Appendix 5

Environmental **Assessment**

Prepared for

Diamond Ocean Investments Limited

Prepared by

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PROPOSED HOTEL DEVELOPMENT AND SOCIAL WELFARE FACILITIES AT 107 – 109 WAI YIP STREET, KWUN TONG, KOWLOON

ENVIRONMENTAL ASSESSMENT (AIR QUALITY & NOISE)

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TABLE OF CONTENTS

Page

1. INTRODUCTION 1-1
1.1 Project Background 1-1
1.2 Application Site and its Environs 1-1
1.3 Proposed Development 1-1
2. AIR QUALITY 2-1
2.1 Introduction 2-1
2.2 Assessment Criteria 2-1
2.3 Vehicular Emission Impact 2-2
2.4 Industrial Emission Impact 2-2
3. NOISE 3-1
3.1 Potential Noise Source 3-1
3.2 Nearby Noise Sensitive Receivers 3-1
3.3 Fixed Noise Impact Assessment 3-1
3.4 Discussion 3-2
4. OVERALL CONCLUSION 4-1

TABLES

Table 2.1 Guidelines on Usage of Open Space Site 2-1
Table 3.1 Acceptable Noise Levels (ANLs) 3-1

FIGURES

Figure 1.1 Location of Application Site and Its Environs
Figure 2.1 HKPSG's Recommended Buffer Distance for Road and Chimney
Figure 3.1 Location of Representative Noise Sensitive Receiver

APPENDICES

Appendix 1.1 Indicative Layout Plan of the Proposed Development
Appendix 3.1 Calculations of Maximum Allowable Sound Power Levels

1. INTRODUCTION

1.1 Project Background

1.1.1 The Application Site at 107-109 Wai Yip Street, Kwun Tong, is zoned as "Other Specified Uses (Business)" (OU(B)) under the Kwun Tong (South) Outline Zoning Plan (OZP) No. S/K14S/26, with site area of about 1,171 m^2. This planning application is to seek permission from the Town Planning Ordinance (the Board) in support of the proposed development, which will be developed into a residential care home for the elderly (RCHE) and hotel (hereafter referred to as the "Proposed Development").

1.1.2 Ramboll Hong Kong Limited has been commissioned by the Applicant to conduct this Environmental Assessment (EA) for the subject planning application.

1.1.3 The EA will assess the air quality and noise impacts associated with the Proposed Development.

1.1.4 As the scale of the Proposed Development is small, construction phase environmental impact is expected to be readily controlled by implementing the good practices stipulated in the "Recommended Pollution Control Clauses for Construction Contracts" issued by the EPD. Hence, construction phase impact will not be assessed in this EA.

1.2 Application Site and its Environs

1.2.1 The Application Site is bounded by Tai Yip Street to the north and Wai Yip Street to the south. It is surrounded by industrial buildings to the north, west and east.

1.2.2 **Figure 1.1** shows the location of the Application Site and its environs. The Application Site is currently vacant and was occupied by an office building, Hsin Chong Centre, previously.

1.3 Proposed Development

1.3.1 The Proposed Development comprises a 33-storey (including one basement level) RCHE and hotel with a total GFA of about 16,856 m^2. The maximum building height is at 115 mPD. The indicative layout plan of the Proposed Development is shown in **Appendix 1.1**.

2. AIR QUALITY

2.1 Introduction

2.1.1 The aim of this study is to assess the potential air quality impact arising from traffic emissions along the road carriageways surrounding the Application Site and the chimney emission from industrial stack in the vicinity of the Application Site, if identified, during the operation of the Proposed Development.

2.2 Assessment Criteria

2.2.1 Table 3.1 of the Chapter 9 (Environment) of the Hong Kong Planning Standards and Guidelines (HKPSG) shows the minimum horizontal buffer distance between kerb side of roads and sensitive uses for various types of roads, and also shows the recommended buffer distance between industrial sites with chimneys and sensitive uses. The mentioned recommendations are extracted and shown in **Table 2.1** below.

