Appendix E –

Environmental Assessment

Prepared by

Ramboll Hong Kong Limited

SECTION 16 PLANNING APPLICATION FOR PROPOSED COMPREHENSIVE RESIDENTIAL DEVELOPMENT WITH COMMERCIAL USES AND SOCIAL WELFARE FACILITY AND MINOR RELAXATION OF MAXIMUM PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS IN "COMPREHENSIVE DEVELOPMENT AREA (5)" ZONE AT YEUNG UK ROAD / KWU

ENVIRONMENTAL ASSESSMENT

Date	March 2025
Prepared by	Kyle Kam Assistant Environmental Consultant
Signed	
Approved by	Tony Cheng Senior Manager
Signed	
Project Reference	SHKTWJUMEI01
Document No.	R9492_v1.1

No part of this document may be reproduced or transmitted, in any form or by any means electronic, mechanical, photographic, recording or otherwise, or stored in a retrieval system of any nature without the written permission of Ramboll Hong Kong Ltd, application for which shall be made to Ramboll Hong Kong Ltd, 21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong.

Disclaimer: This report is made on behalf of Ramboll Hong Kong Ltd. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any third party relying on it accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

Ramboll Hong Kong Limited

21/F, BEA Harbour View Centre
56 Gloucester Road, Wan Chai, Hong Kong

Tel: (852) 3465 2888
Fax: (852) 3465 2899
Email: hkinfo@ramboll.com

CHAPTERS

Page

1. INTRODUCTION 1-1
   - 1.1 Project Background 1-1
   - 1.2 Application Sites and its Environs 1-1
   - 1.3 Proposed Development 1-1
   - 1.4 Assessment Scenarios for Noise Impact Assessments 1-2
   - 1.5 Environmental Perspective on Temporary Petrol Filling Station (PFS) 1-2
   - 1.6 Structure of the Environmental Assessment Report 1-3
2. AIR QUALITY IMPACT ASSESSMENT 2-1
   - 2.1 Introduction 2-1
   - 2.2 Relevant Legislations, Standards and Guidelines 2-1
   - 2.3 Potential Impact Arising from Proposed Development – Construction Phase 2-4
   - 2.4 Mitigation Measure during the Construction Phase 2-5
   - 2.5 Potential Impacts on Proposed Development – Operation Phase 2-7
   - 2.6 Conclusion 2-9
3. CONSTRUCTION NOISE IMPACT ASSESSMENT 3-1
   - 3.1 Introduction 3-1
   - 3.2 Construction Phase Impact 3-1
   - 3.3 Conclusion 3-3
4. ROAD TRAFFIC NOISE IMPACT ASSESSMENT 4-1
   - 4.1 Introduction 4-1
   - 4.2 Assessment Criteria 4-1
   - 4.3 Assessment Methodology 4-1
   - 4.4 Noise Sensitive Receivers 4-1
   - 4.5 Road Traffic Impact Assessment Result (Base Case) 4-2
   - 4.6 Noise Mitigation Measures Incorporated in the Design 4-2
   - 4.7 Assessment Results under Mitigated Scenario 4-7
   - 4.8 Conclusion 4-8
5. FIXED NOISE IMPACT ASSESSMENT 5-1
   - 5.1 Introduction 5-1
   - 5.2 Assessment Criteria 5-1
   - 5.3 Fixed Noise Sources 5-1
   - 5.4 Assessment Methodology 5-4
   - 5.5 Noise Sensitive Receivers 5-4
   - 5.6 Assessment Results in Base Case Scenario 5-4
   - 5.7 Potential Fixed Noise Impact to the Surrounding Environment 5-4
   - 5.8 Conclusion 5-5
6. WASTE MANAGEMENT 6-1
   - 6.1 Introduction 6-1
   - 6.2 Legislation 6-1

6.3 Assessment Methodology 6-2
6.4 Identification and Evaluation of Potential Impact during Construction Stage 6-2
6.5 Mitigation Measures During Construction Phase 6-6
6.6 Identification and Evaluation of Potential Impact during Operation Phase.... 6-9
6.7 Conclusion 6-11
7. LAND CONTAMINATION ASSESSMENT 7-1
7.1 Introduction 7-1
7.2 Legislation 7-1
7.3 Review of Historical and Currently Available Information 7-1
7.4 Conclusion 7-4
8. CONSULSION 8-1

TABLES

Table 1.1 Development Parameters of the Application Site..... 1-2
Table 2.1 Hong Kong Air Quality Objectives 2-1
Table 2.2 Limits of Air Pollutant Concentrations Inside Car Parks 2-2
Table 2.3 Recommended Minimum Buffer Distance from Roads 2-3
Table 2.4 Recommended Minimum Buffer Distance from Industrial Chimneys... 2-3
Table 2.5 Representative ASRs during Construction Phase 2-4
Table 2.6 Buffer Distances between Kerb Side of Concerned Road Links and Proposed Uses..... 2-8
Table 3.1 Noise Limit for Daytime Construction Activities..... 3-1
Table 4.1 Base Case Road Traffic Noise Assessment Results – Scenario (1) (Interim Scenario) 4-2
Table 4.2 Base Case Road Traffic Noise Assessment Results – Scenario (2) (Ultimate Scenario)..... 4-2
Table 4.3 Mitigated Case Road Traffic Noise Assessment Results – Scenario (1) (Interim Scenario) 4-7
Table 4.4 Mitigated Case Road Traffic Noise Assessment Results – Scenario (2) (Ultimate Scenario)..... 4-7
Table 5.1 Acceptable Noise Levels (ANLs) at NSRs of the Development 5-1
Table 5.2 Fixed Noise Sources adopted in Fixed Noise Impact Assessment..... 5-1
Table 6.1 Summary of Estimated Construction Waste and Disposal Method..... 6-5
Table 7.1 Historical Landuse Summary of the Application Site 7-1
Table 7.2 Enquiries and Responses on Land Contamination Issue 7-3

FIGURES

Figure 1.1 The Location of the Application Site and its Environs
Figure 2.1 Location of Representative Air Sensitive Receivers during Construction Phase

Figure 2.2 Location of the Potential Concurrent Project

Figure 2.3 Distance between Proposed Development and Surrounding Roads

Figure 4.1 Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment [a: 3/F to 30/F Site A b: 31/F Site A– Scenario (1)]

Figure 4.2 Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment [a: 3/F to 30/F Site A to F b: 31/F Site A– Scenario (2)]

Figure 4.3 Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment [a: 3/F to 30/F Site A b: 3/F-31/F Site B, C, and D]

Figure 5.1 Location of Fixed Noise Sources in the vicinity of the Proposed Development – Scenario (1)

Figure 5.2 Location of Fixed Noise Sources in the vicinity of the Proposed Development – Scenario (2)

Figure 5.3 Location of Representative Noise Sensitive Receivers for Fixed Noise Impact Assessment – Scenario (1)

Figure 5.4 Location of Representative Noise Sensitive Receivers for Fixed Noise Impact Assessment – Scenario (2)

APPENDICES

Appendix 1.1 The Master Layout Plan of the Proposed Development

Appendix 2.1 The Location of the Potential Odour Sources and Inspection Route

Appendix 2.2 EPD Reply on the Odour Complaint

Appendix 4.1 Traffic Forecast of Year 2045

Appendix 4.2 Road Traffic Noise Impact Assessment Result (Base Case) (Interim and Ultimate Scenario)

Appendix 4.3 Indicative Design of AW(BT) & EAB(BT) Adopted in the Proposed Development

Appendix 4.4 Sound Attenuation Adjustment of AW(BT) & EAB(BT) Adopted in the Proposed Development (Interim and Ultimate Scenario)

Appendix 4.5 Road Traffic Noise Impact Assessment Result (Mitigated Case) (Interim and Ultimate Scenario)

Appendix 4.6 Overall Proposed Noise Mitigation Measures Schedule

Appendix 5.1 Extracts from EAS of Approved Planning Application A/TW/527 on determination of Sound Power Levels of Fixed Noise Sources in the vicinity of the Proposed Development

Appendix 5.2 Blockage of Line-of-sight between the Chillers at Asia Tone i-Centre and Proposed Development by Sunwise Industrial Building

Appendix 5.3 Fixed Noise Source Inventory adopted in Fixed Noise Impact Assessment

Appendix 5.4 Fixed Noise Impact Assessment Results

Appendix 7.1 Historical Aerial Photo of the Application Site

Appendix 7.2 Correspondences from Government Departments

Appendix 7.3 Captured of BRAVO

Appendix 7.4 Site Walkover Checklist and Photo Records

1. INTRODUCTION

1.1 Project Background

1.1.1 The Application Site is zoned as "Comprehensive Development Area (5)" [CDA (5)] site under Approved Tsuen Wan Outline Zoning Plan (OZP no. S/TW/37). A comprehensive development under application consists of different phases, i.e. Phase 1 in Site A at Lot No. 476 in D.D.443 Jumbo iAdvantage, 145-159 Yeung Uk Road and it will be implemented by the Applicant; while the remaining areas (i.e. Tsuen Wan Lot 11 for Phase 2A in Site B, Lot No. 475 in D.D. 443 for Phase 2B in Site C, and Lot No. 461, 469 & 459 in D.D. 443 for Phase 2C-E in Site D-F) will be implemented in later stage. This S16 application is submitted to the Town Planning Board for the proposed comprehensive residential development at the Application Site.

1.1.2 This application is submitted to seek permission from the Town Planning Board for proposed residential redevelopment and minor relaxation of maximum plot ratio and building height restrictions. The current maximum plot ratio is 5.0 with minimum 4.5 shall be for domestic use under OZP. On the other hand, the maximum building height is 100 mPD. Under this application, one 29-storey residential tower (above 1 level of basement carpark and excluding 3 levels of lobby/ club house/E&M/ social welfare facility) with building height not exceeding 120 mPD to the main roof is proposed in Phase 1. Another 5 residential buildings with a maximum building height at 120 mPD are proposed in the remaining areas.

1.1.3 Ramboll Hong Kong Limited has been appointed to conduct the environmental assessment for the Application Site.

1.2 Application Sites and its Environs

1.2.1 The Application Site covers an area of about 7,353 m^2 and currently occupied by Jumbo iAdvantage, Wing Wah Industrial Building, Shui Cheong Industrial Building, Wing Kwai Factory Building, Wing Yu Factory Building, and Sunwise Industrial Building.

1.2.2 The Application Site is bounded by Wang Wo Tsai Street to the north and east. A 4-storeys transitional housing- Tsuen Fook Kui is located at the west of the Application Site. A public open space and mid-rise Ever Gain Centre are located to the immediate northeast with Wang Wo Tsai Street located in between High-rise Sheung Chui Court is located further northeast of the site. To the north of the Application Site, there is an approved comprehensive residential development (Application No. A/TW/527) with 5 residential towers at 120 mPD. Furthermore, another approved development (Application No. A/TW/537) with 4 residential towers at 120 mPD is located at the east of the Application Site. High rise residential developments (H Cube and Indi Home) and Richwealth Industrial building are located to the south of Yeung Uk Road. In general, the surrounding area is dominated by industrial and residential developments.

1.2.3 Figure 1.1 shows the location and the environs of the Application Site.

1.3 Proposed Development

1.3.1 According to the latest development scheme, the Application Site comprises of 2 phases and consists of 6 residential blocks as shown in Table 1.1 below. A notional Scheme is shown in Appendix 1.1. There are altogether 886 number of residential dwellings. A social work service team for pre-primary institutions is provided at G/F

of Site A. Each of the residential blocks at Site A to Site F are provided with a club house. Detailed development parameters can be referred to Table 1.1 below.

Table 1.1 Development Parameters of the Application Site

Development Phase	Phase 1	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E
Site ID.	Site A (The Subject Site of this Application)	Site B	Site C	Site D	Site E	Site F
Ancillary Facilities	Club house, Social Work Service Team for Pre-primary Institutions, Retail	Club house, Retail	Club house, Retail	Club house	Club house	Club house
Non-domestic GFA	1016 m^2	419 m^2	431 m^2	317 m^2	209 m^2	399 m^2
No. of Residential Units	277	116	116	145	87	145
Total no. of Residential Units	886					

1.3.2 The target completion year for Phase 1 is Year 2030. The Phase 2 would replace the existing industrial buildings. The assumed completion year of the Phase 2 developments is also Year 2030.

1.4 Assessment Scenarios for Noise Impact Assessments

1.4.1 In view of the phased development, potential noise impact (i.e., road traffic noise and fixed source noise) is evaluated according to the following scenarios:

- Scenario (1) (Interim Scenario) – Only Phase 1 Development occupied while Phase 2 Developments are not in place. Assumed the existing buildings in Phase 2 and surrounding buildings to the east and north remain as industrial use.
- Scenario (2) (Ultimate Scenario) – All Phase 1 and 2 Developments, the Approved Application No. A/TW/527 Development and the Approved Application No. A/TW/537 Development completed.

1.5 Environmental Perspective on Temporary Petrol Filling Station (PFS)

1.5.1 A temporary PFS is located immediate next to the major road, Yeung Uk Road. The temporary PFS is located in an area zoned "Open Space" under the prevailing OZP and intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of local resident as well as the general public. The filling bay of the PFS as well as underground storage tank are

under concrete cover, and this station also provides repairing activities within a workshop. Based on the site visit, the workshop is a three-side enclosed concrete structure with the only opening facing towards Yeung Uk Road.

1.5.2 It is understood that the term of this PFS will expire in 2025. In view of the completion year for all phases is assumed to be 2030, there would not be any potential interfacing issue in the future.

1.6 Structure of the Environmental Assessment Report

1.6.1 According to the appraisal above, the environmental assessment reports are set out as follows:

- Section 2 Air Quality Impact Assessment
- Section 3 Construction Noise Impact Assessment
- Section 4 Road Traffic Noise Impact Assessment
- Section 5 Industrial Noise Impact Assessment
- Section 6 Waste Management Implication
- Section 7 Land Contamination Review
- Section 8 Overall Conclusion of the Environmental Assessment

2. AIR QUALITY IMPACT ASSESSMENT

2.1 Introduction

2.1.1 This Section presents an assessment of the potential air quality impact that could arise from the construction of the Project. It also evaluates the potential air quality impacts arising from the traffic emissions along the road carriageways and chimney emission (if any) from the industrial stack surrounding the Proposed Development during the operation phase.

2.2 Relevant Legislations, Standards and Guidelines

2.2.1 The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance (APCO) (Cap. 311) and the Air Quality Objectives (AQO)
- Air Pollution Control (Construction Dust) Regulation
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation
- Air Pollution Control (Fuel Restriction) Regulation
- Recommended Pollution Control Clauses for Construction Contracts
- Control of Air Pollution in Car Parks (ProPECC PN 2/96)
- Hong Kong Planning Standards and Guidelines (HKPSG)

Air Pollution Control Ordinance (CAP 311)

2.2.2 To achieve as soon as reasonably practicable and to maintain thereafter to safeguard the health of the community, a set of Air Quality Objectives (AQOs) is established under the Air Pollution Control Ordinance (Cap. 311). The latest set of AQOs that came into effect on 1 January 2022 is presented in Table 2.1.

Table 2.1 Hong Kong Air Quality Objectives

Pollutants	Average Time	Standard [i] ($\mu g/m^3$)	No. of exceedances allowed
SO_2	10-min	500	3
	24-Hour	50	3
RSP (PM_{10}) [ii]	24-Hour	100	9
	Annual	50	NA
FSP ($PM_{2.5}$) [iii]	24-Hour	50	35
	Annual	25	NA
NO_2	1-Hour	200	18
	Annual	40	NA
Ozone (O_3)	8-Hour	160	9
Carbon Monoxide (CO)	1-Hour	30,000	0
	8-Hour	10,000	0
Lead (Pb)	Annual	0.5	NA

Notes:

[i] All measurements of the concentration of gaseous air pollutants, i.e. sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.

[ii] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.

[iii] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

Air Pollution Control (Construction Dust) Regulation

2.2.3 Made under Section 43 of the APCO, this Regulation defines notifiable and regulatory works for achieving the purpose of dust control for a number of activities. The Regulation requires that any notifiable work shall give advance notice to EPD, and the Contractors shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation. Dust control and suppression measures are also provided in the Schedule.

2.2.4 The proposed construction works for the proposed Project are both regulatory and notifiable works due to activities including material stockpiling and dusty material handling as potential sources of fugitive dust emissions as detailed under Parts I to IV of the Schedule on Dust Control Requirements.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

2.2.5 The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, which aims to control emissions from non-road mobile machinery (NRMMs) to improve air quality, became effective on 1 June 2015. NRMMs include non-road vehicles, as well as mobile machines and equipment (regulated machines) such as crawler cranes, excavators and air compressors.

2.2.6 Under the regulation, regulated machines have to comply with the Stage IIIA emission standards of the European Union (EU). It also requires all regulated machines sold or leased for use in Hong Kong to bear an approval or exemption label issued to them by the EPD, started from 1 September 2015. It restricts specified activities and locations including construction sites, designed waste disposal facilities and specified processes to use only NRMMs that bear an approval or exemption label issued to them by the EPD, with effect from 1 December 2015.

