ARUP

Appendix E

Environmental Assessment

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Environmental Assessment

(v3.0)

July 2025

Approved By _____

(Project Manager: Mr. KS Lee)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LIMITED
Room 1710, Technology Park
18 On Lai Street
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

1.1 Project Background

1.1.1 A residential development with clubhouse (the Proposed Development) is planned to be develop at various Lots in D.D. 210 Pak Wai, Sai Kung. The Applicant proposes to amend the *Draft Ho Chung Outline Zoning Plan* (OZP) No. S/SK-HC/12 by rezoning the Application Site from "Green Belt" ("GB") and area shown as "Road" to "Residential (Group C)5" ("R(C)5"), with a maximum plot ratio of 0.6 and maximum building heights of 4 storeys (excluding basements) to facilitate the Proposed Development.

1.1.2 The rezoning requires planning permission from Town Planning Board (TPB). The applicant seeks planning permission for the proposed use at the Application Site under Section 12A Planning Application ("the Application").

1.1.3 Cinotech Consultants Limited has been commissioned by the Project Proponent to prepare an Environmental Assessment (EA) report in supporting of the Application.

2. PROJECT DESCRIPTION

2.1 Description of the Existing Site & its Environs

2.1.1 The Proposed Development is located at the west side of the junction of Hiram's Highway and Hing Keng Shek

2.1.2 Road. The Application Site is occupied by botanical gardens and temporary structures. It covers a portion of the footpath from Hiram Highway leading to the existing village to the north of the site. The Site location is illustrated in **Figure 2-1**.

2.1.3 The Proposed Development is located within an area dominated by residential development, while no commercial and industrial buildings are identified in the vicinity. The Site is surrounded by natural terrain to its north, east and west side, while low-rise residential development is identified between natural terrain at north and east side and the project site. To the south is low-rise residential buildings separated by Hiram's Highway.

2.2 Proposed Development

2.2.1 The Proposed Development, with site area of about 12,692m^2, consists of (1) basement carpark with 79 spaces; (2) a Swimming Pool; (3) four residential buildings with 4 storeys (Blocks 1 - 3) and 3 storeys (Block 4) respectively. A tentative layout plan for the Proposed Development is illustrated in **Appendix 2-1.**

2.3 Scope of Study

2.3.1 This EA is prepared to assess the potential environmental impact associated with the implementation of the Proposed Development in support of the submission of the planning application. The assessment has been undertaken with reference to the guidance for environmental considerations provided in Chapter 9 "Environment" of the Hong Kong Planning Standards and Guidelines (HKPSG).

2.3.2 The key environmental issues with potential environmental impacts arising from the Proposed

Development are air quality, noise, water and waste management during construction phase and operational phase and land contamination.

2.3.3 The assessment has covered the following major aspects:

- Air Quality Impact Assessment
    - Construction Dust
    - Traffic Emission
- Noise Impact Assessment
    - Construction Noise
    - Fixed Noise Sources during Operation Phase
    - Traffic Noise Impact during Operation Phase
- Water Quality Impact during Construction Phase and Operational Phase
- Waste Management Implication
- Land Contamination Assessment

2.3.4 Drainage impact assessment and sewerage impact assessment shall be addressed in separated reports and thus not included in this EA report.

3. AIR QUALITY IMPACT

3.1 Introduction

3.1.1 This chapter identifies and evaluates potential air quality impact due to the Project during construction and operation phases, and recommends appropriate mitigation measures for the potential impact.

3.2 Legislations, Standards and Guidelines

3.2.1 The air quality impact assessment was carried out with reference to the Hong Kong Planning Standards and Guidelines (HKPSG) and the Air Pollution Control Ordinance (Cap.311) (APCO).

Minimum Buffer Distance

3.2.2 The minimum buffer distance from the emission sources (i.e. Roads and Highways, and Industrial Area) are recommended in the Hong Kong Planning Standards and Guidelines (HKPSG) and are summarized in **Table 3-1**.

Table 3-1 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 recreation uses
		3-20m	Passive recreational uses
	District Distributor	>10m	Active and passive recreation uses
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreation uses
		<5m	Passive recreational uses
Industrial Area	*Difference in Height between Industrial Chimney Exit and the Site*		
	<20m	>200m	Active and passive recreation uses
		5-200m	Passive recreational uses
	20-30m (*)	>100m	Active and passive recreation uses
		5-100m	Passive recreational uses
	30-40m	>50m	Active and passive recreation uses
		5-50m	Passive recreational uses
	>40m	>10m	Active and passive recreation uses

Note:
1. 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.
2. 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.
3. 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.

Air Quality Objectives (AQO)

3.2.3 The Air Pollution Control Ordinance (APCO) provides the statutory authority for controlling air pollutants from a variety of sources. The Hong Kong Air Quality Objectives (AQO) stipulate the maximum allowable concentrations over specific periods for the criteria pollutants (**Table 3-2**).

Table 3-2 Hong Kong Air Quality Objectives (2025)

Pollutant	Averaging time	Concentration limit [i] (µg/m3)	Number of exceedances allowed
Sulphur Dioxide (SO2)	10-minute	500	3
	24-hour	40[4]	3
Respirable suspended Particulates (RSP) [2]	24-hour	75[4]	9
	Annual	30[4]	Not applicable
Fine Suspended Particulates (FSP) [3]	24-hour	37.5[4]	18[4]
	Annual	15[4]	Not applicable
Nitrogen Dioxide (NO2)	1-hour	200	18
	24-hours [4]	120[4]	9 [4]
	Annual	40	Not applicable
Ozone (O3)	8-hour	160	9
	Peak season [4]	100[4]	Not applicable [4]
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
	24-hours [4]	4,000[4]	0 [4]
Lead (Pb)	Annual	0.5	Not applicable

Note:
1. All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293Kelvin and a reference pressure of 101.325 kilopascal.
2. Respirable suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
3. Fine suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.
4. Amended/New criteria in the new AQO (AQO-2025).

Air Pollution Control (Construction Dust) Regulation

3.2.4 The regulation defines notifiable and regulatory works activities that are subject to construction dust control.

The Air Pollution Control (Fuel Restriction) Regulations

3.2.5 The regulation provides a statutory minimum requirement to restrict commercial and

industrial processes to use ULSD (Ultra Low Sulphur Diesel) with a sulphur content of only 0.005%.

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

3.2.6 According to the regulation, Non-road Mobile Machinery (NRMMs) must adhere to the prescribed emission standards. Only NRMMs that have been approved or exempted and bear the appropriate label are permitted for use in specified activities and locations. These include construction sites, container terminals and backup facilities, restricted areas of the airport, designated waste disposal facilities, and specified processes.

Recommended Pollution Control Clauses for Construction Contracts

3.2.7 This guideline provides a list of relevant regulations/guidelines for contractors and general engineering practices aimed at minimizing inconvenience and environmental nuisance to nearby residents and other sensitive receivers.

ProPECC PN 2/96 - Control of Air Pollution in Car Parks

3.2.8 The practice note provides guidance on the control of air pollution in car parks including 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 air quality.

3.3 Background Air Quality

Background Air Quality

3.3.1 EPD has been closely monitoring the air quality in Hong Kong through their air quality monitoring stations (AQMS). The Tseung Kwan O Air Quality Monitoring Station is the closest AQMS to the Proposed Development.

3.3.2 The monitoring result of Tseung Kwan O AQMS during year 2019-2023 are summarized in **Table 3-3**. The measured pollutant concentrations generally show a decreasing trend from 2019 - 2023. The concentration of reported pollutants in past four recent year have complied the criteria stipulated in AQO, besides Ozone.

3.3.3 It should be noted that Tseung Kwan O AQMS is located within high density residential area which is about 4.5km from the Proposed Development. On the other hand, the Proposed Development is surrounded by natural terrain to its north, east and west side, and only low-rise residential developments are in the vicinity of the project site.

Table 3-3 Average Concentrations of Pollutants in the Recent Five Years (Year 2019 - 2023) at Tseung Kwan O Air Quality Monitoring Station

Pollutant	Averaging Time	AQO [i]	Pollutant Concentration (µg/m3) [ii]				
			2019	2020	2021	2022	2023
Respirable Suspended Particulates (RSP)	24-hour (10th Max)	75 (9)	60	52	50	46	50
	Annual	30	29	24	24	22	24
Fine Suspended Particulates (FSP)	24-hour (19th Max)	37.5 (18)	34	26	26	28	27
	Annual	15	17	12	13	13	15
Nitrogen Dioxide (NO2)	1-hour (19th Max)	200 (18)	155	136	132	110	116
	24-hour (10th Max)	120 (9)	76	51	60	48	50
	Annual	40	29	23	26	21	22
Sulphur Dioxide (SO2)	10-minute (4th Max)	500 (3)	25	18	18	12	32
	24-hour (4th Max)	40 (3)	12	7	9	7	6
Ozone (O3)	8-hour (10th Max)	160 (9)	185	158	158	167	160
	Peak Season	100	120	112	109	105	111
Carbon Monoxide (CO)	1-hour (1st Max)	30000	2170	1670	1750	1210	1300
	8-hour (1st Max)	10000	1935	1411	1375	1105	996
	24-hour (1st Max)	4000	1420	1152	1113	834	824

Note:
[i] The numbers in brackets () refer to number of exceedance allowed per year.
[ii] The pollution concentrations are obtained from the Smart Air Modelling Platform.
[iii] Exceedances has been highlighted in orange.

PATH Background

3.3.4 PATH is a regional scale air quality model developed by EPD to predict future air quality over the whole Pearl River Delta region including Hong Kong. The PATH v3.0 grids corresponding to the Proposed Development is [48,38]. **Table 3-4** gives the predicted background air quality on Year 2026, 2030, 2035 & 2040 of the Grids [48,38] where the Proposed Development is located.

3.3.5 Generally, the predicted pollutant concentrations of PATH v3.0 show a decreasing trend from 2026 to 2040. The predicted background concentration at ground level of the Site from years 2026 to 2040 meets the relevant Air Quality Objectives (AQOs) with a significant margin, except for Ozone concentration.

3.3.6 Considering the population intake year of the Project is planned to be 2031, the PATH background concentrations at grid [48,38] on year 2030 are representative to reflect the background air quality.

3.3.7 The PATH background concentrations at Grid [48,38] from 0 to 55m (L1 to L3) on Year 2030

are listed in **Table 3-5**. The PATH prediction show that the vertical variation of the pollutant concentrations is not significant for the first 50m from the ground.

Table 3-4 Predicted Background Ground Level Air Quality of PATH, Grid [48,38]

Pollutant	Averaging Time	AQOs [µg/m³] [i]	PATH Model Concentration [µg/m³]			
			Year 2026 L1 (0-17m)	Year 2030 L1 (0-17m)	Year 2035 L1 (0-17m)	Year 2040 L1 (0-17m)
Respirable Suspended Particulates (RSP)	24-hour (10th Max)	75 (9)	54.64	49.63	49.42	49.33
	Annual	30	20.42	18.92	18.79	18.73
Fine Suspended Particulates (FSP)	24-hour (19th Max)	37.5 (18)	32.17	28.25	28.1	28.04
	Annual	15	12.57	11.38	11.26	11.22
Nitrogen Dioxide (NO2)	1-hour (19th Max)	200 (18)	47.67	44.2	36.38	35.7
	24-hour (10th Max)	120 (9)	21.92	20.12	16.42	15.72
	Annual	40	10.54	9.6	8.54	8.31
Sulphur Dioxide (SO2)	10-minute (4th Max)	500 (3)	23.84	20.91	20.9	20.91
	24-hour (4th Max)	40 (3)	7.29	6.62	6.62	6.62
Ozone (O3)	8-hour (10th Max)	160 (9)	169.95	167.28	167.68	167.8
	Peak Season	100	124.56	121.6	122.04	122.19
Carbon Monoxide (CO)	1-hour (1st Max)	30000	577.5	515.72	515.27	515.08
	8-hour (1st Max)	10000	548.01	480.53	479.76	479.41
	24-hour (1st Max)	4000	509.38	440.44	439.15	438.58

Note:
[i] The numbers in brackets () refer to number of exceedance allowed per year.
[ii] The pollution concentrations are obtained from the Smart Air Modelling Platform.
[iii] Exceedances has been highlighted in orange.

Table 3-5 Predicted Background Air Quality of Grid [48, 38] of PATH on Year 2030

Pollutant	Averaging Time	AQOs [µg/m^3] [i]	PATH Model Concentration [µg/m^3]		
			Year 2030 L1 (0-17m)	Year 2030 L2 (17-35m)	Year 2030 L1 (35-55m)
Respirable Suspended Particulates (RSP)	24-hour (10th Max)	75 (9)	49.63	49.41	49.35
	Annual	30	18.92	18.7	18.57
Fine Suspended Particulates (FSP)	24-hour (19th Max)	37.5 (18)	28.25	27.92	27.91
	Annual	15	11.38	11.17	11.05
Nitrogen Dioxide (NO2)	1-hour (19th Max)	200 (18)	44.2	43.72	42.73
	24-hour (10th Max)	120 (9)	20.12	19.57	19.11
	Annual	40	9.6	8.91	8.44
Sulphur Dioxide (SO2)	10-minute (4th Max)	500 (3)	20.91	21.24	21.33
	24-hour (4th Max)	40 (3)	6.62	6.74	6.79
Ozone (O3)	8-hour (10th Max)	160 (9)	167.28	171.12	172.43
	Peak Season	100	121.6	124.33	125.63
Carbon Monoxide (CO)	1-hour (1st Max)	30000	515.72	516.32	516.9
	8-hour (1st Max)	10000	480.53	481.66	482.34
	24-hour (1st Max)	4000	440.44	440.87	441.43

Note:
[i] The numbers in brackets () refer to number of exceedances allowed per year.
[ii] The pollution concentrations are obtained from the Smart Air Modelling Platform.
[iii] Exceedance has been highlighted in orange.

3.4 Study Area & Air Sensitive Receivers

3.4.1 The Study Area for this air quality impact assessment covers the area within 500 m from the Project boundary.

3.4.2 During construction phase, residential development in the vicinity of the Site is considered as the air sensitive receivers (ASRs). The representative ASRs for construction phase are listed in **Table 3-6** and illustrated in **Figure 3-1**.

Table 3-6 Nearby Representative Air Sensitive Receivers for Construction Phase

ID	Location	Type	Building Height (mAG)	Horizontal Distance from Project Boundary
ASR-01	60B Pak Wai	Residential	6	30m
ASR-02	60A Pak Wai	Residential	6	11m
ASR-03	Residential Building in Pak Wai Village	Residential	9	44m
ASR-04	48 Luk Mei Tsuen	Residential	6	119m
ASR-05	73 Hing Keng Shek	Residential	6	87m

3.4.3 During operation phase, the Proposed Development itself is considered as ASRs. The planned ASRs are illustrated in **Figure 3-2** and summarized in **Table 3-7**. Apart from the Proposed Development, a basement carpark and an on-site sewage treatment plant are proposed within the Proposed Development.

Table 3-7 Planned Air Sensitive Receivers of Proposed Development

ID	Location	Type	Building / Facility Height (mPD)
PASR-01	Residential Tower (Block 1)	Residential	19.8
PASR-02	Residential Tower (Block 2)	Residential	19.8
PASR-03	Residential Tower (Block 3)	Residential	19.8
PASR-04	Residential Tower (Block 4)	Residential	16.475
PASR-05	Community Farm	Recreational facilities	6.5 [1]
PASR-06	Swimming Pool and Clubhouse	Recreational facilities	5.5 for Swimming Pool 10.4 for Clubhouse

Note:
[1] Community farm are at-grade recreational facilities.

3.5 Construction Phase Air Quality Impact Identification & Evaluation

3.5.1 Major dust emitting construction activities will be the demolition works, excavation works, foundation works and the construction works of the superstructure. Fugitive dust would be generated during the aforementioned construction activities The concerned air pollutants during the construction phase are the Respirable Suspended Particulates (RSP) and Fine Suspended Particulates (FSP) arising from the construction work of the Proposed Development.

3.5.2 Dust control measures under the Air Pollution Control (Construction Dust) Regulation (Cap. 311R) and good site practice shall be implemented to mitigate dust impact arising from demolition work by preventing dust generation and/or by screening, suppressing and removing dust generated:

- Hoarding of not less than 2.4 m high from ground level, except for a site entrance or exit, shall be provided along the entire portion of project boundary adjoins a road, street, service lane or other area accessible to the public

- Existing structures are proposed to be demolished by non-percussive equipment such as hydraulic crusher to reduce dust emission
- Water or a dust suppression chemical shall be sprayed immediately prior to, during and immediately after excavation works
- Cover stockpile or dusty materials with tarpaulin to prevent wind erosion
- Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads or streets
- Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the construction site
- Where a vehicle leaving construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle
- Store cement bags in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags
- Maintain a reasonable height when dropping excavated materials to limit dust generation
- Limit vehicle speed within site to 10 km/h and confine vehicle movement in haul road
- Minimize exposed earth after completion of work in a certain area by hydroseeding, vegetating or soil compacting
- Cover materials on trucks before leaving the site to prevent dropping or being blown away by wind
- Regular maintenance of plant equipment to prevent black smoke emission
- Throttle down or switch off unused machines or machine in intermittent use

3.5.3 With the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation, good site practice, adverse air quality impact associated with the construction works is not anticipated. Quantitative construction dust assessment is considered not necessary.

3.5.4 Operation of Powered Mechanical Equipment (PME) during demolition/construction works would emit gaseous air pollutants such as nitrogen dioxide (NO_2) via fuel burning. According to Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, only approved or exempted Non-Road Mobile Machinery (NRMM) with a proper label are allowed to be used in specified activities and locations including construction sites. Supportive information and documents (e.g. third-party emission certificates, model and serial numbers of machines and engines, etc.) for each NRMM would be provided to EPD to prove that the concerned NRMM is in line with the prescribed emission standards. No significant air quality impact arising from the PME of the Project is anticipated.

3.6 Operation Phase Air Quality Impact Identification & Evaluation

3.6.1 A small sewage treatment plant (STP) is proposed to be located at the south-east corner of the Project as shown in **Figure 3-1**. To prevent potential adverse odour impact on the Proposed Development and nearby sensitive receivers, the proposed sewage treatment plant shall be fully enclosed by a concrete structure and equipped with deodorizing units at the ventilation

and exhaust system. Considering the scale of the sewage treatment plant and the proposed mitigation measures, no adverse odour impact is anticipated during the operation of the Proposed Development.

3.6.2 The exhaust air from the proposed indoor car park in the Project is considered as a potential source of impact. The proposed car park should be located and built-in accordance to the requirements stipulated in ProPECC PN2/96 for the design, maintenance and operation of the ventilation systems to ensure the compliance of the air quality inside car parks with the concentration limits. The exhaust air should be discharged to the atmosphere in such a manner and at such a location as not to cause a nuisance to occupants in the building or of neighbouring buildings, or to the public. Hence, no insurmountable impact on the nearby sensitive receivers is expected. The impact from nearby emission sources on the project is assessed in the following sections.

3.6.3 The residential floors of the Proposed Development rely on openable windows for ventilation, while the remaining area of the Proposed Development rely on mechanical ventilated system. The openable windows for ventilation and the fresh air intake for air sensitive uses of the Proposed Development shall be located outside of the buffer zone of the nearby emission sources (e.g. road and industrial chimney).

3.6.4 The Site is located at the north-west side of the junction of Hiram's Highway and Hing Keng Shek Road. With reference to The Annual Traffic Census - 2023, Hiram's Highway is classified as "Rural Road", while no classification is identified for Hing Keng Shek Road. However, with confirmed with Transport Department (TD), regarding the road type of Hing Keng Shek Road, TD has no objection on adopting "Rural Road" as the road type. Reply from TD is presented in **Appendix 3-1**. Despite road classification recommended by HKPSG for determining buffer distance as shown in **Table 3-1** do not cover "Rural Road", considering the traffic flow of nearby roads, buffer distance of 10m and 5m for District Distributor and Local Distributor has been adopted for Hiram's Highway and Hing Keng Shek Road respectively.