Table 2.1 Guidelines on Usage of Open Space Site

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Road and Highways	*Type of Road*		
	Trunk Road and Primary Distributor	>20m	Active and passive recreational uses
		3 – 20m	Passive recreational uses
		<3m	Amenity areas
	District Distributor	>10m	Active and passive recreational uses
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreational uses
		<5m	Passive recreational uses
	Under Flyovers		Passive recreational uses
Industrial Areas	*Difference in Height between Industrial Chimney Exit and the Site*		
	<20m	>200m	Active and passive recreational uses
		5 – 200m	Passive recreational uses
	20 – 30m (*)	>100m	Active and passive recreational uses
		5 – 100m	Passive recreational uses
	30 – 40m	>50m	Active and passive recreational uses
		5 – 50m	Passive recreational uses
	>40m	>10m	Active and passive recreational uses
Construction and earth moving Activities	-	<50m	Passive recreational uses
		>50m	Active and passive recreational uses

Remarks:

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

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

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

(d) Amenity areas are permitted in any situation.

2.3 Vehicular Emission Impact

2.3.1 With reference to Annual Traffic Census 2022 published by Transport Department, Wai Yip Street, located to the south of the Application Site, is classified as a Primary Distributor. According to **Table 2.1**, a buffer separation of at least 20m is recommended between the kerb side of a Primary Distributor and the air sensitive uses.

2.3.2 **Figure 2.1** shows the buffer distance from Wai Yip Street to the Application Site. Most part of the building will be located within the 20m buffer zone, except the façade facing the back lane. The Proposed Development will adopt centralised air-conditioning system with fresh air supply, which can ensure adequate ventilation in the building without relying on openable windows. It has been confirmed that there will be no air sensitive use/ fresh air intake/ openable window[1] within the buffer zone. The fresh air intake point will be positioned outside the buffer zone, at about 24m from the kerb side of Wai Yip Street. As such, the fresh air intake point location complies with the HKPSG requirement and no adverse vehicular emission impact is anticipated.

2.4 Industrial Emission Impact

2.4.1 A site visit was carried out in March 2024 and two chimneys have been identified within 200m of the Application Site, which are located at Wing Tai Factory Building and United Overseas Plaza, respectively. The chimney at Wing Tai Factory Building belongs to a laundry shop. As advised by the owner of the laundry shop, the chimney at Wing Tai Factory Building is abandoned and no longer in use.

2.4.2 The chimney at United Overseas Plaza is reported to be still active according to the management office of United Overseas Plaza. As shown in **Figure 2.1**, the location of the fresh air intake point is located beyond 200m from the chimney, satisfying HKPSG's recommended buffer distance for industrial uses of 200m as presented in **Table 2.1**. With the provision of adequate buffer distance for chimneys, adverse air quality impacts from chimney emissions are not anticipated at the Proposed Development.

[1] Windows are not opened under normal circumstances, except for maintenance purpose.

3. NOISE

3.1 Potential Noise Source

3.1.1 The Proposed Development is surrounded by clusters of industrial and commercial buildings. The traffic road network in the vicinity of the Proposed Development and the ventilation equipment at the nearby industrial and commercial buildings have been identified as the major noise source. However, as the Proposed Development will have a centralised air-conditioning system and do not rely on openable windows for ventilation, adverse traffic noise and fixed noise impact on the Proposed Development are not anticipated.

3.1.2 On the other hand, as the Proposed Development will have a centralised air-conditioning system, potential fixed plant noise source i.e. cooling towers/ chillers, will be installed at the Proposed Development. The location of the cooling towers/chillers is not confirmed yet, which can be located at the podium, inside the plant room or at the rooftop. As the Proposed Development is surrounded by industrial and commercial buildings, locating the cooling towers/ chillers at the rooftop with sightline to noise sensitive receivers is assumed for conservative assessment.