Air Pollution Control (Fuel Restriction) Regulation

2.2.7 The Air Pollution Control (Fuel Restriction) Regulation was enacted in 1990 to impose legal control on the type of fuels allowed for use and their sulphur contents in commercial and industrial processes to reduce sulphur dioxide (SO2) emissions. In June 2008, the Regulation was amended to tighten the control requirements of liquid fuels.

Practice Note on Control of Air Pollution in Car Parks

2.2.8 This practice notes include air quality guidelines required for the protection of public health and factors that should be considered in the design and operation of car parks in order to achieve the required standards. The limits for air pollutants as recommended by the practice notes are summarised in Table 2.2.

Table 2.2 Limits of Air Pollutant Concentrations Inside Car Parks

Air Pollutant	Average Time	Maximum Concentration (µg/m3) [i]	Parts Per Million (ppm)
Carbon Monoxide (CO)	5 minutes	115,000	100
Nitrogen Dioxide (NO_2)	5 minutes	1,800	1

Notes:

*[i] *All limits are expressed as at reference conditions of 298K and 101.325kPa.*

Hong Kong Planning Standards and Guidelines (HKPSG)

2.2.9 Potential air quality impacts associated with the surrounding road carriageways and chimney emission from industrial stack shall be evaluated in accordance with the guidelines set out in the HKPSG.

2.2.10 Table 3.1 of the HKPSG provides the broad guidelines for locating active open spaces close to potentially polluting uses, viz. road traffic. The recommended buffer distances are reproduced in Table 2.3.

Table 2.3 Recommended Minimum Buffer Distance from Roads

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

Source: HKPSG Table 3.1: Guidelines on Usage of Open Space Site

2.2.11 Table 3.1 of the HKPSG also provides the broad guidelines for locating active open spaces close to potentially polluting uses, viz. industrial chimneys emissions. The recommended buffer distances are reproduced in Table 2.4.

Table 2.4 Recommended Minimum Buffer Distance from Industrial Chimneys

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Industrial Areas	Difference in Height between Industrial Chimney Exit and the Site		
	< 20 m	> 200 m	Active and passive recreation uses
		5 – 200 m	Passive recreational uses
	20 m – 30 m (*)	> 100 m	Active and passive recreational uses
		5 – 100 m	Passive recreational uses
	30 m – 40 m	> 50 m	Active and passive recreational uses
		5 – 50 m	Passive recreational uses
	> 40 m	10 m	Active & Passive recreational uses

Notes:

(i) 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.

(ii) 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.

(iii) The guidelines are generally applicable to major industrial areas but NOT individual large industrial establishment which are likely to be significant air pollution sources. Consult EPD when planning open spaces close to such establishments.

(iv) Amenity areas are permitted in any situation.

Source: HKPSG Table 3.1: Guidelines on Usage of Open Space Site

2.3 Potential Impact Arising from Proposed Development – Construction Phase

2.3.1 During the construction phase of the Proposed Development Site, there may be potential air quality impacts upon the nearby air sensitive receivers (ASRs). The representative ASRs represent existing and planned ASRs during construction phase among all Proposed Development Sites are identified and shown in Figure 2.1 with details summarised in Table 2.5.

Table 2.5 Representative ASRs during Construction Phase

ASR ID	Descriptions	Type	Status	Approximate Minimum Horizontal Distance to The Nearest Site Boundary of Proposed Development Sites (m)
A1	Approved Planning Application No. A/TW/527	Residential	Planned	~13m
A2	Approved Planning Application No. A/TW/537	Residential	Planned	~1m
A3	Tsuen Fook Kui	Transitional Housing	Existing	~28m
A4	Wang Wo Tsai Street Garden	Recreation	Existing	~27m
A5	Indi Home	Residential	Existing	~54m
A6	Sheung Chui Court	Residential	Existing	~102m

2.3.2 Potential sources of air quality impacts would be dust and gaseous emissions generated by construction activities related to the demolition works at Application Site, movement of vehicles along unpaved roads, material handling, wind erosion of exposed area during site formation, site formation and foundation works, and stockpiling of excavated materials within the Proposed Development Sites.

2.3.3 Fugitive dust will be the potential major source of air quality impact during the construction phase. Besides, the Application Site is located at developed urban area where supply of electricity is available for the Application Site. Therefore, it is anticipated that the number of diesel/ petroleum fuelled machinery operated at the Subject Site can be minimized as practically as possible with the availability of the supply of electricity. Moreover, under the Air Pollutant Control (Non-road Mobile Machinery) (Emission) Regulation, only approved or exempted non-road mobile machineries (including mobile generator, air compressor, crawler crane, bulldozer, etc.) with a proper label are allowed to be used in the construction site, which would meet the prescribed emission standards and requirement. According to the requirements stipulated in the Air Pollution Control (Fuel Restriction) Regulation and its amendment, using liquid fuel with a sulphur content of less than 0.005% by weight (such as Ultra Low Sulphur Diesel) for the equipment should be fulfilled to control the SO_2 and PM emissions. Travelling of the dump trucks is another potential

source of construction dust and gaseous emissions. At this planning application stage, there is no detailed information on the construction program or amount of excavated material to be handled; however, with reference to other similar scale projects, there is likely to be around 5 dump trucks per hour during the site formation stage of the Proposed Development. Watering the haul road and the site once per hour would be implemented to minimize the potential dust emission during the traveling of the dump trucks within the site. An EM&A programme will be implemented to ensure that the nearby ASRs will not be subject to adverse air quality impact during the construction stage.

Concurrent Project

2.3.4 There are 2 potential concurrent projects Approved 527 development and Approved 537 development were identified within the 500m study area from the site boundary which would contribute to the cumulative impact during the construction phase. The location of the potential concurrent project is shown in Figure 2.2.

2.3.5 According to the available information, the tentative completion year of the potential concurrent projects would be 2025/26 and 2026/27 respectively, while the tentative completion year of the proposed development is 2030. It is assumed the construction phase of the proposed development would be commenced in 2027, hence the overlapping of the construction period of the concurrent and proposed projects may be less than a year. In addition, the construction work of the Approved 537 development and Approved 527 development in years 2026 and 2027 may be building works that the major construction activities would be carried out at indoor area. No major construction air quality impact is expected to be generated from indoor construction works of the Approved 537 development and Approved 527 development. Nevertheless, with the adoption of good practices as mentioned in section 2.2.7 above, it is expected that construction dust and gaseous emissions from both construction site can be kept to an acceptable level, and the nearby ASRs of the two-construction site.

2.3.6 In addition, the applicant will liaise with the relevant parties of the concurrent project, if any, to avoid any heavy dusty activities to be conducted at the same time to minimize the cumulative air quality impact at the area.

2.3.7 For example, the project proponent/contractor shall liaise with relevant parties of the concurrent projects to avoid any heavy dusty activities to be conducted at the same time. Also, dust and gaseous emission generated can be further minimized with the implementation of appropriate control measures and requirements listed in the Air Pollution Control (Construction Dust) Regulation of the APCO as well as good site practices. With the implementation of these mitigation measures/ control and relatively small construction area, adverse cumulative air quality impact is not anticipated.

2.4 Mitigation Measure during the Construction Phase

2.4.1 The recommended mitigation measures are described below.

General Site Management

2.4.2 Appropriate working methods should be devised and arranged to minimise dust emissions and to ensure any installed control system and/or measures are operated and/or implemented in accordance with their design merits. No free falling of construction debris should be allowed, which should be let down by hoist or enclosed tunnel to the ground.

2.4.3 A high standard of housekeeping shall be maintained. Any piles of materials accumulated on or around the work areas shall be cleaned up regularly. Cleaning,

repair and maintenance of all plant facilities within the work areas shall be carried out in a manner that does not generate fugitive dust emissions. Prior to cleaning, the materials should be handled properly to prevent fugitive dust emission. Any exposed earth shall be properly treated by compacting or hydro seeding, within 6 months after the last construction activity.

2.4.4 Frequent mist/ water spraying should be applied on dusty areas. The frequency of spraying will depend upon local conditions such as rainfall, temperature, wind speed and humidity. The amount of water spraying should be just enough to dampen the material without over-watering which could result in surface water runoff.

Vehicles and Unpaved Site Roads

2.4.5 Dust emission from unpaved roads comes predominantly from travelling of vehicles. Areas within the Proposed Development Sites where there are regular vehicle movements should have an approved hard surface. Speed controls at an upper limit of 10km/hr should be imposed and their movements should be confined to designed roadways within the Proposed Development Sites. All dusty vehicle loads should have side and tail boards covered by tarpaulin extending at least 300mm over the edges of the side and tail boards. Wheel-wash troughs and hoses should be provided at exit points of the Proposed Development Sites.

Material Stockpiling and Handling

2.4.6 The amount of stockpiling should be minimised where possible. Construction material or debris should be covered and stored inside enclosed areas. Other control measures such as enclosed or semi-enclosed windboard should be used, where applicable, to minimise dust emission. Regular watering is needed at areas such as storage piles, where there could be potential dust emission.

Mitigation Measures for Fugitive Dust Emission

2.4.7 Fugitive dust and gaseous emission arising from construction activities can be effectively suppressed by incorporating proper mitigation measures into work procedures through contractual clauses with reference to EPD's Recommended Pollution Control Clauses for Construction Contracts, where applicable, good site management, and close monitoring by the resident engineers. The contractor shall be required to follow the requirements of the Air Pollution Control (Construction Dust) Regulations for demolition and construction of the project. With the adaptation of good practices, it is expected that emission of construction dust and other air pollutants can be kept at an acceptable level. Mitigation measures including but not limited to the followings with respect to demolition, superstructure construction of a building and hoarding should be implemented as appropriate:

- In the case of demolition of a building;
  - ➢ the area at which demolition work takes place shall be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the demolition activities so as to maintain the entire surface wet;
  - ➢ for any wall of the building to be demolished that abuts or fronts upon a street, service lane or other open area accessible to the public, impervious dust screens or sheeting shall be used to enclose the whole wall to a height of at least 1m higher than the highest level of the structure being demolished;
  - ➢ any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads or streets.
- In the case of the superstructure construction of a building:

- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scaffolding from the ground floor level of the building, or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding;
- Any skip hoist for material transport shall be totally enclosed by impervious sheeting; and
- Any relevant requirements set outs in Parts III and IV of Air Pollution Control (Construction Dust) Regulations shall be met.
- Exempted NRMMs, diesel generators and machinery shall be avoided to minimize any air emissions.

- Except for road opening or resurfacing work, or for construction work carried out in a construction site that is completely paved or completely covered with hardcore:
  - Vehicle washing facilities including a high-pressure water jet shall be provided at every discernible or designated vehicle exit point;
  - The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores;
  - Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level shall be provided along the entire length of that portion of the site boundary except for a site entrance or exit.
- In view of the proximity of ASRs close to the Project site (i.e.<10m):
  - Adopt site hoarding at sufficient height close to those concerned ASRs;
  - Locate the haul road away from those concerned ASRs;
  - Avoid dusty works or placing stockpiles near to those concerned ASRs;
  - Minimization of unpaved, exposed earth by immediate covering/ permanent paving as soon as the works have been completed.

2.5 Potential Impacts on Proposed Development – Operation Phase

Review on Industrial Emission

2.5.1 On site survey was conducted on 16 Nov 2023, 13 Dec 2023, and 07 June 2024 to verify the presence of chimneys. There were no chimney or industrial activities identified within 200m from the Application Site. As such, it is anticipated that the Application Site would not be subject to unacceptable industrial emission impact.

Review on Vehicular Emission

2.5.2 The Proposed Development is bounded by Wang Wo Tsai Street to the north, Kwu Hang Road to the west, and Yeung Uk Road to the south. According to the Annual Traffic Census 2022 published by Transport Department, the road type of Wang Wo Tsai Street and Kwu Hang Road are classified as Local Distributor (LD) while Yeung Uk Road is classified as District Distributor (DD). Transport Department's (TD) agreement letter on the road type will be provided when available.

2.5.3 In accordance with above table as stipulated in the HKPSG, the minimum buffer distance required for separation from Yeung Uk Road is >10m; and >5m away from Wang Wo Tsai Street and Kwu Hang Road. Figure 2.3 shows the buffer distance

from the kerb side of roads to the Proposed Development. The buffer distances between the kerb side of concerned road links and permitted uses are tabulated in Table 2.6.

Table 2.6 Buffer Distances between Kerb Side of Concerned Road Links and Proposed Uses

Road Name	Road Type	Recommended Buffer Distance
Yeung Uk Road	DD	>10m
Kwu Hang Road	LD	>5m
Wang Wo Tsai Street	LD	>5m

2.5.4 As shown in Figure 2.3 and above table, the recommended requirement in the HKPSG would be complied. Furthermore, there would be no air sensitive uses within the above-mentioned buffer zones. Since the recommended minimum buffer distance of the vehicular emission in the HKPSG can be met, the future occupants of the Proposed Development will not be subjected to adverse vehicular emission impact.

Review on Impact from Petrol Filling Station and Workshop

2.5.5 A temporary PFS is located immediate next to the major road, Yeung Uk Road. The temporary PFS is located in an area zoned "Open Space" under the prevailing OZP and intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of local resident as well as the general public. The filling bay of the PFS as well as underground storage tank are under concrete cover, and this station also provides repairing activities within a workshop. Based on the site visit, the workshop is a three-side enclosed concrete structure with the only opening facing towards Yeung Uk Road.

2.5.6 It is understood that the term of this PFS will expire in 2025. In view of the completion year for all phases is assumed to be 2030, there would not be any potential interfacing issue in the future.

Review on Impact from Proposed Basement Carpark

2.5.7 Basement carpark proposed will satisfy the requirements, including design, maintenance and operation of the ventilation systems, as stipulated in the "ProPECC PN 2/96 - Control of Air Pollution in Car Park". Therefore, the mechanical ventilation system and layout of the basement carpark should be properly designed. Furthermore, the exhaust outlet of the mechanical ventilation system of the basement carpark should also be designed by facing away from all the nearby ASRs as far as practicable to ensure not causing a nuisance to the occupants/ residents of the air sensitive uses including the surrounding developments and the Proposed Development. As the Project is still under initial design stage, the location of the exhaust outlet of the mechanical ventilation system is yet to be available.

Review on Potential Odour Impact

2.5.8 Petrol Filling Station and RCP are located ~60m west and ~40m east of the Application Site. On-site surveys were conducted on 16 Nov 2023, 13 Dec 2023, and 07 June 2024 to identify any noticeable odour of the of the cornered Petrol Filling Station and RCP. Appendix 2.1 shows the location of the Petrol Filling Station and RCP and inspection route. No identifiable odour was detected at the boundary of the Petrol Filling Station, RCP, pedestrian walkway at Luen Yan Street, Wang Wo Tsai Street and Kwu Hang Road. Furthermore, an enquiry if any odour complaint related to the potential odour emission source(s) within 200m assessment area from the boundary of Application Site to EPD's regional officer has been made. It is confirmed that there have been no complaint records in the past five years associated with the Petrol Filling Station and RCP, both of which are located within 200m of the Application Site boundary. The reply from EPD regarding odour complaint is provided in Appendix 2.2. Therefore, adverse odour impact on the Proposed Development is not anticipated.

2.6 Conclusion

2.6.1 Adequate suppression mitigation measures will be implemented during demolition/construction phase of the Project and significant air quality impact is not anticipated.

2.6.2 No chimneys/ industrial activities/ marine emission / portal emission was found within 200m assessment area from the site boundary of the Proposed Development Sites. Besides, there is no chimney emission from the Proposed Development Sites. Therefore, no adverse air quality impact due to industrial emission is expected.

2.6.3 No air sensitive uses, including openable window, fresh air intake of mechanical ventilation and recreational uses in the open area, will be located within the buffer zones of the surrounding roads. Therefore, the proposed development will fulfil the buffer distance requirements for roads as stipulated in the HKPSG and will not be subject to any adverse vehicular emission impacts.

3. CONSTRUCTION NOISE IMPACT ASSESSMENT

3.1 Introduction

3.1.1 The noise impact assessment is prepared to evaluate potential construction noise impact to the surroundings and to recommend mitigation measures where practicable to attenuate the impact.

3.2 Construction Phase Impact

3.2.1 During the construction phase of the proposed development, major noise impacts would arise from piling works, operation of Powered Mechanical Equipment (PME), and construction-related traffic.

Construction Noise Criteria

3.2.2 Construction noise is controlled under the Noise Control Ordinance (NCO) which prohibits the use of powered mechanical equipment (PME) during the restricted hours (7 p.m. to 7 a.m. on normal weekdays and any time on a public holiday, including Sunday) without a valid Construction Noise Permit (CNP) from the Authority. The criteria and procedures for issuing such a permit are specified in the "Technical Memorandum on Noise From Construction Works Other than Percussive Piling" (TM1). While there is no planned construction works to be carried out during the restricted hours, TM1 should be followed in case there is any need to carry out works in such time period in future.

