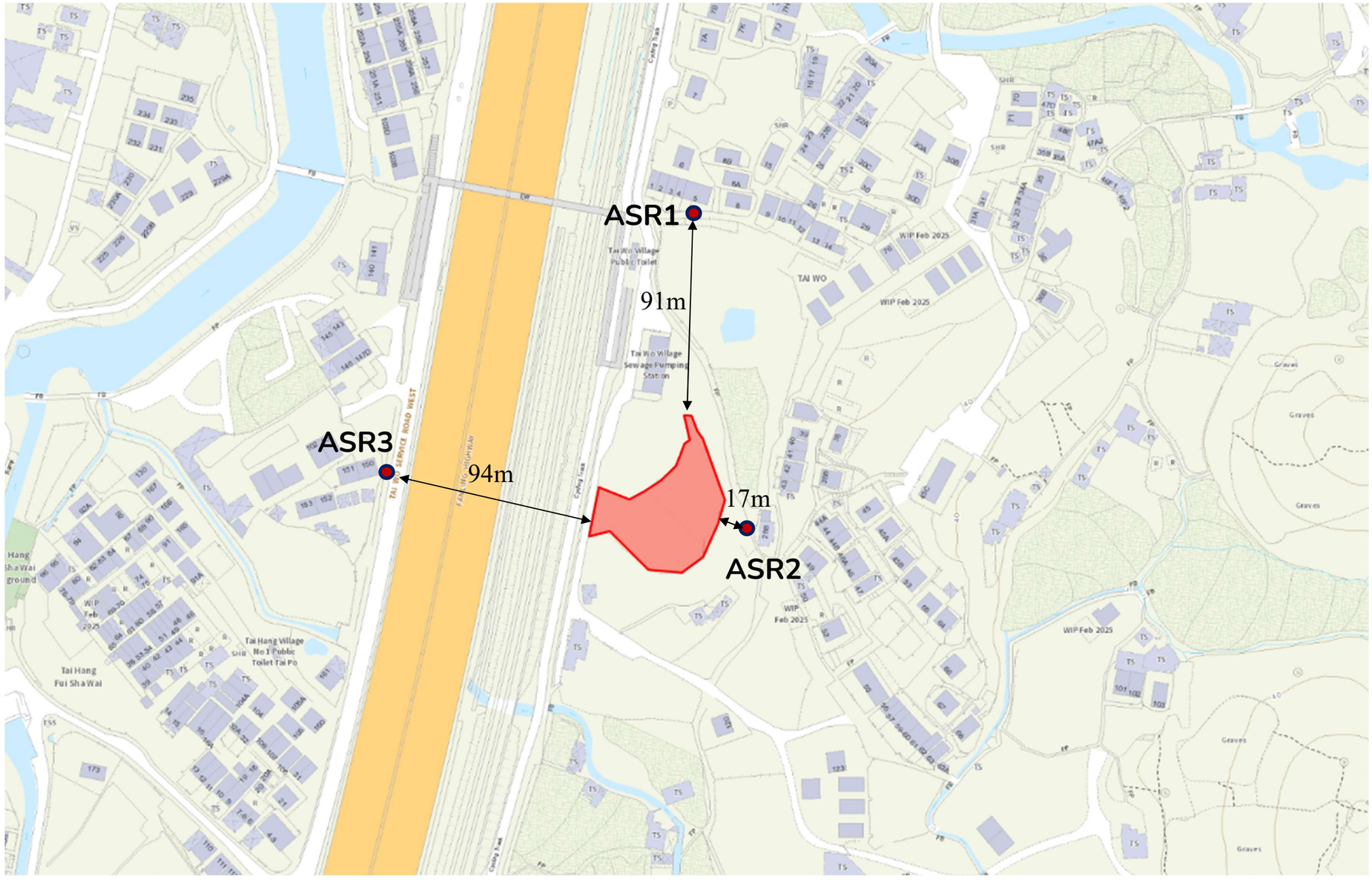
APPENDIX 2.1. AIR QUALITY SENSITIVE RECEIVERS & EMISSION SOURCES



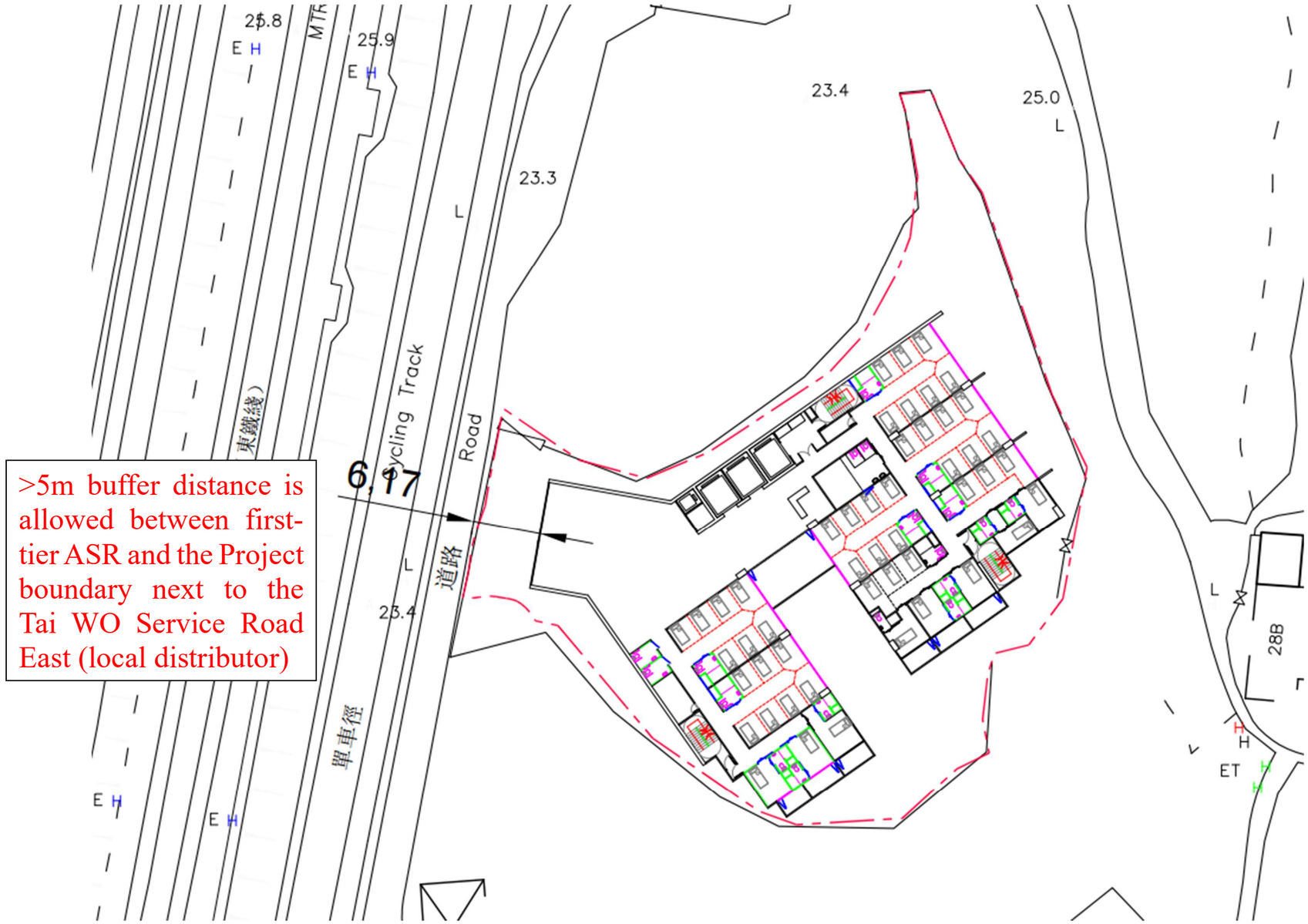
LEGEND

- SITE BOUNDARY
- 500m STUDY AREA
- PATH GRIDS

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 2.1.1a		PREPARED BY	Frankie Yuen
DRAWING TITLE: AIR QUALITY STUDY AREA	SCALE: N.T.S.	REV: A	CHECKED BY	Eddy Ng
LEAD ARCHITECT: R Lee Architects (HK) Ltd ENVIRONMENTAL CONSULTANT: Novox			APPROVED BY	Banting Wong

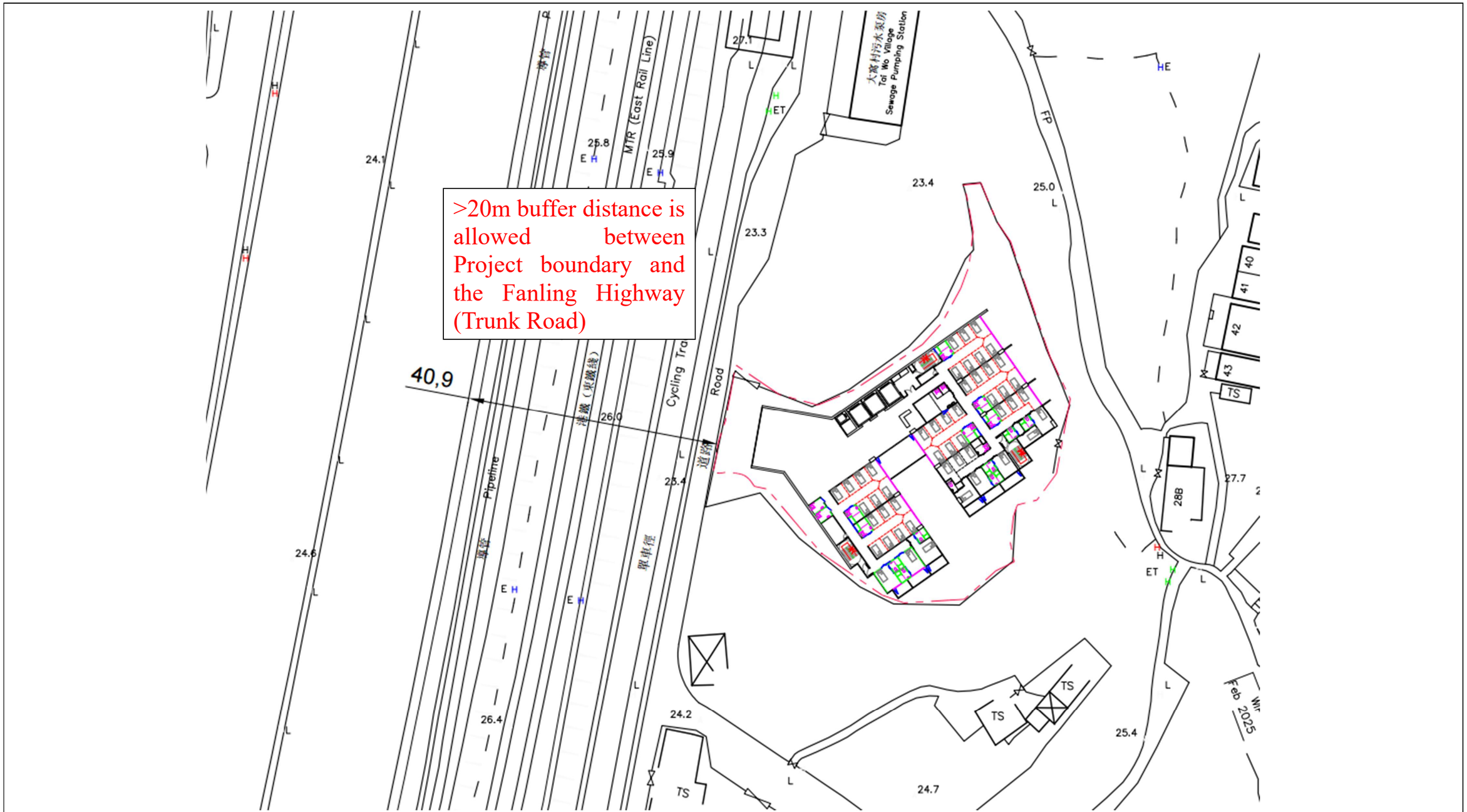


PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 2.1.1b		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: REPRESENTATIVE ASRS FOR CONSTRUCTION PHASE	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