3.6.5 The building footprint of the Proposed Development and the buffer regions for road traffic emission are indicated in **Figure 3-3**. Although the layouts are tentative and subject to change, no significant change in building footprint is anticipated. As the building footprint are clearly outside of the required buffer regions, no adverse air quality impact arising from the nearby traffic emission is anticipated.

3.6.6 Based on the on-site survey, no industrial chimney was identified within 200m from the planned ASRs. On the other hand, marine vessels are identified at the bay area of Marina Cove, where located at the south-east of the Proposed Development. It should be noted that there are moorings within the bay area of Marina Cove. The hoteling process of marine vessels at mooring area shall be considered as stationary industrial emission and 200m of buffer region shall be provided according to HKPSG.

3.6.7 The 200m buffer region from residential buildings, recreational facilities and site boundary of the Proposed Development are illustrated in **Figure 3-4**. Since there is no industrial chimney and mooring within 200m of the planned ASRs of the Proposed Development, and the PATH background at Year 2030 meets the relevant AQOs with a significant margin, except for Ozone concentration. No adverse impact from marine vessels is anticipated during operation phase.

3.7 Mitigation Measures

3.7.1 All openable windows for ventilation, fresh air intake, and other planned outdoor locations for air sensitive uses of the Proposed Development should be located outside of the buffer regions to avoid potential air quality impact.

3.7.2 The ventilation for the car park should be designed according to the requirements in ProPECC PN 2/96.

3.7.3 To strengthen the odour control measures of the sewage treatment plant, the following measures are recommended:

- The STP shall be fully enclosed by a concrete structure.
- The STP shall be equipped with deodorizing units with at least 99.5% odour removal efficiency at the ventilation and exhaust system.
- Ventilation exhaust pipes will be taken to roof level and away from the Proposed Development and neighbouring premises.
- Ensuring good housekeeping in the sewerage collection systems to prevent the development of anaerobic conditions, etc

3.8 Conclusion

3.8.1 During construction phase, major dust emitting construction activities will be the demolition of existing structures, excavation works, foundation works and construction works of the superstructures. With the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation and the adoption of good site practice, adverse air quality impact associated with the construction works is not anticipated.

3.8.2 During operation phase, the Proposed Development itself is considered as ASRs. The minimum buffer distance requirement recommended in Chapter 9 of HKPSG has been fulfilled. Taken into consideration of the large margin in the PATH background, no adverse air quality impact to the Proposed Development during operation phase is anticipated.

3.8.3 Although the proposed sewage treatment plant of the Proposed Development is considered an air pollution source, however, with a fully enclosed concrete structure and deodorizing units installed at the ventilation and exhaust system, no adverse odour impact to the surroundings is anticipated.

3.8.4 The exhaust air from the proposed indoor car park in the Project is considered as a potential source of impact. The proposed car park should be located and built-in accordance to the requirements stipulated in ProPECC PN2/96 for the design, maintenance and operation of the ventilation systems to ensure the compliance of the air quality inside car parks with the concentration limits. The exhaust air should be discharged to the atmosphere in such a manner and at such a location as not to cause a nuisance to occupants in the building or of neighbouring buildings, or to the public. Hence, no insurmountable impact on the nearby sensitive receivers is expected.

4. NOISE IMPACT ASSESSMENT

4.1 Introduction

4.1.1 This chapter identifies and evaluates potential noise impact associated with the Proposed Development and nearby noise sources, and to provide appropriate suggestions and mitigations for minimizing potential noise impact if necessary.

4.2 Legislations, Standards and Guidelines

Construction Noise

4.2.1 Construction noise is governed by the Noise Control Ordinance (NCO) (Cap. 400) which prohibits the use of PME during the restricted hours (7 p.m. to 7 a.m. on Monday to Saturday and any time on a general holiday, including Sunday) without a valid Construction Noise Permit (CNP) issued by the Authority. The criteria and procedures for issuing the permit are specified in the "Technical Memorandum on Noise from Construction Works Other than Percussive Piling" - (TM1).

4.2.2 For construction works other than percussive piling, although TM1 does not provide control over daytime construction activities, the noise limits are set out in the "Practice Note for Professional Persons Environmental Consultative Committee" (ProPECC) "Minimizing Noise from Construction Activities" (PN1/24).

Fixed Plant Noise

4.2.3 Fixed noise sources, such as the building services system, ventilation system, and the operation of the Project is controlled under the NCO and "Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites" (IND-TM). According to the IND-TM, the Acceptable Noise Level (ANL) for a Noise Sensitive Receiver (NSR) is determined by the Area Sensitive Ratings (ASR); which classify a NSR based on the type of the area within, and the degree of the effect on the NSR of particular Influencing Factors (IFs). The different types of area containing the NSR are categorised into the rural area, low density residential area, urban area and other areas, with reference to Table 1 of the IND-TM. While the IFs, defined as industrial areas or area containing a number of factories or major road with an annual average daily traffic flow (AADT) in excess of 30,000, should be assessed for their influence on the NSR according to the degree of influence ("not affected", "indirectly affected" and "directly affected").

4.2.4 The HKPSG states that all planned fixed noise sources should be located and designed so that when assessed in accordance with the IND-TM, the level of the intruding noise at the facade of the nearest sensitive use should be at least 5 dB(A) below the appropriate ANL shown in Table 2 of the IND-TM or the background noise level, whichever is lower. When the prevailing background noise levels would be adopted as the assessment criteria, the prevailing background noise levels, L_{90}(1-hour), at the relevant NSRs shall be measured during the typical operation hours of the fixed plant within daytime, evening and night times. The Acceptable Noise Levels (ANLs) for different Area Sensitivity Ratings (ASRs) are given in **Table 4-1**.

Table 4-1 Acceptable Noise Levels for different Area Sensitivity Ratings (ASRs)

Time Period	Area Sensitivity Rating A	Area Sensitivity Rating B	Area Sensitivity Rating C
	dB(A)	dB(A)	dB(A)
Day (0700 to 1900 hours)	60 (55)*	65 (60) *	70 (65) *
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50 (45) *	55 (50) *	60 (55) *

* Numbers in ( ) limit indicates the ANL-5dB(A) limit for planned fixed plant.

Traffic Noise

4.2.5 *HKPSG* provides guidance on acceptable road traffic noise levels at the openable windows of various types of noise sensitive buildings. The relevant criteria are shown in **Table 4-2**. For domestic premises, road traffic noise criteria [$L_{10\ (1hr)}$] of 70 dB(A) shall be adopted.

Table 4-2 HKPSG Road Traffic Noise Planning Criteria

Uses	Road Traffic Noise Criteria $L_{10,\ (1hr)}$ dB(A)
Domestic Premises	**70**
Hotel and Hostels	70
Offices	70
Educational institutions	65
Hospital & Clinics	55
Places of public worship and courts of law	65

Note: The above criteria apply to noise sensitive uses which rely on openable window / balcony for ventilation.

4.3 Noise Sensitive Receivers & Representative Noise Assessment Points

Existing Representative Noise Receiver in the Vicinity

4.3.1 The existing land uses in the vicinity of the Site are mainly residential uses, while no commercial and industrial buildings are identified within 300m from site boundary. Residential development located at the south-west is blocked by the natural terrain and therefore, no direct line-of-sight between the Proposed Development and the residential development located at the south-west. The representative noise sensitive receivers within the 300m assessment area that having direct line-of-sight to the Proposed Development in different directions, except for residential development located at west of the site, and rely on opened windows for ventilation are illustrated in **Figure 4-1** and listed in **Table 4-3**.

Table 4-3 List of Representative Noise Sensitive Receivers in the Vicinity

ID	Description	Type	Nearest Distance from Project Boundary
NSR-01	60A Pak Wai	Residential	11m
NSR-02	Residential Building in Pak Wai Village	Residential	44m
NSR-03	73 Hing Keng Shek	Residential	87m

Planned Noise Assessment Points of the Proposed Development

4.3.2 All openable window for ventilation for the bedrooms/living rooms of the residential flats of

the Proposed Development are considered as Noise Sensitive Receivers (NSRs). Although the Proposed Development is still in early stage and locations of openable window for ventilation are not yet decided, possible locations of openable window are carefully designed to avoid adverse traffic noise impact. The locations of possible openable window are illustrated in **Figures 4-2a** to **4-2c**. Noise assessment points for traffic noise impact assessment have been selected at all building facade for representing the possible openable window locations.

4.3.3 The possible locations of openable window for ventilation and representative noise assessment points have been illustrated in **Figures 4-2a** to **4-2c**. Representative noise assessment points have been assigned to each building façade of the residential flat, at 1.2m above the slab level and 1m away from the façade.

4.4 Construction Noise Impact Assessment

4.4.1 Four major works will be conducted in the construction phase of the redevelopment, including: demolition, site formation, foundation and superstructure works.

4.4.2 Construction noise generated by the powered mechanical equipment (PME) during construction phase can be minimised with implementation of the following mitigation measures. The Proposed Development consists of four residential blocks (3-storeys and 4-storeys) with basement car park. Considering the scale of the Proposed Development is small, no significant construction impact is anticipated with proper implementation of the mitigation measures. "Recommended Pollution Control Clauses for Construction Contracts" which is available on EPD website, will be incorporated into the tender document of this project. The following construction noise mitigation measures that can be applied but not limited to:

- Use non-percussive equipment such as hydraulic crusher, sawing, coring machines for demolishing existing building and structure
- Use non-percussive piling diving method such as hydraulic press-in method, vibration or jacking method for foundation work
- Use Quality Powered Mechanical Equipment (QPME) recognized by the Environmental Protection Department (EPD). The QPME shall be registered with EPD, and valid label issued by EPD shall be affixed on the QPME all times.
- Use Quieter Construction Methods as far as practicable
- Schedule work to minimize concurrent activity and duration of impact
- Regular maintenance of equipment to prevent noise emission due to impairment
- Adopt good site practice, such as throttle down or switch off equipment unused or intermittently used between works
- Position mobile noisy equipment in locations away from nearby NSRs and point the noise sources to directions away from NSRs
- Make good use of other structures for noise screening
- Use of mobile noise barriers/enclosures along the path of noise propagation

4.4.3 Construction activities under the Proposed Development involves concrete removal works, demolition works, site formation/excavation works and superstructure works. Subject to detailed site works arrangement, the contractor shall consider the following mitigation

measures, if necessary and applicable:

Concrete Removal Works / Demolition Works:

- Use of high pressure water jetting instead of traditional jackhammers and drill hammers;
- Use of quieter type wire saws or diamond wire saws for cutting large areas and heavily reinforced concrete;
- Use of quieter type blade saws utilizing diamond blades with higher speeds and smoother blades reduces excitation of vibration;
- Use of hydraulic crushers for concrete breaking instead of traditional excavator-mounted breakers;
- Use of handheld concrete crushers instead of traditional jackhammers;
- Use of hydraulic splitters instead of traditional jackhammers and breakers.

Site Formation / Excavation Works:

- Use of silent piling by press-in method instead of traditional massive augering and piling machines or drop hammer for sheet piling / channel planking installation work;
- Use of a sheet piling noise reducer such as a suitable shock absorber to reduce collisions between sheet pile / channel planking and holding parts;
- Use of pile driving impact cushions to reduce noise generated by piling impact;
- Pre-augering/pre-trench/boring pile holes to remove underground obstruction for avoiding hard driving / soften the ground;
- Use of crack inducers instead of traditional percussive breakers.

Superstructure Works:

- Use of prefabricated structure / sections to replace in-situ construction to reduce the amount of mechanical equipment used on site;
- Use of self-compacting concrete (without the aid of a vibrator e.g. poker for compaction) for in-situ concreting;
- Use of crack inducers instead of traditional percussive breakers.

4.4.4 With proper noise mitigation measures implemented during the construction phase, no adverse noise impact arising from the construction activities is expected.

4.5 Fixed Noise Impact Identification & Evaluation

External Fixed Noise Source

4.5.1 The Proposed Development shall be used primarily and mainly for residential purposes. The dwellings would rely on openable windows and single split air conditioning units. Fixed noise source in the vicinity within 300m should be reviewed.

4.5.2 No industrial activities and commercial buildings were identified in the environs as the Proposed Development is located within an area dominated by residential development. Major existing fixed plants within 300m from the project boundary have been reviewed, while no major fixed noisy plant is identified. Considering the land use in the vicinity, the quantity

and scale of existing noisy fixed source shall be limited.

4.5.3 No adverse noise impact arising from fixed plants to the Proposed Development is anticipated.

Planned Fixed Noise Source in the Proposed Development

4.5.4 The potential noise issue arising from the operation of the noisy building service equipment, e.g.: HVAC & sewage treatment facilities, has been reviewed in early stage of the Proposed Development. The major potential fixed noise sources are located indoor in the plant room & E&M room. As the noise from the plants may transmit to the outdoor area via louvres/exhausts at the building facades, the NSRs with direct line-of-sight to the Proposed Development have also been assessed.

4.5.5 The Site is located at area dominated by low-rise residential buildings, where characterised as "Low Density Residential Area" with reference to the definition of the type of area containing the NSR as described in the IDM-TM. Hiram's road (Stn no. 6055) has a traffic flow of 22,860 according to the Traffic Department's Annual Traffic Census 2023, which is not considered as a "IF". In view of the traffic impact on the Proposed Development, the representative NSRs shall be considered "not affected by IF" and classified as "ASR A". The criteria for planned fixed noise sources would be 55 dB(A) for day and evening time and 45 dB(A) for night time, as tabulated in **Table 4-1**. Representative NSRs (as shown in **Figure 4-1**) for fixed noise assessment are listed in **Table 4-4**.

Table 4-4 Representative Noise Sensitive Receivers at nearby development for Fixed Plant Noise Assessment

ID	Description	Horizontal Distance from Building Facades	Area Sensitivity Ratings for ANL[1]
NSR-01	60A Pak Wai	11m	A
NSR-02	Residential Building in Pak Wai Village	44m	A
NSR-03	73 Hing Keng Shek	87m	A

Note:
[1] The NSRs located within a Low-Density Residential Area without affected by IF directly, and thus, ASR of A is adopted.

4.5.6 Since the project is still in early design stage with no detailed information of the specification of the planned fixed noisy plants, maximum allowable sound power level in different direction will be determined so as to ensure the compliance of the planned fixed noise sources. Horizontal distance between project boundary and the NSRs at nearby residential buildings has been measured (as shown in **Figure 4-1**) to calculate the maximum allowable sound power level (SWL) at the building façades of Proposed Development which is detailed in **Appendix 4-1** and summarised in **Table 4-5**.

Table 4-5 Allowable Sound Power Level for the Building Service Equipment of the Proposed Development

Location	Maximum Allowable Sound Power Level at Source, dB(A)	
	Day and Evening (07:00 – 23:00)	Night (23:00 – 07:00)
NE façade	75	65
SE façade / Sewage Treatment Plant	87	77
NW facade	93	83

[1] For assessment purpose, a 6dB(A) of Tonality/ Intermittency/ Impulsiveness correction has been adopted.
[2] Since noise sensitive receivers located at south-west is completely blocked by natural terrain and slope, no fixed noise impact is anticipated at nearby NSR at south-west side.

4.5.7 According to **Table 4-5**, lowest maximum allowable power level among three directions is identified at the north-east of the Site, with maximum SWL of ~75 dB(A) at day & evening time and ~65 dB(A) at night. To minimise the fixed noise impact on the surrounding residential buildings, planned fixed noisy plants and exhausts should be designed to avoid direct line-of-sight to the nearest residential buildings (60A Pak Wai) at north-east side.

4.5.8 With allowable sound power level implemented properly, the criteria of the planned fixed noisy plant as shown in **Table 4-1** should be complied thus no adverse noise impact arising from the fixed noise sources is anticipated. The planned fixed plant at the Proposed Development should be designed and reviewed during detailed design stage with reference to the standard stipulated in the HKPSG to ensure compliance.

4.6 Traffic Noise Impact Identification & Evaluation

Assessment Methodology

4.6.1 An in-house noise model (MARC) was used to predict the traffic noise levels arising from the road network. It adopts the methodology provided in the UK Department of Transport's Calculation of Road Traffic Noise (CRTN) 1988, which is stipulated in Chapter 9, Section 4.2.7 of the HKPSG for assessing road traffic noise impact. Road traffic noise levels are presented in terms of noise levels exceeded for 10% of the one-hour period for the hour having the peak traffic flow [$L_{10\ (1\text{-hour})}$ dB(A)].

4.6.2 The assessment was based on the projected peak hour flows for the worst year within 15 years after completion of the Project in Year 2031. Based on the traffic forecast provided by the traffic consultant, the maximum traffic projections within 15 years upon occupation of the proposed development, that is between Year 2031 (year of population intake) and Year 2046 would occur in AM peak of Year 2046, were adopted for road traffic model. The major roads within 300m from the Site boundary have been included in the assessment. The adopted traffic forecast and corresponding road index map are shown in **Appendix 4-2**.

4.6.3 Base Scenario without mitigation measure, other than the architectural designs incorporated into the building design including buildings orientation, setback, fence wall, had been considered in the Traffic Noise Impact Assessment.

Architectural Design in Base Scenario

4.6.4 In the Base scenario, the architectural design has been optimised to reduce the potential traffic noise impact from the surrounding roads. Building setback, orientation of the building has been designed in a way such that most of the NSRs will not be severely affected by the major

traffic noise sources. Since some location of south-east facade of Block 4 may experience adverse traffic noise impact due to wide view-angle, fence wall with 8.5mAG above the ground level (14mPD), as shown in **Figure 4-2a,** has been incorporated in the design in early stage and thus adopted in Base Scenario.

Predicted Traffic Noise Level in Base Scenario

4.6.5 The summaries of the predicted traffic noise level are listed in **Table 4-6**. The detailed results of the Base Scenario are presented in **Appendix 4-3**.

Table 4-6 Summary of Traffic Noise Level (Base Scenario)

Floor	Range of Predicted Traffic Noise Level, dB(A)				Compliance Rate
	Block 1	Block 2	Block 3	Block 4	
4/F	53 - 61	55 - 68	56 - 68	--	100%
3/F	53 - 60	54 - 67	54 - 67	<40 – 69	100%
2/F	52 - 60	52 - 65	52 - 66	<40 – 67	100%
1/F	51 - 60	50 - 63	50 - 64	<40 – 67	100%

4.6.6 In general, the predicted traffic noise level is increasing with elevation. The highest traffic noise level is 69 dB(A) found at 4/F of Block 4 (B4-E) facing Hiram's Highway. The predicted traffic noise levels show that all NSRs for the residential flats of the proposed redevelopment comply with the criteria of 70 dB(A). As the compliance rate is 100%, no adverse traffic noise impact is anticipated and no further mitigation measures are required.

4.7 Conclusion

4.7.1 Considering the scale of the Proposed Development is small, no significant construction impact is anticipated with proper implementation of the mitigation measures. External noisy fixed plants within 300m from project boundary have been reviewed. No adverse fixed noise impact on the Proposed Development is anticipated.

4.7.2 Limitation of Sound Power Level for building service equipment will be incorporated into the tender document to ensure the fixed noise sources at the Proposed Development will be designed with appropriate mitigation for complying with the relevant criterion. The planned fixed plants should be reviewed during the detailed design stage to ensure compliance with the standard stipulated in the HKPSG.

4.7.3 Traffic noise impact assessment has been conducted based on predicted peak traffic flow (15 years upon the commencement of Project, Year 2046). Under the Base Scenario without mitigation measure, the predicted traffic noise levels for the residential flats of the proposed redevelopment fully comply with the HKPSG traffic noise criteria. As the compliance rate is 100%, no adverse traffic noise impact is anticipated and no further mitigation measures are required.