3.2 Nearby Noise Sensitive Receivers

3.2.1 There are mainly industrial and commercial development in the vicinity of the Application Site. The nearest noise sensitive receiver (NSR) which will have a line of sight to the cooling towers/ chillers of the Proposed Development is the Foo Yue Building at Ting Fu Street, which is located about 140m to the north of the Proposed Development as shown in **Figure 3.1**. This NSR is chosen for fixed noise impact assessment.

3.3 Fixed Noise Impact Assessment

3.3.1 The IND-TM sets out the appropriate Acceptable Noise Level (ANL) for fixed noise source which are dependent on the Area Sensitivity Ratings (ASRs) of the NSRs. According to Table 4.1 of HKPSG Chapter 9, the planned fixed noise source shall comply with 5dB(A) below the ANL shown in **Table 3.1** or the prevailing background noise level, whichever lower.

3.3.2 Considering that the nearest NSR is close to Kwun Tong Road and Kai Fuk Road with busy traffics as well as MTR Kwun Tong Line, the prevailing background noise levels is very likely to be higher than ANL-5. Therefore, ANL-5 is adopted as the noise criteria for the assessment.

Table 3.1 Acceptable Noise Levels (ANLs)

Time Period	ANL on Different Area Sensitivity Rating (Leq, 30min, dB(A))		
	ASR A	ASR B	ASR C
Day (0700 to 1900 hours)	**60**	**65**	**70**
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	**50**	**55**	**60**

3.3.3 According to the Annual Traffic Census 2022, Kwun Tong Road and Kai Fuk Road with annual average daily traffic flow (AADT) lower than 30,000 are not considered as an influencing factor. Foo Yue Building is located in urban area and is not affected by the influencing factor, an ASR of "B" has been assumed and adopted for this NSR in the assessment.

3.3.4 Based on standard acoustic principle for attenuation ($20 \times \log(distance) + 8$) and façade correction (+3 dB(A)), the maximum allowable sound power levels of the ventilation equipment of the Proposed Development are back calculated as 102 dB(A) for daytime and evening time (0700 – 2300 hours) and 92 dB(A) for night time (2300 – 0700 hours), assuming no screening correction applied. Calculations of maximum allowable sound power levels is provided in **Appendix 3.1**. Depending on the detailed design of the Proposed Development, should screening structure be incorporated into the design, the maximum allowable sound power levels could be adjusted. Provided that the future design on ventilation equipment of the centralised air-conditioning system is designed in compliance with the requirement of the IND-TM and the HKPSG, no adverse fixed noise impact is anticipated at Foo Yue Building.

3.4 Discussion

3.4.1 The Proposed Development will be equipped with central air-conditioning system and will not rely on openable windows for ventilation under normal circumstances. Therefore, traffic noise and industrial noise from the surroundings would not cause adverse noise impact on the Proposed Development.

3.4.2 The cooling towers/ chillers of the Proposed Development may cause potential fixed noise impact to the surrounding NSRs. The equipment will be designed to meet the relevant noise criteria stipulated in the HKPSG and the IND-TM and incorporate at-source noise mitigation measures as necessary. As such, potential fixed noise impact due to the proposed development is not anticipated.

4. OVERALL CONCLUSION

4.1.1 The Application Site is bounded by Wai Yip Street and an active chimney is identified within 200m of the Site. The fresh air intake point for the central air-conditioning system is carefully positioned beyond 200m from the chimney and beyond 20m from Wai Yip Street. Adequate buffer distance from both the road and the chimney is provided in accordance with the requirements outlined in the HKPSG. Therefore, no adverse vehicular and chimney emission impacts are anticipated.

4.1.2 The Proposed Development will be equipped with central air-conditioning system and will not rely on openable windows for ventilation under normal circumstances. Therefore, traffic noise and industrial noise from the surroundings would not cause adverse noise impact on the Proposed Development. The cooling towers/ chillers on the rooftop of the Proposed Development will be appropriately designed to meet the relevant noise criteria stipulated in the HKPSG and the Noise Control Ordinance.