>5m buffer distance is allowed between first-tier ASR and the Project boundary next to the Tai WO Service Road East (local distributor)

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 2.1.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY: Frankie Yuen
DRAWING TITLE: REPRESENTATIVE ASRS FOR OPERATIONAL PHASE (1/F)	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY: Eddy Ng
				APPROVED BY: Banting Wong



PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 2.1.3		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: REPRESENTATIVE ASRS FOR OPERATIONAL PHASE	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

APPENDIX 2.2. BROCHURE OF THE GREASE FILTER


Control of Oily Fume and
Cooking Odour from
Restaurants and Food Business

Introduction

Oily fume and cooking odour emissions from cooking processes are under the control of the Air Pollution Control Ordinance (The "Ordinance"). It is necessary for owners and operators of restaurants and food business to take appropriate measures to ensure that no visible cooking fumes nor objectionable odour would be emitted causing any forms of pollution. In this regard, appropriate high performance air pollution control equipment have to be installed at the kitchen ventilation system of the food premises for treating cooking fume emissions before being discharged to the outdoor environment, lest to violate the requirements of the Ordinance.

This note aims to provide guidance to the owners and operators of restaurants and food business in helping them understand and apply the best practical control measures to minimize these emissions, thereby preventing air pollution problems.

A typical air pollution problem associated with cooking fumes emissions

Standards of Control

As a general guideline, all air emissions from a restaurant and food premises should not give rise to an air pollution problem, including odour nuisance, and should be free from visible fume.

For exhaust outlets in close proximity to the sensitive receptors, such as residential premises, schools, clinics, it is possible that the air pollution problem would still exist even after the application of advanced control technologies. To avoid air nuisance likely caused to the air sensitive receivers, the owners and operators of the restaurants and food business should refrain from choosing these sites for their business.

Positioning of Exhaust Outlets

Suitable siting or positioning of the outlet of the exhaust system is of paramount importance to avoid causing or contributing to an air pollution. In deciding the location of the exhaust outlet, the following should be considered :

(a) locate the exhaust outlet at such a place where the ventilation is good and the emissions from them can be adequately dispersed without hindrance;

(b) provide sufficient separate distance from any sensitive receptor in the vicinity so that the emissions will not cause, or contribute to, an odour nuisance or other type of air pollution to the public; and

(c) set the exhaust outlet as high as possible for upward discharge.

It is preferable to extend the exhaust to a level of at least 3 metres above the highest point of the restaurant's own building and of any adjacent or attached buildings that fall within a 20-metre radius. If this is not practicable, advice should be sought from the environmental professionals to confirm if the alternative location is also suitable before finalizing the decision.

An example of good practice, extending kitchen exhausts to rooftop

Oily Fume and Cooking Odour Control

The complete exhaust system serving the cooking stoves or other cooking appliances, including the air pollution control equipment, should be designed, commissioned and maintained by competent and professionals, and be operated by competent and adequately trained staff. The design of air pollution control equipment should be based on peak load conditions (i.e. the worst case scenario). For easy reference, a brief description of the available techniques for the control of emission of oily fume and cooking odour is given in Annex A.

For those exhaust systems serving stoves for frying, charbroiling, roasting and similar operations that will give out excessive oily fume emissions, they should be equipped with high efficiency air pollution control equipment to remove oily fume from the waste gases before discharging into open atmosphere.

If the exhaust contains a strong odour or the exhaust outlet is in close proximity to any sensitive receptor in the vicinity such that an air pollution exists or is imminent, high efficiency odour control equipment will also be required.

To ease the loading of the control equipment, it is advisable to provide a separate exhaust system for those cooking operations giving rise to oily fume and strong odour emissions and treat the emissions with a separate control equipment.

Oily fume treatment system on the roof

Operation and Maintenance of Control Equipment

It is important that the exhaust system, including the air pollution control equipment, is properly operated and maintained. The following practices should be fully adopted:

(a) Operation and servicing of the exhaust system and the air pollution control equipment should only be carried out by competent staff with sufficient training and relevant skills in accordance with the manufacturers' recommendations.

(b) Maintenance and repair of the system should be carried out by competent professionals.

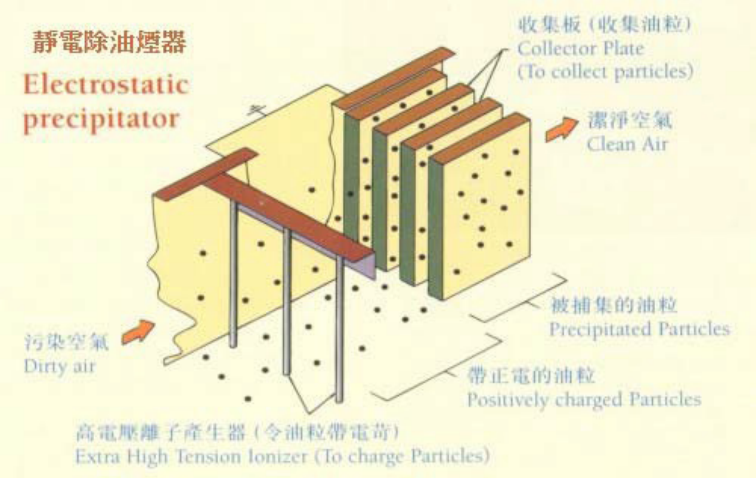
Consideration should be given in the design of kitchen ventilation system to ensure adequate capacity of the air pollution control equipment to cater for the peak load. Safe access shall be provided for facilitating regular inspection, cleansing and maintenance of the air pollution control equipment. Inspection window in the form of transparent panel shall be provided for equipment such as air washer, Venturi & packed water scrubber and activated carbon filter unit. Standby or spare units should be provided if the situation warrants. It is also recommended to interlock the air pollution control equipment with the associated exhaust system in such a manner that the exhaust system will be inoperative unless the control equipment is in operation and functioning properly.

To ensure its proper performance, the air pollution control equipment should be scheduled for inspection, cleansing and maintenance regularly. The frequency for cleansing and servicing are recommended below:

(a) Electrostatic precipitators:

(i) The components of extra high tension ionizer and oily fume collector plate should be removed for cleansing by competent staff with sufficient training and relevant skill at regular intervals (for example every week to every month depending on the amount of cooking fume handled). While cleansing the oil droplets deposited on the collector plates, care must be given to detect if the detergents or chemical in use would cause damage to the collector plate components (such as strong alkaline would corrode and oxidize the aluminum components). Moreover, it is recommended to inspect emission at least twice a day. Whenever observing any signs of deterioration in performance, such as visible emission, is noted, they should be cleansed immediately. If a built-in washing system unit is installed, the unit should be activated once a day to help reduce the frequency of periodic cleansing of the components.

(ii) Sufficient maintenance space should be provided in the installation of electrostatic precipitator for safe removal of the components of extra high tension ionizer and oily fume collector plate for cleansing.



Collector plate is one of the essential component which must be cleaned regularly to ensure the performance of the Electrostatic Precipitators

Before and after conditions of the electrostatic precipitator collector plate. Oil droplets deposited on the collector plates will deteriorate the removal efficiency, regular cleansing have to be conducted to maintain operating performance.

(b) UV-C Lamp Exhaust Hood:

The UV-C lamps and the forefront grease pre-filters should be regularly cleaned (say every few days to every week depending on the amount of cooking fumes being handled). The cleaning procedures should be strictly adhered as recommended by the suppliers in order to ensure that the control equipment is in good operating conditions at all times.

Kitchen Exhaust Hood Equipped with Ultraviolet Bulb to Remove Grease and Odour

After removal of forefront grease pre-filters, UV bulb cassette is in sight installed behind them. The UV lamps and the pre-filters should be cleaned regularly.

(c) Hydrovents, air washers and scrubbers:

The hydrovents, air washers and scrubbers should be cleaned and serviced immediately as soon as there is any sign of deterioration in fume control and in any case, not less than once a month. Besides, the water and dosing pumps, filters, detergent dosage rate, pressure gauge, spraying (i.e. adequate atomizing) condition, etc, should be checked regularly to ensure the control equipment is in good operating conditions at all time.

(d) Duct works:

They should be cleaned and serviced at least once every 6 months.

Regular visual inspection on the exhaust outlets and scent for likely odour nuisance during peak hours should also be conducted to ensure an early discovery of any operational problem with the equipment. In general, a frequency of twice a day or more at busy hours is recommended.

Remedial measures should be taken immediately if objectionable odour, visible oily fume and/or droplets are noticed. This could be done by checking the operating conditions and performance of the air pollution control equipment and the condition of the exhaust system. Any defective parts, choked filters, saturated scrubbing liquid, etc. should be replaced as soon as possible. To facilitate immediate replacement, there should be sufficient stock of such materials kept in the restaurant.

It is also desirable for the restaurant owners and operators to keep a copy of the operation and maintenance manual and the maintenance and repair log book of the air pollution control equipment at the restaurant.

Enquiries

Enquiries can be addressed to the Regional Offices of the Environmental Protection Department. They will be glad to answer any enquiries concerning the control of oily fume and cooking odour from restaurants and food business.

ANNEX A

Available Techniques for the Control of Oily Fume and Odour Emissions

Grease Filters

Metallic grease filters, which are commonly found in the market, can screen out large oily droplets by way of simply physical collision and / or changing the direction of flow at high speed onto the filter surface, thus suitable for preliminary treatment of oily fumes.

Typical metallic grease filters {Mesh filter (left) and baffle filter (right)}

UV-C Lamp Exhaust Hood

UltravioletC light emitted by the UV lamp can break down the chemical structure of oil molecules so as to achieve the removal of fumes and odour. A built-in UV lamp exhaust hood is generally equipped with several UV lamps depending on the handling capacity of fumes and the size of the hood. The lamps are mounted on cassette panel and installed behind the grease filters (usually 2 layers of forefront grease pre-filters). The forefront grease pre-filters serve as barrier impeding large oil droplets directly onto the UV lamps, and meanwhile screening off the harmful effect of UV-C light to human. Built-in UV lamp exhaust hood is another method with an added advantage to treat greasy fumes and odours.

Cassette panel mounted with UV-C lamps

Water Spray Hoods (Hydrovents) and Air Washers

In the design of a hydrovent and air washer system, due considerations should be given to the following:

(a) avoidance of channelling;

(b) sufficient residence time;

(c) adequate air-to-water-ratio;

(d) choices of scrubbing liquid; and

(e) easy maintenance and cleaning.