5. WATER QUALITY IMPACT

5.1 Legislations, Guidelines and Requirements

5.1.1 The Water Pollution Control Ordinance (Cap. 358) (WPCO), in existence since 1980, is the major legislation relating to the protection and control of water quality in Hong Kong. According to the WPCO and its subsidiary legislation, Hong Kong waters are divided into ten Water Control Zones (WCZs). Water Quality Objectives (WQOs) provide the limits for different parameter for each WCZ to minimize the impact on water quality. With reference to the WCZs map, the study area, i.e. the area within 500m from the Site boundary, is located within the Port Shelter WCZ. **Table 5-1** has summarized the WQO for Port Shelter WCZ.

Table 5-1 Water Quality Objectives

WQO	Port Shelter WCZ
AESTHETIC APPEARANCE	
Waste discharges shall cause no objectionable odours or discolouration of the water.	Whole Zone
Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substance should be absent.	Whole Zone
Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	Whole Zone
There should be no recognisable sewage-derived debris.	Whole Zone
Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	Whole Zone
Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.	Whole Zone
BACTERIA	
The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Secondary Contact Recreation Subzones and Fish Culture Subzones
The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive in one calendar year. Samples should be taken at least 3 times in a calendar month at intervals of between 3 and 14 days.	Bathing Beach Subzones
COLOUR	
Waste discharges shall not cause the colour of water to exceed 50 Hazen units.	Inland Waters
DISSOLVED OXYGEN	
Waste discharges shall not cause the level of dissolved oxygen to fall below 4 mg per litre for 90% of the sampling occasions during the year; values should be calculated as the water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed). In addition, the concentration of	Marine waters excepting Fish Culture Subzones

dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the year.	
The dissolved oxygen level should not be less than 5 mg per litre for 90% of the sampling occasions during the year; values should be calculated as water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the year.	Fish Culture Subzones
Waste discharges shall not cause the level of dissolved oxygen to be less than 4 mg per litre.	Inland waters
pH	
The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 units.	Marine waters excepting Bathing Beach Subzones
The pH of the water should be within the range of 6.0–9.0 units for 95% of samples. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 units.	Bathing Beach Subzones
Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Ho Chung (A) Subzone
The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
TEMPERATURE	
Waste discharges shall not cause the natural daily temperature range to change by more than 2.0℃.	Whole Zone
SALINITY	
Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.	Whole Zone
SUSPENDED SOLIDS	
Waste discharges shall neither cause the natural ambient level to be raised by 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
Waste discharges shall not cause the annual median of suspended solids to exceed 25 mg per litre.	Inland waters
AMMONIA	
The ammonia nitrogen level should not be more than 0.021 mg per litre, calculated as the annual average (arithmetic mean), as unionised form.	Whole Zone
NUTRIENTS	
Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine waters
Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.1 mg per litre, expressed as annual water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed).	Marine waters

5-DAY BIOCHEMICAL OXYGEN DEMAND	
Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 mg per litre.	Inland waters
CHEMICAL OXYGEN DEMAND	
Waste discharges shall not cause the chemical oxygen demand to exceed 30 mg per litre.	Inland waters
DANGEROUS SUBSTANCES	
Waste discharges shall not cause the concentration of dangerous substances in the water to attain such levels as to produce significant toxic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone
Waste discharges of dangerous substances shall not put a risk to any designated beneficial uses of the aquatic environment.	Whole Zone
PHENOL	
Phenols shall not be present in such quantities as to produce a specific odour, or in concentrations greater than 0.05 mg per litre as C_6H_5OH.	Bathing Beach Subzones
TURBIDITY	
No changes in turbidity or other factors arising from waste discharges shall reduce light transmission substantially from the normal level.	Bathing Beach Subzones

5.1.2 A Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) was issued under the WPCO which gives guidance on the permissible effluent discharges based on the type of receiving waters (foul sewers, inland waters, marine waters, inshore waters and coastal waters) and the flow rate. TM-DSS set limits to control the physical, chemical and microbial quality of effluents. The effluents generated from the Proposed Development will be treated properly by the on-site sewage treatment plant (STP) and discharged to the inland water (Group D), which classified as "general amenity and secondary contact recreation". The standard for effluent discharged into the inland water (Group D) has been presented in **Table 5-2**.

Table 5-2 Standard for effluent discharged into the inland water (Group D)

Flow rate (m3/day) / Determinand	≤200	>200 and ≤400	>400 and ≤600	>600 and ≤800	>800 and ≤1000	>1000 and ≤1500	>1500 and ≤2000	>2000 and ≤3000
pH (pH units)	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
Temperature (°C)	30	30	30	30	30	30	30	30
Colour (lovibond units)	1	1	1	1	1	1	1	1
Suspended solids	30	30	30	30	30	30	30	30
BOD	20	20	20	20	20	20	20	20
COD	80	80	80	80	80	80	80	80
Oil & Grease	10	10	10	10	10	10	10	10
Iron	10	8	7	5	4	2.7	2	1.3
Boron	5	4	3.5	2.5	2	1.5	1	0.7
Barium	5	4	3.5	2.5	2	1.5	1	0.7
Mercury	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001

Flow rate (m3/day) / Determinand	≤200	>200 and ≤400	>400 and ≤600	>600 and ≤800	>800 and ≤1000	>1000 and ≤1500	>1500 and ≤2000	>2000 and ≤3000
Other toxic metals individually	1	1	0.8	0.8	0.5	0.5	0.2	0.2
Total Toxic metals	2	2	1.6	1.6	1	1	0.5	0.4
Cyanide	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.05
Phenols	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Sulphide	1	1	1	1	1	1	1	1
Sulphate	800	600	600	600	600	400	400	400
Chloride	1000	800	800	800	600	600	400	400
Fluoride	10	8	8	8	5	5	3	3
Total phosphorus	10	10	10	8	8	8	5	5
Ammonia nitrogen	20	20	20	20	20	20	20	10
Nitrate + nitrite nitrogen	50	50	50	30	30	30	30	20
Surfactants (total)	15	15	15	15	15	15	15	15
E. coli	1000	1000	1000	1000	1000	1000	1000	1000

Note:
[1] All units are in mg/L unless otherwise stated.

5.1.3 A practice note (PN) for professional persons was issued by the Environmental Protection Department (EPD) to provide environmental guidelines for handling and disposal of construction site discharges. The (ProPECC) "Construction Site Drainage" PN (2/24) provides good practice guidelines for dealing with various types of discharge from a construction site. Practices outlined in the PN should be followed as far as possible during construction to minimize the water quality impact due to construction site drainage.

5.1.4 The ProPECC PN 1/23 on Drainage Plans Subject to Comment by the EPD provides guidelines and practices for handling, treatment and disposal of various effluent discharges to stormwater drains and foul sewers. The design of site drainage and disposal of various site effluents generated within the new development area should follow the relevant guidelines and practices as given in the ProPECC PN 1/23. As there is a carpark in the proposed development, the relevant practice and mitigation measures during operational phase are recommended with reference to Section 5 of ProPECC PN 1/23.

5.2 Water Quality Sensitive Receivers

5.2.1 Water Quality sensitive receivers (WSRs) within 500m from project boundary has been identified and the representative water quality sensitive receivers are illustrated in **Figure 5-1**. The representative water sensitive receivers are summarized in **Table 5-3**. Modification or removal works on any watercourse and WSR is not anticipated.

Table 5-3 List of Representative Water Quality Sensitive Receivers

WSR ID	Status	Distance to Project Boundary (m)
Natural Watercourse		
WSR01a	Active	290
WSR01c	Active	130
WSR02a	Active	420
Modified Watercourse		
WSR01b	Active	0
WSR02b	Active	390
WSR03a	Active	480
Channelized Watercourse		
WSR01d	Active	0
Conservation Zone		
CZ01	Active	20
Secondary Contact Recreation Subzone		
SC01	Active	110

5.2.2 All identified natural watercourses and conservation zones are located on the hill at a higher elevation compared to the Proposed Development. Considering the topographic location of the Proposed Development, water generated from the site cannot reach the natural watercourses and conservation zones during both construction and operation phases. Additional attention should be paid for the modified channel that is identified at close proximity to the Site. On the other hand, Secondary Contact Recreation Subzone is located approximately 100 meters from the site with Hiram's Highway and residential houses in between. Since the Proposed Development dose not involves any modification or removal works on the watercourse and WSR, with properly implementation of the mitigation measures as stated in **Section 5.4**, no adverse water quality impact on the nearby WSR is anticipated during construction and operation phases.

5.3 Impact Identification & Evaluation

Construction Phase

5.3.1 Potential sources of water quality impact associated with the Proposed Development have been identified. They are construction site runoff, sewage generated from construction workforce and accidental spillage of chemicals.

5.3.2 Construction site surface runoff may carry pollutants into nearby water drainage system, which may lead to increased suspended solids and other pollutants' (e.g. metals and organics) concentrations in receiving waters, and may cause blockage of storm water drains. Nevertheless, the impact is anticipated to be insignificant if mitigations proposed in **Section 5.4** are implemented properly.

5.3.3 Sewage will be generated by the sanitary facilities that serving the on-site construction workforce. Considering the scale of the construction site, the number of on-site construction workforce is limited. With the mitigation measures as described in **Section 5.4**, like provision of adequate chemical toilets, no adverse water quality impact is anticipated.

5.3.4 Chemicals, such as fuel and lubricating oil for powered mechanical equipment (PME), may be stored and used onsite for the construction work. Accidental spillage of these chemicals may be carried down by construction site runoff and deteriorate water quality in receiving waters. Nevertheless, since there should be no immerse need for chemical or oil in this proposed development, the quantity stored or used onsite should be limited. With proper implementation of mitigations proposed in **Section 5.4**, the impact is anticipated to be insignificant.

Operation Phase

5.3.5 The Proposed Development is used mainly for residential purpose. Sewage generated from the Proposed Development will be discharged to the existing watercourse after treated by the on-site sewage treatment plant, that will be addressed in separated reports (Sewerage Impact Assessment). Stormwater generated from the Proposed Development will be discharged to the existing watercourse and addressed in separated report (Drainage Impact Assessment).

5.3.6 Pollutants such as vehicle dust, debris and grease within the Proposed Development will accumulate on the surface of the paved area of the Proposed Development. The surface runoff may carry the pollutants to the nearby drainage system during rainfall event. However, with provision of appropriate mitigation measures, such as adequate silt traps and oil interceptors, no water quality impact is anticipated during operation phase.

5.4 Mitigation Measures

Construction Phase

5.4.1 Construction surface runoff should be prevented or minimized in accordance with the guidelines stipulated in the ProPECC PN 2/24, which includes but not limited to the followings:

- Provide sufficient chemical toilets with regular maintenance by licensed chemical waste collector where necessary.
- Channels, earth bunds or sand bag barriers should be provided on site to direct storm-water to sand/silt removal facilities. Where necessary, perimeter channels should be provided at the project boundary to intercept storm-runoff from outside the site. These shall be implemented in advance of construction work.
- Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the Technical Memorandum standard under the WPCO. These facilities shall be properly and regularly maintained.
- Construction works should be programmed to minimize soil excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces
- Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed

to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.

- The Contractor should implement the Precautions/Actions relating to rainstorms as summarized in Appendix A2 of ProPECC PN 2/24.
- If there is excess effluent, it shall be treated by sedimentation up to the standard stipulated in the water discharge licence issued by EPD. Only that effluent can be discharged into the designated discharge point to safeguard the water quality in the receiving water. If discharge to stormwater system is not permitted under the WPCO, the treated water is proposed to be removed from the Site by tankers. The effluent will then be delivered to public sewage treatment plant.
- Open stockpiles of materials on site shall be covered with tarpaulin or similar fabric during rainstorms.
- Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.
- Final surfaces of earthworks shall be well compacted and sequential work shall be executed after the final surfaces are completed to minimize erosion arose from rainstorm.
- Wheel washing facilities shall be provided in the construction site and all vehicles and plant shall be cleaned before they leave the site. The wastewater shall be treated by silt removal facilities and sedimentation before discharging into storm drains. The section between the wheel washing facilities and public road shall be paved to avoid site run-off from intruding public drainage system.
- Wastewater from building construction works like cleaning of works, concreting and similar activities shall not be discharged into the storm drains. The wastewater shall be treated by the silt removal facilities to remove settleable solids and pH adjustment before discharging into foul sewers.

5.4.2 Since a modified watercourse is identified in close proximity of the Proposed Development, the following measures should also be taken:

- The use of less or smaller construction plant may be specified to reduce disturbance to the riverbed where aquatic inhabitants are located.
- Proper locations well away from rivers/streams for temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction debris and spoil should be identified before commencement of the works.
- Stockpiling of construction materials, if necessary, should be properly covered and located away from any stream/river.
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby rivers/streams by rain.
- Adequate lateral support may need to be erected in order to prevent soil/mud from slipping into the stream/river, but without unduly impeding the flow during heavy rain.

5.4.3 Adequate portable chemical toilets will be provided to cater for the sewage generated from the construction workforce. Any effluent discharge from the construction site should comply with the standards stipulated in the TM-DSS under WPCO. Discharge license under WPCO

should be obtained.

5.4.4 It is recommended that the contractor should prepare an emergency plan associated with the accidental spillage of chemical. Any chemical spillage should be immediately contained and cleaned up. Disposal of chemical waste should be complied with the Watse Disposal Ordinance (Cap. 354). Mitigation measures as per the Code of Practice of the Packaging, Labelling and Storage of Chemical Wastes under Watse Disposal Ordinance is suggested as follows:

- All chemicals shall be stored in suitable containers which are sealable, robust and in good condition.
- Chemical storage areas shall have impermeable floor and bund-wall. The bund shall at least have a capacity of 110% of the volume of the largest container or 20% by volume of the chemical stored in the area, whichever is largest. All liquid collected within the bund shall be treated as chemical waste. Where possible, storage areas should be sheltered to prevent rainfall entering.
- All chemical should be labelled accurately to enable proper use, handling and storage by the construction workforce.

5.4.5 Above mitigation will be incorporated into the tender of the Proposed Development. With the proper implementation of the above mitigation, water quality impact from different sources during construction stage is not anticipated.

Operation Phase

5.4.6 During operation phase, recommendations from ProPECC PN 1/23 should be followed as far as possible to minimise the potential water quality impacts.

5.4.7 Surface runoff in the open areas Proposed Development should be collected by the drainage system with adequate silt traps and oil interceptors. For the basement carpark that may generate wastewater, drainage in basement carpark should be connected to foul sewer via petrol inceptors as per the recommendation form ProPECC PN 1/23. The typical design of the petrol interceptor can refer to Appendix A of the ProPECC PN 1/23.

5.4.8 All sewage or waste water generated from the Proposed Development will be treated properly, in accordance with the standard stipulated in TM-DSS, by the on-site treatment plant prior to the discharge to the existing watercourse. To facilitate proper flow during emergency conditions, mitigation measures such as standby power supply, standby pump and twin mains shall be incorporated into the design of the STP.

5.4.9 Given that the provision of swimming pool in the Proposed Development, recommendations from ProPECC PN 1/23 regarding the discharge of swimming pool shall be followed. Backwash water from the swimming pool will be connected to the sewage treatment plant and discharge to the existing watercourse via the sewers within the Proposed Development.

5.4.10 With proper implementation of the mitigation measures during operation phase, no adverse water quality impact is anticipated.

5.5 Conclusion

5.5.1 Potential water quality impact associated with the Proposed Development during construction phase would be construction site runoff, sewage generated from construction workforce and

accidental spillage of chemicals. However, with proper implementation of mitigation measures, no adverse water quality impact is anticipated.

5.5.2 For operation phase, all sewage and wastewater generated from the Proposed Development will be properly treated by the on-site treatment plant prior to the discharge to the existing watercourse. All water should be discharged through the public drainage and sewerage system that will be addressed in separated reports (Drainage Impact Assessment and Sewerage Impact Assessment).

6. WASTE MANAGEMENT CONSIDERATION

6.1 Legislations and Requirements

6.1.1 In general, sustainable approaches to waste management should be adopted to produce less waste and reuse or recover value from waste. The consideration on waste management for the Project will take into account of the below Ordinances/Guidelines/Practice Notes adopted in Hong Kong.

6.1.2 The following legislations/guidelines related to the handling, treatment and disposal of waste in Hong Kong are listed:

- Waste Disposal Ordinance (Cap. 354) (WDO)
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)
- Land (Miscellaneous Provisions) Ordinance (Cap. 28)
- Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
- Air Pollution Control Ordinance (Control of Asbestos (sections 51 to 84))
- ProPECC PN2/97 Handling of Asbestos Containing Materials in Buildings
- ADV-19 – Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers – Construction and Demolition Waste
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Wastes

6.1.3 Waste collection and disposal is covered by the Waste Disposal Ordinance (Cap. 354) (WDO). This provides a licensing system for the disposal of certain wastes and for the control of certain wastes by regulation. All wastes should be properly stored and disposed in accordance with relevant waste management regulations and guidelines.

6.1.4 Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) outlines the requirement for chemical waste handling and disposal.

6.1.5 Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N), construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert materials. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert materials, and construction waste delivered to a public fill reception facility for disposal must consist entirely of inert materials.

6.1.6 Land (Miscellaneous Provisions) Ordinance (Cap. 28) provides control over placing and maintaining of C&D materials on unleased land. If the occupier does not hold the relevant license, the Department of Lands will take action accordingly.

6.1.7 Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (ADV-19) provides mitigation measures on waste generation and management during the planning stage of a building development to minimise waste disposals at landfills.

6.2 Waste Management for Construction Phase

Waste Types

6.2.1 The site clearance, demolition of existing structure, excavation, and superstructure construction activities to be carried out for the proposed development would generate a variety of waste that can be divided into distinct categories based on their composition and ultimate method of disposal. The identified waste types include:

- Construction and demolition (C&D) materials, comprising inert and non-inert materials, from the demolition and construction works;
- Potential asbestos containing materials;
- Chemical waste from any maintenance of construction plant and equipment; and
- General refuse from the workforce

Inert and non-inert C&D Materials

6.2.2 Inert C&D Material (or public fills) includes construction debris, soil, rock and concrete, should be re-used on-site as filling materials or off-site as public fill at public fills reception facilities. Non-inert C&D Material (or C&D waste) includes metal from the existing structures, wood from formwork, equipment parts, and materials and equipment wrappings, etc. should be re-used or recycled as far as possible.

6.2.3 As the Proposed Development involves demolition of existing structure and construction of 1 floor of basement, it is estimated that about 28,455 m^3 excavated materials would be generated and about 4,100 m^3 would be suitable for backfilling during site formation stage. It is also estimated that about 50 m^3 C&D materials will be generated during the demolition work.

6.2.4 In order to account for the quantity of C&D materials to be generated from construction of the new building, C&D materials generation rate of 0.1 m^3 per m^2 of GFA constructed is adopted in accordance with the "Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)". The total GFA of the proposed development from the Proposed Development will be around 10,000m^2. The C&D materials generated from superstructure construction is approximately 1,000m^3. Hence, the total amount of inert C&D materials generated by the Project is projected at 29,400 m^3.

6.2.5 The volume of non-inert C&D material, such as building materials, maintenance and packaging waste; generated during site clearance, demolition of existing buildings, and construction of superstructure works is projected at 105 m^3, which will be subject to specific construction procedures and site practices. The estimated amount of non-inert C&D material generated would be minimal with careful design, planning, good site management and control of ordering procedures etc.

6.2.6 The estimated quantities of inert and non-inert C&D material generated from the construction of the Proposed Development are presented in **Table 6-1**.

Table 6-1 Estimated Quantities of C&D materials to be Generated, Reused and Disposed of

Construction Activities	Sum (m^3)	Wastes to be Reused/Recycled/disposed of (m^3)					
		Inert C&D material			Non-inert C&D material		
		Reused/Recycled On-Site	Reused/Recycled Off-Site(a)	Disposed Off-Site	Reused/Recycled On-Site	Reused/Recycled Off-Site(a)	Disposed Off-Site
Excavation	28,455	4,100	0	24,355	0	0	0
Demolition of Existing Buildings	50	0	0	45	0	0	5
Superstructure Construction	1,000	0	0	900	0	10	90
All	**29,505**	4,100	0	25,300	0	10	95
		29,400			105		

Note
[1] The inert C&D materials not reused on-site shall be disposed off-site and delivered to the Tseung Kwan O Area 137 Fill Bank.
[2] Non-inert C&D materials should be reused or recycled as much as possible before disposed off-site, estimated to be 10% of the total generated.