4.1.3 In conclusion, this EA confirms the overall acceptability from the air quality and noise perspectives.

Figures

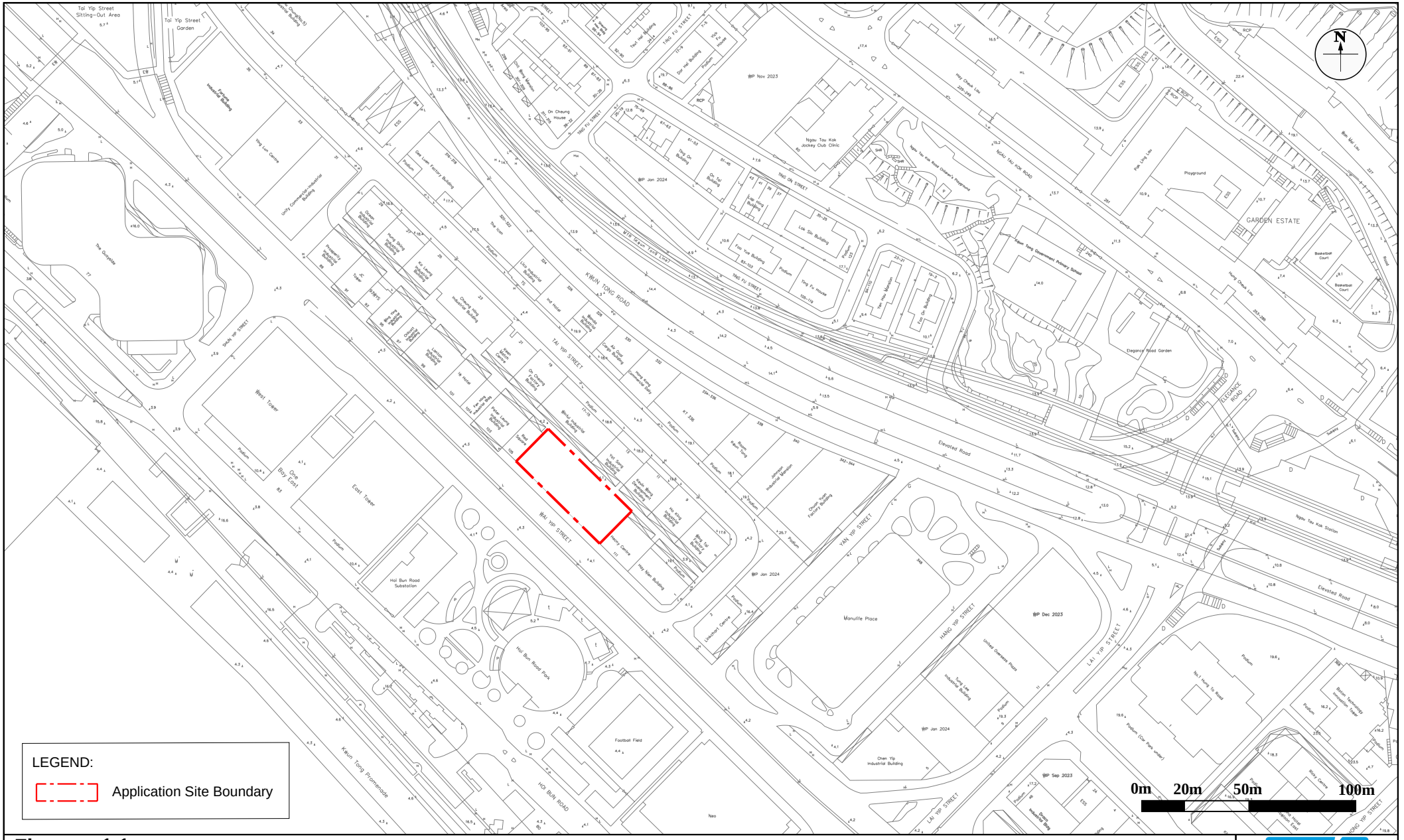

Figure: 1.1	RAMBOLL
Title: Location of Application Site and Its Environs	Drawn by: NT
	Checked by: KY
Project: Proposed Hotel Development and Social Welfare Facilities at 107 - 109 Wai Yip Street, Kwun Tong, Kowloon	Rev.: 1.0
	Date: Mar 2024