Air washers should be filled with specially designed baffles to enhance their performance.

Given the average removal performance of water spray hoods (hydrovents) and air washers for greasy droplets in the exhaust stream, they can only be used for preliminary treatment while satisfactory fume removal would result with the combined use of high performance air pollution control equipment, say, electrostatic precipitators.

Electrostatic Precipitators (ESPs)

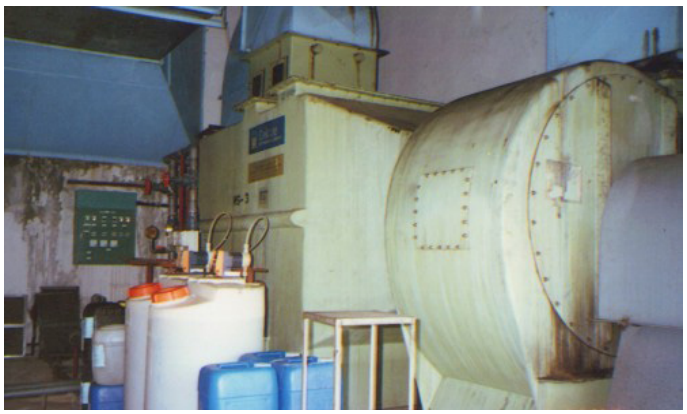
If properly designed and maintained, ESPs can achieve a high collection efficiency for oily fume. Since oily fume is sticky and easily coated on the collector plates and render the equipment inoperative, ESPs should be cleaned/serviced regularly and properly. Whenever observing any sign of deteriorating performance for control of oily fume, it is required to cleanse the collector plates immediately.

Venturi and Packed Tower Scrubbers

Venturi scrubbers are sometimes employed to control oily fume. Exhaust gas stream is forced through the venturi throat where they are intercepted by an atomized scrubbing liquid stream. Removal efficiency depends on the pressure drop across the venturi throat and particle size. Noise may be a problem since air velocity at the throat is high.

Packed tower scrubbers remove oily fume by absorption as stream of scrubbing liquid is sprayed on the oily fume laden gas stream. The scrubber is filled with specially designed packing materials to increase the contact surface area between the scrubbing liquid and the waste gas stream to enhance the absorption efficiency. Packed tower scrubbers generally occupy more space for installation.

For both venturi scrubbers and packed tower scrubbers, water is the common scrubbing liquid. These kinds of scrubbers can be effective for odour control too if a suitable scrubbing liquid is used. The venturi scrubber, however, are notorious emitters of high-frequency noise and special consideration should be taken to avoid causing noise pollution problem if this equipment is selected. Further, given the larger volume of scrubbers occupying bigger space, they would merely suitable for food premises and workshops with sufficient spatial environment.



Example of venturi scrubber with odour control

Activated Carbon Filter

Activated carbon particles, which are highly porous and have very large surface to volume ratios, remove odour by adsorption in which the odorous compounds, when penetrate into the pores, are retained on the inner-surfaces of the granular solid.

Although activated carbon filters are effective in odour removal, their performance could be adversely affected under the following conditions:

(a) High moisture content will flood the adsorption sites, thereby reducing performance and media life.

(b) High temperature will increase the gas movement and therefore, reduce the adsorption capability.

(c) Any oily particles present in the exhaust gas stream will plug the adsorption sites, thereby reducing performance and media life and increasing services costs.

It should therefore be noted that the sole use of activated carbon is not suitable for controlling odour emission from cooking processes because of the nature of the emission.

Common factors which should be considered in the design of activated carbon filter system or other adsorption equipment include:

(a) Contact time between adsorbent and adsorbate;

(b) Total adsorptive capacity of the adsorbent;

(c) Uniform distribution of airflow over the surface of the adsorbent;

(d) Resistance to airflow;

(e) Quantity of exhaust gas handled per unit time; and

(f) Amount of oily particles to be adsorbed.

Adsorbers are mostly of a stationary packed bed arrangement. They are usually packed with appropriate depth adsorbent and installed in units of two or more modules in parallel to permit continuous operation. Preliminary treatment facility should be installed before activated carbon filters to remove oily fume and water from the exhaust gases, and, if necessary, to lower the exhaust gas temperature to the operational range. Particular attention should also be paid to the requirement of regular replenishment and to prevent carbon dust from blowing out.

Control of offensive odours

For cooking fumes with offensive smell, it is necessary to install high performance odour removal equipment in addition to high performance fume control equipment, such as activated carbon filter or UV-C / ozone de-odourizing equipment.

The odour control equipment should be installed at the rear portion of the ventilation ducting system immediately prior to exhaust outlet, such that the exhaust cooking fumes could be preliminarily treated for removal of oily droplets and moisture before allowing to pass through the odour removal equipment. The exhaust cooking fumes should preferably be cooled appropriately down where necessary, lest to causing detrimental effect to the control equipment.

Remarks: While for installing air pollution control equipment, such as electrostatic precipitator and activated carbon filter which form part of the ventilation system, the owners and operators of the restaurants and food business may need prior approval from relevant government departments and are advised to consult the Food and Environmental Hygiene Department, Fire Services Department and Buildings Department where appropriate.

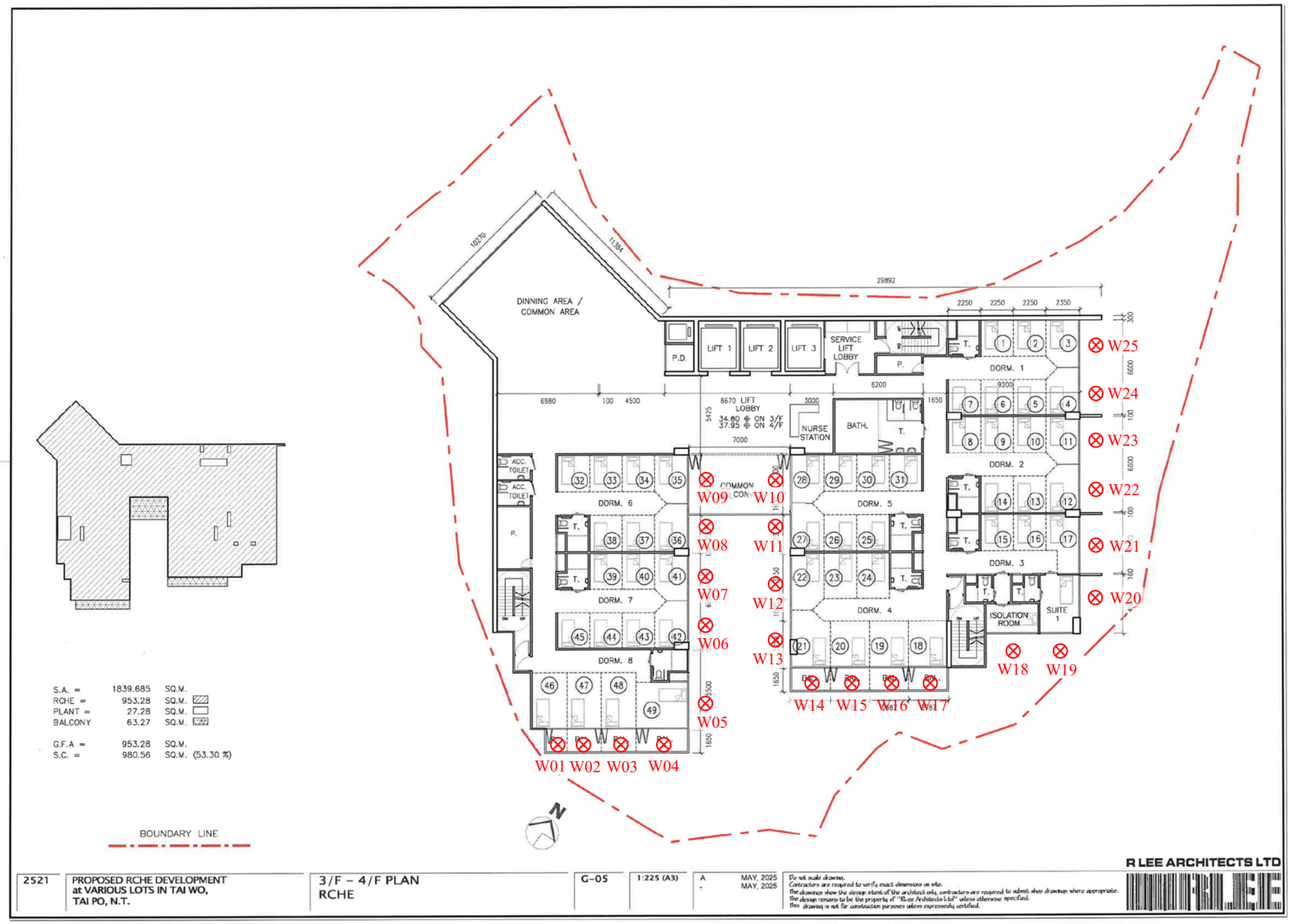
ANNEX B

Regional Offices	
Districts / Address	Telephone No. / Fascimile No.
EPD Territorial Control Office 28/F Southorn Centre, 130 Hennessy Centre, Wanchai, Hong Kong.	Tel. 2835 1018 Fax. 2838 2155
Regional Office (East) (Kwun Tong, Wong Tai Sin, Sai Kung, Yau Tsim Mong & Kowloon City) 5/F Nan Fung Commercial Centre, 19 Lam Lok Street, Kowloon Bay, Kowloon.	Tel. 2755 5518 Fax. 2756 8588
Regional Office (South) (Hong Kong Island & Islands) 2/F Chinachem Exchange Square, 1 Hoi Wan Street, Quarry Bay, Hong Kong.	Tel. 2516 1718 Fax. 2960 1760
Regional Office (West) (Tuen Mun, Tsuen Wan, Kwai Tsing & Sham Shui Po) 8/F Tsuen Wan Government Offices, 38 Sai Lau Kok Road, Tsuen Wan, N.T..	Tel. 2417 6116 Fax. 2411 3073
Regional Office (North) (Yuen Long, Shatin, Tai Po & North) 10/F, Shatin Government offices, No. 1 Sheung Wo Che Road, Shatin, N.T..	Tel. 2158 5757 Fax. 2685 1133

(reviewed in Dec 2024)