6.2.7 It is estimated that about 14% of inert C&D material to be reused on-site. It is proposed to deliver the rest of inert C&D materials to the Tseung Kwan O Area 137 Fill Bank. The remaining non-recyclable C&D materials are not suitable for public fill reception facilities and requires disposal to licensed landfill facilities (the closest landfill is the South East New Territories (SENT) Landfill).

Chemical Waste

6.2.8 Chemical waste, such as cleaning fluids, solvents, spent lubricants and fuel for equipment or waste battery, may be generated. As far as the scale of the works is small, the quantity of chemical waste generated would be minimal. It is expected that the approximate quantity of the lubrication oil is about 100L/month and hence approximately 3.6 m^3 of chemical waste will be generated during construction period of 36 months. The chemicals should be collected and handled by a licensed collector and further dispose of at a licensed chemical treatment and disposal facility (Chemical Waste Treatment Centre - CWTC). Furthermore, the chemical waste should be handled in accordance with the Waste Disposal (Chemical Waste)(General) Regulation. The Works Contractor should register as a Chemical Waste Producer under the WDO.

6.2.9 In addition, other chemical waste, if any, to be generated during the demolition works will be handled and disposed of in accordance with the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C). For asbestos wastes, if any, will be handled and disposed of in accordance with the Code of Practice on the Handling, Transportation and Disposal of Asbestos Wastes.

6.2.10 With the implementation of proper chemical waste management measures listed in **Section 6.2.22**, the impact is anticipated to be insignificant.

6.2.11 No hazardous materials or hazardous wastes are expected to be generated during the construction of the Site.

General Refuse

6.2.12 General refuse such as food scraps, waste paper, empty containers, etc., would be generated from construction workforce during construction phase.

6.2.13 The maximum number of construction workers to be employed will be approximately 15 workers per day. The daily arising of general refuse from the construction workforce can be estimated based on a generation rate of 0.65 kg per worker per day, the estimated quantity of the general refuse is 9.75 kg/day (= 15 workers x 0.65 kg/worker/day). Considering the construction period is around 2 years, the total quantity of general refuse is ~7118 kg (9.75 kg/day x 2 years)

6.2.14 Such refuse should be properly managed so intentional or accidental release to the surrounding environment does not occur. If the general refuse is recyclable, such as paper, plastics and aluminium materials, the reuse and recycling of such waste is encouraged. Effective collection of site wastes such as providing enclosed bins or compaction units would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problem. Waste storage areas should be well maintained and cleaned regularly. General refuse will be collected daily and disposed of at SENT landfill.

6.2.15 With the implementation of good waste management practices as suggested in **Section 6.2.21** at the site, adverse environmental impacts are not expected to arise from the storage, handling and transportation of general refuse generated by construction workers.

Mitigation Measures

6.2.16 Prior to the commencement of the construction works, the contractor will identify the types and amount of waste generated, and handle, store, collect and dispose waste in accordance with Waste Disposal Ordinance (Cap. 354). The associated mitigation measures and good site practice should be implemented as follows:

C&D Materials

6.2.17 In general, minimization/reuse/recycling of C&D materials (i.e. both inert and non-inert C&D materials) should be considered prior to disposal. Waste minimization measures should be adopted during construction phase, measures may include:

- On-site sorting of C&D materials;
- Recycling of construction materials for on-site use;
- Avoidance and minimization to reduce the potential quantity of C&D materials generated;
- Reuse of materials as practical as possible;
- Recovery and Recycling as practical as possible;
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

6.2.18 The Contractor should submit a waste management Plan (the Plan) to the project proponent for agreement, covering the types of waste and their estimated quantities, timing of waste arising; measures for reducing waste generation etc. as recommended in Section 3 of ADV-19. If the project will produce more than 300,000 m^3 of construction and demolition material,

advice from the Director of Environmental Protection should be sought prior to the acceptance of the Plan.

6.2.19 The Contractor should adopt good housekeeping practices such as waste segregation prior to disposal. Stockpiling and segregating areas should be provided at site. Effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.

6.2.20 During inclement weather (e.g. heavy rainstorm), the stockpile should be covered by tarpaulin or other water-resistant fabric. This can prevent dust and waste from being blown away by wind or washed into watercourses/drainage system.

General Refuse

6.2.21 General refuse should be stored in enclosed bins or compaction units separate from C&D materials. 3-color recycle bins for the collection of recyclable municipal waste should also be provided. A reputable waste collector should be employed by the Contractor to remove or recycle general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of "wind-blown" light materials.

Chemical Waste

6.2.22 If chemical waste is produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C). Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector. The chemical waste management measures should include, but not limited to the following:

- Minimize the production of Chemical Waste
- Registration of Chemical Waste Producers with EPD should be carried out for any person who produces chemical waste
- Give notification of certain Chemical Waste for Disposal to EPD as required in Section 4 of the Regulation & Section 17 of the Ordinance
- Carry out Packaging, Labelling and Storage of Chemical Wastes as per Sections 9 to 19 of the Regulation
- Collection of Chemical Waste and the "Trip Ticket" System as per Sections 20 to 29 of the Regulation
- Precautions Against Dangers from Spillages, Leakages or Accidents involving Chemical Waste as per Sections 30 to 32 of the Regulation

6.2.23 Provided that good site practices are strictly followed, there would be no adverse impacts related to waste management during construction phase.

6.3 Waste Management for Operation Phase

6.3.1 Domestic wastes will be expected as the major type of waste from the redevelopment, including food residues, plastic, metal products, paper, etc.. No chemical or hazardous waste

is anticipated, including waste generated during the operation and maintenance of the equipment and facilities. Wastes generated will be collected and disposed of on a regular basis. Building management will be arranged by the future owners to manage the development including waste disposal.

6.3.2 The domestic waste will be collected (at the refuse collection point) and disposed of daily at SENT landfill or regularly collected by recyclers, waste recycling would be carried out during operation phase. To minimize waste generation and promote recycling, it is recommended to implement source separation of domestic waste in the proposed development.

6.3.3 Based on the anticipated population intake for the Proposed Development, which is projected to be about 360 and will be further refined during the detailed design stage, it is estimated that approximately 335 kg per day (= 360 persons x 0.93kg/person/day) of general refuse will be generated during the operation phase. With the proper implementation of the control measures, adverse impacts due to waste management will not be anticipated.

6.4 Conclusion

6.4.1 A variety of wastes including inert C&D material, C&D waste, chemical waste and general refuse would be generated during the construction phase and domestic waste would be generated during operation phase. Provided that the wastes generated would be managed with appropriate measures, no adverse environmental impacts arising from the handling, storage, transportation or disposal of the wastes generated during the construction and operation stage of the Proposed Development would be envisaged.

7. LAND CONTAMINATION ASSESSMENT

7.1.1 According to the desktop study and planning statement for the Application, the Site is currently occupied by a commercial horticulture workshop and temporary structures with some vehicle repair activities. According to **Table 2.3** of "Practice Guide for Investigation and Remediation of Contaminated Land (EPD, revised in April 2023)" (PG), a commercial horticulture workshop and temporary structures do not belong to any potential contaminated land use types, while a vehicle repair workshop is classified as a potentially land use type. As the Project is still at a planning stage and the operations at the Site are ongoing, a preliminary site appraisal for the Application shall be conducted accordingly. This appraisal shall include a review of historical land uses, an inquiry into land contamination-related records and a site visit for the site appraisal in relation to the land contamination assessment.

7.2 Review of Historical Land Uses

7.2.1 A review of aerial photographs was undertaken to evaluate the likelihood of potential contamination associated with past land uses within the Site from 1990 – 2023. The reviewed aerial photos for the Site are attached in **Appendix 7-1**. Findings indicate that the site was primarily covered in flora before 2011, with horticultural activities first recorded in 2011 near the site and later within the site from 2015 onward. Suspected vehicle parking or maintenance activities in the centre area of the Site have been noted since 2017, concentrated in two areas as illustrated in **Appendix 7-1**.

7.3 Site Visit

7.3.1 A site visit was carried out on 19th December 2024 to verify the information obtained from the desktop study and to evaluate potential land contamination issues. The photo record from the site visit is presented in **Appendix 7-2**. The Site was operating as commercial horticulture workshop where the ground mostly paved. Although a vehicle repair workshop was noted in the desktop study, only vehicle parking on the Site was found in well-maintained paved area. According to the site representative, vehicles were primarily parked or abandoned, with only minor maintenance activities, such as car detailing, being performed occasionally. Temporary storage areas for the horticultural workshop and construction materials were also found within the Site. Additionally, no observable cracks/fissures or signs of oil stain were observed. Hence, the potential for the land contamination at the Site is not anticipated. The need for further studies shall be determined at a later stage.

7.4 Conclusion

7.4.1 Based on the findings of this preliminary site appraisal, the Site had primarily been used for commercial horticulture workshops. Although minor vehicle maintenance activities were noted in the desktop study, only vehicle parking was found on the Site during the visit, and it was located in a well-maintained paved area. Therefore, the potential for land contamination at the site is not anticipated. The need for further studies will be determined at a later stage.

8. CONCLUSION

8.1.1 The Project Proponent has proposed to develop a residential development with clubhouse (Proposed Development) at various Lots in D.D. 210 Pak Wai, Sai Kung.

8.1.2 This EA is prepared to assess the potential environmental impact associated with the implementation of the Project in support of the submission of the Application. The assessment has been undertaken with reference to the guidance for environmental considerations provided in Chapter 9 "Environment" of the Hong Kong Planning Standards and Guidelines.

8.1.3 The key environmental issues with potential environmental impacts arising from the Project are identified, based on the environment of the Project, as air quality, noise, water, waste management and land contamination. The Sewerage Impact Assessment and Drainage Impact Assessment are provided in separated reports under this Application.

Air

8.1.4 During construction phase, major dust emitting construction activities will be the demolition of existing structures, excavation works, foundation works and construction works of the superstructures. With the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation and the adoption of good site practice, adverse air quality impact associated with the construction works is not anticipated.

8.1.5 During operation phase, the Proposed Development itself is considered as ASRs. The minimum buffer distance requirement recommended in Chapter 9 of HKPSG has been fulfilled. Taken into consideration of the large margin in the PATH background, no adverse air quality impact to the Proposed Development during operation phase is anticipated.

8.1.6 The proposed sewage treatment plant of the Proposed Development is considered an air pollution source. However, with proper implementation of the mitigation measures, no adverse odour impact to the surroundings is anticipated.

8.1.7 The exhaust air from the proposed indoor car park in the Project is considered as a potential source of impact. The proposed car park should be located and built-in accordance to the requirements stipulated in ProPECC PN2/96 for the design, maintenance and operation of the ventilation systems to ensure the compliance of the air quality inside car parks with the concentration limits. The exhaust air should be discharged to the atmosphere in such a manner and at such a location as not to cause a nuisance to occupants in the building or of neighbouring buildings, or to the public. Hence, no insurmountable impact on the nearby sensitive receivers is expected.

Noise

8.1.8 Considering the scale of the Proposed Development is small, no significant construction impact is anticipated with proper implementation of the mitigation measures. External noisy fixed plants within 300m from project boundary have been reviewed. No adverse fixed noise impact on the Proposed Development is anticipated.

8.1.9 Limitation of Sound Power Level for building service equipment will be incorporated into the tender document to ensure the fixed noise sources at the Proposed Development will be designed with appropriate mitigation for complying with the relevant criterion. The planned fixed plants should be reviewed during the detailed design stage to ensure compliance with the standard stipulated in the HKPSG.

8.1.10 Traffic noise impact assessment has been conducted based on predicted peak traffic flow (15 years upon the commencement of Project, Year 2046). Under the Base Scenario without mitigation measure, the predicted traffic noise levels for the residential flats of the proposed redevelopment fully comply with the HKPSG traffic noise criteria. As the compliance rate is 100%, no adverse traffic noise impact is anticipated and no further mitigation measures are required.

Water

8.1.11 Potential water quality impact associated with the Proposed Development would be construction site runoff, sewage generated from construction workforce and accidental spillage of chemicals. However, with proper implementation of mitigation measures, the impact on water quality is anticipated to be insignificant.

8.1.12 For operation phase, all sewage and wastewater generated from the Proposed Development will be properly treated by the on-site treatment plant prior to the discharge to the existing stream. All water should be discharged through the public drainage and sewerage system that will be addressed in separated reports (Drainage Impact Assessment and Sewerage Impact Assessment).

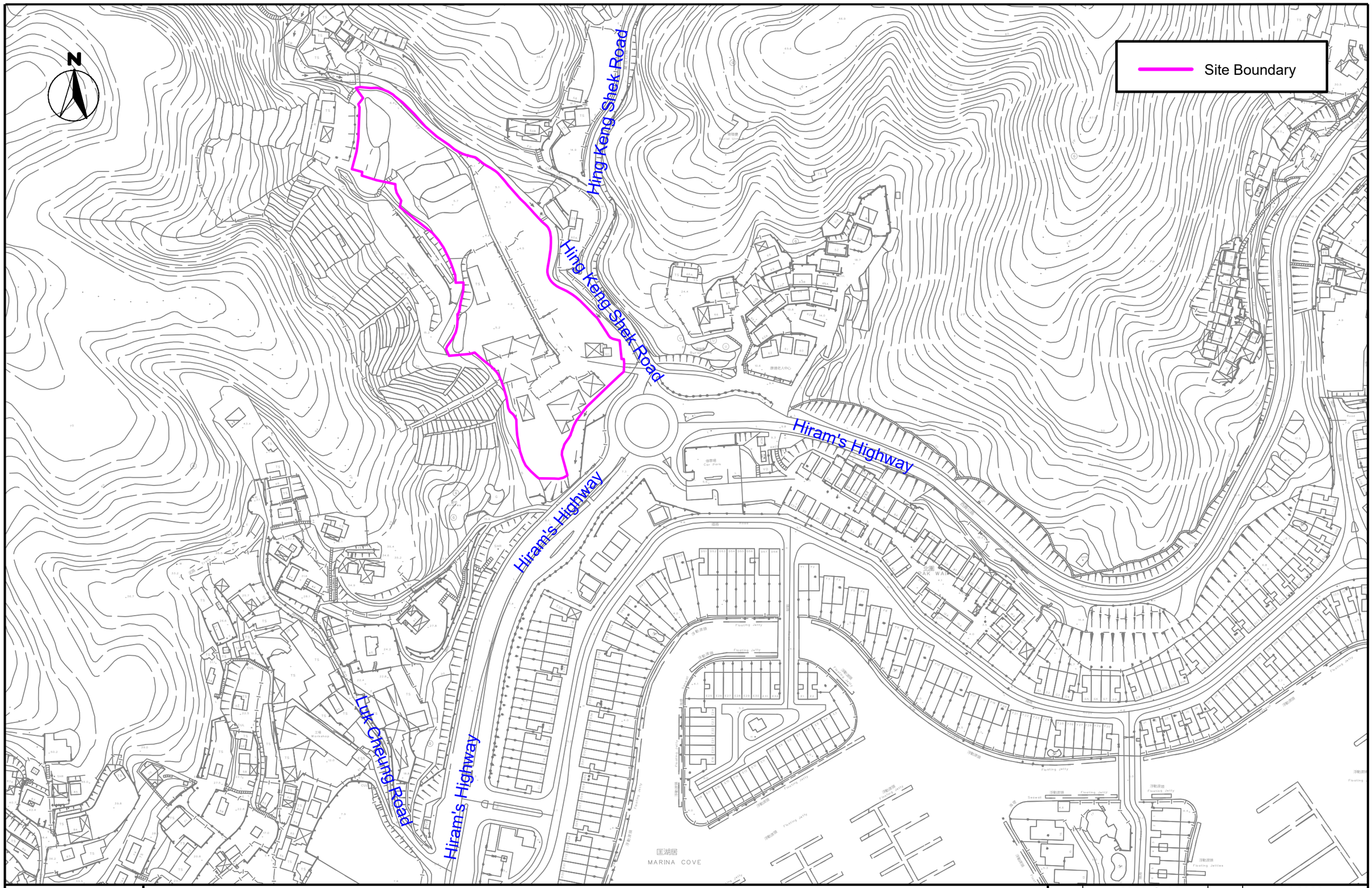
Waste Management

8.1.13 A variety of wastes including inert C&D material, C&D waste, chemical waste and general refuse would be generated during the construction phase and domestic &commercial waste would be generated during operation phase. Provided that the wastes generated would be managed with appropriate measures, no adverse environmental impacts arising from the handling, storage, transportation or disposal of the wastes generated during the construction and operation stage of the Proposed Development would be envisaged.

Land Contamination

8.1.14 Based on the findings of this preliminary site appraisal, the site had primarily been used for commercial horticulture workshops. Although minor vehicle maintenance activities were noted in the desktop study, only vehicle parking was found on the site, and it was located in a well-maintained paved area. Therefore, the potential for land contamination at the site is not anticipated. The need for further studies will be determined at a later stage.