Q:\Projects\KTAWY107EI00\04 Deliverables\01 EA Report\01 Figures\v1.0\Source\Figure 1.1 Loation of Application Site.dwg

Wing Tai Factory Building

United Overseas Plaza

LEGEND:

- Application Site Boundary
- 20m Buffer Zone for Primary Distributor
- Identified Abandoned Chimney
- Identified Active Chimney
- 200m from Active Chimney
- Indicative Fresh Air Intake Location

0m 20m 50m 100m

Figure: 2.1

Title: HKPSG's Recommended Buffer Distance for Road and Chimney

Project: Proposed Hotel Development and Social Welfare Facilities at 107 - 109 Wai Yip Street, Kwun Tong, Kowloon

RAMBOLL

Drawn by: NT

Checked by: KY

Rev.: 1.0

Date: Mar 2024

Q:\Projects\KTAWY107EI00\04 Deliverables\01 EA Report\01 Figures\v1.0\Source\Figure 2.1 HKPSG's Buffer Distance Requirement.dwg

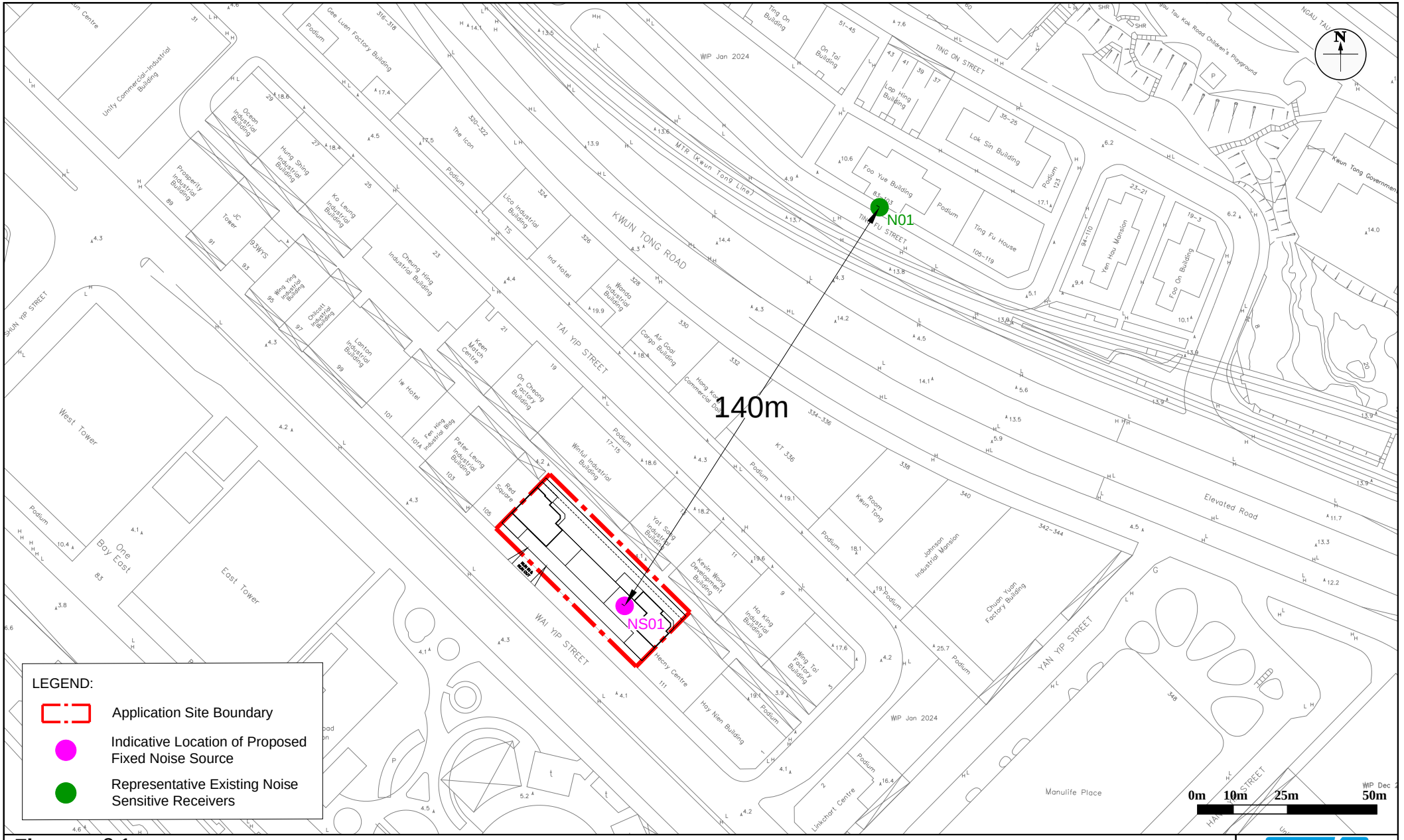

Figure: 3.1

Title: Location of Representative Noise Sensitive Receiver

Project: Proposed Hotel Development and Social Welfare Facilities at 107 - 109 Wai Yip Street, Kwun Tong, Kowloon

RAMBOLL

Drawn by: NT

Checked by: KY

Rev.: 2.0

Date: Jul 2024

Q:\Projects\KTAWY107EI00\04 Deliverables\01 EA Report\01 Figures\v2.0\Source\Figure 3.1 Location of NSR.dwg

Appendix

Appendix 1.1 Indicative Layout Plan of the Proposed Development (Please refer to the Planning Statement)

Appendix 3.1 Calculations of Maximum Allowable Sound Power Levels