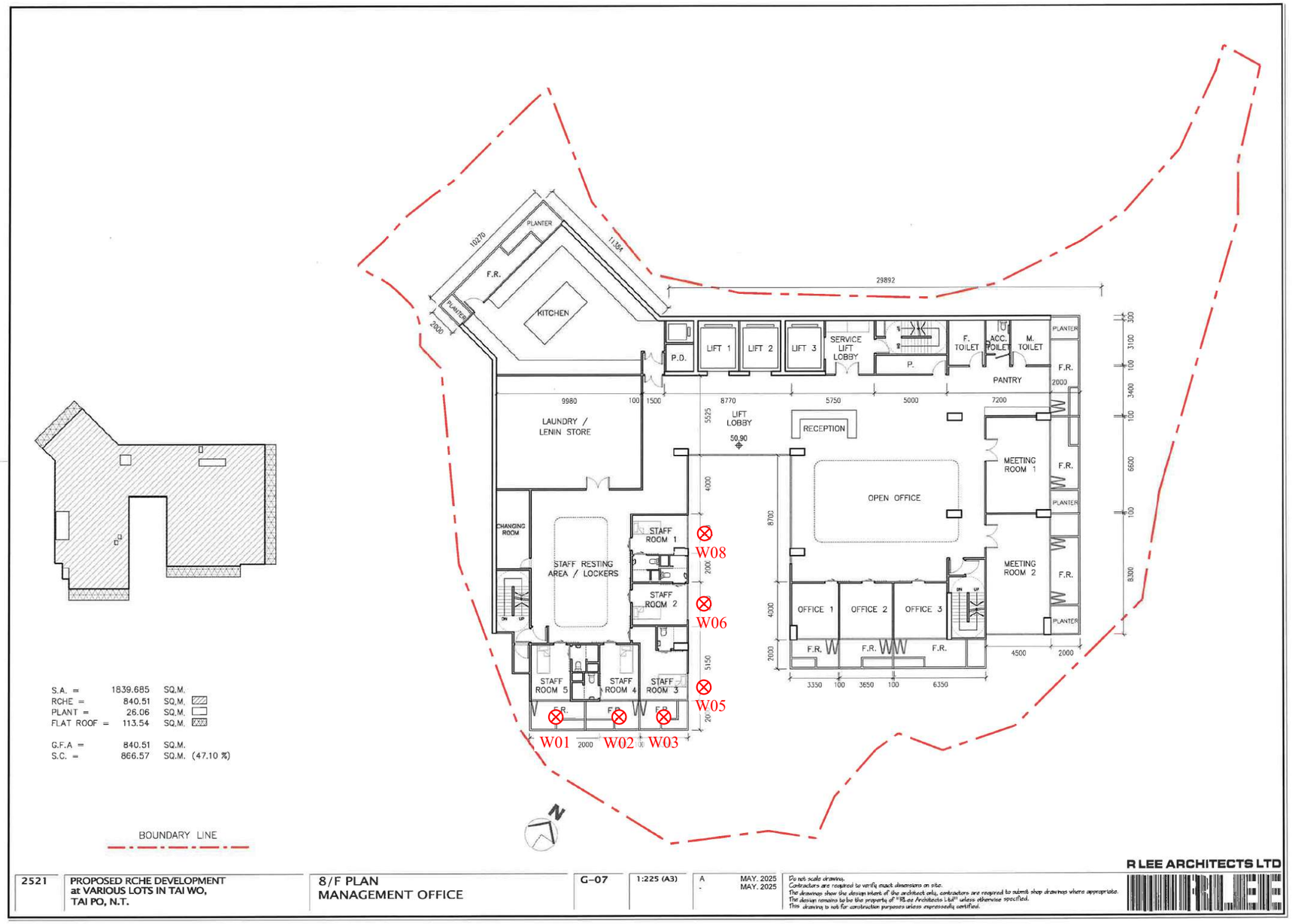
APPENDIX 3.1. TRAFFIC NOISE IMPACT ASSESSMENT

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-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

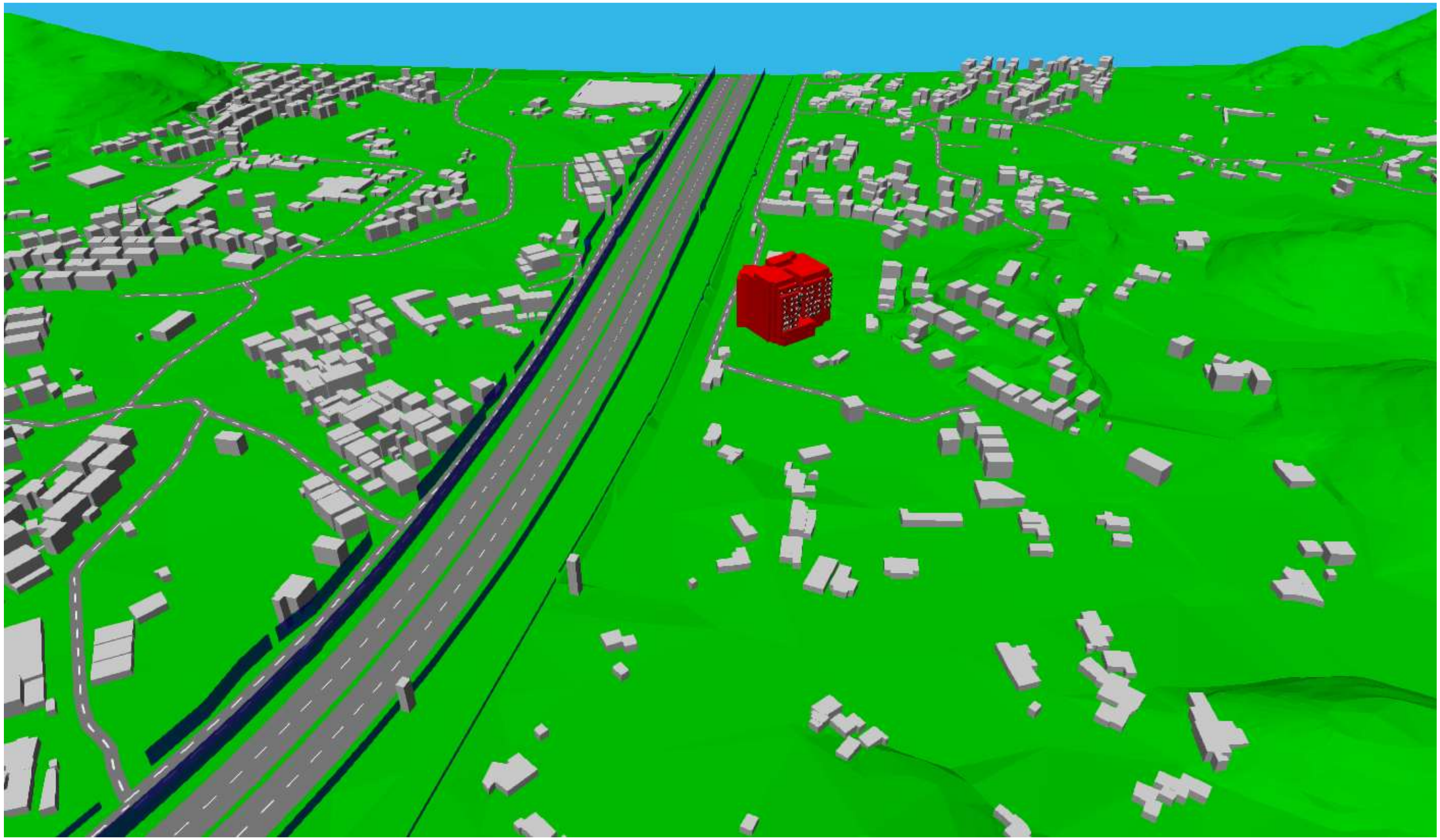


PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.2		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY: Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (3/F-4/F TYPICAL FLOOR)	SCALE: N.T.S.	REV: A			CHECKED BY: Eddy Ng
					APPROVED BY: Banting Wong

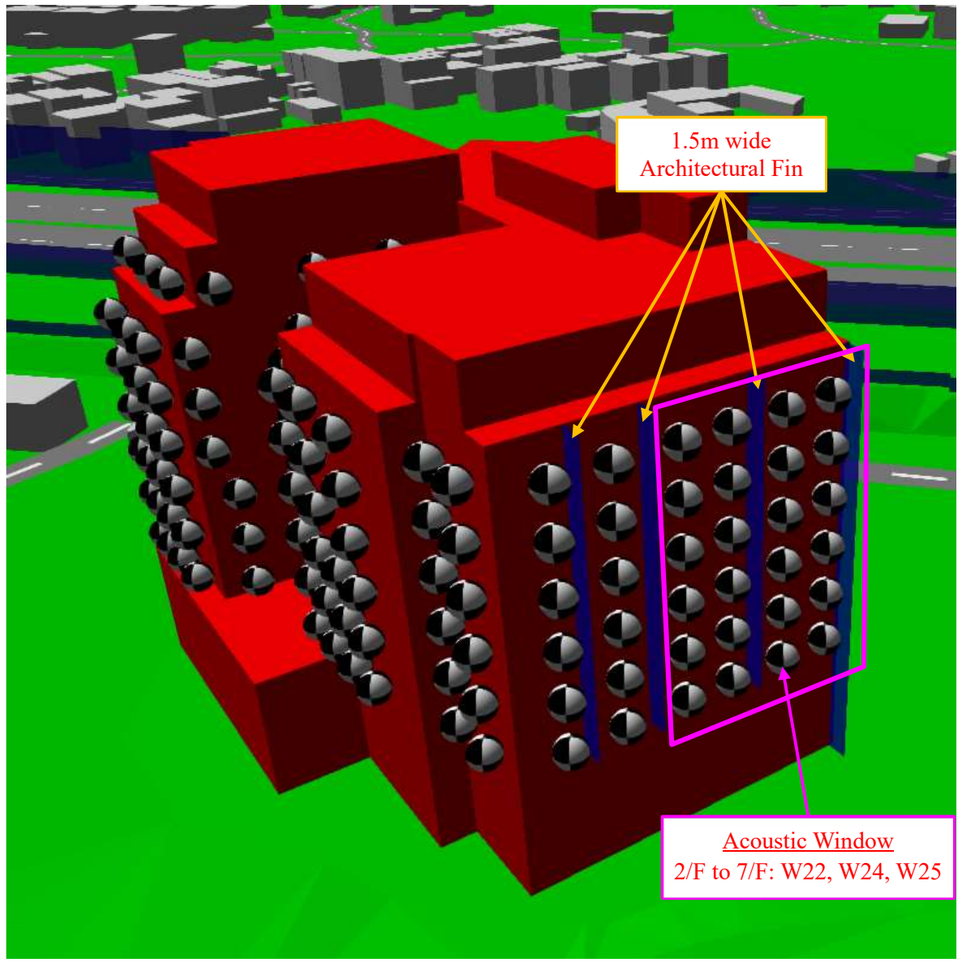
PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.3		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (5/F-7/F TYPICAL FLOOR)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