FIGURES

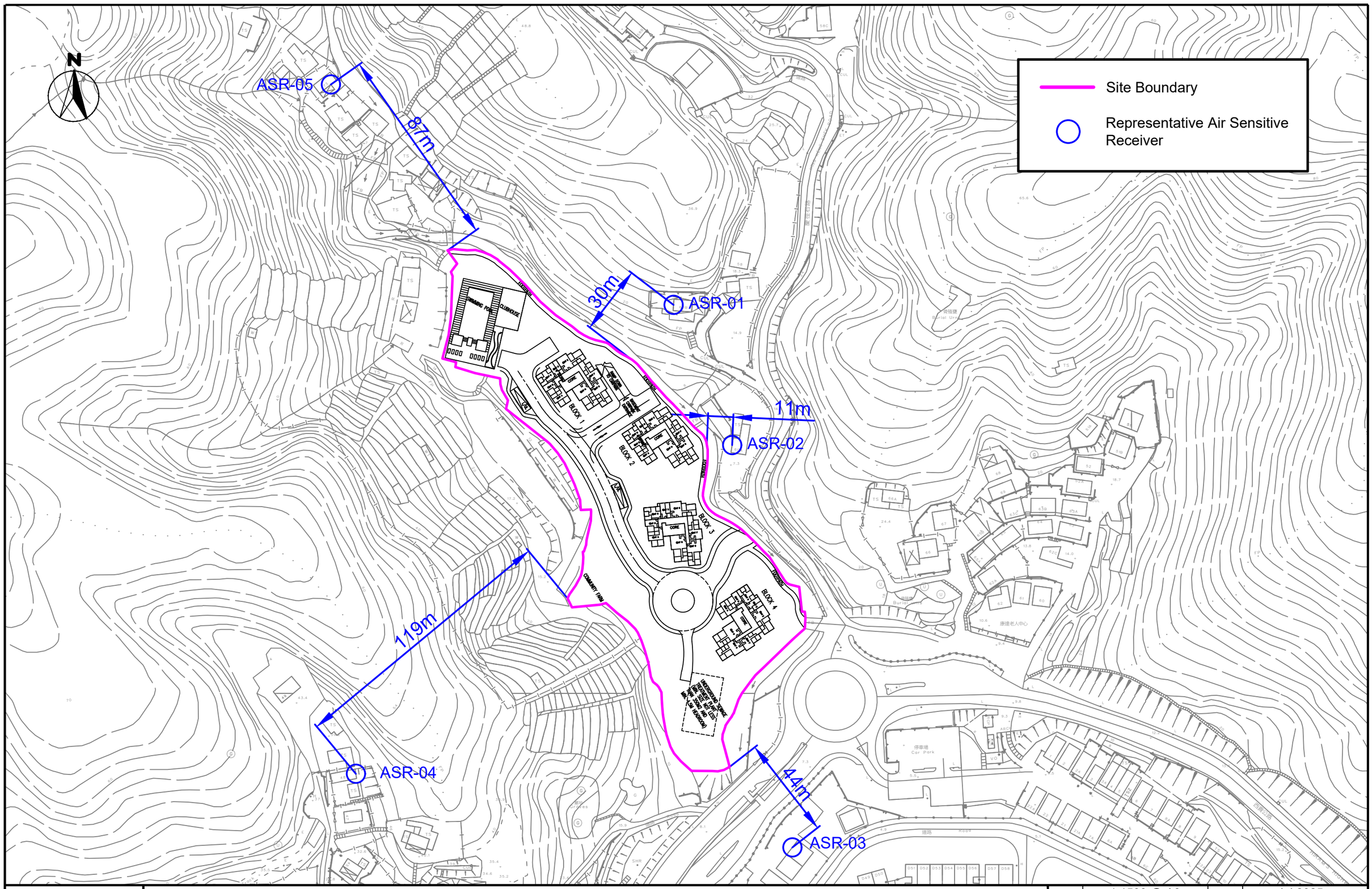


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Site Location Plan

SCALE	1:2000 @ A3	DATE	Jul 2023
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	2-1
		REV	-

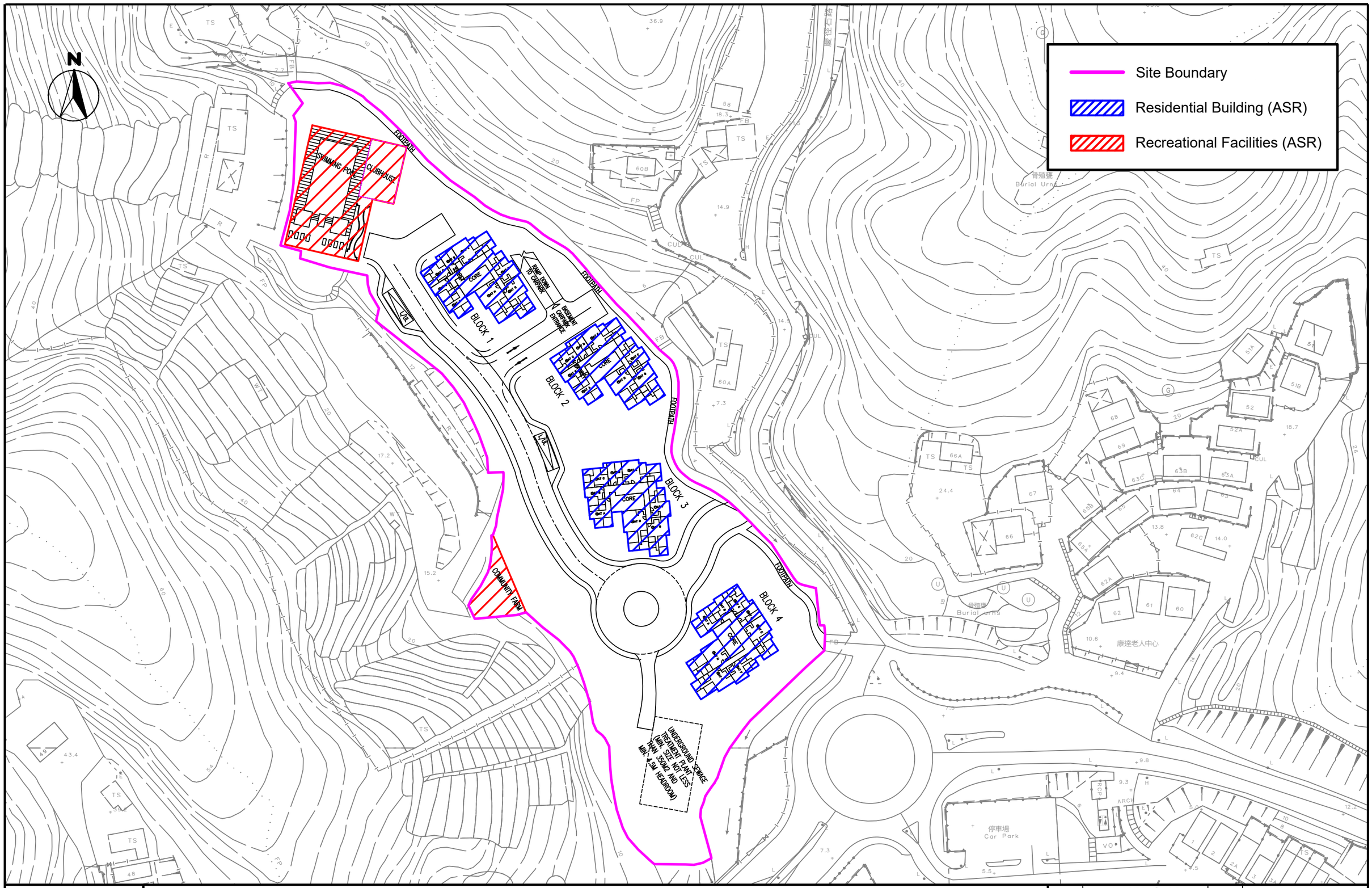


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Representative Air Sensitive Receivers for Construction Phase

SCALE	1:1500 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	3-1
		REV	-

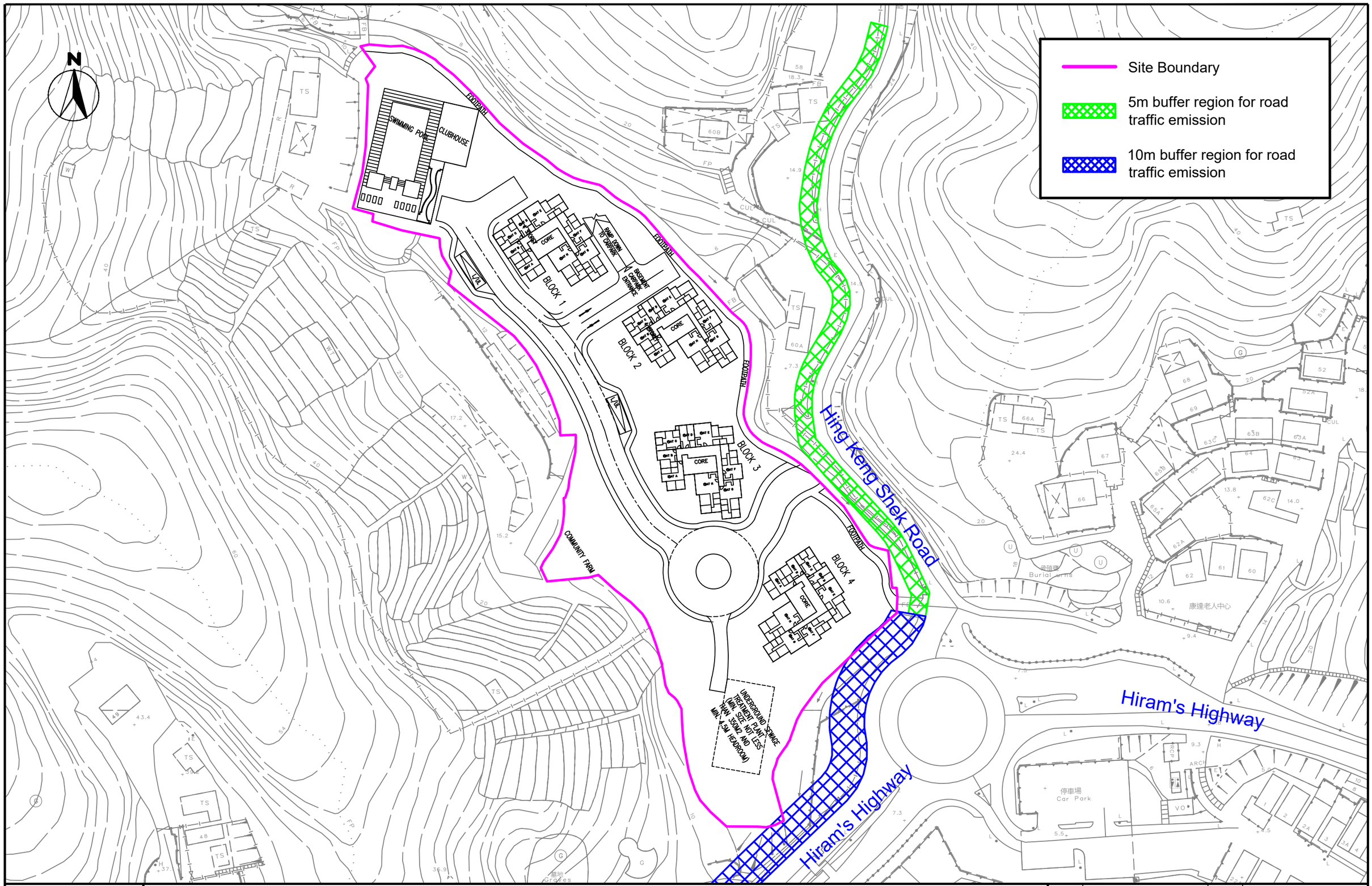


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of Planned ASRs of the Proposed Development

SCALE	1:1000 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	3-2
		REV	-

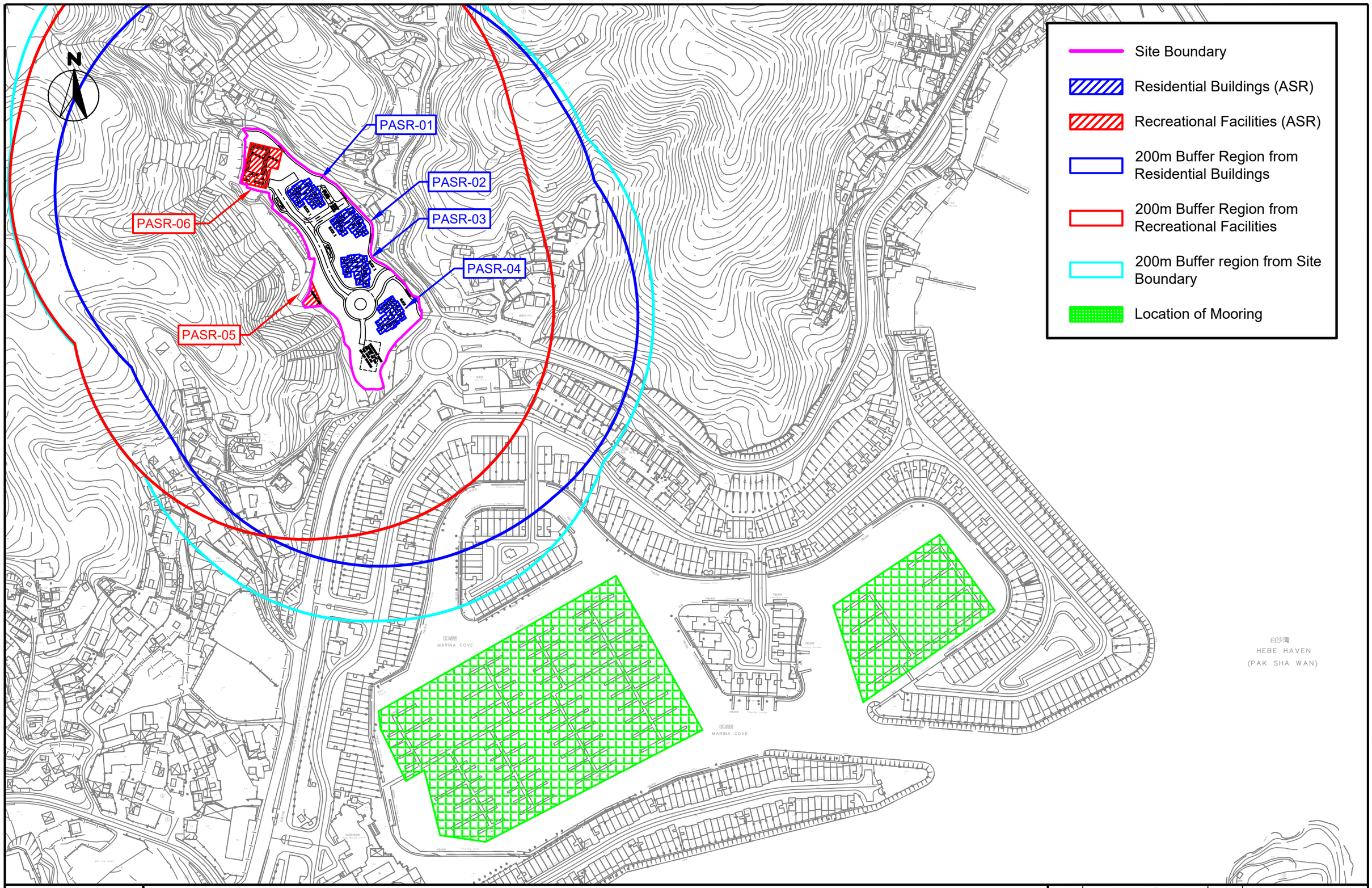


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Buffer Region for Road Traffic Emission

SCALE	1:1000 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	3-3
		REV	-

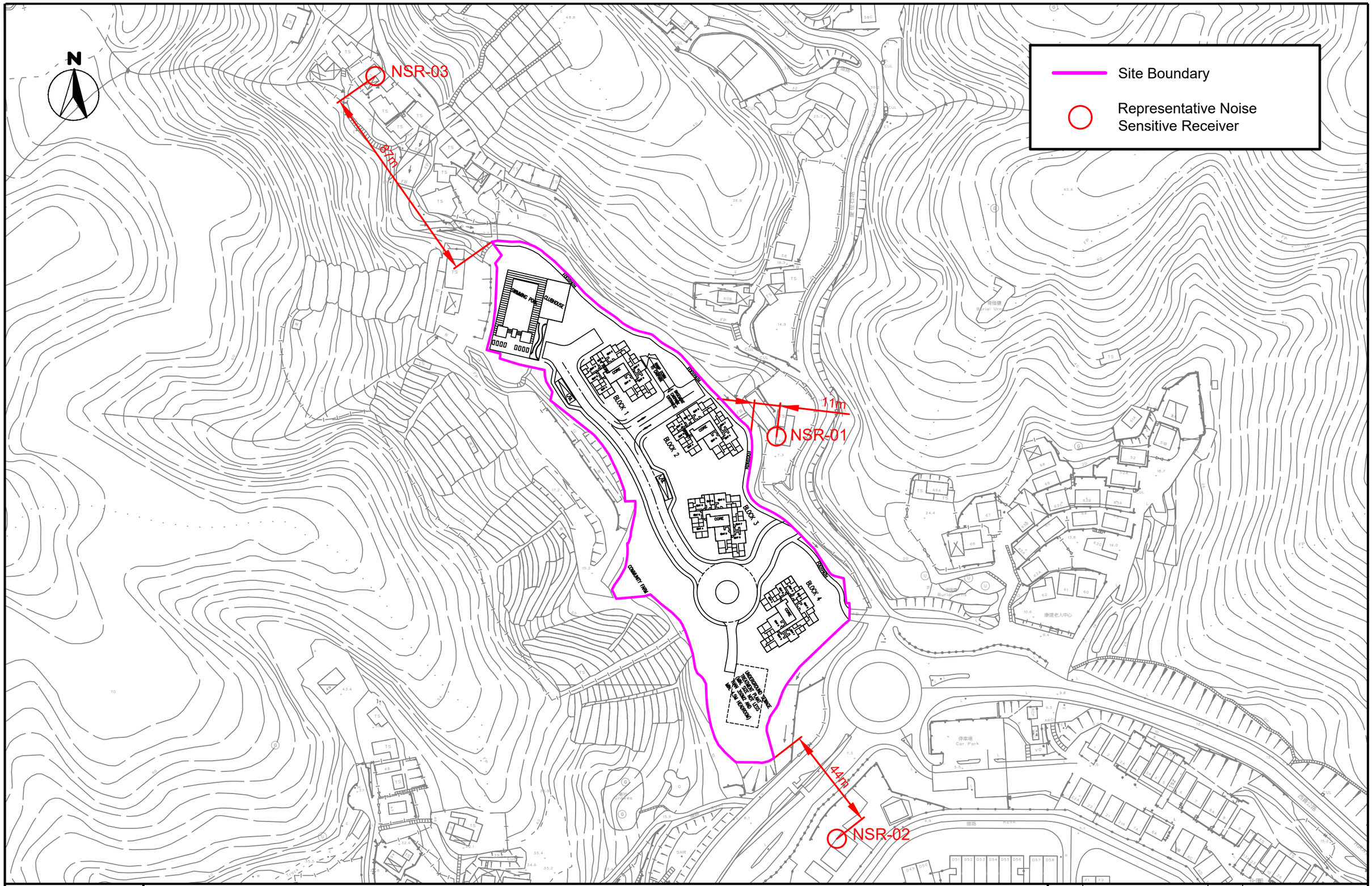


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

200m Buffer Region from Planned ASRs

SCALE	1:2000 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	3-4
		REV	-

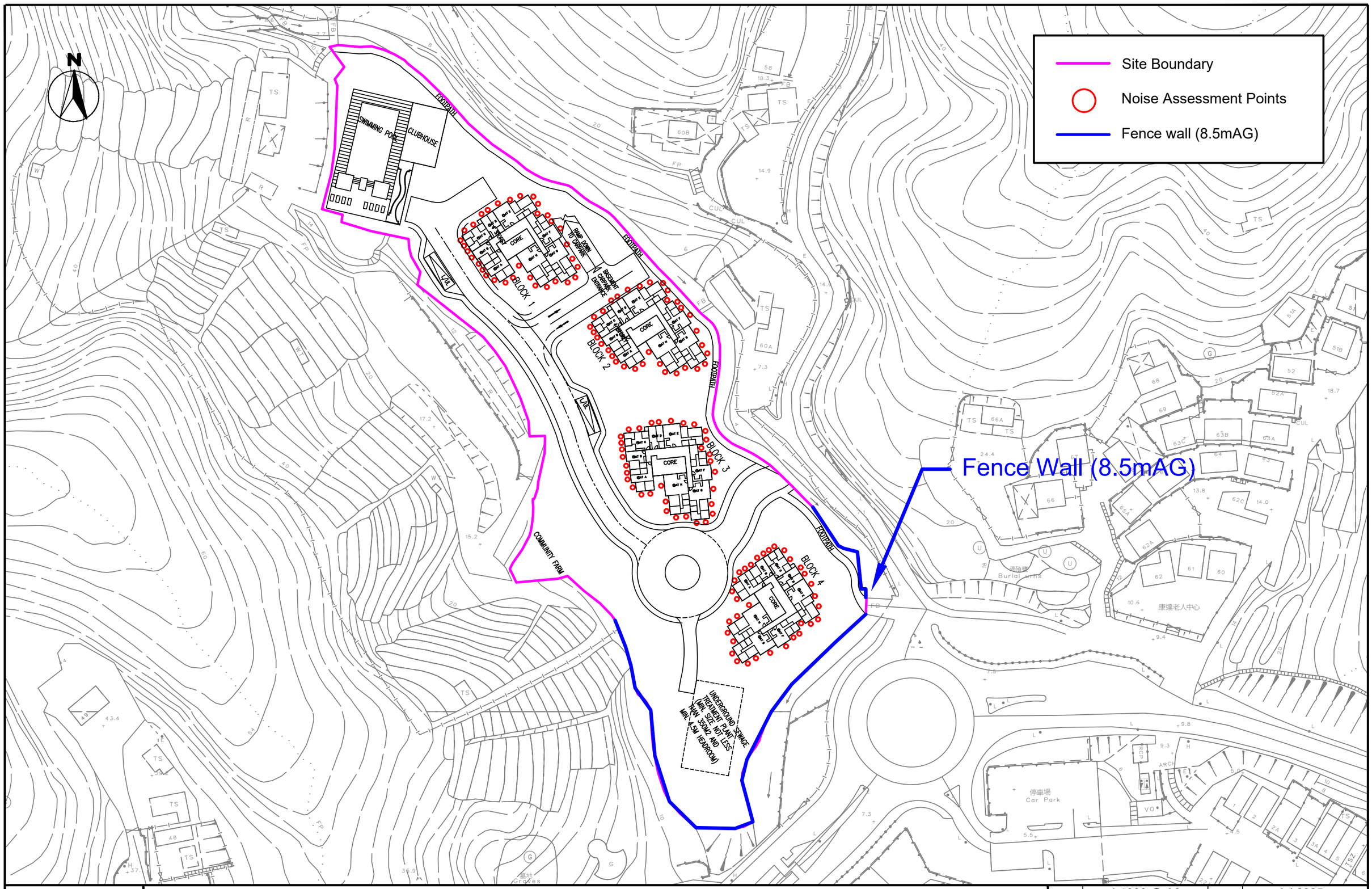


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Representative NSRs in the Vicinity