3.2.3 With effect from 1 November 1996, the use of specified powered mechanical equipment (SPME) for carrying out construction work other than percussive piling and/ or the carrying out of prescribed construction work (PCW) within a designated area are also brought under control. The relevant technical details are provided in the "Technical Memorandum on Noise from Construction Work in Designated Areas" (TM2).

3.2.4 Percussive pilling is controlled similarly by a construction noise permit system and described in the NCO and the "Technical Memorandum On Noise From Percussive Piling" (TM3) which restrict the number of hours during which piling can be conducted. Percussive piling is prohibited between 7 p.m. and 7 a.m. and on holidays (including Sundays). Percussive piling during the daytime (i.e. between 7 a.m. and 7 p.m. on any day not being a holiday) may be carried out in accordance with the permitted hours and other conditions under a valid construction noise permit.

3.2.5 For construction works other than percussive piling, although TM1 does not provide control over daytime construction activities, noise limits as shown in below Table are set out in the "Practice Note for Professional Persons Environmental Consultative Committee" (ProPECC) PN/1 issued in 2024.

Table 3.1 Noise Limit for Daytime Construction Activities

NSR	0700 to 1900 Hours on Any Day Not Being a Sunday or General Holiday, Leq (30 min), dB(A)
Dwelling	75
School	70 (65 during examinations)

Notes:

(i) The above standards apply to uses which rely on opened windows for ventilation;

(ii) The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

3.2.6 In all circumstances, future contractor will be required to exercise adequate mitigation measures to minimise potential construction noise impact on the surrounding noise sensitive uses.

Mitigation Measures

3.2.7 Sufficient noise mitigation measures should be introduced in the development to alleviate potential noise impacts on nearby NSRs. The Contractor(s) will be required under the contract to ensure regular maintenance of all plant and equipment, and that noise generation at source would be minimized and practicable noise mitigation measures would be in use. The Contractor(s) will be required to adopt quiet type construction plants (e.g. EPD's quality powered mechanical equipment (QPME) inventory), wherever practicable. Similarly, quieter method other than percussive piling will be adopted as far as practicable for any piling works subject to ground investigation result (which usually dictates the piling method). Movable noise barriers will also be erected around noisy plants in order to minimize noise generation at source. With these measures in place noise generation due to construction activities would be minimized.

3.2.8 The following general noise mitigation measures are recommended for implementation:

- Use of quieter equipment and construction method where practicable;
- Application of properly designed silencers, mufflers, acoustically dampened panels and acoustic sheds or shields, etc.;
- Use of electric-powered equipment where applicable instead of diesel-powered or pneumatic-powered equipment;
- Erecting noise enclosures/ movable noise barriers around noisy plants;
- Only well-maintained plants should be operated on-site;
- Plants should be serviced regularly during the construction programme;
- Noisy activities can be scheduled to minimize exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise;
- Noisy equipment such as emergency generators shall always be sited as far away as possible from noise sensitive receivers;
- Location of noise emitting plants at maximum possible distances from sensitive receivers;
- Contractual clauses for construction works; and
- Schedule of noisy operations during non-restricted hours where possible.

3.2.9 The above-mentioned noise mitigation measures will be included in the contractual clauses for implementation by the contractor(s) during the construction stage.

3.2.10 "Recommended Pollution Control Clauses for Construction Contracts" is available on EPD website. These clauses spell out the recommended noise control measures to be implemented by the contractor(s) during the construction stage of the Project. The Project Proponent will include the "Recommended Pollution Control Clauses for Construction Contracts" in the construction contract(s).

3.2.11 With these measures in place, construction noise due to the Proposed Development can be minimized, and no significant noise impact is anticipated.

3.3 Conclusion

3.3.1 With the implementation of recommended mitigation measures, including the use of QPMEs, installing temporary noise barrier and enclosure for PMEs as required in ProPECC PN 1/24, quiet construction methods and applying good site practices and together with the clauses of the "Recommended Pollution Control Clauses for Construction Contracts" in the construction contract(s) implemented by the contractor(s), the potential noise impact generated during the construction works stage on the NSRs will be minimised.

4. ROAD TRAFFIC NOISE IMPACT ASSESSMENT

4.1 Introduction

4.1.1 This road traffic noise impact assessment is prepared to address the potential road traffic noise impact on the noise sensitive uses of the Proposed Development and to recommend mitigation measures, where necessary.

4.2 Assessment Criteria

4.2.1 Noise standards are recommended in Chapter 9, "Environment", of the Hong Kong Planning Standards and Guidelines (HKPSG) for planning against possible noise impact from road traffic, railway and aircrafts.

4.2.2 For the Proposed Development, only dwellings will rely on openable window for ventilation purpose. The clubhouse and the G/IC use at podium will be provided with air-conditioning system and will not be provided with any openable windows / openings for ventilation.

4.2.3 According to the guidelines, the criterion for road traffic noise impact on domestic premises (habitable rooms) is L10(1-hour) 70dB(A). This criterion applies to uses which rely on openable windows for ventilation.

4.3 Assessment Methodology

4.3.1 In this assessment, the potential noise impact arising from nearby road carriageways on the Proposed Development has been assessed. It involved the prediction of future noise impact on NSRs arising from traffic flows along the carriageways situated in the vicinity of the Application Site.

4.3.2 The assessment concerns the prediction of the maximum hourly $L_{10\ (1\ hour)}$ road traffic noise level at NSRs of the Proposed Development due to the projected traffic flow on the adjacent road networks for Year 2045, which is considered as the worst-case scenario within 15 years upon completion of the Proposed Development in Year 2030 (same as occupation year). The information on traffic volume and percentage of heavy vehicle using these roads is attached in Appendix 4.1.

4.3.3 In view of the phase development, two scenarios are evaluated:

- Scenario (1) (Interim Scenario) – Only Phase 1 Development occupied while Phase 2 Developments are not in place. Assumed the existing buildings in Phase 2 and surrounding buildings to the east and north remain as industrial use.
- Scenario (2) (Ultimate Scenario) – All Phase 1 and 2 Developments, the Approved Application No. A/TW/527 Development and the Approved Application No. A/TW/537 Development completed.

4.3.4 The noise mitigation measures shall be proposed such that all noise exceedances under both scenarios, if any, have been mitigated.

4.3.5 The U.K. Department of Transport's procedure "Calculation of Road Traffic Noise" was applied to predict the $L_{10\ (1\ hour)}$ noise level generated from road traffic at openable window for ventilation at habitable room (NSRs) of the Proposed Development. Then, the predicted noise levels were compared with the HKPSG for assessing the impact.

4.4 Noise Sensitive Receivers

4.4.1 Noise Sensitive Receivers (NSRs) have been identified in this assessment. Their locations within the site are shown in Figure 4.1 to 4.2. The assessment points are

taken at 1.2m above the floors at 1m away from the facades of all noise sensitive openable windows.

4.4.2 The Social Work Team of Social Work Service for Pre-primary Institutions and clubhouses will be provided with central air conditioning system and will not reply on openable windows for ventilation.

4.5 Road Traffic Impact Assessment Result (Base Case)

4.5.1 The assessment result for dwelling under base case scenario is presented in Appendix 4.2 and summarised below.

Table 4.1 Base Case Road Traffic Noise Assessment Results – Scenario (1) (Interim Scenario)

Development Phase	Phase 1
Site ID	Site A
Total no. of Units	277
Total no. of Exceedances	128
Predicted Max. Noise Level, dB(A)	76
Percentage of Compliance, %	54

Table 4.2 Base Case Road Traffic Noise Assessment Results – Scenario (2) (Ultimate Scenario)

Development Phase	Phase 1	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E
Site ID	Site A	Site B	Site C	Site D	Site E	Site F
Total no. of Units/NSRs	277	116	116	145	87	145
Total no. of Exceedances	131	70	94	58	0	0
Predicted Max. Noise Level, dB(A)	76	76	76	73	70	70
Percentage of Compliance, %	53	40	19	60	100	100

4.6 Noise Mitigation Measures Incorporated in the Design

a. Building Setback

4.6.1 Sufficient setbacks have been provided to all building's facade faceing Wang Wo Tsai Street, and Yeung Uk Road.

b. Podium

4.6.2 The residential block at Site A is sitting on a podium that provides shielding effect between the residential floors and Yeung Uk Road.

4.6.3 The residential block at Site B to F are sitting on the podium that provides shielding effect between the residential floors, and surrounding road (i.e., Yeung Uk Road and Wang Wo Tsai Street).

c. Fixed Glazing with/without Maintenance Window

4.6.4 For those window façades that are not necessary for ventilation purpose yet exposed to potential road traffic noise, fixed glazing with/without maintenance window is proposed. The fixed glazing is not less than 8 mm. It will be equipped with well gasketed maintenance window with a removable handle or key lock system to ensure the maintenance window remains locked except for cleaning and maintenance purpose.

Residential Tower (Site A)

4.6.5 Please be noted the reference case in EPD-Practice note (ProPECC 5/23) [EPD-PN] have been made to adopt in first place for the Site A. However, some major parameters in EPD-PN cannot be followed (i.e., outer/inner opening is much larger than the EPD-PN, full height side wall near the outer opening cannot be provided at the balcony etc.), reference cases from other developments are therefore adopted.

a. Acoustic Window / Acoustic Balcony (Baffle Type) - Tai Po Town Lot No. 225 [AW(BT)-TP225 /AB(BT)-TP225]

4.6.6 Acoustic window and acoustic Balcony (Baffle Type) [AW(BT)-TP225 /AB(BT)-TP225] are proposed and the noise attenuation performance are referenced to a development project at Tai Po Town Lot No. 225 (*St. Martin*) (hereafter referred as "TP225"), which the residential development project was completed in the year 2019. The project owner of TP225 and this project are the same. The noise attenuation performance provided by the [AW(BT)-TP225 /AB(BT)-TP225] are obtained via laboratory testing which has been approved by EPD.

4.6.7 AW(BT)-TP225 and AB(BT)-TP225 are adopted in this project. The AW(BT)-TP225 and AB(BT)-TP225 refers to the type of window that has a sliding glass panel behind an outer window, both readily openable, for creating an air gap for the supply of fresh air with noise mitigation effect. It comprises two glazing:

(i) The outer window system with top hung / side hung openable window; and

(ii) The inner sliding panel with micro-perforated absorber (MPA).

For all cases, the air gap will be maintained at 100mm.

4.6.8 The "designed setting" for reducing noise entry to indoor area by moving the inner sliding panel to the side behind the openable window so that noise from outside cannot pass through the opening and enter indoor area directly. Instead, noise needs to pass through the gap between the inner sliding panel and outer façade aside the openable window in order to enter indoor area. According to Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-130 "Lighting and Ventilation Requirements – Performance-based Approach", the proposed baffle type acoustic window is considered in compliance with prescribed ventilation requirement if the net opening when inner sliding panel is moved to another side with least obstruction to the openable window at the outer façade. According to the Practice Note on Lighting and Ventilation Requirements –Performance-based Approach (APP-130) issued by Buildings Department, for optimum performance with the inner sliding panel in a closed position, the length of overlapping ("the length of overlapping" interprets as "the

length of airgap" in APP-130) should not be less than 100mm and the width of overlapping should be between 100mm to 175mm. The length and width of the air gap of the proposed acoustic windows also meet these conditions.

4.6.9 A road traffic noise sound attenuation of acoustic window with MPA applied in 4.2m^2 bedrooms of TP225 reaches 5.9dB(A), and acoustic balcony with MPA applied in 11.8 m^2 living room can reaches 6.6dB(A) with reference to TP225 determined based on onsite field test.

4.6.10 The configurations of AW(BT)-TP225 and AB(BT)-TP225 design are shown in Appendix 4.3. The configurations will be followed and optimized to suit the Proposed Development. The noise reduction effectiveness of the proposed AW(BT)-TP225 and AB(BT)-TP225 should not be worse than the reference cases. It is anticipated the proposed AW(BT)-TP225 and AB(BT)-TP225 should have at least the same sound transmission loss performance as the reference case. Further, if the room size of the Proposed Development is lower than the reference case in TP225, room size adjustment is conducted (shown in Appendix 4.5), so that the noise reduction will be lowered.

b. <u>Acoustic Balcony (Baffle Type) – Kai Tak NKIL No. 6568 [AB(BT)-KT6568]</u>

4.6.11 Acoustic Balcony (Baffle Type) [AB(BT)-KT6568] are proposed and the noise attenuation performance are referenced to a development project at NKIL No. 6568 in Kai Tak (hereafter referred as "KT6568"), which was previously proposed in an approved noise impact report and the KT6568 is under construction. The project owner of KT6568 and this project are the same. The noise attenuation performance provided by the [AB(BT)-KT6568] are obtained via laboratory testing which has been approved by EPD.

4.6.12 The AB(BT) in KT6568 refers to the type of balcony that has an inner sliding panel behind the outer opening, both readily openable, for creating an air gap for the supply of fresh air with noise mitigation effect. It comprises two glazing:

i. The outer window system with side hung openable window; and

ii. The inner sliding panel.

For all cases, the air gap will be maintained at 100mm.

4.6.13 The "designed setting" to reduce noise entering indoor area is achieved by placing the inner sliding panel behind the outer openable window, so that noise from outside cannot pass through the opening enter indoor area directly. As there is no gap at top and bottom of the sliding panel, direct transmission of sound energy into the habitable room is avoided. Instead, outdoor noise has to pass through the gap between the inner sliding panel and outer façade aside the opening in order to enter indoor area. The design allows natural ventilation through the aforementioned gap (although extent of natural ventilation may be inferior to the case without the inner sliding panel behind) and prevent most noise from entering indoor environment. According to the latest PNAP APP-130: "Lighting and Ventilation Requirements – Performance-based Approach", the proposed AB(BT) are considered complying with prescribed ventilation requirement if the net opening when the inner sliding panel is moved to another side with least obstruction to the openable window at the outer façade.

4.6.14 In this study, the use of micro-perforated absorber (MPA) panel and sound absorptive material (SAM) have been proposed where necessary.

- MPA is applied to the inner sliding panel of acoustic balcony (baffle type) wherever necessary (if the case without MPA is found to be inadequate to reduce noise to acceptable level); and

4.6.15 A road traffic noise sound attenuation of acoustic balcony with MPA applied in 11.2m^2 living rooms of KT6568 reaches 6.8 dB(A). The above noise attenuation performance is obtained via laboratory testing which has been approved by EPD.

4.6.16 The configurations of AB(BT)-KT6568 design are shown in Appendix 4.3. The configurations will be followed and optimized to suit the Proposed Development. The noise reduction effectiveness of the proposed AB(BT)-KT6568 should not be worse than the reference cases. It is anticipated the proposed AB(BT)-KT6568 should have at least the same sound transmission loss performance as the reference case. Further, if the room size of the Proposed Development is lower than the reference case in KT6568, room size adjustment is conducted (shown in Appendix 4.5), so that the noise reduction will be lowered.

c. Acoustic Window (Baffle Type)- Tin Shui Wai Town Lot No. 34 [AB(BT)-TSW34]

4.6.17 Acoustic window [AW(BT)-TSW34] are proposed and the noise attenuation performance are referenced to a development project at TSWTL No. 34 (Wetland Season Park) (hereafter referred as "TSW34"), which was completed at year 2020. The project owner of TSW34 and this project is the same. The noise attenuation performance provided by the AW(BT)-TSW34 are obtained via laboratory testing which has been approved by EPD.

4.6.18 The AW(BT) in TSW34 refers to the type of window that has an inner sliding panel behind the outer opening, both readily openable, for creating an air gap for the supply of fresh air with noise mitigation effect. It comprises two glazing:

i. The outer window system with side hung openable window; and

ii. The inner sliding panel.

For all cases, the air gap will be maintained at 100mm.

4.6.19 The "designed setting" to reduce noise entering indoor area is achieved by placing the inner sliding panel behind the outer openable window, so that noise from outside cannot pass through the opening enter indoor area directly. As there is no gap at top and bottom of the sliding panel, direct transmission of sound energy into the habitable room is avoided. Instead, outdoor noise has to pass through the gap between the inner sliding panel and outer façade aside the opening in order to enter indoor area. The design allows natural ventilation through the aforementioned gap (although extent of natural ventilation may be inferior to the case without the inner sliding panel behind) and prevent most noise from entering indoor environment. According to the latest PNAP APP-130: "Lighting and Ventilation Requirements – Performance-based Approach", the proposed AB(BT) are considered complying with prescribed ventilation requirement if the net opening when the inner sliding panel is moved to another side with least obstruction to the openable window at the outer façade.

4.6.20 In this study, the use of micro-perforated absorber (MPA) panel and sound absorptive material (SAM) have been proposed where necessary.

- MPA is applied to the inner sliding panel of acoustic balcony (baffle type) wherever necessary (if the case without MPA is found to be inadequate to reduce noise to acceptable level); and

4.6.21 A road traffic noise sound attenuation of acoustic balcony with MPA applied in 4.4m^2 bedrooms of TSW34 reaches 6.3 dB(A). The above noise attenuation performance is obtained via laboratory testing which has been approved by EPD.