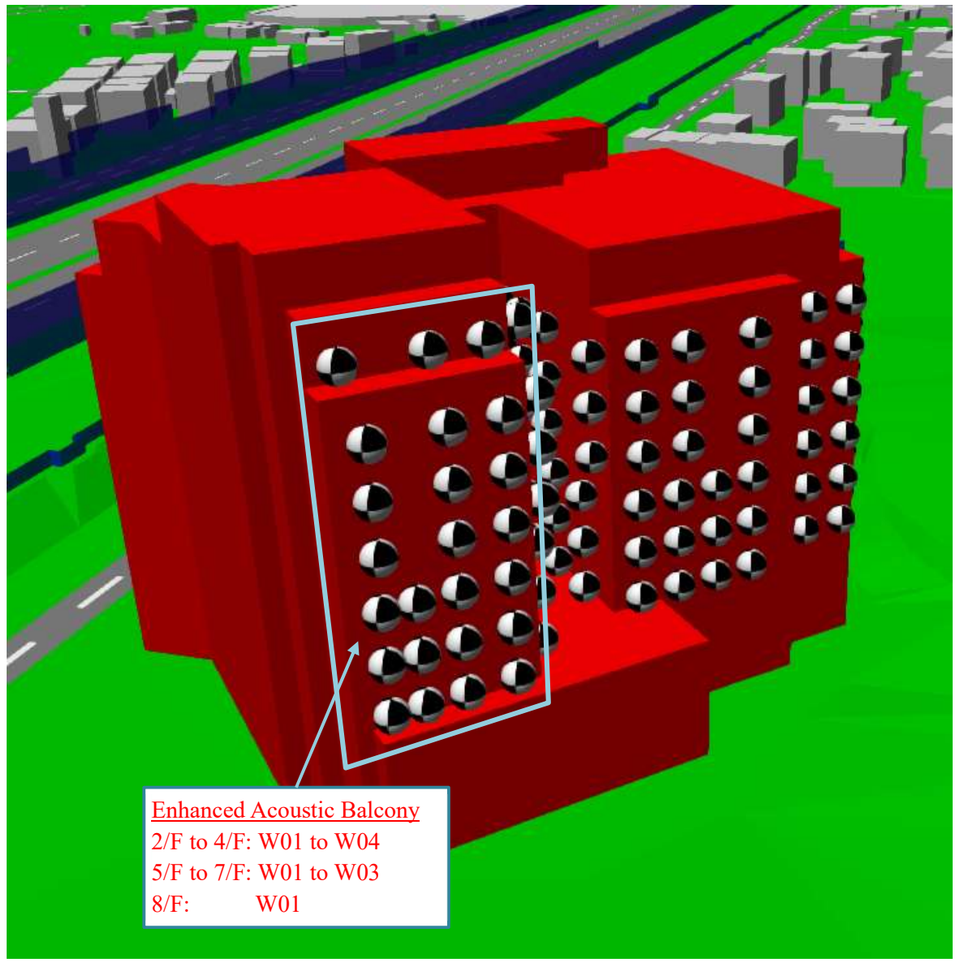


PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.4		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR TRAFFIC NOISE IMPACT ASSESSMENT (8/F)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

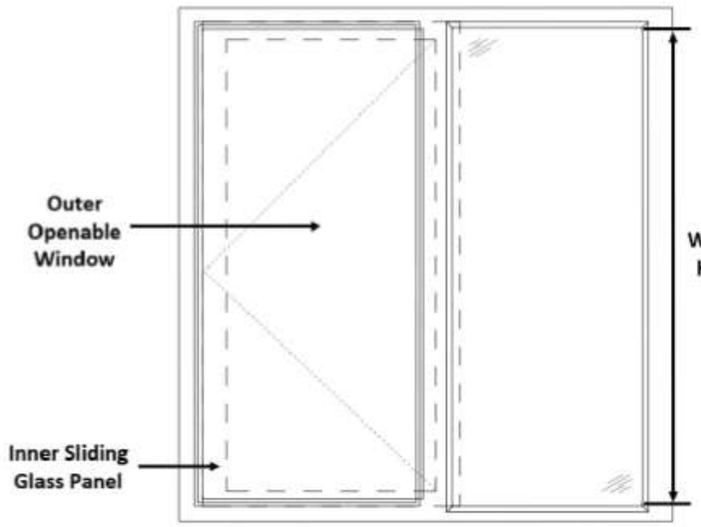


PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.5		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: 3D VIEW OF NOISE MODEL, NOISE SOURCES AND REPRESENTATIVE NSRS	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

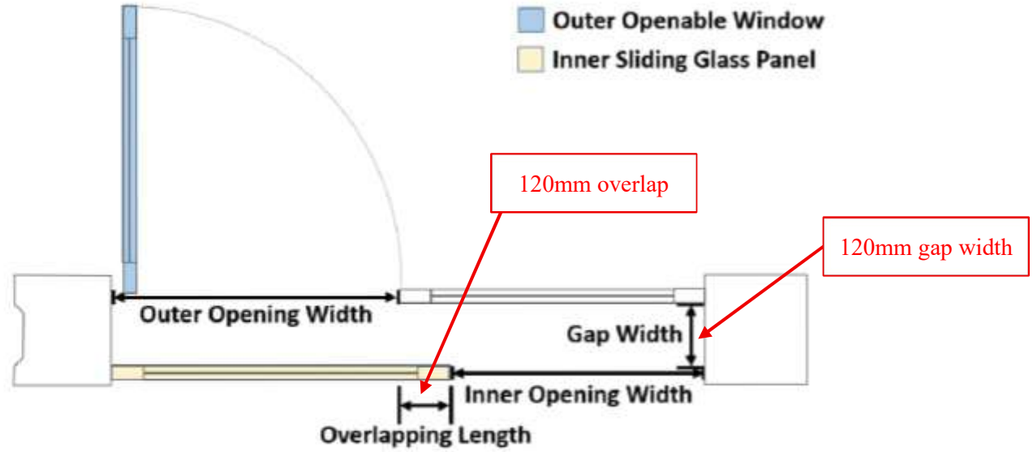




PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.6		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: 3D VIEW OF NOISE MITIGATION MEASURES	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

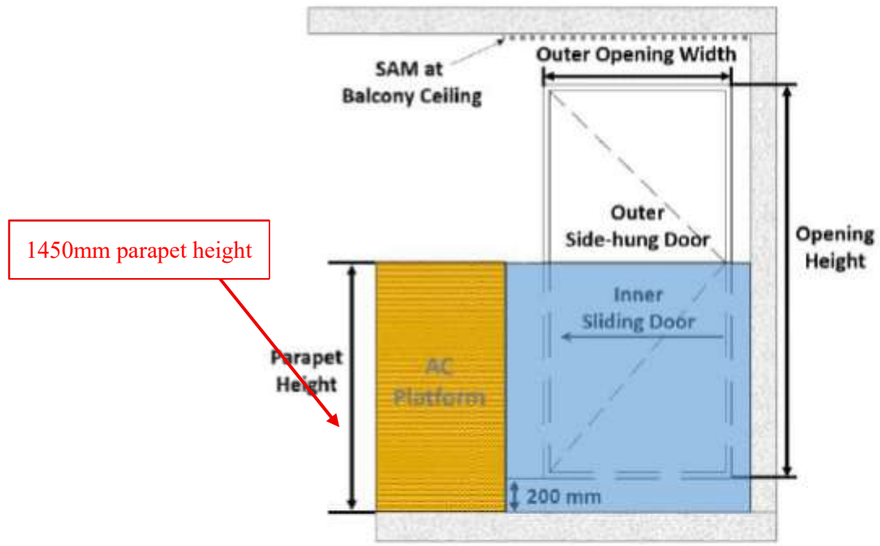


INTERNAL VIEW (NOT TO SCALE)

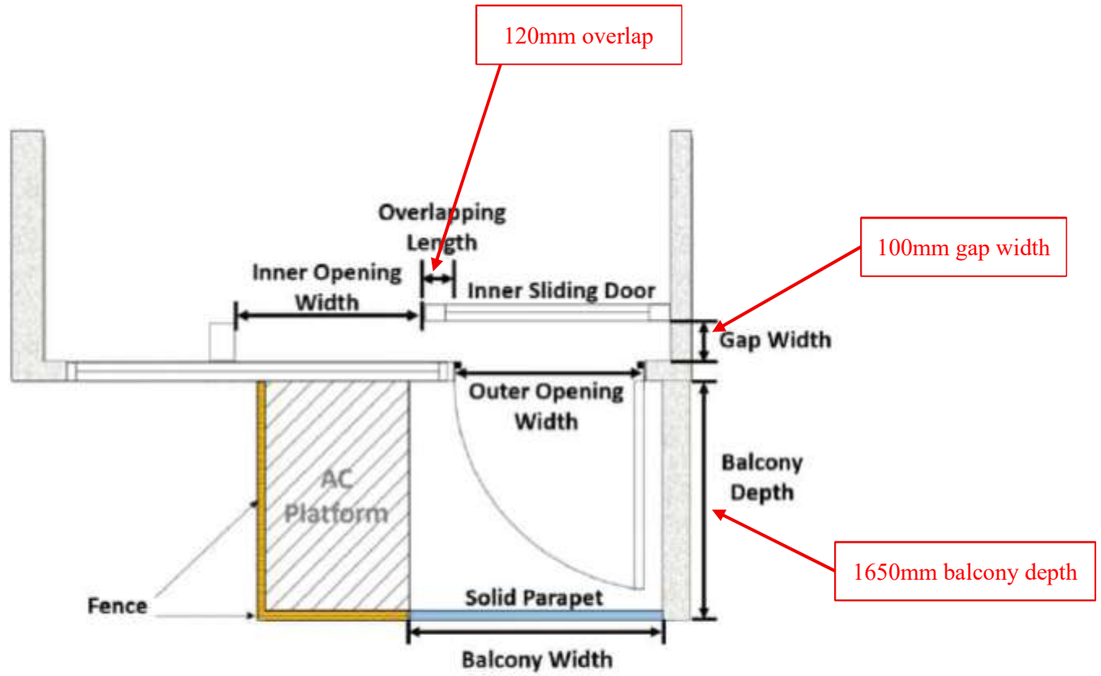


PLAN (NOT TO SCALE)

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.7		LEAD ARCHITECT: R Lee Architects (HK) Ltd.	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Phoenix Lee
DRAWING TITLE: ACOUSTIC MITIGATION MEASURES – ACOUSTIC WINDOW	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



EXTERNAL VIEW (NOT TO SCALE)