Calculation of Maximum Allowable SWLs for Planned Fixed Noise Sources (Day & Evening Time Period)

NSR					Fixed Plant Noise Source								Correction, dB(A)				SPL at NSR, dB(A)	Day and Evening Time Noise Criterion, dB(A). ANL - 5 db(A)
ID	Description	Location			ID	Description	Location			Max. allowable SWL LAeq, dB(A)	No. of Plants	Distance to NSR, m	Distance	Screening	Tonality	Facade		
		X	Y	Elevation (mPD)			X	Y	Elevation (mPD)									
N01	Foo Yue Building	840357	819722	70	NS01	Chillers/ Cooling Towers	840293	819605	116	102	1	140	-51	0	6	3	60	60

Notes
[1] Day and evening time is defined as 0700 to 2300 hours.
[2] Assume no screening correction
[3] Noise levels are rounded to the nearest dB(A).

Calculation of Maximum Allowable SWLs for Planned Fixed Noise Sources (Night Time Period)

NSR					Fixed Plant Noise Source								Correction, dB(A)				SPL at NSR, dB(A)	Night Time Noise Criterion, dB(A). ANL - 5 dB(A)
ID	Description	Location			ID	Description	Location			Max. allowable SWL LAeq, dB(A)	No. of Plants	Distance to NSR, m	Distance	Screening	Tonality	Facade		
		X	Y	Elevation (mPD) [5]			X	Y	Elevation (mPD)									
N01	Foo Yue Building	840357	819722	70	NS01	Chillers/ Cooling Towers	840293	819605	116	92	1	140	-51	0	6	3	50	50

Notes
[1] Night time is defined as 2300 to 0700 hours.
[2] Assume no screening correction
[3] Noise levels are rounded to the nearest dB(A).