4.6.22 The configurations of AW(BT)-TSW34 design are shown in Appendix 4.3. The configurations will be followed and optimized to suit the Proposed Development. The noise reduction effectiveness of the proposed AW(BT)-TSW34 should not be worse than the reference cases. It is anticipated the proposed AW(BT)-TSW34 should have at least the same sound transmission loss performance as the reference case. Further, if the room size of the Proposed Development is lower than the reference case in TSW34, room size adjustment is conducted (shown in Appendix 4.5), so that the noise reduction will be lowered.

Residential Towers (Site B- Site F)

a. Acoustic Window/Acoustic Balcony (Baffle Type) – EPD Practice Note [(AW(BT)/AB(BT))-(EPD-PN)]

4.6.23 Innovative noise mitigation measures are being explored in recent years. Baffle type acoustic windows and acoustic doors have been adopted for numerous residential developments for attenuating road traffic noise. It is understood that Environmental Protection Department (EPD) has issued the Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact (hereafter referred as "EPD-PN") for mitigating road traffic noise impact.

4.6.24 The AW(BT) and AB(BT) in EPD-PN has been proposed, it refers to the type of window that has a sliding glass panel behind an outer window, both readily openable, for creating an air gap for the supply of fresh air with noise mitigation effect. It comprises of two glazing: –

(i) the outer window system with side hung openable window; and

(ii) the inner sliding panel.

For all cases, the air gap will be maintained at 100mm.

4.6.25 The "designed setting" to reduce noise entering indoor area is achieved by placing the inner sliding panel behind the openable window, so that noise from outside cannot pass through the opening window and enter indoor area directly. As there is no gap at top and bottom of the sliding panel, direct transmission of sound energy into the habitable room is avoided. Instead, outdoor noise has to pass through the gap between the inner sliding panel and outer façade aside the opening window in order to enter indoor area. The design allows natural ventilation through the aforementioned gap (although extent of natural ventilation may be inferior to the case without the inner sliding panel behind) and prevent most noise from entering indoor environment. According to the latest PNAP APP-130: "Lighting and Ventilation Requirements – Performance-based Approach", the proposed AW(BT) and AB(BT) is considered complying with prescribed ventilation requirement if the net opening when the inner sliding panel is moved to another side with least obstruction to the openable window at the outer façade.

4.6.26 If the NSRs are parallel to the road, a road traffic noise sound attenuation of 7.0dB(A) can be achieved for the 8m^2 bedrooms. Meanwhile, the horizontal incident angle between the NSRs and the road within 30^o-60^o, and a road traffic noise sound attenuation of 8.0dB(A) can be achieved with reference to EPD-PN.

4.6.27 For the AB(BT), when the NSRs are parallel to the road, a road traffic noise sound attenuation of 8.0 dB(A) can be achieved for 14 m^2 living rooms, and 9.0 dB(A) for 18 m^2 living rooms respectively. Furthermore, a road traffic noise sound attenuation of 11.0 dB(A) can be achieved for both 18m^2 and 14 m^2 living rooms when the horizontal incident angle between the NSRs and the road within 30^o-60^o.

For NSR N3-05, it is noted that there would still be around 0.6 dB(A) exceedance after provision of acoustic window. In order to further mitigate these minor exceedances, additional sound absorption material with 1.5 dB(A) noise reduction at the window frame (top and outer opening side of mullion) of acoustic window is proposed.

4.6.28 The performance of sound attenuation for AW(BT) and AB(BT) is affected by various parameters, (i.e., air gap width between the outer façade and inner sliding panel, overlapping area between the sliding panel and the outer window, etc). It is understood that the smaller air gap width and longer overlapping length will provide better sound attenuation performance comparing to the reference case. The overlapping length for all proposed AW(BT) and AB(BT) will not be less than the EPD-PN (i.e., 100mm), and the air gap width will be same as the EPD-PN (i.e., 100mm). The indicative AW(BT) and AB(BT) design adopted in the Application Site is shown in Appendix 4.3.

4.7 Assessment Results under Mitigated Scenario

4.7.1 After the incorporation of the proposed noise mitigation measures, all noise exceedances in both Scenario (1) and (2) shall be mitigated. The assessment result for dwelling under mitigated scenario is presented in Appendix 4.5 and summarised below. Appendix 4.6 shows the overall proposed noise mitigation measures schedule.

Table 4.3 Mitigated Case Road Traffic Noise Assessment Results – Scenario (1) (Interim Scenario)

Development Phase	Phase 1
Site ID	Site A
Total no. of Units	277
Total no. of Exceedances	0
Predicted Max. Noise Level, dB(A)	70
Percentage of Compliance	100%

Table 4.4 Mitigated Case Road Traffic Noise Assessment Results – Scenario (2) (Ultimate Scenario)

Development Phase	Phase 1	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E
Site ID	Site A	Site B	Site C	Site D	Site E	Site F
Total no. of Units/NSRs	277	116	116	145	87	145
Total no. of Exceedances	0	0	0	0	0	0
Predicted Max. Noise	70	70	70	70	70	70

Level, dB(A)						
Percentage of Compliance	100%	100%	100%	100%	100%	100%

4.8 Conclusion

4.8.1 A road traffic noise impact assessment has been carried out for the Proposed Development.

4.8.2 All practical and effective noise mitigation measures have been explored, which include podia building, building setback, acoustic window (baffle type) and acoustic balcony (baffle type).

4.8.3 All noise sensitive uses in the Proposed Development would comply with the relevant HKPSG traffic noise standards after the provision of the noise mitigation and the proposed development would be acceptable in traffic noise terms. There is no insurmountable traffic noise impact.

5. FIXED NOISE IMPACT ASSESSMENT

5.1 Introduction

5.1.1 This fixed noise impact assessment has been prepared to address the noise impact on noise sensitive uses of the Proposed Development due to the fixed noise sources in the vicinity and recommend mitigation measures to attenuate the impact when necessary.

5.2 Assessment Criteria

5.2.1 Fixed noise impact assessment has been conducted in accordance with the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM), published under the Noise Control Ordinance (NCO). The IND-TM specifies the applicable Acceptable Noise Levels (ANLs) at Noise Sensitive Receivers (NSRs) which are dependent on the Area Sensitivity Rating (ASR) and the time period concerned. The ASR of NSR is determined based on the perceived usage of the study area and the presence of any influencing factors such as major roads, industrial areas, and airports.

5.2.2 The Application Site is considered as urban area. Area sensitivity rating (ASR) of "C" is adopted as it is directly affected by the industrial establishments along Wang Wo Tsai Steet, Yeung Uk Road and Texaco Road.

5.2.3 According to the IND-TM, the ANLs in $L_{eq\ (30min)}$ dB(A) related to the ASRs for both daytime and night-time are shown in Table 5.1 as below.

Table 5.1 Acceptable Noise Levels (ANLs) at NSRs of the Development

Time Period	ANL for ASR "C", $L_{eq\ (30min)}$, dB(A)
Day & Evening (0700 to 2300 hours)	70
Night (2300 to 0700 hours)	60

Notes: In any event, the Area Sensitivity Rating and the ANLs adopted in this report are only indicative and they are used for assessment only. Noise from fixed noise sources is controlled under the NCO. Therefore, the Noise Control Authority shall determine the noise impact on the basis of prevailing legislation and practices being in force and taking into account of contemporary conditions/ situation of adjoining land uses.

Where the noise under investigation is being received within a building from a noise source located on or within the same or an adjoining building such that the noise is transmitted primarily through the structural elements of the building or buildings, the appropriate ANL shall be 10 dB(A) less than the relevant ANL as shown above. A similar adjustment should be made to the relevant ANL if the point of assessment is at an internal location of a building in which the NSR is located.

5.3 Fixed Noise Sources

5.3.1 The Environmental Assessment report of the Approved Application No. A/TW/527 Development was referenced. Further site visits were carried out in Dec 2023 and Jun 2024 to verify the site conditions The following summarise the changes in fixed noise source inventory to be adopted in the fixed noise impact assessment for the Proposed Development. An extract from EAS of Approved Planning Application A/TW/527 on determination of Sound Power Levels of Fixed Noise Sources is shown in Appendix 5.1.

5.3.2 As mentioned in Section 1.5.1, a temporary PFS is located immediate next to the major road, Yeung Uk Road. The temporary PFS is located in an area zoned "Open Space" under the prevailing OZP and intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of local resident as well as the general public. The filling bay of the PFS as well as underground storage tank are under concrete cover, and this station also provides repairing activities within a workshop. Based on the site visit, the workshop is a three-side enclosed concrete structure with the only opening facing towards Yeung Uk Road.

5.3.3 During the Interim Scenario, noise sources C13 was identified and located at rooftop of the Asia Tone i-Centre (i.e., Maple Tree Logistics) with a height at level of 50 mPD. Furthermore, an industrial building- Sunwise Industrial Building with 100 mPD building height, which located in between the Asia Tone i-Centre (i.e., Maple Tree Logistics) and Site A. The building edge of Sunwise Industrial building provides a huge shielding effect to the Proposed Development. Therefore, C13 have no direct line-of-sight to the Proposed Development and shall not be considered in this assessment. The drawing shows the blockage of line-of-sight between the chillers at Asia Tone i-Centre and Proposed Development by Sunwise Industrial Building is shown in Appendix 5.2.

5.3.4 For noise sources C12a-b, C14, C15, and C16, are located at the building façade, which faces Wang Wo Tsai Street. Therefore, those sources have no direct line-of-sight to the Proposed Development and shall not be considered in this assessment.

5.3.5 The detailed fixed noise source inventory adopted in this assessment can be referred to Appendix 5.3 and is summarised in Table 5.2 below.

Table 5.2 Fixed Noise Sources adopted in Fixed Noise Impact Assessment

Building Name	Opening Hours	Noise Source ID	Fixed Noise Source	Operation Time		Remarks	mPD Level of Sources	Estimated Sound Power Level
				7am-11pm	11pm-7am			
Ever Gain Building	8am-7pm*	C1	Two air-cooled chillers on the roof	Yes	No	Centralised cooling system of building	70.4	C1: 100.8 dB(A)
Symphone Industrial Building	8am-8pm*	C2 & C3	One water cooling tower located on the roof near the western end and four water cooling towers located on the roof near the eastern end	Yes	No	--	41.7	C2: 89.9 dB(A)
ADP Pentagon Centre	9am-6pm*	C4	Two water cooling towers located on the roof	Yes	No	For centralised cooling system of building	97.9	C4: 92.9 dB(A)
Young Ya Industrial Building	7am-6pm*	C5	Condensing units located on 1/F podium area	Yes	No	Operated by ground floor canteen	11.3	C5: 96.9 dB(A)
	8am-8pm*	C9	23 exhaust fans (with hood) at building façade facing south +	yes	no	no		C9a: 90.8dB(A) C9b: 95.0dB(A) C9c: 84.9dB(A

Po Yip Building	No information	C7	Four water cooling towers located on the roof of Block B	Assume operation at all times as worst-case scenario		Access to this building was denied by property management office (PMO)	#	C7 small: 86.9 dB(A) each
		C8	33 exhaust fans (with hood) at building façade facing south	Yes	Possibly 5 fans could be in operation	A laundry centre located on the 1/F at the southeast corner of Po Yip Building was seen in operation during the night-time	#	C8a: 90.8 dB(A)
			142 air conditioners	Assume operation at all times as worst-case scenario		Noise from A/C units was perceived in operation during nighttime	#	C8c: 87.5 dB(A)
Hing Yip Centre	7am-8pm*	C10	4 exhaust fans (with hood) at building façade facing the Site +	Yes	No	Nighttime survey findings confirm these fans were not in operation. No noise from fans or A/C units was perceived.	#	C10a: 88.0 dB(A) C10b: 77.8 dB(A)
Saving Logistic Centre	7am-7pm*	C11	9 exhaust fans (with hood) at building façade facing the Site +	Yes	No	Nighttime site survey findings confirm these fans were not in operation. NO noise from fans or A/C units was perceived.	#	C11a: 91.5 dB(A) C11b: 79.4 dB(A)
Asia Tone i-Centre (i.e., Maple Tree Logistics)	No information	C17a & C17b	2 emergency generators	No	No	Emergency power backup	6.6	C17a & C17b: 100.0 dB(A)
		C18a to C18j	10 sets of split-type air conditioners	Yes	Yes	--	10.8	C18a to C18j: 76.4 dB(A) each

		C19a to C19d	4 sets of split-type air conditioners	Yes	Yes	Completely decked over by G/F ceiling with no direct line-of-sight to Proposed Development	9.5	C19a to C19d: 76.4 dB(A) each
		C20	2 ventilation duct outlets	Yes	Yes	--	#	C20: 68.3 dB(A)
Bonsun Industrial Building	8am-8pm	C21	17 air conditioners at building façade facing the Site	Yes	No	--	#	C21: 78.3 dB(A)

Remark:

**As advised by the PMO through interview with PMO officials*

#During the industrial noise impact assessment, worst case scenario has been assumed that all fans and A/C units identified are grouped and located at the nearest building facade towards NSRs. Distance between the noise source and NSRs is assumed to be the shortest distance between the nearest building facade and the NSRs.

5.3.6 The 300m assessment area from the site boundary of Application Site and the potential fixed noise sources in the vicinity of the Application Site are shown in Figure 5.1 and Figure 5.2.

5.4 Assessment Methodology

5.4.1 The shortest horizontal distances between NSRs of the Proposed Development and the fixed noise sources are adopted in the assessment as a worst-case scenario. The Corrected Noise Level (CNL) can be calculated by applying the appropriate corrections to the estimated Sound Power Level (SWL) of the fixed noise source in accordance with the following formula:

$$CNL_{\square} = SWL_{source} + Corr_{dist} + Corr_{bar} + Corr_{ton} + Corr_{fac}$$

where

$CNL_{\square}$ = Corrected Noise level at the Representative NSR [$Leq_{(30\ min)}$ dB(A)]

SWL_{source} = Sound Power Level of the Identified Fixed Noise Sources [dB(A)]

$Corr_{dist}$ = Distance Correction [-20 x Log (Distance between NSR and Source) – 8]

$Corr_{bar}$ = Barrier Correction

$Corr_{ton}$ = Tonality Correction [+3dB(A)]

$Corr_{fac}$ = Façade Correction [+3dB(A)]

5.4.2 For the fans and A/C units on building facades (C8, C9, C10, C11), it is assumed that they would be grouped into one source and this notional noise source will be located at the nearest building facade towards NSRs, as a worst-case scenario.

5.5 Noise Sensitive Receivers

5.5.1 Representative NSRs that are closest to the fixed noise sources have been selected for fixed noise impact assessment. Figure 5.3 and Figure 5.4 indicates the location of these representative NSRs for each assessment scenario.

5.6 Assessment Results in Base Case Scenario

5.6.1 The predicted fixed noise impact during both Scenario (1) and (2) (as mentioned in Section 1.4) have been evaluated. The fixed noise impact assessment results can be referred to Appendix 4.5.

Site A Development

5.6.2 For Scenario (1), there are no noise exceedances at the Proposed Development at Site A under both daytime and nighttime assessment scenarios. The Site A development would not be subject to insurmountable industrial noise impact. No mitigation measures for Site A development are required.

5.6.3 Remaining Phase (Site B to F)

5.6.4 For Scenario (2), there are no noise exceedances at the Proposed Development at Sites B to F under both daytime and nighttime assessment scenarios. The Site B to F development would not be subject to insurmountable industrial noise impact. No mitigation measures for Site B to F development are required.

5.7 Potential Fixed Noise Impact to the Surrounding Environment

5.7.1 In order to ensure the fixed noise generated by the Proposed Development would not cause potential impact to neighbouring noise sensitive uses, potential noise sources from the Proposed Development (e.g., mechanical ventilation of club houses, E/M

Room etc.) will be designed to meet the relevant noise criteria as stipulated in the HKPSG.

5.8 Conclusion

5.8.1 The potential fixed noise impact to the Proposed Development has been assessed. The Phase 1 & 2 development would not be subject to insurmountable industrial noise impact. No mitigation measures for Phase 1 & 2 development are required.

5.8.2 Provisions shall be made to control the noise sources by suitable silencers, acoustic louvers and enclosures, if necessary. As such, it is anticipated that the fixed noise impact on the surrounding NSRs due to the operation of the Proposed Development will not exceed the relevant noise standard of the HKPSG and the NCO.

6. WASTE MANAGEMENT

6.1 Introduction

6.1.1 This section presents the management and disposal strategy of the wastes generated from the construction work and operation phase. The options for waste minimization, reuse, recycling, collection, transportation and disposal of wastes arising from the construction, demolition work and operation phase have been examined. Where appropriate, procedures for waste reduction and management are considered and environmental control measures for avoiding and minimising the potential impacts are recommended.