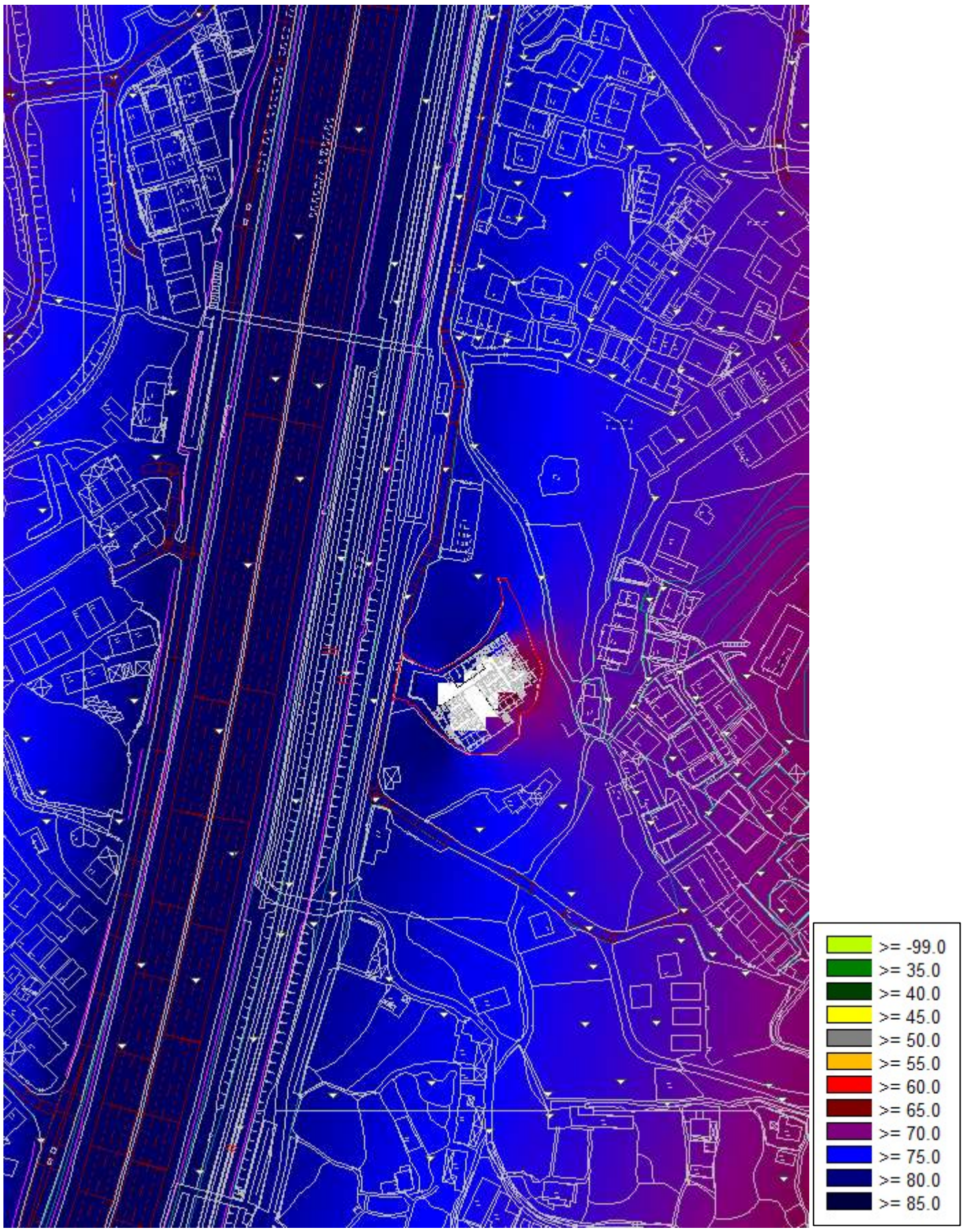


PLAN (NOT TO SCALE)

Fence (≥ 70% Permeability)

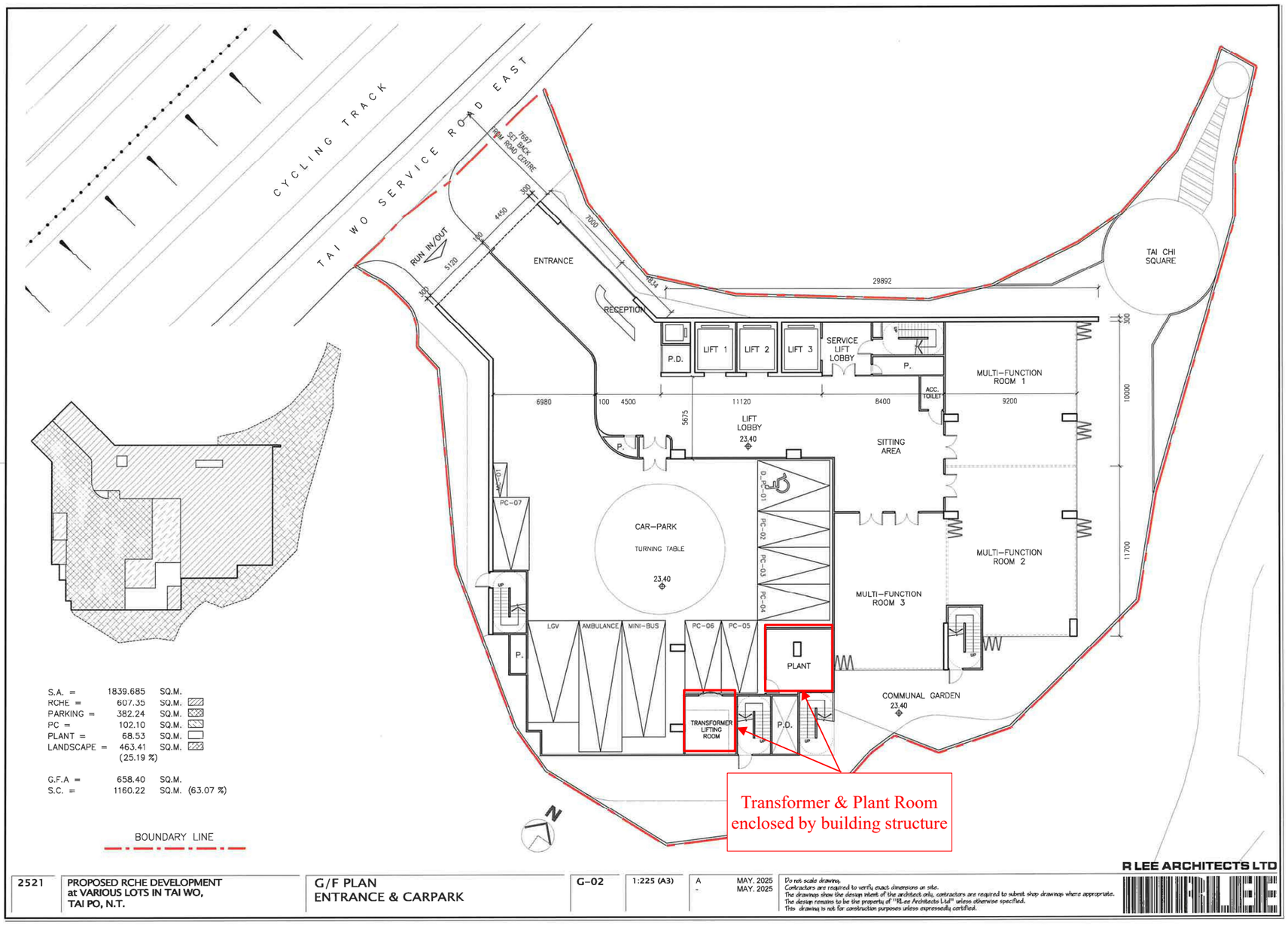
Solid Parapet

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.8			PREPARED BY: Phoenix Lee
DRAWING TITLE: ACOUSTIC MITIGATION MEASURES – ENHANCED ACOUSTIC BALCONY	SCALE: N.T.S.	REV: A	LEAD ARCHITECT: R Lee Architects (HK) Ltd ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY: Eddy Ng APPROVED BY: Banting Wong

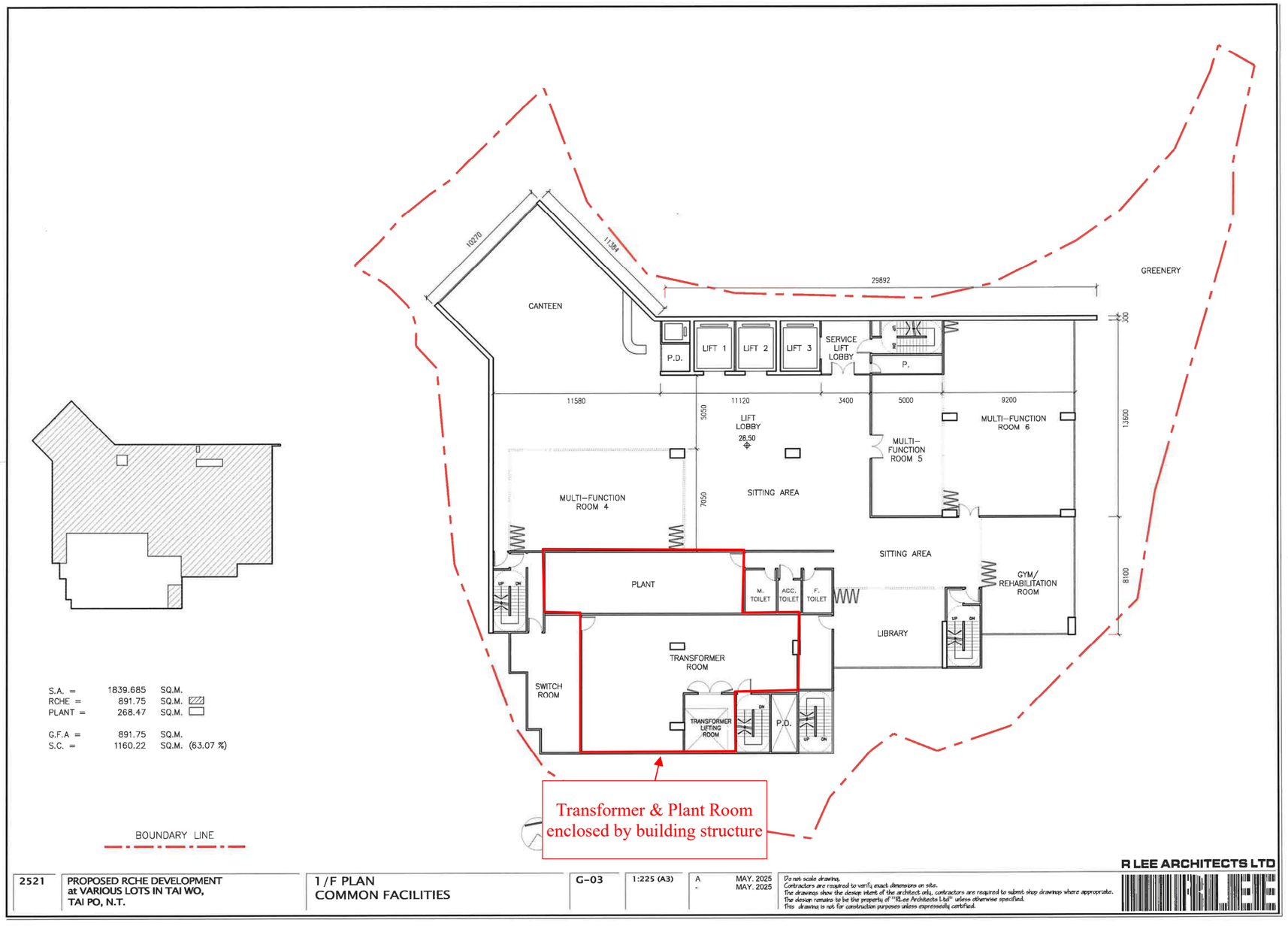


PROJECT: PROPOSED REZONING FROM “AGR” TO “GIC” FOR A PROPOSED “SOCIAL WELFARE FACILITIES” (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.1.9		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY	Phoenix Lee
DRAWING TITLE: NOISE CONTOUR OF ROAD TRAFFIC NOISE IMPACT (MITIGATED)	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY	Eddy Ng
				APPROVED BY	Banting Wong