SCALE	1:1500 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-1
		REV	-

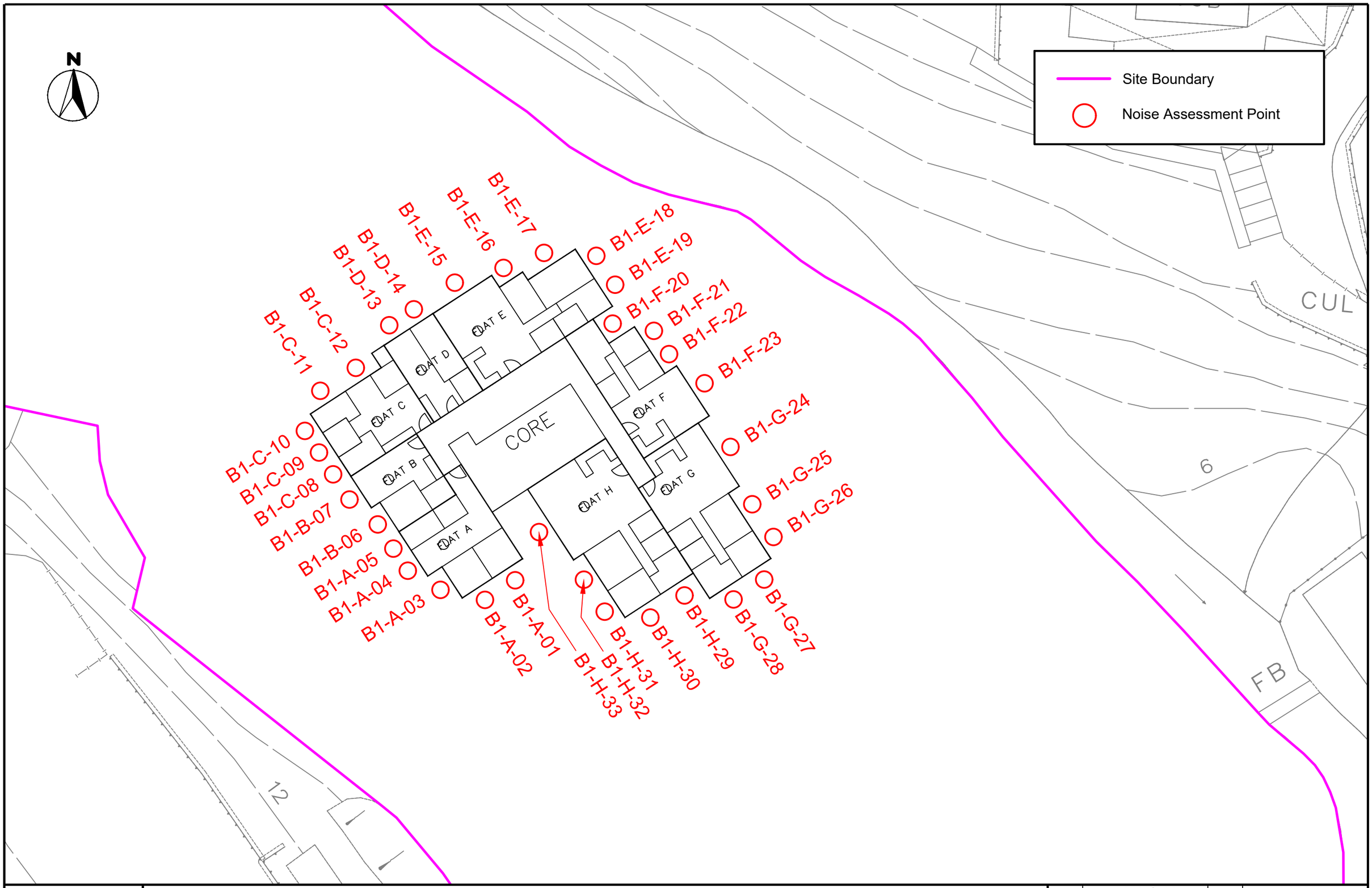


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Assessment Points for Traffic Noise Impact Assessment (Overview)

SCALE	1:1000 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-2a
		REV	-

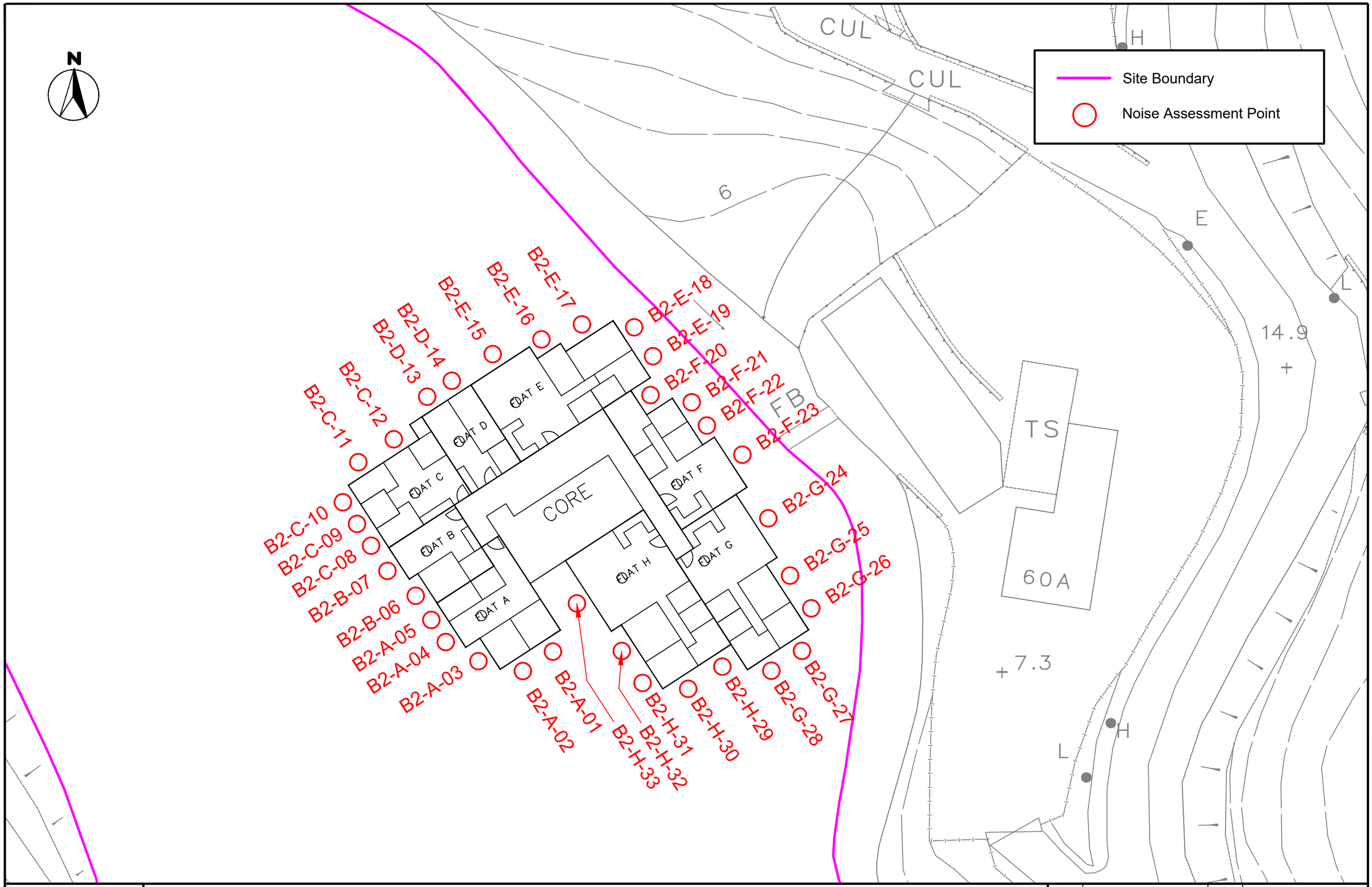


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Assessment Points for Traffic Noise Impact Assessment (Block 1)

SCALE	1:250 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-2b
		REV	-

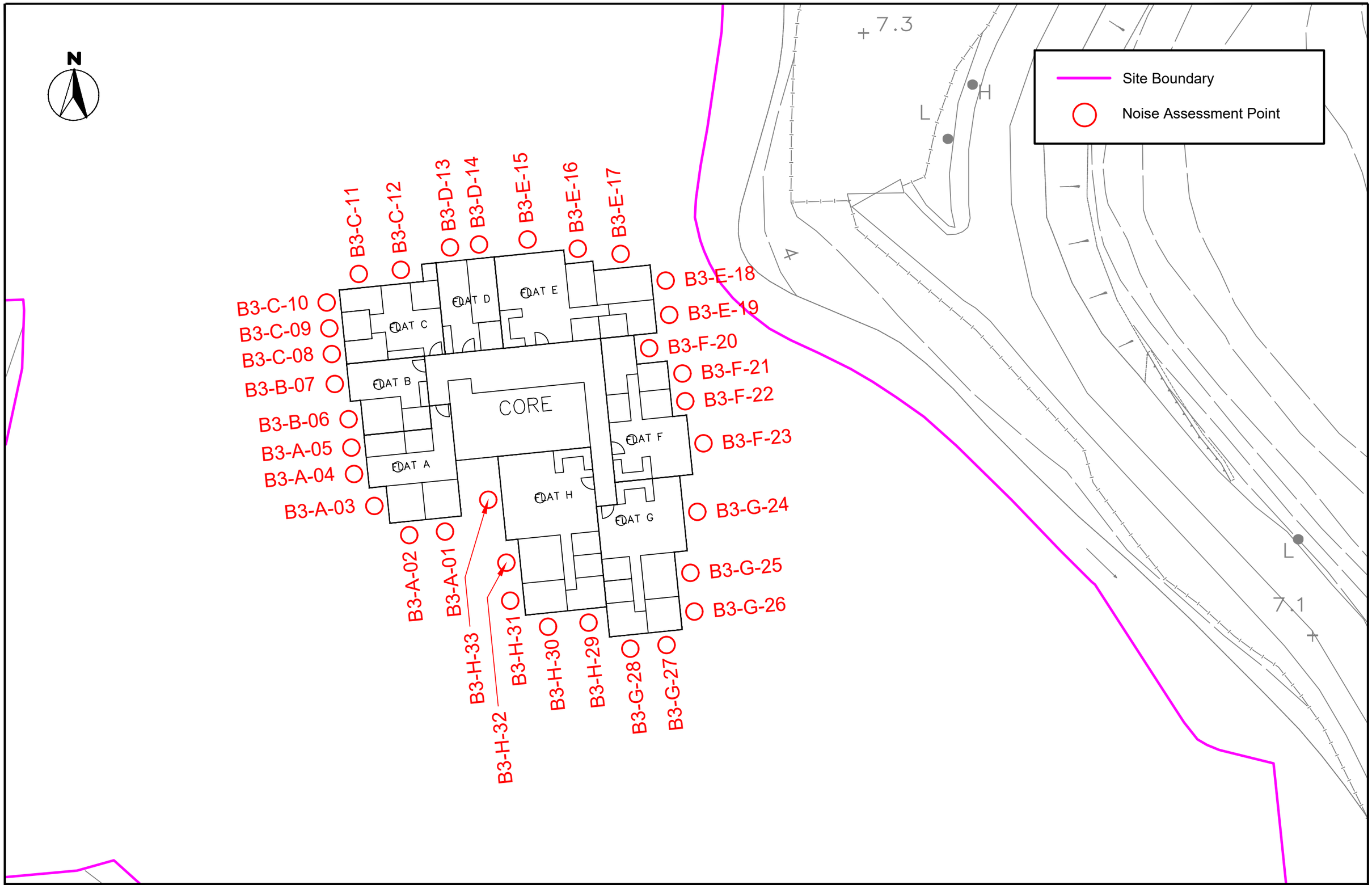


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Assessment Points for Traffic Noise Impact Assessment (Block 2)

SCALE	1:250 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-2c
		REV	-

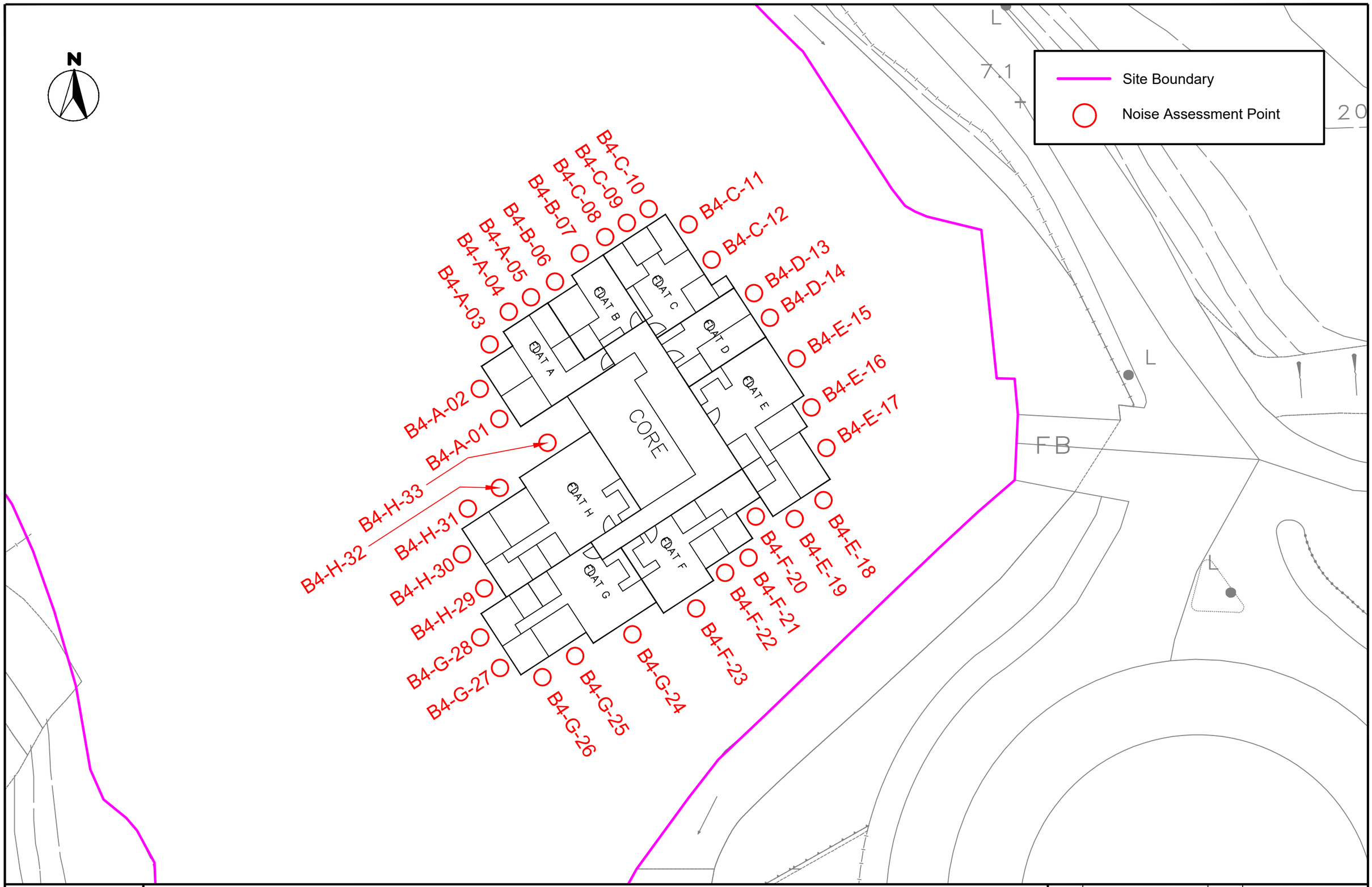


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Assessment Points for Traffic Noise Impact Assessment (Block 3)

SCALE	1:250 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-2d
		REV	-

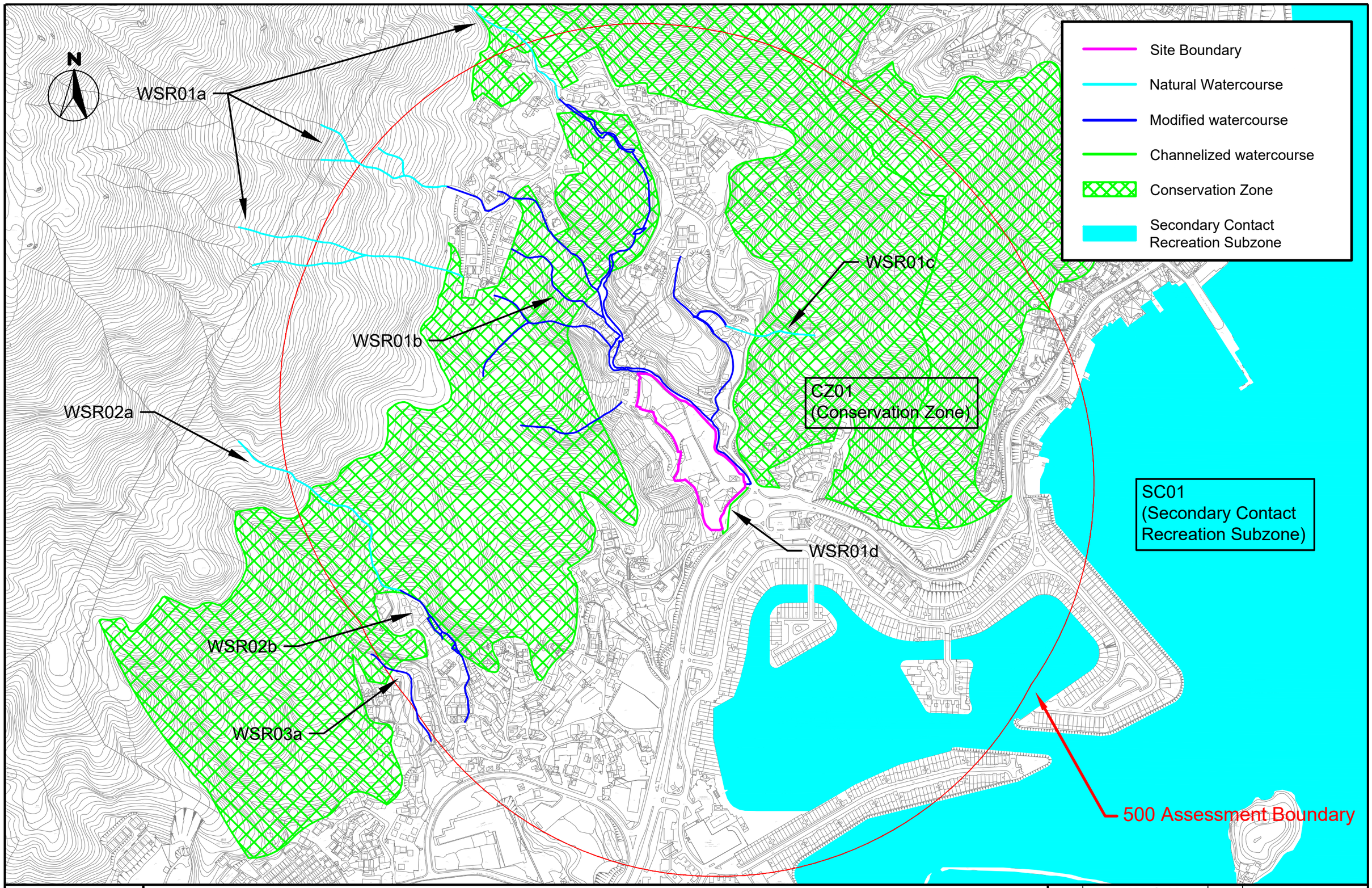


CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of the Assessment Points for Traffic Noise Impact Assessment (Block 4)