6.2 Legislation

6.2.1 The following legislations and guidelines are relevant to the handling, treatment and disposal of waste in HKSAR and references were made in assessing the potential impacts and their avoidance or mitigation:

- *Waste Disposal Ordinance (Cap. 354);*
- *Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);*
- *Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);*
- *Practice Note for Authorized Persons and Registered Structural Engineers – Construction and Demolition Waste (PNAP ADV-19, also known as PN for AR&RSE No. 243);*
- *Public Health and Municipal Services Ordinance (Cap 132);*
- *Land (Miscellaneous Provisions) Ordinance (Cap 28); and*
- *Monitoring of Solid Waste in Hong Kong 2022*

6.2.2 The following guidelines also relate to waste management and disposal:

- *Waste Disposal Plan for Hong Kong (1989);*
- *Hong Kong Planning Standards and Guidelines (HKPSG), Chapter 9 – Environment;*
- *WBTC No. 2/93, Public Dumps;*
- *WBTC No. 2/93B, Public Filling Facilities;*
- *WBTC No. 12/2000, Fill Management, Hong Kong SAR Government;*
- *WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates, Works Bureau, Hong Kong SAR Government;*
- *WBTC No. 32/92, The Use of Tropical Hard Wood on Construction Site;*
- *ETWB TC(W) No. 19/2005 Environmental Management on Construction Sites;*
- *DEVB TC(W) No. 2/2011, Encouraging the Use of Recycled and other Green Materials in Public Works Projects;*
- *DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, Development Bureau, Hong Kong SAR Government;*
- *DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness, Works Bureau, Hong Kong SAR Government;*
- *CEDD TC No. 11/2019, Management of Construction and Demolition Materials;*
- *Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste (1993) Environmental Protection Department;*

- *Code of Practice on Asbestos Control: Preparation of Asbestos Investigation Report, Asbestos Management Plan and Asbestos Abatement Plan (1997) Environmental Protection Department;*
- *ProPECC PN2/97, Handling of Asbestos Containing Materials in Buildings; and*
- *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, EPD (1992)*

6.3 Assessment Methodology

6.3.1 The assessment of the potential waste management implications during the construction and operation phases of the Project has been conducted in accordance with Annexes 7 and 15 of the EIAO-TM, including the following tasks:

- Estimation of the types and quantities of the wastes generated;
- Evaluation of opportunities for waste reduction and re-use;
- Identification of disposal options for each type of wastes;
- Assessment of potential environmental impacts arising from the wastes management with respect of potential hazards, air and odour emissions, noise, wastewater discharge, and public transport; and
- Assessment of the impacts caused by handling, collection, transportation and re-use /disposal of wastes.

6.3.2 Prior to considering the disposal options for various types of waste, opportunities for reducing waste generation, on-site or off-site reuse and recycling have been evaluated. Measures which can be taken in the planning and design phases (e.g. by modifying the design approach) and in the construction phase for maximizing waste reduction have been separately considered. Practices to promote segregation of waste materials are additionally considered for advancing the waste management efficiency.

6.3.3 After considering the opportunities for reducing waste generation and maximizing reuse, the types and quantities of the waste required to be disposed of have been estimated and the disposal options for each type of waste have been described. The disposal method recommended for each type of waste has been taken into account the result of the assessment. The impacts caused by handling (including stockpiling, labelling, packaging and storage), collection and reuse / disposal of waste have been addressed and appropriate mitigation measures have been proposed.

6.4 Identification and Evaluation of Potential Impact during Construction Stage

6.4.1 The construction activities to be carried out for the proposed Project would generate a variety of wastes that can be divided into distinct categories based on their composition and ultimate method of disposal. The identified waste types include:

- Construction and Demolition (C&D) materials due to excavation and site formation;
- General refuse generated by the workforce;
- Chemical and oily wastes due to maintenance of equipment; and
- Asbestos Containing Materials (ACM)

<u>Key sources of C&D materials</u>

It is anticipated that the majority of C&D materials will be generated from the following key construction activities:

- Excavation of ground for basement of the Proposed Development;

- Demolition existing industrial buildings; and
- Building construction and superstructure works.

C&D Materials

6.4.2 C&D materials comprise mainly of unwanted materials, including surplus materials arising from excavations that are generated from the works (e.g. site clearance, demolition works of substructure, site formation works, excavation work for basement). Inert soft C&D materials comprise of soil, sand, clay, slurry, etc., while hard C&D materials comprise of crushed concrete, asphalt, rock, etc. The amount of non-inert C&D materials generated during site clearance would be minor (as there is little vegetation at the Application Site). C&D materials may comprise different types of materials, including:

- Inert C&D materials (also known as public fill, including soil, rock debris, rubble earth, concrete, etc.) do not decompose and are suitable to reuse as filling materials for land reclamation and site formation. Inert C&D materials could be reused on-site as filling materials. For those inert C&D materials that cannot be reused should be delivered to Public Fill Reception Facilities.
- Non-inert C&D materials (also known as C&D waste, including bamboo, timber, paper, metal, glass, plastic, packaging wastes, etc.). Non-inert C&D materials should be reused or recycled as far as possible. For those non-inert C&D materials that cannot be reused or recycled, they should be disposed of at designated landfill sites as last resort.

6.4.3 The general waste management strategy is to avoid waste generation in the first place. Should it be unavoidable, reduction and segregation at-source should be exercised as far as practicable and recycling and reuse should be adopted at the same time to salvage all the recyclable and reusable materials as much as possible.

6.4.4 Inert C&D materials should be re-used on-site (e.g. for backfilling) if it is practical and/or delivery to CEDD designated public fill reception facilities. Non-inert C&D materials (i.e. C&D waste) should be re-used or recycled. For those that cannot be reused or recycled, they should be disposed of at designated landfill sites as last resort.

6.4.5 The site area of the Application Site is approximately 7,353m^2 with 6 existing industrial buildings. It is assumed that all buildings are 11-story with 3m floor height. Assuming the inert and non-insert materials produced during the demolition is 10% and 90%, 7,300m^3 and 65,700m^3 of inert and non-inert materials will be produced in this stage. For the area of the basement in the Proposed Development is 5,882m^2 with 4m depth (which is a conventional headroom for basement level). Considerations will be made to minimise the excavation extent as practicable as possible while ensuring the parking provision can meet the HKPSG standard. It is estimated that 21,878m^3 and 1,650m^3 of inert and non-inert materials are generated from excavation, assuming 93% inert C&D materials and the remaining are non-insert C&D materials. During the building construction, appropriately 5,147m^3 C&D materials will be produced. Assuming 80% are inert materials, 4,00m^3 and 100m^3 of inert and non-inert materials will be produced. Therefore, it is estimated that about 33,178m^3 of inert C&D material and 67,450m^3 of non-inert C&D material will be generated during the course of construction (including demolition, excavation and building construction). Adequate areas for sorting and storage of segregated materials should be provided onsite. Construction wastes shall be sorted, with the inert C&D materials broken up into small pieces for delivery at public fill reception facility, and the non-inert C&D materials should be disposed of at landfill.

6.4.6 According to ETWB TC(W) 19/2005 on "Environmental Management on Construction Sites", waste management plan (WMP) becomes part of Environmental Management

Plan (EMP) to be submitted to Architect/ Engineer for approval before construction works. The Project team will require the Contractor(s) to submit WMPs for approval. The WMPs will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. It will ensure that the day-to-day operations on site comply with the approved WMPs. It will control the delivery of inert C&D materials and non-inert C&D materials to public fill reception facilities and landfills, respectively, through a trip-ticket system. It will require the Contractor(s) to separate public fill from C&D materials for delivery at appropriate facilities. It will record the delivery, reuse and recycling of C&D materials for monitoring purposes.

6.4.7 The Contractor(s) should be responsible for ensuring that all on-site wastes will be collected by approved waste collectors and appropriate measures should be undertaken to minimise potential impacts to the surrounding environment, such as dust generation. The Contractor(s) must also ensure that all necessary waste disposal permits have been obtained before actions.

6.4.8 Prior to disposal of non-inert C&D materials, it is recommended that wood, steel, glass and other metals will be collected separately for re-use and/or recycling and inert C&D materials utilized as fill materials to minimize the quantity of waste to be delivered to the Public Fill Reception Facilities and landfill. The details are shown in Table 6.1.

6.4.9 The inert materials should be segregated from the C&D materials on-site for reuse as far as practicable. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the C&D material that could be reused on-site as fill materials as far as practicable. It is estimated that the Project would require a total of 1,659 m^3 of fill materials for construction phase as shown in Table 6.1

6.4.10 If the total quantity of C&D materials generated from the Project is estimated to be over 50,000 m^3, a Construction and Demolition Material Management Plan (C&DMMP) is required to be prepared at the feasibility study or preliminary design stage in accordance with Chapter 4 Clause 4.1.3 of Project Administration Handbook for Civil Engineering Works. The purpose of the C&DMMP is to actively seek to minimise generation of C&D materials and to reuse inert materials generated, including rock, as far as possible. The C&DMMP shall be signed off by a D1 officer. The C&DMMP has been prepared in accordance with the guidelines stipulated in Appendix 4.9 of Project Administration Handbook for Civil Engineering Works for separate submission.

Chemical Waste

6.4.11 The maintenance and servicing of construction plant and equipment may generate chemical wastes such as cleaning fluids, solvents, lubrication oil and fuel. Maintenance of vehicles may also involve the use of a variety of chemicals, oil and lubricants. The amount of chemical waste generated will be small, in the order of a few cubic metres per month. It will be quantified in the Environmental Management Plan (EMP) to be prepared by the Contractor. For the disposal of chemical wastes, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

6.4.12 Chemical waste arising during the construction phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as stipulated in the Waste Disposal (Chemical Waste) (General) Regulations. The potential hazards include:

- Toxic effects to workers;
- Adverse impacts on water quality from spills; and

- Fire hazards.

6.4.13 Materials classified as chemical wastes will require special handling and storage arrangements before removal for appropriate treatment at the approved Chemical Waste Treatment Facility. Wherever possible opportunities should be taken to reuse and recycle materials. Provided that the handling, storage and disposal of chemical wastes are in accordance with these requirements, adverse environmental impacts are not expected.

General Refuse

6.4.14 Throughout the construction stage, the workforce would generate general refuse comprising food scraps, wastepaper, empty containers, etc. Release of general refuse into the nearby storm drain should not be permitted as introduction of these wastes is likely to have detrimental effects on water quality in the area. Effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into the surrounding environment, and odour nuisance. The work site may also attract pests and vermin if the waste storage area is not well maintained and cleaned regularly.

6.4.15 Recyclable materials (i.e., food scraps and container, paper, plastic bottles and aluminium cans) will be separated for recycling, in order to reduce the amount of general refuse to be disposed of at landfill. Adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. The non-recyclable refuse will be placed in bags and stored in enclosed containers and disposed of on a daily basis to designated landfill.

6.4.16 With the implementation of recommended waste management practices at the site, adverse environmental impacts would not arise from the storage, handling and transportation of general refuse.

Asbestos Containing Materials (ACM)

6.4.17 Asbestos was widely used in the construction industry prior to the early 1980s for fireproofing, thermal and electrical insulation as well as in sound absorption materials. However, asbestos is currently recognized as hazardous materials, due to its etiological effects on human respiratory system.

6.4.18 As the Schemes involve the demolition of buildings/ structures that were built before 1980s, ACM may be present in the buildings within the Schemes. Thus, ACM which may be disturbed during demolition activities, should be removed and disposed of in a proper manner prior to the demolition work, so as to avoid the release of harmful asbestos fibres to environment and minimise potential hazard.

6.4.19 All ACM if confirmed to be present within the existing premises must be removed and disposed of in accordance with the Air Pollution Control Ordinance (APCO) and WDO prior to the demolition works. A Registered Asbestos Consultant and Registered Asbestos Laboratory shall be engaged to conduct investigation for the presence of ACM. An Asbestos Investigation Report, an Asbestos Abatement Plan (AAP) (if required) and a notification of commencement of asbestos abatement works commences. Also, the removal of ACMs should be carried out by a Registered Asbestos Contractor according to the approved AAP under the supervision of a Registered Asbestos Consultant. The asbestos waste generated shall be disposed of by a licensed chemical waste collector in compliance with the WDO.

6.4.20 Preliminary quantity estimation of construction waste involved, and disposal method is summarised in the Table 6.1 below.

Table 6.1 Summary of Estimated Construction Waste and Disposal Method

Waste Material Type		Estimated Quantity Generated[(a)]	Disposal Method
Inert C&D materials (Soil, rock debris, rubble earth, concrete etc.)	Demolition of Existing Building	7,300 m^3	~0.5% (i.e.1,659m^3) would be reused or recycled on site or in other projects; and the remaining (i.e., 99.5%, ~33,012m^3) would be delivered to Public Fill Reception Facilities for another beneficial reuse. [(c)(d)]
	Excavation of Basements	21,878 m^3	
	Construction of New Buildings/Structures	4,000 m^3	
Non-inert C&D materials (Bamboo, timber, paper, metal, glass, plastic, packaging wastes etc.)	Demolition of Existing Building	65,700 m^3	Disposed to landfill. [(c) (e)]
	Excavation of Basements	1,650 m^3	
	Construction of New Buildings/Structures	100 m^3	
Chemical Waste	-	Less than hundred litres /month (preliminary estimate)	To be collected by licensed chemical waste collector and delivered to CWTC
General Refuse	-	52kg/day (Preliminary estimate, assuming there are 80 workers at any one time with generation rate of 0.65kg per worker per day)	Recyclables to recyclers; non-recyclables to landfill
ACM	TBC [(b)]	TBC[(b)]	TBC[(b)]

Note:

(a) The above estimated quantities are subject to detailed design.

(b) As the majority of sites are managed by private owners and still in operation, further investigation is required by the asbestos specialist after land resumption, when access to the sites becomes available.

(c) With total ~35478 tonnes inert/ non-inert C&D material, the number of dump truck is anticipated to be around 8 trucks/day (assuming each truck can carry 15tones and there is around 270 working day per year)

(d) The destination of inert C&D materials is subject to the designation by the Public Fill Committee according to DEVB TC(W)

(e) The disposal of non- inert C&D materials is subject to agreement with relevant section of the EPD

6.5 Mitigation Measures During Construction Phase

6.5.1 The mitigation measures for construction phase are recommended based on the waste management hierarchy principles. Recommendations of good site practices,

waste reduction measures as well as the waste transportation, storage and collection are described in following sub-sections.

Good Site Practices

6.5.2 Appropriate waste handling, transportation and disposal methods for all waste arisings generated during the construction phase should be implemented to ensure that construction waste do not enter the nearby sensitive receivers.

6.5.3 It is expected that adverse impacts from waste management would not arise, provided that good site practices are strictly followed. Recommendations for good site practices during construction include:

- Nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to appropriate facilities;
- Training of site personnel in proper waste management and chemical waste handling procedures;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.

6.5.4 In order to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by the Contractor. One may make reference to DEVB TCW No. 6/2010 for details. All dump trucks engaged on-site for delivery of inert and non-inert C&D material from the site to the designated disposal location including PFRFs, landfill etc., should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor to prohibit illegal dumping and landfilling of materials. The data collected by GPS or equivalent system should be recorded properly for checking and analysis the travel routing and parking locations of dump truck engaged on site.

Waste Reduction Measures

6.5.5 Good management and control can prevent the generation of significant amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Maximising the use of reusable steel formwork to reduce the amount of C&D material;

- Prior to disposal of non-inert C&D material, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- Proper storage and site practices to minimise the potential for damage or contamination of construction materials;
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; and
- Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering.

6.5.6 In addition to the above good site practices and waste reduction measures, specific mitigation measures are recommended for the identified waste to minimise environmental impacts during handling, transportation and disposal of these wastes.

General Refuse

6.5.7 Recycle bins will be provided onsite to collect recyclable wastes such as, paper, metal (e.g. cans), plastic and glass. Recyclable wastes will be segregated from non-recyclable waste to be stored in enclosed bins or compaction units. A reputable waste collector should be employed by the contractor to remove general refuse from the site on a daily basis. Recyclable waste will be collected in appropriate frequency to ensure no over stacking of recyclable wastes. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

6.5.8 For the food waste, it is recommended an adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. Also, food waste will be placed in bags and stored in enclosed containers. The containers should be placed in prominent places to promote wate separation at the source. The food waste should be collected by daily basis to minimize any potential odour and environmental hygiene impacts.

Construction and Demolition Material

6.5.9 The C&D material generated from excavation should be sorted on-site into inert C&D material (that is, public fill) and ssnon-inert C&D material. In order to minimise the impact resulting from collection and transportation of C&D materials for off-site disposal, the excavated material comprising fill material should be reused on-site as far as practicable. Non-inert C&D material, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill.

6.5.10 Suitable areas should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. Within stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance:

- Covering material during heavy rainfall;
- Locating stockpiles to minimise potential air quality, water quality and visual impacts; and
- Minimising land intake of stockpile areas as far as possible.

Chemical Wastes

6.5.11 For those processes which would generate chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type with less impact on environment, health and safety as far as possible.

6.5.12 If chemical wastes are produced at the construction site, the Contractor should register with EPD as a Chemical Waste Producer and to follow the guidelines stated

in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed chemical waste collector to transport, and disposal of the chemical wastes generated at the Chemical Waste Treatment Centre at Tsing Yi, or other licenced facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

Asbestos Containing Materials

6.5.13 Due to the potential presence of ACM during the demolition stage, asbestos investigation is required. An asbestos specialist shall be employed during the design and construction stage to investigate this issue.