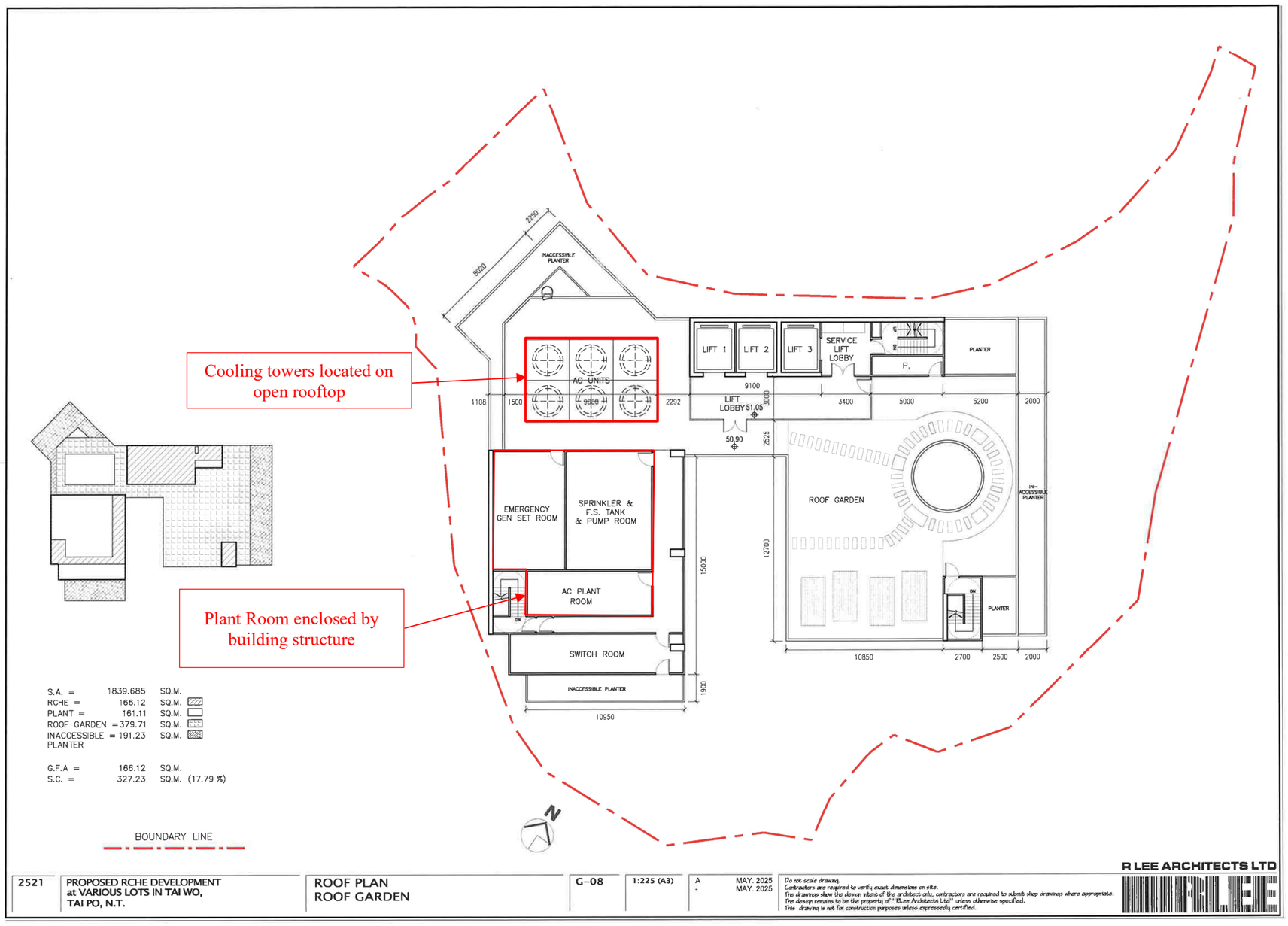
Appendix 3.2. FIXED SOURCE NOISE ASSESSMENT



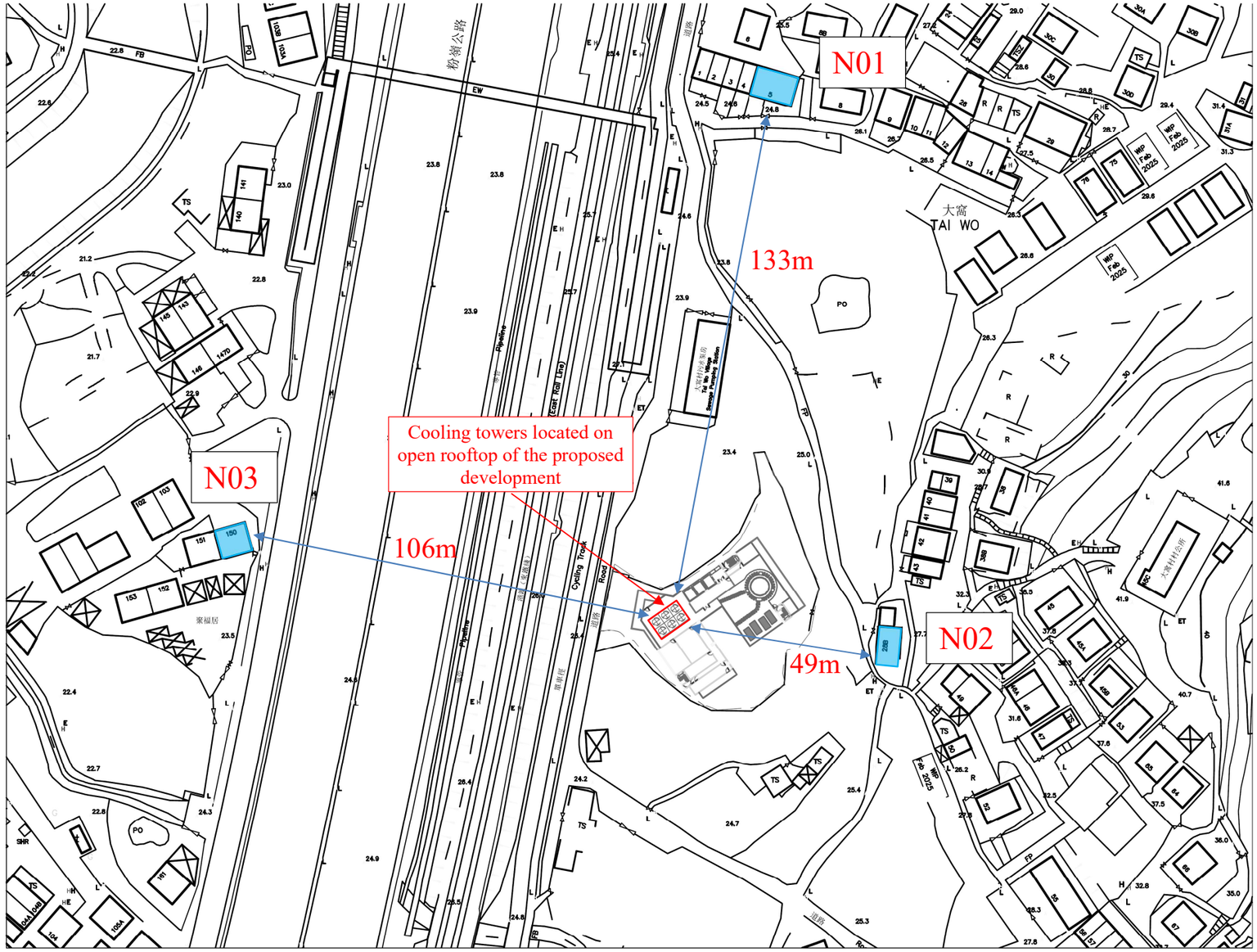
PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.2.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: PLANNED FIXED NOISE SOURCES LOCATIONS (G/F)	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



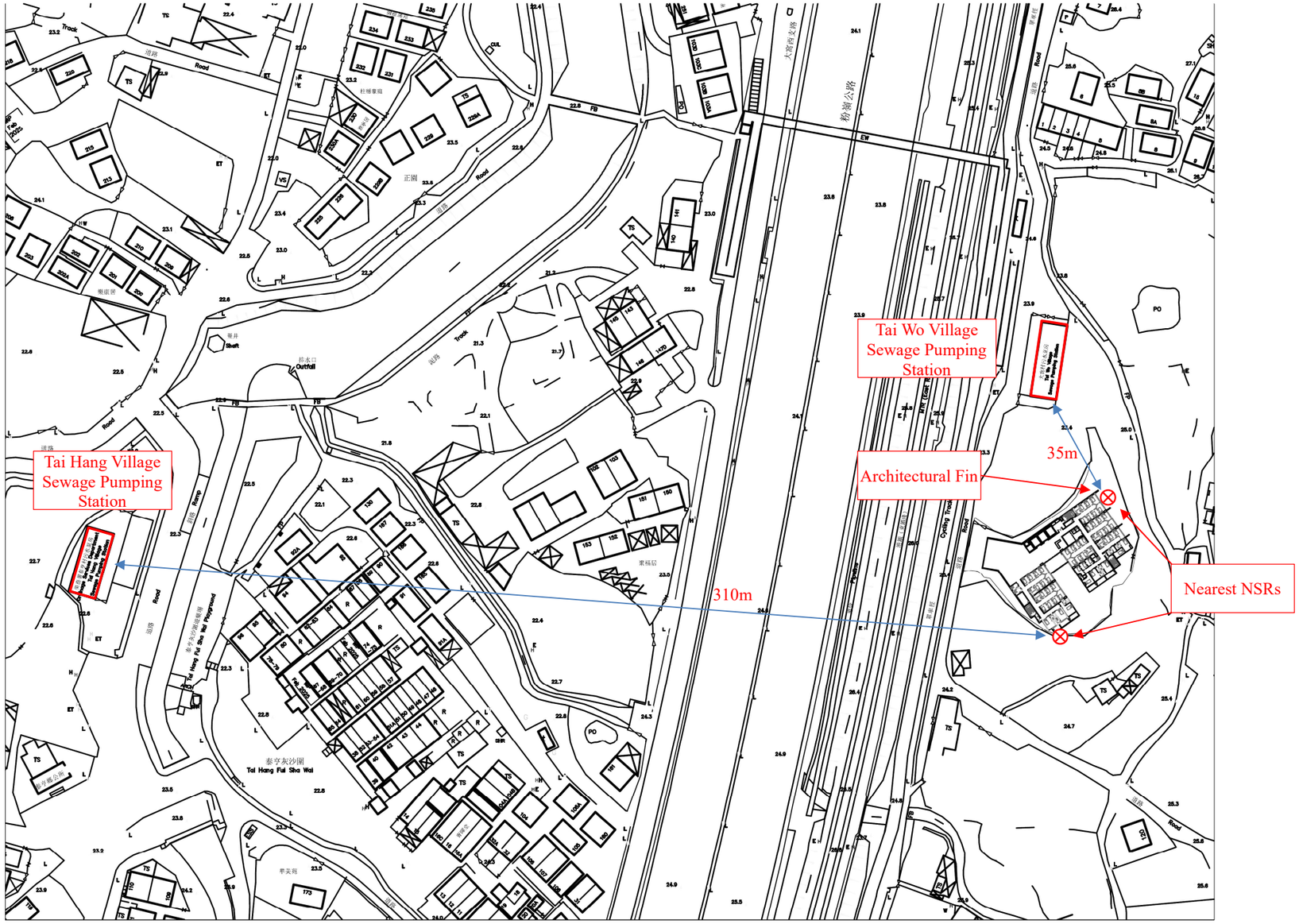
PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.2.2			PREPARED BY	Frankie Yuen
DRAWING TITLE: PLANNED FIXED NOISE SOURCES LOCATIONS (1/F)	SCALE: N.T.S.	REV: A	LEAD ARCHITECT: R Lee Architects (HK) Ltd	CHECKED BY	Eddy Ng
			ENVIRONMENTAL CONSULTANT: Novox	APPROVED BY	Banting Wong



PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.2.3		PREPARED BY: Frankie Yuen
DRAWING TITLE: PLANNED FIXED NOISE SOURCES LOCATIONS (R/F)	SCALE: N.T.S.	REV: A	CHECKED BY: Eddy Ng
LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox		APPROVED BY: Banting Wong



PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.2.4		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: LOCATION OF PLANNED FIXED NOISE SOURCES & REPRESENTATIVE NSRS	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong



PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 3.2.5		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: LOCATION OF EXISTING FIXED NOISE SOURCES & REPRESENTATIVE NSRS	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

Appendix 3.3. RAILWAY NOISE ASSESSMENT

MTR Corporation Limited
香港鐵路有限公司
www.mtr.com.hk

Novox Limited
Room L, 7/F, Block 2, Kinho Industrial Building,
14-24 Au Pui Wan Street,
Fo Tan, Hong Kong

Our ref: T&ESD/E&IC/ES/EnvE/L1291

Date: 19 JUN 2025

Attention: Mr. Eddy NG

By Post and Fax
(Fax no.:2690 9798)

Dear Mr. NG,

Re: Re: Town Planning Ordinance Section 12A Amendment of Plan Application for Proposed "Social Welfare Facilities" (Residential Care Homes for the Elderly) at Various Lots in D.D.7, Tai Wo, Tai Po, N.T.