SCALE	1:250 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No.	4-2e
		REV	-



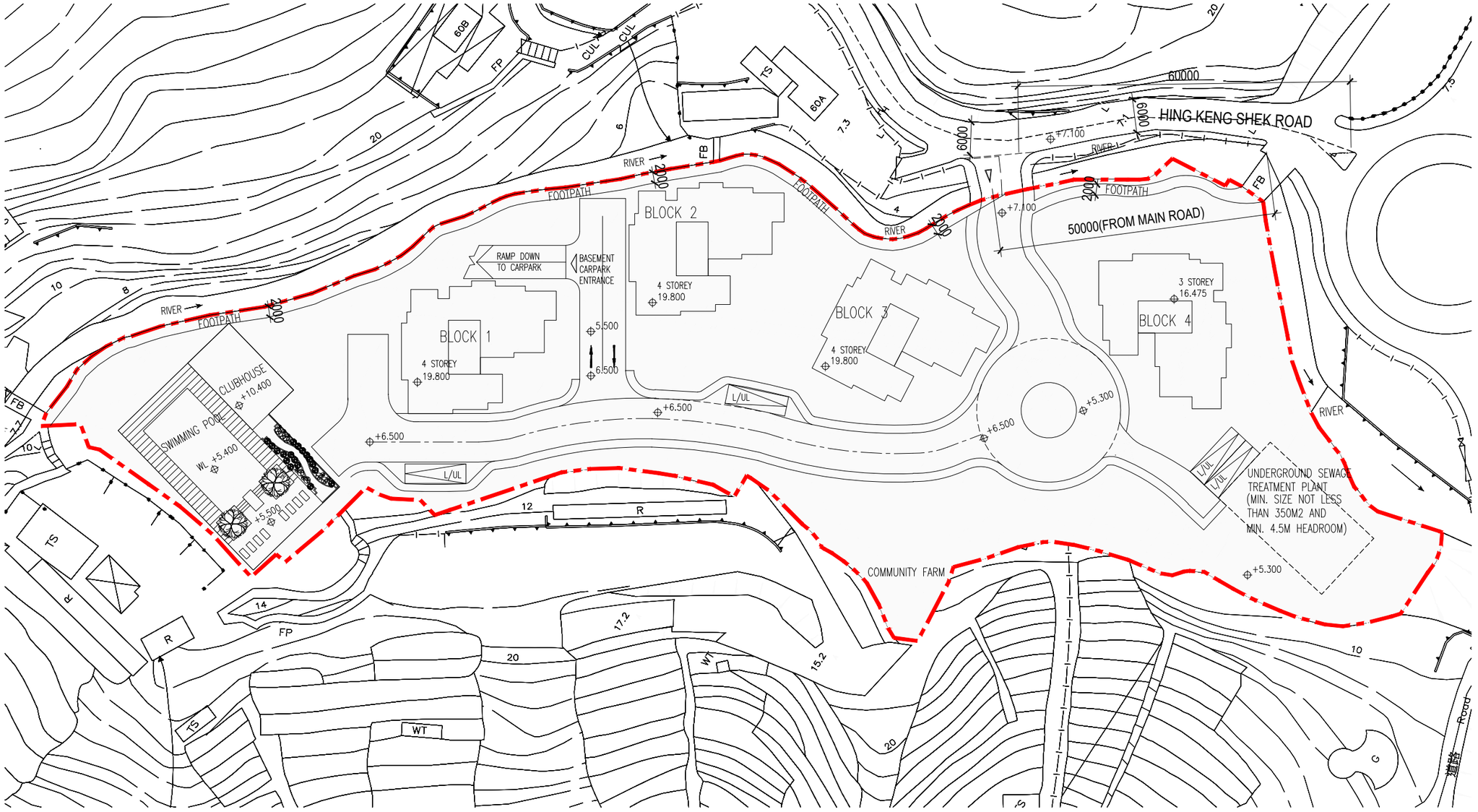
CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Location of Representative WSRs

SCALE	1:5000 @ A3	DATE	Jul 2025
CHECK	CC	DRAWN	LL
JOB No.	--	DRAWING No. 5-1	REV -

APPENDIX 2-1
LAYOUT OF PROPOSED DEVELOPMENT



Rev.	Date	Amendment	Purpose

K & W Architects Ltd.
關黃建築師有限公司

K&W

- This drawing and the contents herein are the copyright of K & W Architects Ltd.
- No part of the drawing and the design contained herein may be reproduced without the prior written consent of a director of K & W Architects Ltd.
- Do not take measurements directly from this drawing.
- Check and verify all dimensions on site.
- Read this drawing in conjunction with the specifications and all other related drawings.
- Notify the Architect immediately of any discrepancy found herein.

Client

Project
Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Drawing Title
MASTER LAYOUT PLAN

Job No.	Drawing No.	Revision No.
D1186	MLP-01	P
Scale	Date	CAD Ref.
1:800	09/06/2025	
Drawn	Checked	Approved
SF	SF	

APPENDIX 3-1
TD'S CONFIRMATION ON ROAD TYPE

[redacted]

From: [redacted]@td.gov.hk>
Sent: Wednesday, December 4, 2024 12:09 PM
To: [redacted]
Cc: [redacted]
Subject: Re: Section 12A Application for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung // Road Classification

Dear [redacted],

I refer to your email dated 29.11.2024.

Please note that Hing Keng Shek Road is not under TD's management. Comments from relevant authorities / parties should be sought. Notwithstanding, we have no objection to the proposed road type of Hing Keng Shek Road.

Regards,
[redacted]
E/SK, TE/NTE, TD
Tel: [redacted]

From: [redacted]
To: [redacted]@td.gov.hk>
Cc: [redacted]
Date: 29/11/2024 03:02 PM
Subject: Section 12A Application for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung // Road Classification

---

Dear [redacted],

We are the traffic consultant of the captioned project.

Regarding the current submission of the Environmental Assessment to the EPD, EPD's comment was received regarding the road type of Hing Keng Shek Road as follow:

EPD's Comment: Please provide the confirmation from Transport Department for the road type of Hing Keng Shek Road.

There is no road classification in Annual Traffic Census Reports for the above road. Meanwhile, Hing Keng Shek Road is connecting to Hiram's Highway. So, we consider that Hing Keng Shek Road shall only have the same classification as Hiram's Highway, which is a "Rural Road", but not a higher hierarchy.

In view of the above, we would like to seek your confirmation on the road type of Hing Keng Shek Road as "Rural Road" and the confirmation will be solely for environmental assessment use.

Should you have any query or require any additional information, please feel free to contact the undersigned or our [redacted] at [redacted].

Thanks & Regards

[redacted]

[redacted]

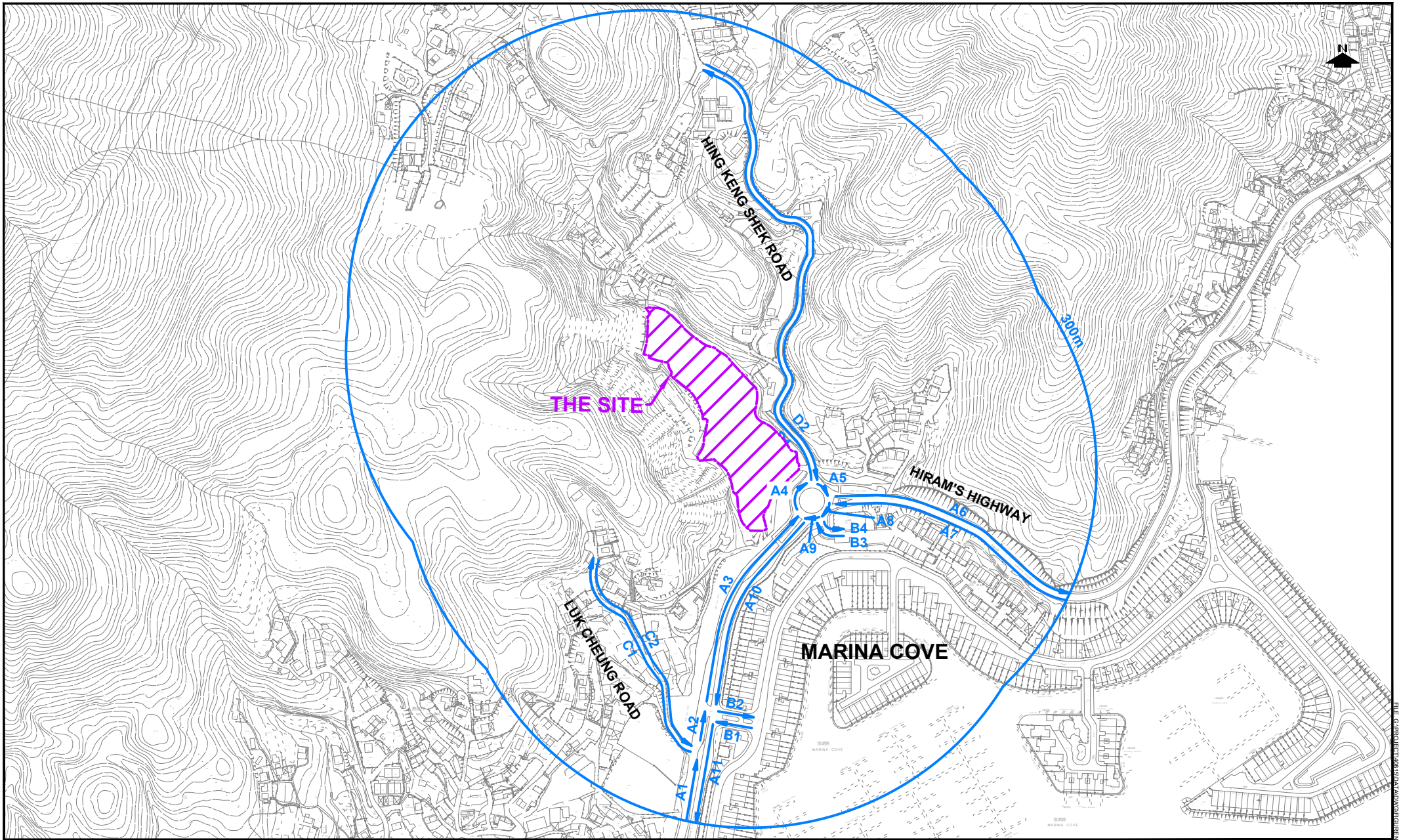
APPENDIX 4-1
ALLOWABLE SOUND POWER LEVEL FOR THE BUILDING SERVICE EQUIPMENT OF THE PROPOSED DEVELOPMENT

Allowable Sound Power Level for the Building Service Equipment of the Proposed Development

Represenative NSR	Time period	Maximum Allowable Sound Pressure Level at NSR, dB(A)	Horizontal Distance (m)	Correction, dB(A)			Maximum Allowable Sound Power Level at Source, dB(A)
				Distance	Façade	Tonality/ Intermittency/ Impulsiveness	
NE façade							
NSR-01	Day and Evening	55	11	29	-3	-6	**75**
	Night	45					**65**
SE façade / Sewage Treatment Plant							
NSR-02	Day and Evening	55	44	41	-3	-6	**87**
	Night	45					**77**
NW façade							
NSR-03	Day and Evening	55	87	47	-3	-6	**93**
	Night	45					**83**

[1] For assessment purpose, a 6dB(A) of Tonality/ Intermittency/ Impulsiveness correction has been adopted.

APPENDIX 4-2
TRAFFIC FORECAST FOR TRAFFIC NOISE IMPACT ASSESSMENT (YEAR 2046)



PROJECT NO. 40815	PROJECT TITLE APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP. 131) TO REZONE THE APPLICATION SITE FROM "GREEN BELT" AND AREA SHOWN AS "ROAD" TO "RESIDENTIAL (GROUP C)5" FOR PROPOSED RESIDENTIAL DEVELOPMENT AT VARIOUS LOTS IN D.D. 210 AND ADJOINING GOVERNMENT LAND, PAK WAI, SAI KUNG	DRAWING NO. FIGURE N1	REV. B
DESIGNED SLN / DATE SEP 2023	DRAWING TITLE ROAD SECTIONS WITHIN 300m OF THE SITE	LLA 顧問有限公司 Consultancy Limited	
DRAWN CLL / SCALE 1:5000			
CHECKED SLN			

FILE: G:\PROJECT\40815\DATA\DWG\FIGUREN1B.DWG PLOT SCALE : 1 = 1

Table 2 2046 Traffic Forecast – AM Peak Hour

No	Road	2046 Project Traffic Flows (veh/hr)	% of Heavy Vehicles
A1	Hiram's Highway	1,100	30%
A2	Hiram's Highway	1,100	30%
A3	Hiram's Highway	1,150	29%
A4	Hiram's Highway	1,200	29%
A5	Hiram's Highway	1,150	31%
A6	Hiram's Highway	1,100	31%
A7	Hiram's Highway	1,350	28%
A8	Hiram's Highway	1,450	28%
A9	Hiram's Highway	1,450	29%
A10	Hiram's Highway	2,550	29%
A11	Hiram's Highway	2,600	29%
B1	Access to Marina Cove	50	12%
B2	Access to Marina Cove	50	9%
B3	Access to Marina Cove	100	11%
B4	Access to Marina Cove	100	9%
C1	Luk Cheung Road	50	23%
C2	Luk Cheung Road	50	15%
D1	Hing Keng Shek Road	100	8%
D2	Hing Keng Shek Road	100	25%

Table 3 2046 Traffic Forecast – PM Peak Hour

No.	Road	2046 Project Traffic Flows (veh/hr)	% of Heavy Vehicles
A1	Hiram's Highway	1,400	21%
A2	Hiram's Highway	1,400	21%
A3	Hiram's Highway	1,400	21%
A4	Hiram's Highway	1,450	21%
A5	Hiram's Highway	1,400	22%
A6	Hiram's Highway	1,350	22%
A7	Hiram's Highway	1,300	22%
A8	Hiram's Highway	1,350	22%
A9	Hiram's Highway	1,300	21%
A10	Hiram's Highway	2,300	21%
A11	Hiram's Highway	2,300	21%
B1	Access to Marina Cove	50	21%
B2	Access to Marina Cove	50	20%
B3	Access to Marina Cove	100	22%
B4	Access to Marina Cove	100	19%
C1	Luk Cheung Road	50	19%
C2	Luk Cheung Road	50	20%
D1	Hing Keng Shek Road	150	8%
D2	Hing Keng Shek Road	50	23%

[redacted]

寄件者: [redacted]
寄件日期: 2024年9月23日星期一 11:24
收件者: [redacted]
副本:
主旨: Re: S12A for Proposed Residential Development at Various Lots in DD210 and Adjoining Government Land, Pak Wai, Sai Kung

郵件標幟: 待處理
標幟狀態: 已標幟

類別: Departmental Comment

Dear [redacted],

I refer to your email dated 17.9.2024.

Please note that the Noise Impact Assessment is not under our purview. We are not in a position to provide comments on the traffic figures tailor-made for the environmental assessment study. Notwithstanding the above, we have no objection in principle to the methodology of traffic forecast provided that the methodology is consistent with the TIA Report submitted in the project.

Regards,

[redacted]
E/SK, TE/NTE, TD
Tel: [redacted]

From: [redacted]
To: [redacted]
Cc: [redacted]
Date: 17/09/2024 03:03 PM
Subject: S12A for Proposed Residential Development at Various Lots in DD210 and Adjoining Government Land, Pak Wai, Sai Kung

---

Dear [redacted],

Thank you for your attached letter on 16 September 2024 indicating that you have no adverse comment on the 2046 traffic forecast for Environmental Assessment.

Based on your suggestion, we reviewed the 2022 annual traffic census data and we would be pleased to provide the following updated Table 4 for your reference.

Table 4 Annual Traffic Census Data

Stn. No.	Road Section			AADT[1]					Average Growth%
	Road	From	To	2018	2019	2020	2021	2022	
5017	Clear Water Bay Rd	On Sau Rd	Hiram's Highway	28,450	28,980↓ (1.9%)	28,900↓ (-0.3%)	29,100↓ (0.7%)	27,720↓ (-4.7%)	-0.6%
5466	Clear Water Bay Rd	Hang Hau Rd	Hiram's Highway	18,950	20,240↓ (6.8%)	19,110↓ (-5.6%)	20,020↓ (4.8%)	19,140↓ (-4.4%)	0.2%
6055	Hiram's Highway	Clear Water Bay Rd	Po Tung Rd	24,450	24,280↓ (-0.7%)	23,360↓ (-3.8%)	24,460↓ (4.7%)	23,480↓ (-4%)	-1.0%
Total				**71,850**	**73,500↓ (2.3%)**	**71,370↓ (-2.9%)**	**73,580↓ (3.1%)**	**70,340↓ (-4.4%)**	**-0.5%**

Note: (1) Figures in bracket indicated the % increase between two years.

The average annual growth rate derived between 2018 to 2022 is **-0.5%** while the rate derived between 2017 to 2021 is **+1.4%**. Therefore, the growth rate of +1.4% adopted in the submitted traffic forecast is considered conservative and acceptable for the exercise.

Based on the above, we would be pleased to have your further comment, if any. Should you have any further query, please feel free to call me at [redacted].