6.5.14 Sufficient and reasonable lead time shall be allowed for the preparation, vetting and implementation of asbestos investigation report and asbestos abatement plan in accordance with APCO before commencement of any demolition stage.

6.5.15 Asbestos waste will be handled in accordance with the Code of practice on the Handling, Transportation and Disposal of Asbestos Waste issued by the EPD.

6.5.16 Some key precautionary measures related to the handling and disposal of asbestos based on Handling of Asbestos Containing Materials in Buildings (ProPECC PN 2/97) are listed as following:

- Adoption of protection, such as full containment, mini containment, or segregation of work area;
- Provision of decontamination facilities for cleaning of workings, equipment and bagged waste before leaving the work area;
- Adoption of engineering control techniques to prevent fibre release from work area, such as use of negative pressure equipment with high efficiency particulate air (HEPA) filters to control air flow between the work area and the outside environment;
- Wetting of asbestos containing materials before and during disturbance, minimising the breakage and dropping of asbestos containing materials, and packing of debris and waste immediately after it is produced;
- Cleaning of work area by wet wiping and vacuuming with HEPA filtered vacuum cleaner;
- Coating on any surfaces previously in contact with or contained by asbestos with a sealant;
- Proper bagging, safe storage and disposal of asbestos and asbestos contaminated waste;
- Pre-treatment of all effluent from the work area before discharged; and
- Air monitoring strategy to check the leakage and clearance of the work area during and after the asbestos work.

6.6 Identification and Evaluation of Potential Impact during Operation Phase

General Refuse

6.6.1 During operation phase of the proposed development, since the uses are mainly residential, recreational, and social services, livestock and clinical waste are not anticipated. Instead, general waste is anticipated to be the major type of waste

generated during the operation of the proposed development. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2022" by EPD, the per capita disposal rates of municipal solid waste, domestic waste, commercial & industrial waste are respectively 1.51 kg/person/day, 0.93 kg/person/day and 0.59 kg/person/day (Plate 2.7 of Waste Statistics for 2022). Among domestic and commercial waste, the recovery rate is respectively 20% and 45% respectively (Plate 3.2 of Waste Statistics for 2022). Based on the estimated total number of residents and visitors for the residential and non-domestic portions of the Proposed Development is 2482 per day and 100 per day respectively, there will be around 2993 kg/day of waste generation (i.e. 0.93/ (1-20%) x 2482 + 0.59/(1-45%) x 100). With adequate waste collection/storage facilities provided to segregate recyclable and non-recyclable wastes, the burden of waste treatment facilities in Hong Kong will be reduced. In addition, the applicant will explore in detailed design stage to collect food waste alongside these recyclable wastes mentioned above to further reduce waste generation.

6.6.2 The refuse shall be properly managed by suitable waste collectors so that intentional or accidental release to the surrounding environment will not occur. Storage of general refuse would generate odour nuisance and visual impact if they are not managed in a proper manner. Vermin and pests may also be attracted if the waste containers are not cleaned or maintained properly and frequently. Therefore, general refuse should be temporarily stored in proper containers with covers to avoid adverse impact to the surroundings. To reduce waste and improve recycling, sufficient properly labelled recycling bins for paper, plastic and aluminium should be provided at appropriate locations of the site to collect recyclables for off-site recycling. Regular (e.g., daily) waste removal and recyclables collecting should be arranged to avoid odour nuisance or pest/vermin problem. These waste management practices and good site practises should be properly implemented to ensure adverse environmental impacts from handling and disposal of general refuse would not arise.

6.6.3 For the food wastes such as leftovers, it is recommended an adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. Also, leftovers will be placed in bags and stored in enclosed containers. Rather than disposing of the food waste to the designated landfill directly, the project proponent is recommended to deliver the food waste to the Organic Resources Recovery Centre (ORRC) to reduce the pressure on the existing landfill. Therefore, the chances of odour nuisance and hygiene issues are reduced.

<u>Chemical Waste</u>

6.6.4 Chemical waste will be generated from various routine maintenance and servicing activities for air conditioning systems, and other electrical and mechanical equipment. Chemical waste such as waste lubricating oil, contaminated rags, waste paint, used solvents and spent chemicals are expected to be generated from these activities. It is difficult to quantify the amount of chemical waste that will arise from those activities at this stage since it will be dependent on the equipment maintenance requirements and the amount of equipment utilised.

6.6.5 Chemical wastes arising during the operation phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as stipulated in the Waste Disposal (Chemical Waste) (General) Regulations. The potential hazards include:

- Toxic effects to workers;
- Adverse impacts on water quality and wildlife from spills; and
- Fire hazards.

6.6.6 Chemical wastes will require special handling and storage arrangements in accordance with the relevant regulations before off-site disposal at the approved Chemical Waste Treatment Facility or recycling by licensed facilities. Provided that the handling, storage and disposal of chemical wastes will be in accordance with these requirements, adverse environmental impacts will not be expected.

6.7 Conclusion

6.7.1 Waste generated during construction works and operation phase have been qualitatively evaluated. With these waste management measures in place, the waste generated from the construction work and operation of the Proposed Development would be properly controlled and no significant waste management impact is anticipated.

7. LAND CONTAMINATION ASSESSMENT

7.1 Introduction

7.1.1 The Application Site is bounded by Wang Wo Tsai Street to the North and East, and Yeung UK Road to the South, which is currently occupied by six (6) industrial buildings. The historical and current land uses of the Application Site are discussed in the following sections.

7.2 Legislation

7.2.1 This land contamination review has been prepared following the below guidelines published by EPD:

- *Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (RBRGs), EPD, Revised in April 2023*
- *Guidance Note for Contaminated Land Assessment and Remediation, EPD, Revised in April 2023*; *and*
- *Practice Guide for Investigation and Remediation of Contaminated Land (EPD's Practice Guide), EPD, Revised in April 2023*

7.2.2 As the RBRGs and the EPD's Practice Guide were the latest guidelines promulgated for use in August 2007 and August 2011 respectively, the RBRGs criteria and the requirements stated in the EPD's Practice Guide will be adopted in this land contamination review.

7.3 Review of Historical and Currently Available Information

7.3.1 The Application Site is zoned as "Comprehensive Development Area (5)" [CDA (5)] under Approved Tsuen Wan Outline Zoning Plan (OZP no. S/TW/37).

7.3.2 The Application Site comprises five (5) industrial buildings, Jumbo iAdvantage (Site A), Wing Wah Industrial Building (Site B), Shui Cheong Factory Building (Site C), Wing Kwai Factory Building (Site D), Wing Yu Factory Building (Site E), and Sunwise Industrial Building (Site F). They range from 8 to 26 storeys high without basements.

7.3.3 In the aerial photograph taken in 1964 by Lands Department (LandsD), a building was erected at Site F. In 1977, all buildings were observed within the whole Application Site. Moreover, the building in Site F was demolished in around year 1995 and re-built as Sunwise Industrial Building. Such buildings/purposes remain unchanged till the present day.

7.3.4 Upon review of the aerial photographs in Years 1963, 1964, 1969, 1972, 1977, 1987, 1995, 2000, 2007, 2012, 2017, 2022, and 2023 from the Lands Department (LandsD), the land uses of the Application Site are summarized in Table 7.1. The relevant aerial photographs from LandsD are presented in Appendix 7.1.

Table 7.1 Historical Landuse Summary of the Application Site

Period / Year	Landuse / Descriptions	Sources of Information
1963	The Application Site (all phase sites) was vacant land.	Aerial photographs from LandsD
1964	A building structure was erected at Site F, remain sites were vacant land.	Aerial photographs from LandsD

Period / Year	Landuse / Descriptions	Sources of Information
1969	A building structure was erected at Site F and Site A, remain sites were vacant land.	Aerial photographs from LandsD
1972	Four (4) more building structures were erected in Application Site.	Aerial photographs from LandsD
1977	All industrial building were constructed within the Application Site.	Aerial photographs from LandsD
1987	No landuse change for the Application Site.	Aerial photographs from LandsD
1995	The building in Site F was demolished and rebuilt as Sunwise Industrial Building.	Aerial photographs from LandsD
2000	No landuse change for the Application Site.	Aerial photographs from LandsD
2007	No landuse change for the Application Site.	Aerial photographs from LandsD
2012	No landuse change for the Application Site.	Aerial photographs from LandsD
2017	No landuse change for the Application Site.	Aerial photographs from LandsD
2022	No landuse change for the Application Site.	Aerial photographs from LandsD
2023	No landuse change for the Application Site.	Aerial photographs from LandsD

Site Inspection and Observation

7.3.5 Site inspection of the Application Site was conducted in Dec 2023 and Jun 2024. Photo records are provided in Appendix 7.4. However, as the industrial buildings, retail, workshops, and warehouse on the ground floor area are still in operation access was not granted.

7.3.6 Based on the observation from the site inspection, the ground floor of the Application Site generally consists of carpark, retail, car repair workshops and warehouse, etc. There were no aboveground / underground oil storage tanks, chemicals and dangerous goods observed to be stored on site during the site visit. Besides, the ground surface of the Application Site was generally paved with concrete. However, Due to the nature of the existing industrial building, potential land contamination issues need to be ascertained in later stage.

7.3.7 On the other hand, it is observed that a Petrol Filling Station (PFS) located ~40m east of the Application Site, at which an underground oil storage tank has been stored onsite, by considering the nature of PFS, it is considered as potential land contamination source.

Information from Government Department

7.3.8 Apart from the historical aerial photos, the following Hong Kong Special Administration Region (HKSAR) Government Departments have been enquired on the latest update on the availability of land contamination and/or spillage (i.e. (i) Dangerous Goods Incidents, (iv) Explosive Storage/Spillage, (v) Spillage/Leakage of Chemical or Dangerous Goods; and (vi) Fire Incidents) for Application Site. The summary of correspondence is tabulated in Table 7.2 below. Copy of the response letters and emails are included in Appendix 7.2.

Table 7.2 Enquiries and Responses on Land Contamination Issue

Consultant's Letter Ref.	Department	Response Letter Ref.	Response Date	Summary
SHKTWJUMEI01_0_0001L.24	Environmental Protection Department (EPD)	--	22 October 2024	EPD has no record of a chemical spillage/leakage accident at the Subject Site.
SHKTWJUMEI01_0_0002L.24	Fire Services Department (FSD)	(137) in FSD GR 6-5/4 R Pt.55	31 October 2024	No records of dangerous goods license. Five incident records found at the Application Site

7.3.9 As advised by Environmental Protection Department (EPD), the Consultant visited the territory-wide register of chemical waste producers (CWPs) maintained at EPD's Territory Control Office. It is observed there are 11 record(s) in the register record as of 24 December 2024.

7.3.10 As advised by Fire Service Department (FSD), five incident of No.1 fire alarm were record in 13 Jan, 21 Feb,06 April, 19 May, and 01 Oct 2023.The Government responses are provided in Appendix 7.2.

Information available from BRAVO website

7.3.11 Building Records Access and Viewing On-line (BRAVO) of Building Departments (BD) was visited to obtain records for completed private buildings. It is observed there is one (1) building plan for , Jumbo iAdvantage, Wing Wah Industrial Building , Shui Cheong Factory Building , Wing Kwai Factory Building, Wing Yu Factory Building, and Sunwise Industrial Building respectively. The captured shown of BRAVO is provide in Appendix 7.3.

Discussion

7.3.12 Based on the review of aerial photos, the Application Site was occupied by vacant land in and before 1963. As mentioned above, existing buildings were observed within whole Application Site in 1977. Around 1995, the building in Phase 2- Site F was demolished and re-built as Sunwise Industrial Building. These buildings and usage remained unchanged until now.

7.3.13 Based on the desktop review and site inspection, considering the nature of the existing industrial building and land uses, it is concluded that the Application Site has a potential land contamination issue related to its historical land use. The potential land contamination issue needs to be ascertained in later stage.

7.3.14 Further site appraisal may be required to determine whether the site is contaminated, and if so, the extent of the potential contamination should be

determined during the soil and groundwater Sampling. Nevertheless, the consequent Contamination Assessment Plan (CAP) will be prepared to cover the whole site to be developed.

7.4 Conclusion

7.4.1 A preliminary land contamination review has been conducted for the Application Site. Historical aerial photos from Lands Department and building plans from Buildings Department have been reviewed. Site inspection has also been conducted to identify the potential land contamination in the Application Site.

7.4.2 As mentioned above, the industrial buildings, retail, workshops, and warehouse on the ground floor area in Application Site are still in operation and access was not granted. In considering the nature of existing industrial building at the Application Site and the surrounding land use, further site investigations shall be conducted to determine whether potential contamination sources are present at the Application Site subject to the findings of site investigation, a detailed land contamination study and hence Contamination Assessment Plan (CAP), Environmental Site Investigation (SI) and Contamination Assessment Report (CAR), if necessary, is recommended to be conducted and prepared in the later stage to determine the presence and extent of contamination on the Application Site.

7.4.3 Further land contamination assessment and/or remediation works will be completed before commencement of any construction works for the development, in accordance with relevant guidelines issued by government departments.

8. CONSULSION

8.1.1 In order to confirm the environmental acceptability of the Application Site, an Environmental Assessment was carried out to examine the impacts associated with the Proposed Development. Potential environmental impacts, including air and noise impact have been assessed.

8.1.2 According to the road traffic noise impact assessment and fixed noise impact assessment, with the implementation of appropriate noise mitigation measures, the Proposed Development shall not be subject to adverse road traffic noise and fixed noise impact.

8.1.3 Due to the usage of the Application Site (i.e., industrial building and Car repair workshops), there may be potential land contamination issues associated. Detail study will be carried out at later stages. The land contamination assessment and/or remediation works will be completed before commencement of any construction works for the development, if the later stage assessment demonstrated the land is contaminated.

8.1.4 With the implementation of the waste management measures, no significant impact is anticipated due to the waste generated during construction and operation stages.

Figure

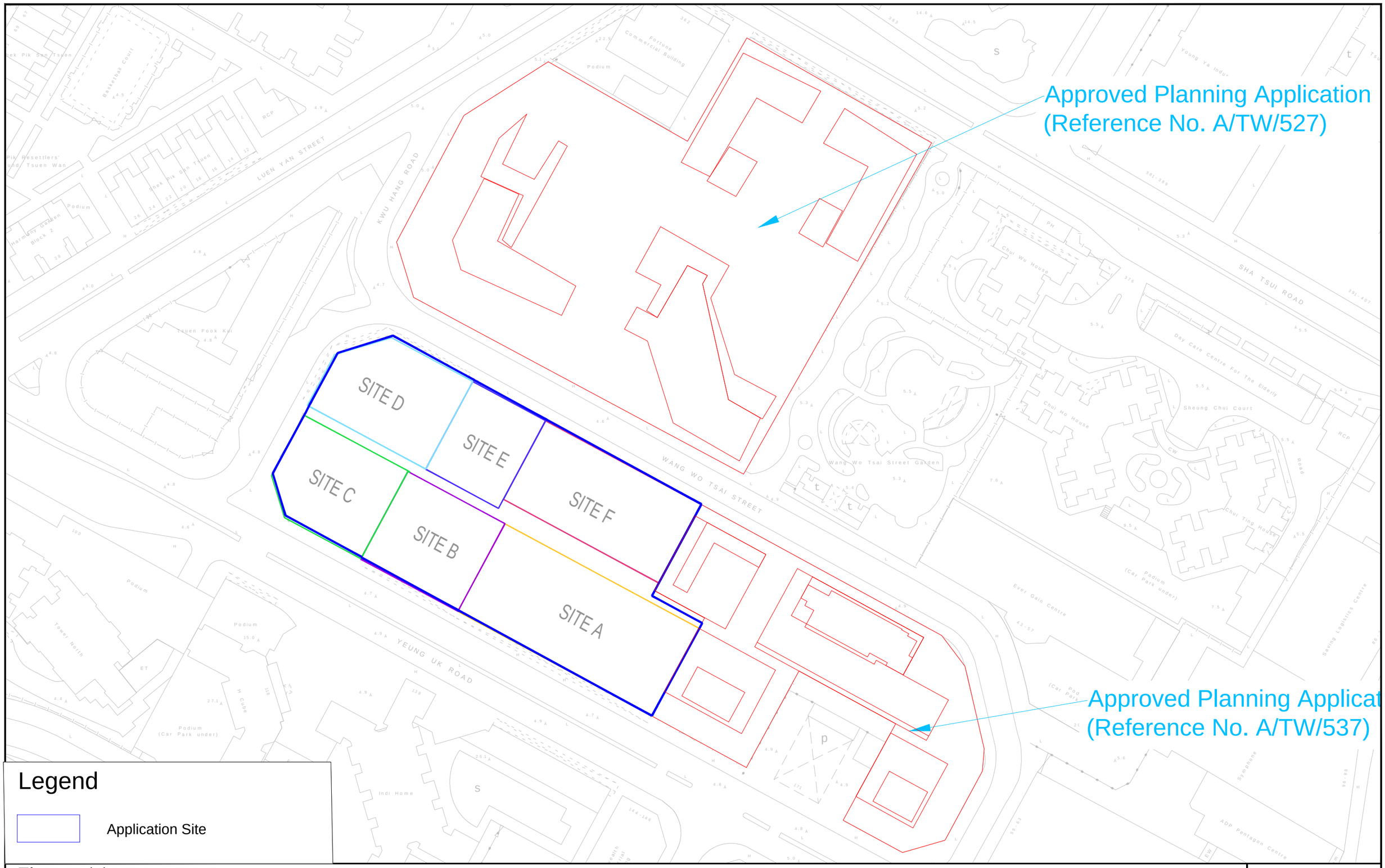


Figure: 1.1

Title: Location of the Application Site and Its Environs

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.0
Date:	Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf

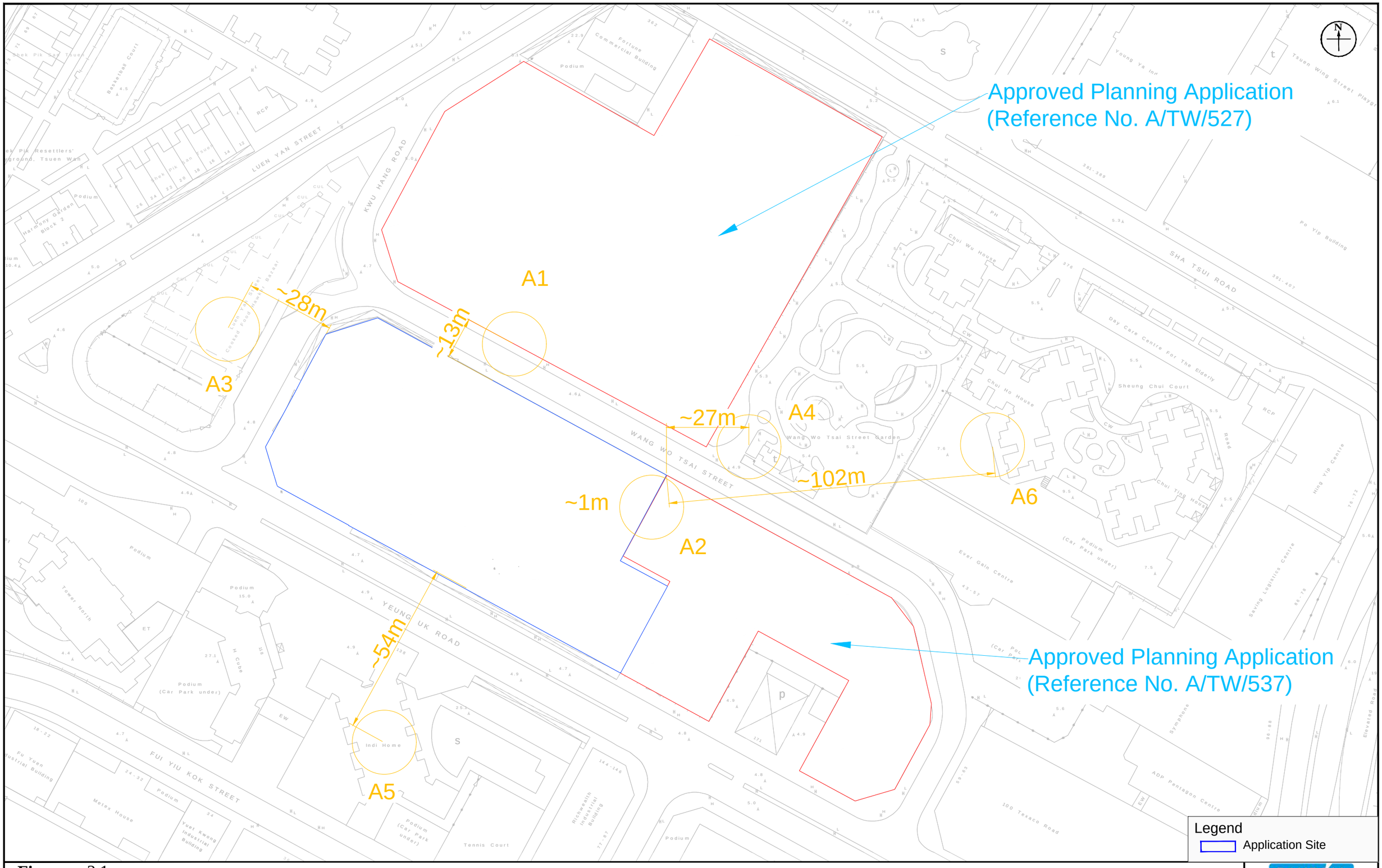


Figure: 2.1	RAMBOLL
Title: Location of Representative Air Sensitive Receivers during Construction Phase	Drawn by: KK Checked by: TC
Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan	Rev.: 1.0 Date: Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\01 Air\JUM_240618.dwg

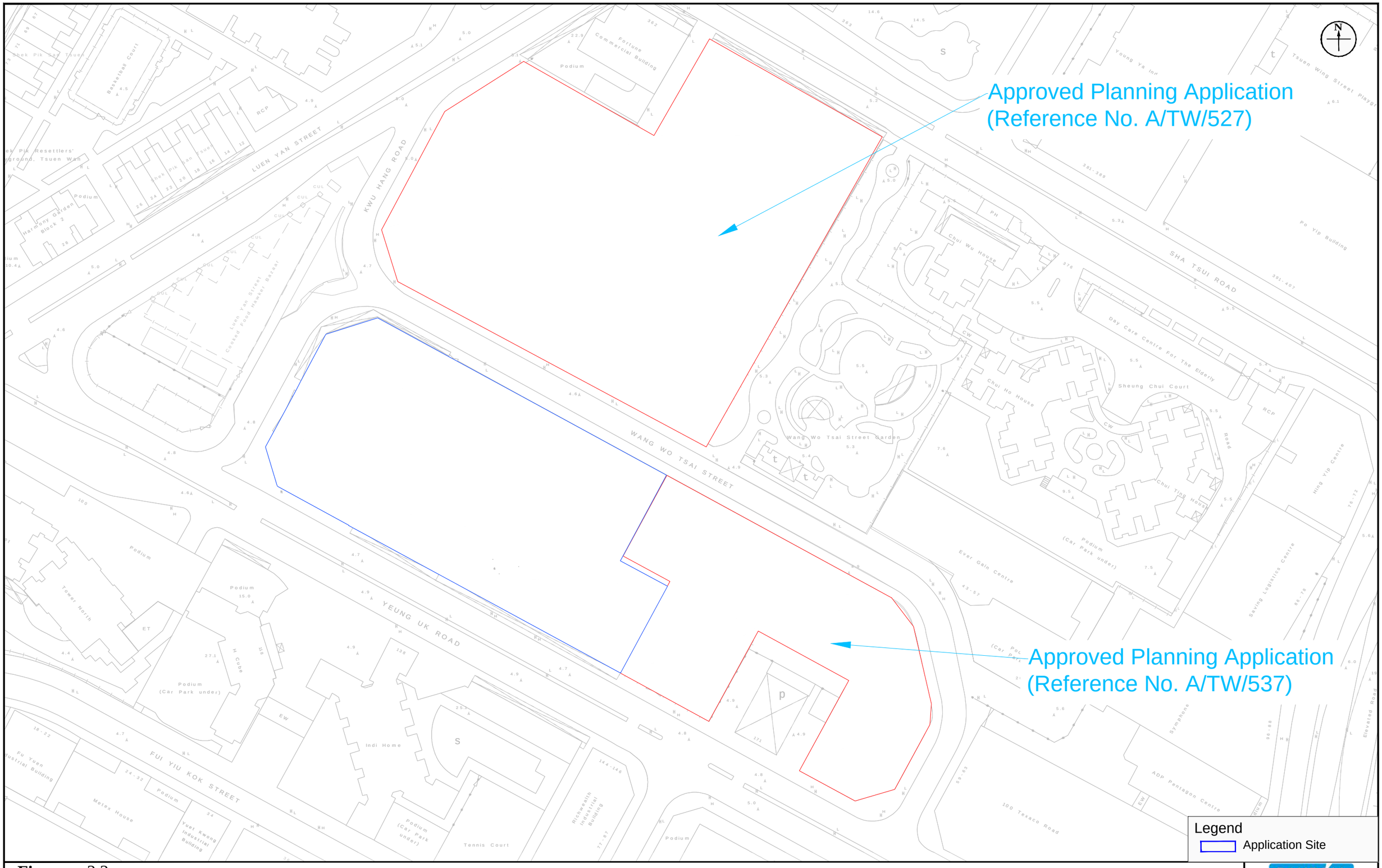


Figure: 2.2

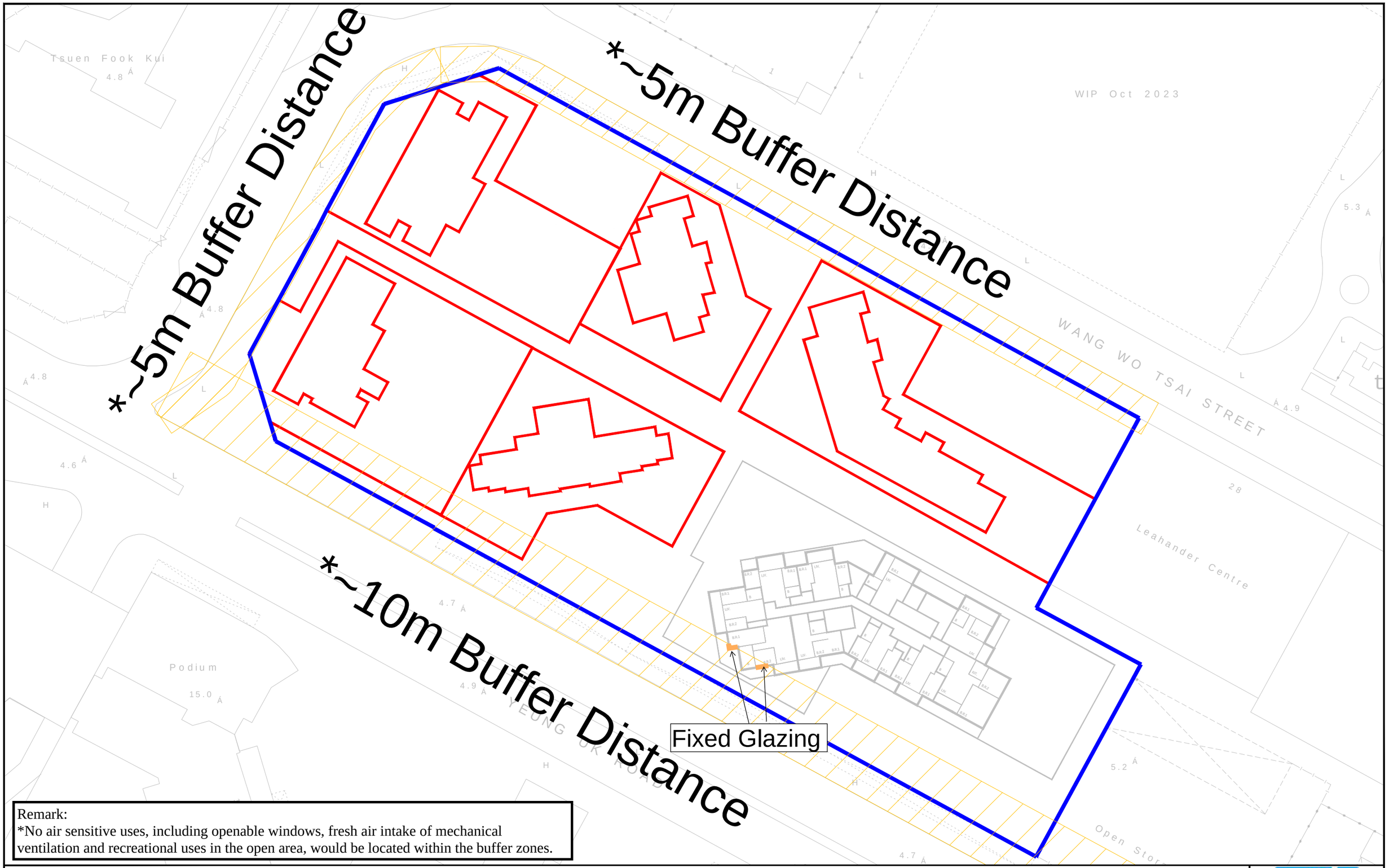
Title: Location of the Potential Concurrent Project

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

RAMBOLL

Drawn by:	KK
Checked by:	TC
Rev.:	1.0
Date:	Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\01 Air\JUM_240618.dwg



Remark:
*No air sensitive uses, including openable windows, fresh air intake of mechanical ventilation and recreational uses in the open area, would be located within the buffer zones.

Figure: 2.3	RAMBOLL
Title: Distance between Proposed Development and Surrounding Roads	Drawn by: KK
	Checked by: TC
Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan	Rev.: 1.1
	Date: Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf



Figure: 4.1a

Title: Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (3/F- 30/F Site A)(Scenario 1)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf



Figure: 4.1b

Title: Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (31/F Site A) (Scenario 1)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf



Figure: 4.2a

Title: Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (3/F to 30/F Site A, 3/F-31/F Site B to F) (Scenario 2)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf

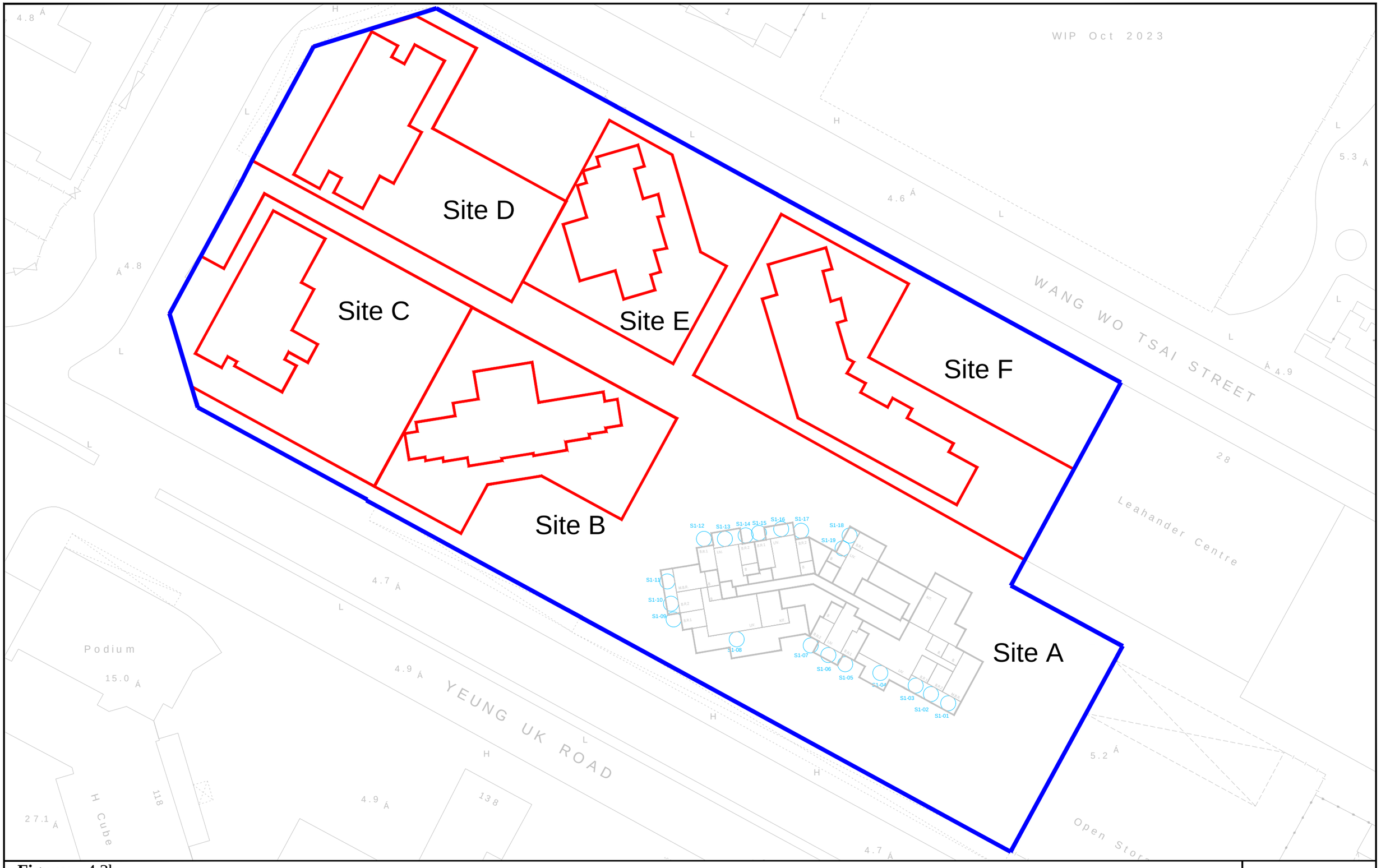


Figure: 4.2b		
Title: Location of Noise Sensitive Receivers for Road Traffic Noise Impact Assessment (31/F Site A)(Scenario 2)		Drawn by: KK Checked by: TC
Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan		Rev.: 1.0 Date: Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf

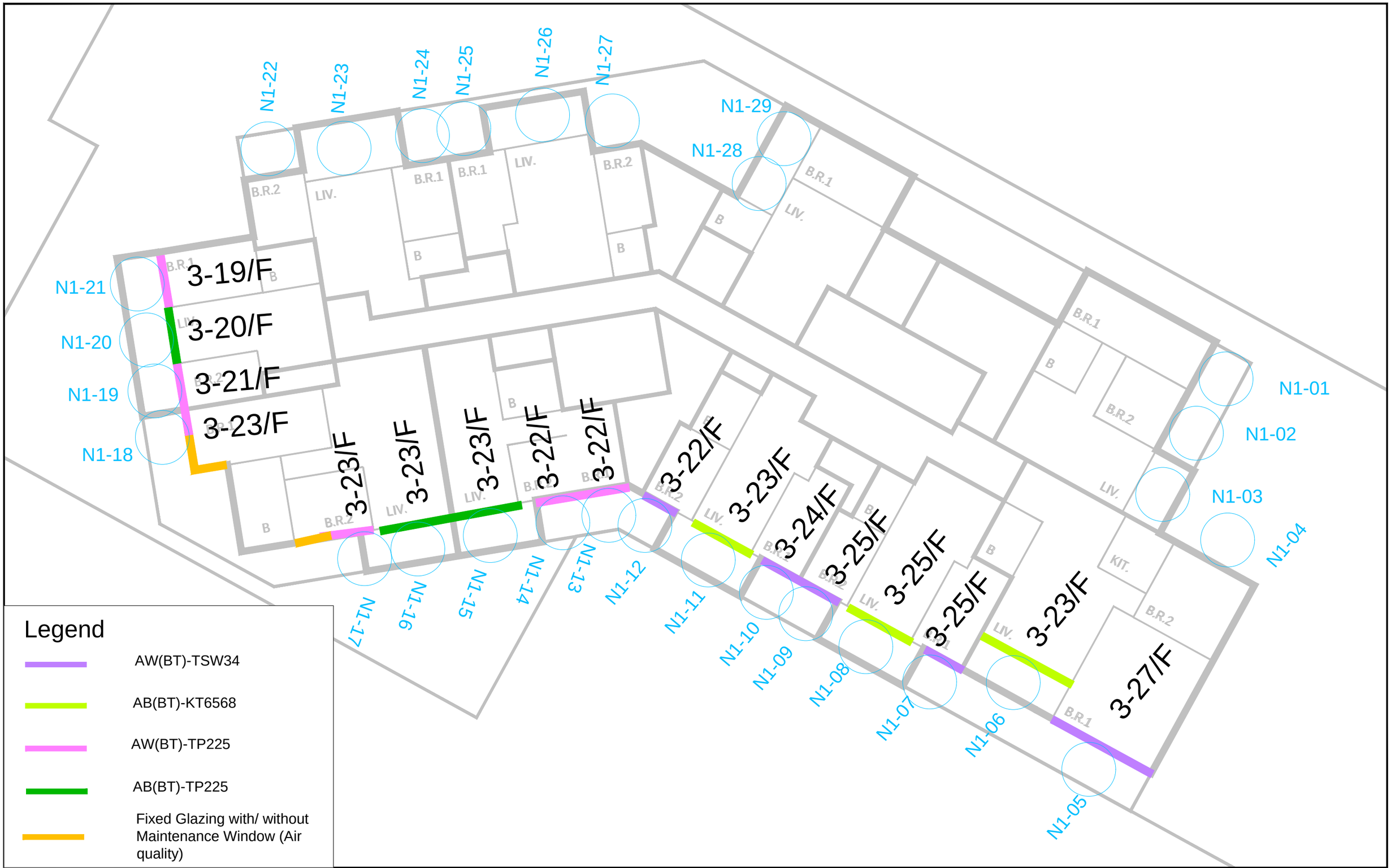


Figure: 4.3a

Title: Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment - 3/F to 31/F Site A

Drawn by:	KK
Checked by:	TC
Rev.:	1.2
Date:	Dec 2024

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf

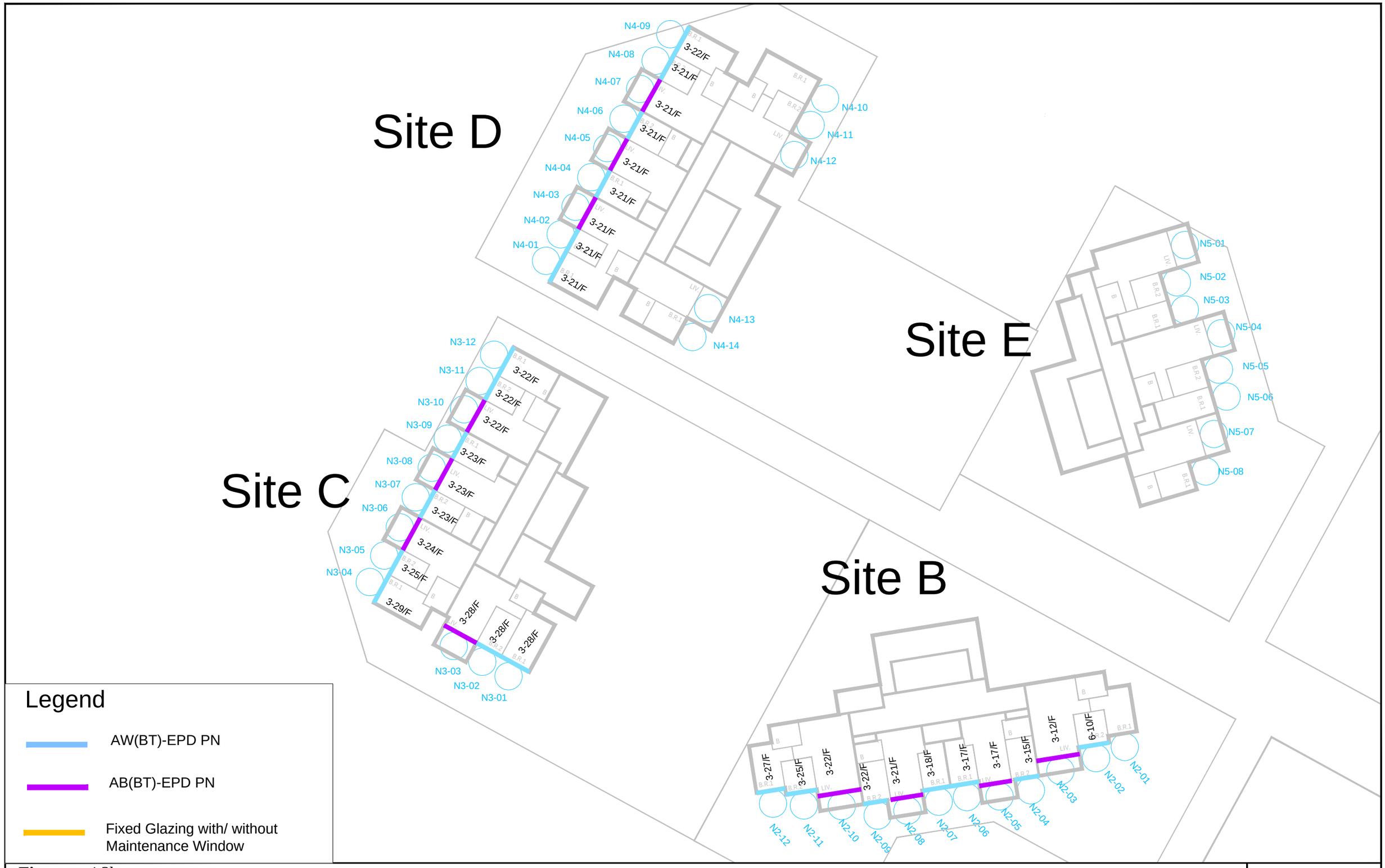


Figure: 4.3b

Title: Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment - 3/F to 31/F Site B, C and D

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf

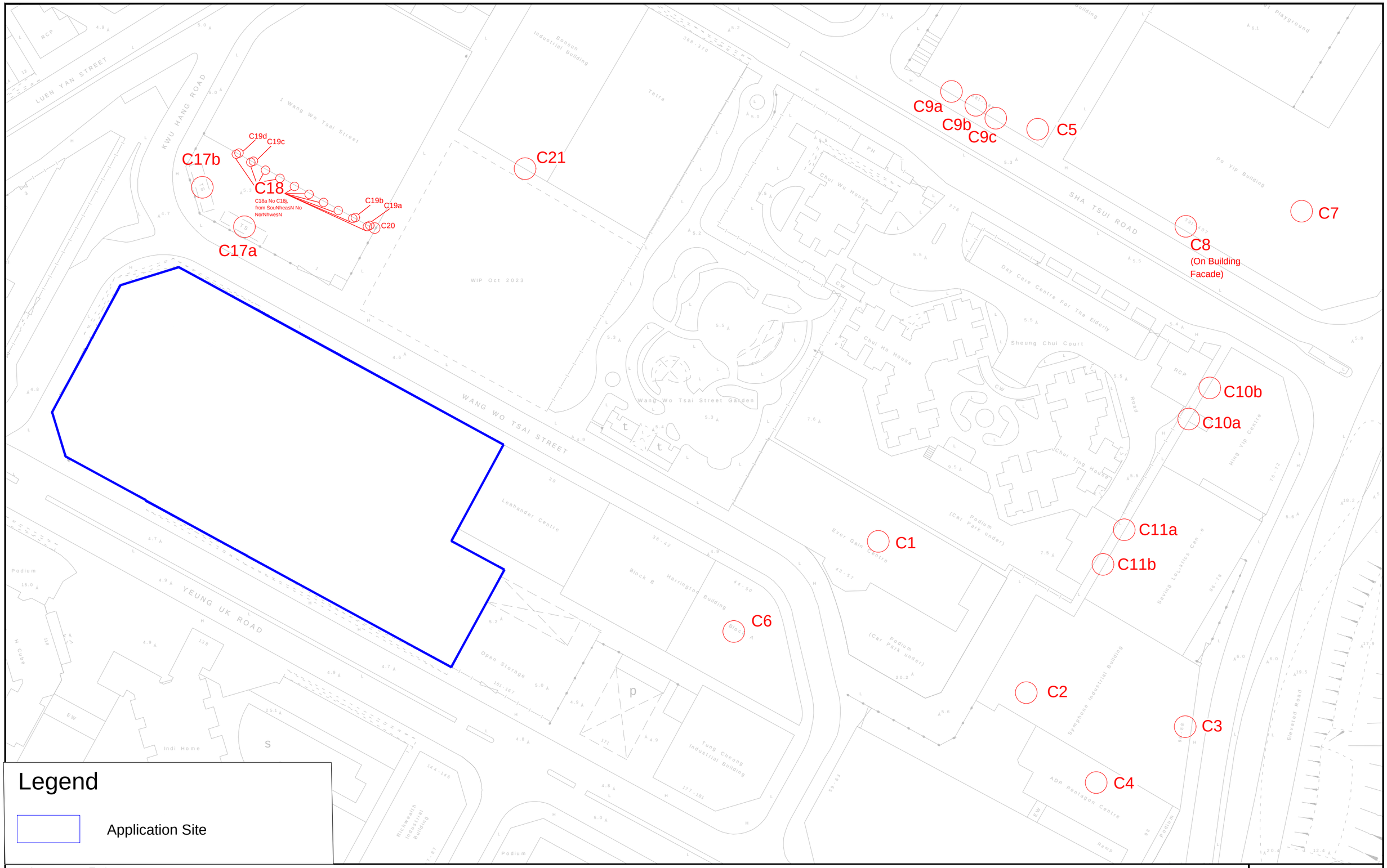


Figure: 5.1

Title: Location of Fixed Noise Sources in the vicinity of the Proposed Development - Scenario (1)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.0
Date:	Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\240815\JUM_240815.dwg

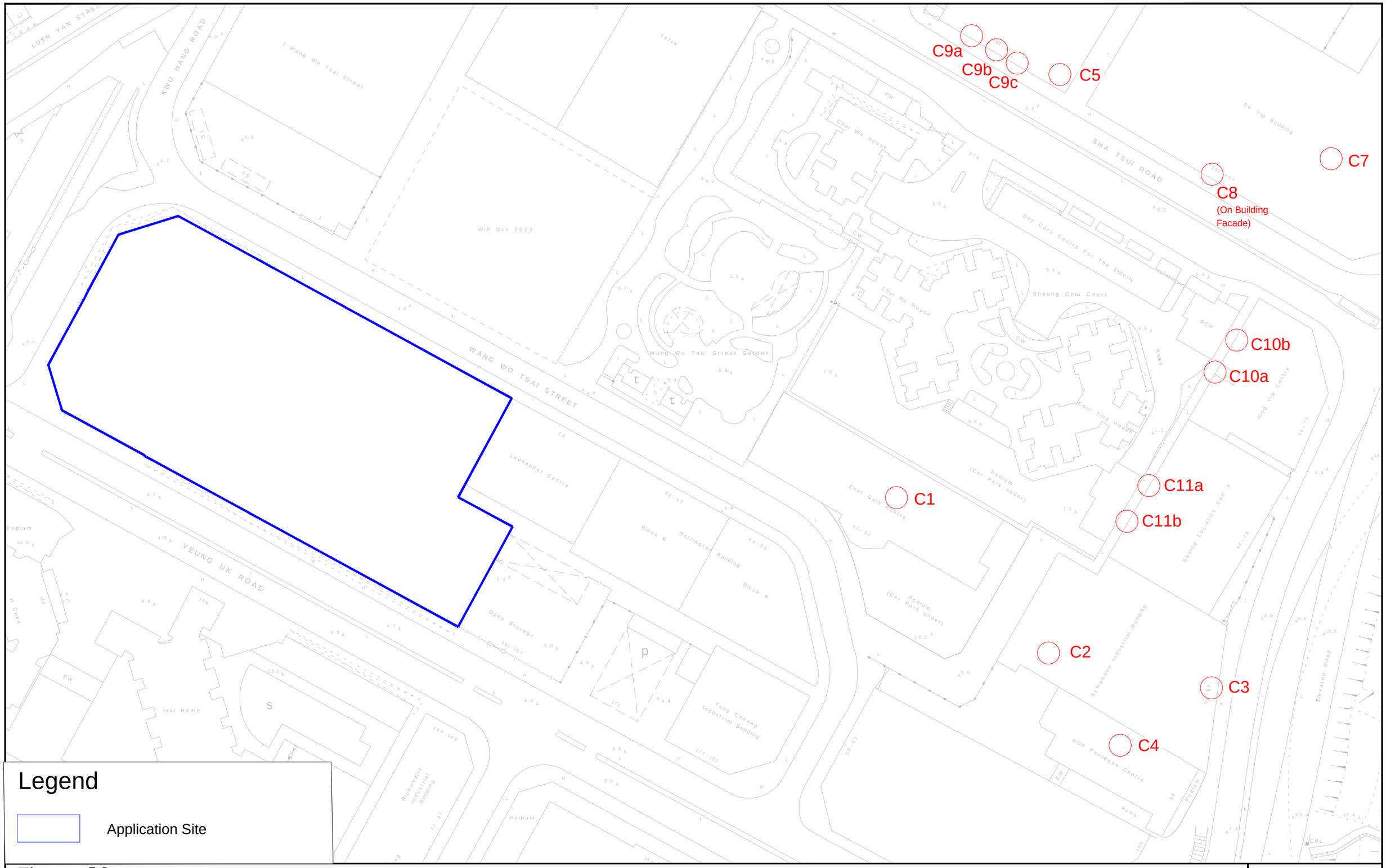


Figure: 5.2

Title: Location of Fixed Noise Sources in the vicinity of the Proposed Development - Scenario (2)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

Drawn by:	KK
Checked by:	TC
Rev.:	1.0
Date:	Aug 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\240815\JUM_240815.dwg



Figure: 5.3

Title: Location of Noise Sensitive Receivers for Industrial Noise Impact Assessment (Scenario 1)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

RAMBOLL

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf



Figure: 5.4

Title: Location of Noise Sensitive Receivers for Industrial Noise Impact Assessment (Scenario 2)

Project: Section 16 Planning Application for Proposed Comprehensive Residential Development with Commercial Uses and Social Welfare Facility and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in "Comprehensive Development Area (5)" Zone at Yeung Uk Road / Kwu Hang Road / Wang Wo Tsai Street, Tsuen Wan

RAMBOLL

Drawn by:	KK
Checked by:	TC
Rev.:	1.1
Date:	Dec 2024

Q:\Projects\SHKTWJUMEI01\05 Assessment\02 Noise\01 Traffic\241112\JUM_241218.dxf