Information Request for Railway Noise Assessment

We refer to your letter (ref.: #C250511W-01A) dated 2 June 2025 requesting information regarding East Rail Line (EAL).

Operational Information

- The operating hours for the concerned section between Fanling Station and Tai Wo Station of EAL are approximately from 05:30 to 01:10 hours, including the movement of non-passenger trains.
- The current peak train frequency during the period of 07:00-23:00 hours and 23:00-07:00 hours is about 12 trains per 30 minutes per direction and about 9 trains per 30 minutes per direction respectively.
- For the ultimate future EAL operating train frequency, please refer to the latest Environmental Permit for the *Shatin to Central Link (SCL) – Mong Kok East to Hung Hom Section* available via the EPD website.

Locations of Trackside Noise Barrier, Rail Crossings, Rail Alignment and Datum Level

There is currently a vertical trackside noise barrier (about 2m in height) at the concerned down track section of EAL, which is near Yuen Leng Tsuen and Tai Wo Village. We suggest that your organization contact us to arrange the checking of the respective drawings on the requested information suitable for your study.

We wish to caution that the proposed development is located in a noise sensitive area given that the proposed development is approximately less than 20m away from our railway. Although an existing short noise barrier is installed along the railway alignment, higher elevations of the proposed development may have a direct line-of-sight towards the rail lines and noise impacts could be a major concern to future occupants.

MTR Headquarters Building, Telford Plaza, Kowloon Bay,
Kowloon, Hong Kong. GPO Box 9916, Hong Kong
Tel (852) 2993 2111 Fax (852) 2798 8822

香港九龍灣德福廣場港鐵總部大樓
香港郵政總局信箱9916號
電話 (852) 2993 2111 傳真 (852) 2798 8822

MTR Corporation Limited
香港鐵路有限公司
www.mtr.com.hk

Our ref: T&ESD/E&IC/FS/EnvE/L1291
Date: 19 JUN 2025

Like many other property development projects in close proximity to the railway, it is crucial for the development proponent to implement all necessary noise mitigation measures at its own costs and to the satisfaction of the Director of Environmental Protection so that the potential train noise issue can be satisfactorily addressed. These measures may include: adopting self-protecting building design, optimizing building disposition to reduce noise reflection, conducting noise verification tests for acoustic windows, recommending sound insulation properties for fixed glazings, etc.

Please be reminded that any information that may come to your knowledge or come into your possession from MTR Corporation Limited shall only be used solely as reference for this captioned project. Further distribution and/or publication of the above information for purposes not connected with the captioned project are strictly prohibited without the prior consent of MTR Corporation Limited. Please also note that any such information is subject to change without prior notification.

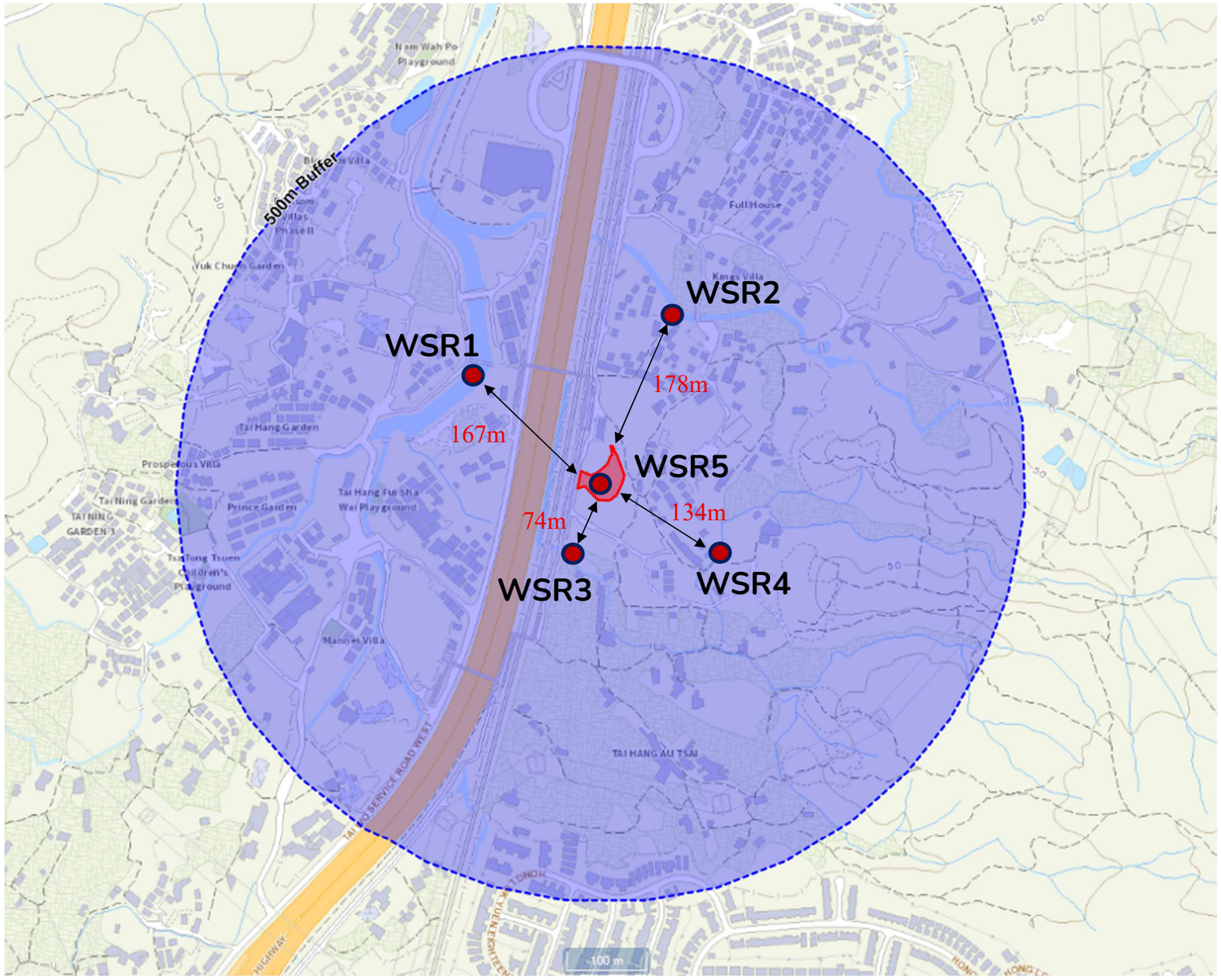
Should you have any additional enquiries, please feel free to contact the undersigned at 2993-4127.

Yours sincerely,

Catherine Leung
Lead Environmental Manager

MTR Headquarters Building, Telford Plaza, Kowloon Bay, Kowloon, Hong Kong. GPO Box 9916, Hong Kong
香港九龍灣德福廣場港鐵總部大樓
香港郵政總局信箱9916號

Appendix 4.1. WATER SENSITIVE RECEIVERS



LEGEND

- SITE BOUNDARY
- 500m STUDY AREA
- WATER SENSITIVE RECEIVER

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 4.1.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	PREPARED BY: Frankie Yuen
DRAWING TITLE: WATER SENSITIVE RECEIVERS	SCALE: N.T.S.	REV: A	ENVIRONMENTAL CONSULTANT: Novox	CHECKED BY: Eddy Ng
				APPROVED BY: Banting Wong

Appendix 4.2. SEWAGE DISCHARGE PATHWAY

PROJECT: PROPOSED REZONING FROM "AGR" TO "GIC" FOR A PROPOSED "SOCIAL WELFARE FACILITIES" (RESIDENTIAL CARE HOME FOR THE ELDERLY) (RCHE) AT TAI WO, TAI PO, N.T.	DRAWING NO.: C250511W-01 Figure 4.2.1		LEAD ARCHITECT: R Lee Architects (HK) Ltd	ENVIRONMENTAL CONSULTANT: Novox	PREPARED BY	Frankie Yuen
DRAWING TITLE: PROPOSED SEWAGE DISCHARGE PATHWAY	SCALE: N.T.S.	REV: A			CHECKED BY	Eddy Ng
					APPROVED BY	Banting Wong

Appendix 4.3. ESTIMATION OF C&D MATERIALS

Estimation of C&D Materials Generated During Site Formation Stage

Type of Pavement	Type of Waste	Portion	Site Area (m2)	Depth (m)	Estimated Quantity (m3)	Total Estimated Quantity (m3)	Density (tonnes/m3)	Estimated Quantity (tonnes)	Total Estimated Quantity (tonnes)
Concrete Pavement	Inert C&D	1.0	1839.7	0.2	367.9	4047.3	2.4	883.1	6770.1
Excavated Material	Inert C&D	1.0	1839.7	2.0	3679.4		1.6	5887.0	
Topsoil with Vegetation	Non-inert C&D	0.0	0.0	0.3	0.0	0.0	1.6	0.0	0.0

Estimation of C&D Materials Generated During Construction Stage

Waste Estimation	Type	GFA (m2)	Waste Index (m3/m2 GFA)(i)	Waste Proportion (ii)	Estimated Quantity (m3)	Total Estimated Quantity (m3)	Density (tonnes/m3)	Estimated Quantity (tonnes)	Total Estimated Quantity (tonnes)
Inert C&D	Domestic	5751	0.25	0.9	1293.975	1763.1702	1.8	2329.155	3173.70636
	Non-domestic	2606.64	0.2	0.9	469.1952		1.8	844.55136	
Non-inert C&D	Domestic	5751	0.25	0.1	143.775	195.9078	1	143.775	195.9078
	Non-domestic	2606.64	0.2	0.1	52.1328		1	52.1328	

Note:

(i) In accordance with "A Guide for Managing and Minimizing Building and Demolition Waste" published by the Hong Kong Polytechnic University in May 2001

(ii) In accordance with EPD's Monitoring of Solid Waste in Hong Kong – Waste Statistic for 2023

Estimation of Total C&D Materials Generated

Waste Type	Site Formation (tonnes)	Construction (tonnes)	Total (tonnes)
Inert C&D waste	6770.1	3173.70636	9943.8
Non-inert C&D waste	0.0	195.9078	195.9

Estimation of Total C&D Materials Generated

Waste Type	Site Formation (m3)	Construction (m3)	Total (m3)
Inert C&D waste	4047.3	1763.1702	5810.5
Non-inert C&D waste	0.0	195.9078	195.9