Thanks & Regards

[redacted]

APPENDIX 4-3
PREDICTED TRAFFIC NOISE LEVEL
(BASE SCENARIO)

Predicted Traffic Noise Level for Base Scenario (by Noise Assessment Points)

Block 1																																
NSR ID		B1-A-01	B1-A-02	B1-A-03	B1-A-04	B1-A-05	B1-B-06	B1-B-07	B1-C-08	B1-C-09	B1-C-10	B1-C-11	B1-C-12	B1-D-13	B1-D-14	B1-E-15	B1-E-16	B1-E-17	B1-E-18	B1-E-19	B1-F-20	B1-F-21	B1-F-22	B1-F-23	B1-G-24	B1-G-25	B1-G-26	B1-G-27	B1-G-28	B1-H-29	B1-H-30	B1-H-31	B1-H-32	B1-H-33
Floor	mPD	L10,1hr (dB(A))																														
4	17.69	55.4	57.0	57.6	57.4	54.5	54.1	53.9	53.8	53.7	54.0	53.6	52.9	54.9	55.2	56.1	56.4	57.3	59.7	59.7	58.6	59.9	59.9	60.3	60.3	60.3	61.0	59.5	60.6	55.7	57.2	55.6	54.7	54.3
3	14.36	54.1	56.1	56.9	56.8	53.6	53.2	53.1	53.0	52.9	53.3	53.6	52.9	54.9	55.2	56.1	56.4	57.3	59.5	59.5	58.6	59.6	59.7	59.9	59.9	59.9	60.4	58.8	59.9	53.9	56.1	54.1	53.5	53.3
2	11.03	53.0	55.2	56.2	56.0	52.8	52.4	52.3	52.2	52.1	52.6	53.6	52.9	54.9	55.2	56.1	56.4	57.3	59.3	59.4	58.6	59.5	59.5	59.7	59.7	59.6	60.1	58.3	59.5	52.4	55.2	52.9	52.5	52.3
1	7.70	52.1	54.2	55.1	55.0	52.0	51.7	51.6	51.5	51.4	52.0	53.5	52.9	54.9	55.2	56.1	56.4	57.3	59.2	59.3	58.6	59.4	59.4	59.6	59.6	59.5	59.9	58.0	59.3	51.1	54.6	51.8	51.5	51.4

Block 2																																
NSR ID		B2-A-01	B2-A-02	B2-A-03	B2-A-04	B2-A-05	B2-B-06	B2-B-07	B2-C-08	B2-C-09	B2-C-10	B2-C-11	B2-C-12	B2-D-13	B2-D-14	B2-E-15	B2-E-16	B2-E-17	B2-E-18	B2-E-19	B2-F-20	B2-F-21	B2-F-22	B2-F-23	B2-G-24	B2-G-25	B2-G-26	B2-G-27	B2-G-28	B2-H-29	B2-H-30	B2-H-31	B2-H-32	B2-H-33
Floor	mPD	L10,1hr (dB(A))																														
4	17.69	63.5	63.1	62.4	61.8	56.4	55.9	55.8	55.7	55.5	56.2	56.4	55.3	58.1	58.5	59.3	59.6	60.4	65.6	65.6	61.0	66.3	66.3	66.8	66.8	67.1	67.5	67.4	66.8	65.7	65.8	64.7	58.4	57.6
3	14.36	62.7	62.2	61.5	61.0	54.1	53.8	53.9	53.9	53.8	54.9	56.5	55.3	58.1	58.5	59.3	59.6	60.4	64.6	64.8	60.9	65.7	65.8	66.2	66.3	66.6	67.0	66.9	66.2	65.1	65.2	64.0	56.8	55.9
2	11.03	61.6	61.2	60.5	60.1	51.9	51.7	52.1	52.1	52.1	53.6	56.5	55.3	58.1	58.5	59.3	59.6	60.4	62.9	62.8	60.9	63.6	63.6	64.0	64.0	64.2	64.6	64.5	63.8	63.0	63.7	62.7	55.6	54.6
1	7.70	58.8	58.6	58.2	57.8	50.0	49.9	50.4	50.5	50.5	52.7	56.4	55.3	58.1	58.4	59.3	59.6	60.3	62.2	62.0	60.8	62.8	62.7	63.0	62.9	62.7	62.9	62.4	61.0	59.9	60.5	59.7	54.2	53.2

Block 3																																
NSR ID		B3-A-01	B3-A-02	B3-A-03	B3-A-04	B3-A-05	B3-B-06	B3-B-07	B3-C-08	B3-C-09	B3-C-10	B3-C-11	B3-C-12	B3-D-13	B3-D-14	B3-E-15	B3-E-16	B3-E-17	B3-E-18	B3-E-19	B3-F-20	B3-F-21	B3-F-22	B3-F-23	B3-G-24	B3-G-25	B3-G-26	B3-G-27	B3-G-28	B3-H-29	B3-H-30	B3-H-31	B3-H-32	B3-H-33
Floor	mPD	L10,1hr (dB(A))																														
4	17.69	59.3	59.5	59.0	58.5	57.1	56.2	56.2	55.8	55.7	56.0	55.9	55.7	58.3	58.9	60.9	62.0	63.3	67.5	67.4	65.4	67.3	67.3	67.5	67.0	66.1	65.6	64.0	62.8	60.2	61.9	59.6	57.2	56.5
3	14.36	57.2	57.6	57.2	56.7	55.3	54.3	54.4	54.0	53.7	53.8	54.8	54.5	57.4	58.2	60.2	61.4	62.7	66.9	66.7	64.1	66.1	65.8	65.9	65.7	64.5	63.6	61.4	59.8	57.8	58.7	57.4	55.1	54.5
2	11.03	55.5	55.9	55.5	55.1	53.6	52.5	52.7	52.3	52.0	51.9	53.8	53.6	56.4	57.1	58.9	60.2	61.2	65.9	65.6	62.7	64.8	64.2	64.4	64.5	63.0	61.7	59.5	57.7	55.9	56.6	55.6	53.4	52.8
1	7.70	54.0	54.4	54.0	53.6	52.0	50.8	51.1	50.6	50.3	50.2	52.1	52.0	54.7	55.4	57.2	58.4	59.2	63.9	63.8	60.4	62.8	61.9	62.1	62.5	61.1	59.5	57.3	55.6	54.1	54.8	54.0	51.9	51.4

Block 4																																
NSR ID		B4-A-01	B4-A-02	B4-A-03	B4-A-04	B4-A-05	B4-B-06	B4-B-07	B4-C-08	B4-C-09	B4-C-10	B4-C-11	B4-C-12	B4-D-13	B4-D-14	B4-E-15	B4-E-16	B4-E-17	B4-E-18	B4-E-19	B4-F-20	B4-F-21	B4-F-22	B4-F-23	B4-G-24	B4-G-25	B4-G-26	B4-G-27	B4-G-28	B4-H-29	B4-H-30	B4-H-31	B4-H-32	B4-H-33
Floor	mPD	L10,1hr (dB(A))																														
3	14.36	<40	51.9	58.6	59.1	59.5	59.8	60.5	60.9	61.2	61.4	66.7	66.9	67.5	67.8	68.1	66.7	66.7	68.6	68.4	67.1	68.3	68.2	68.4	67.6	66.9	66.7	64.2	62.6	53.2	58.3	46.4	<40	<40
2	11.03	<40	49.7	58.2	58.7	59.1	59.4	60.1	60.4	60.8	60.9	65.8	66.0	66.7	67.2	67.4	64.5	61.2	61.7	61.5	60.2	61.4	61.4	61.4	61.4	61.3	61.3	60.1	59.0	49.4	55.7	45.5	<40	<40
1	7.70	<40	48.2	57.1	57.5	57.8	58.0	58.4	58.6	58.8	58.8	64.4	64.8	65.6	66.3	66.7	63.5	59.1	58.5	58.2	56.2	57.8	57.8	57.6	57.9	57.9	58.1	57.1	56.3	46.7	53.6	45.2	<40	<40

Predicted Traffic Noise Level for Base Scenario (by flats)

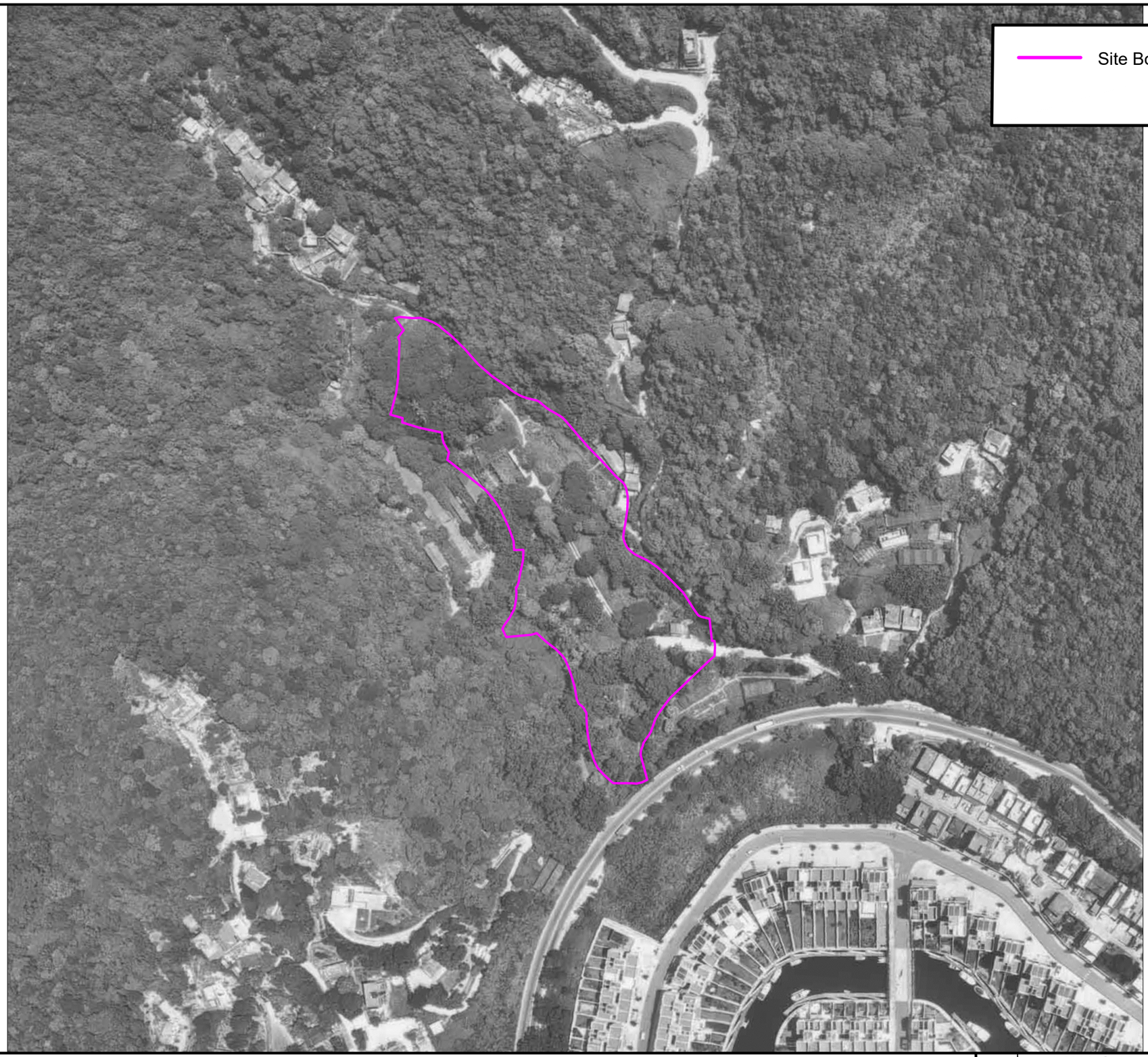
Block 1									
NSR ID		B1-A	B1-B	B1-C	B1-D	B1-E	B1-F	B1-G	B1-H
Floor	mPD	L10,1hr (dB(A))							
4	17.69	57.6	54.1	54.0	55.2	59.7	60.3	61.0	57.2
3	14.36	56.9	53.2	53.6	55.2	59.5	59.9	60.4	56.1
2	11.03	56.2	52.4	53.6	55.2	59.4	59.7	60.1	55.2
1	7.70	55.1	51.7	53.5	55.2	59.3	59.6	59.9	54.6

Block 2									
NSR ID		B2-A	B2-B	B2-C	B2-D	B2-E	B2-F	B2-G	B2-H
Floor	mPD	L10,1hr (dB(A))							
4	17.69	63.5	55.9	56.4	58.5	65.6	66.8	67.5	65.8
3	14.36	62.7	53.9	56.5	58.5	64.8	66.2	67.0	65.2
2	11.03	61.6	52.1	56.5	58.5	62.9	64.0	64.6	63.7
1	7.70	58.8	50.4	56.4	58.4	62.2	63.0	62.9	60.5

Block 3									
NSR ID		B3-A	B3-B	B3-C	B3-D	B3-E	B3-F	B3-G	B3-H
Floor	mPD	L10,1hr (dB(A))							
4	17.69	59.5	56.2	56.0	58.9	67.5	67.5	67.0	61.9
3	14.36	57.6	54.4	54.8	58.2	66.9	66.1	65.7	58.7
2	11.03	55.9	52.7	53.8	57.1	65.9	64.8	64.5	56.6
1	7.70	54.4	51.1	52.1	55.4	63.9	62.8	62.5	54.8

Block 4									
NSR ID		B4-A	B4-B	B4-C	B4-D	B4-E	B4-F	B4-G	B4-H
Floor	mPD	L10,1hr (dB(A))							
3	14.36	59.5	60.5	66.9	67.8	68.6	68.4	67.6	58.3
2	11.03	59.1	60.1	66.0	67.2	67.4	61.4	61.4	55.7
1	7.70	57.8	58.4	64.8	66.3	66.7	57.8	58.1	53.6

APPENDIX 7-1
AERIAL PHOTOS



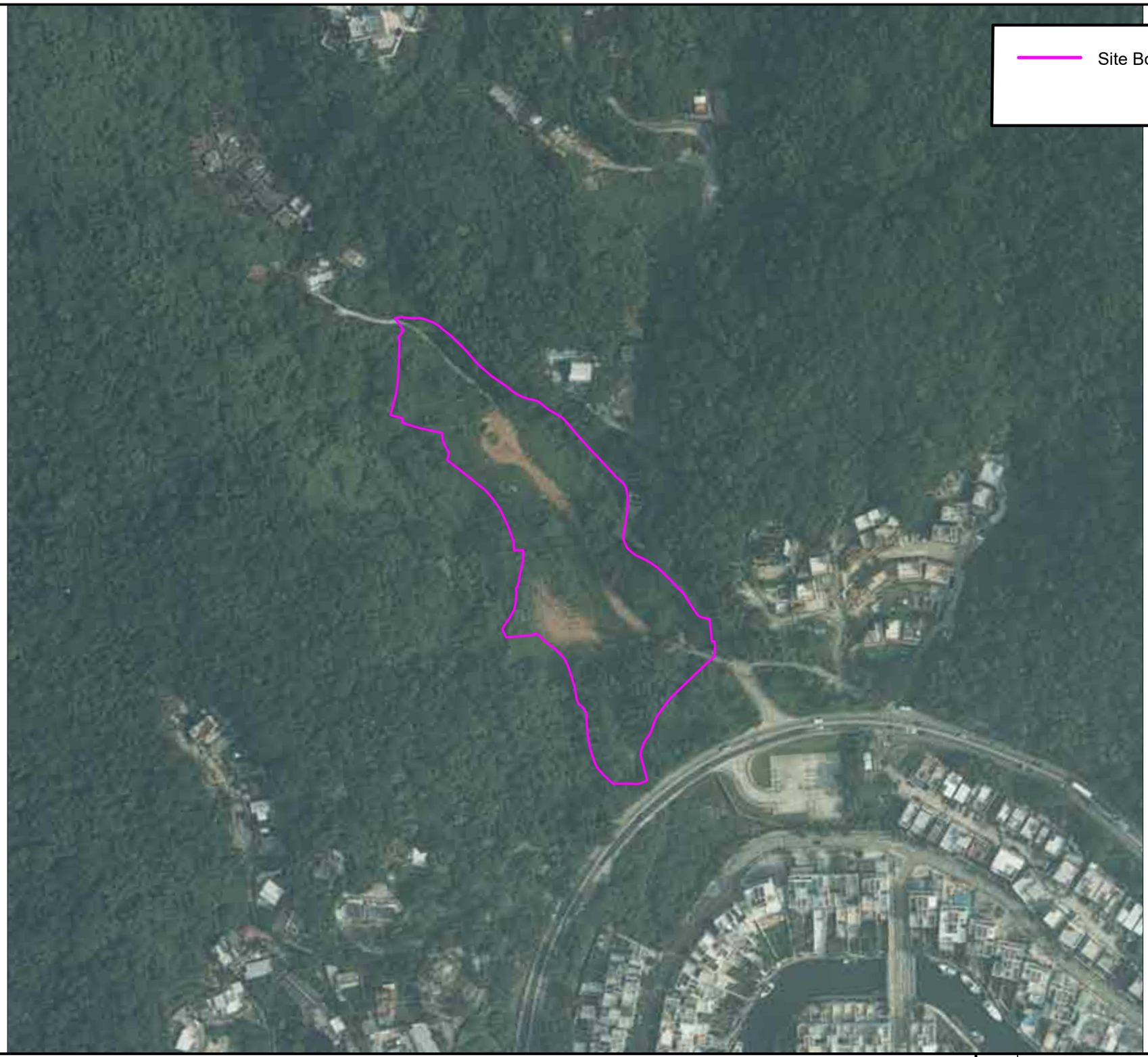
Year: 1990 **Photo no.:** 1990_A21733

Description: The site was mainly covered by flora

CINOTECH
Cinotech Consultants Limited

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N

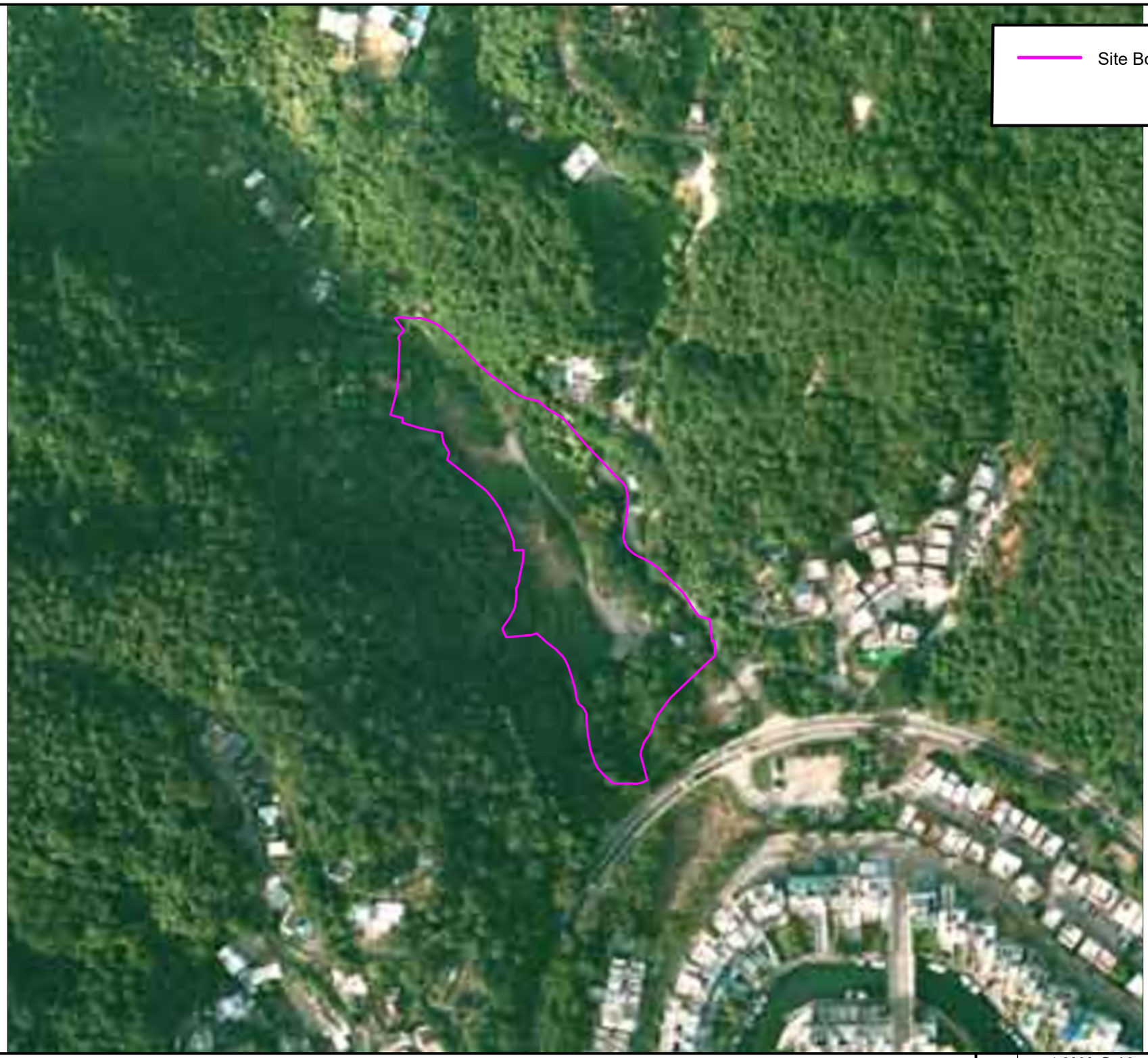


CINOTECH
Cinotech Consultants Limited

Year: 2001 **Photo no.:** 2001_CW32439
Description: The site was primarily covered by flora, with clearances observed in certain areas for pathway development.

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N



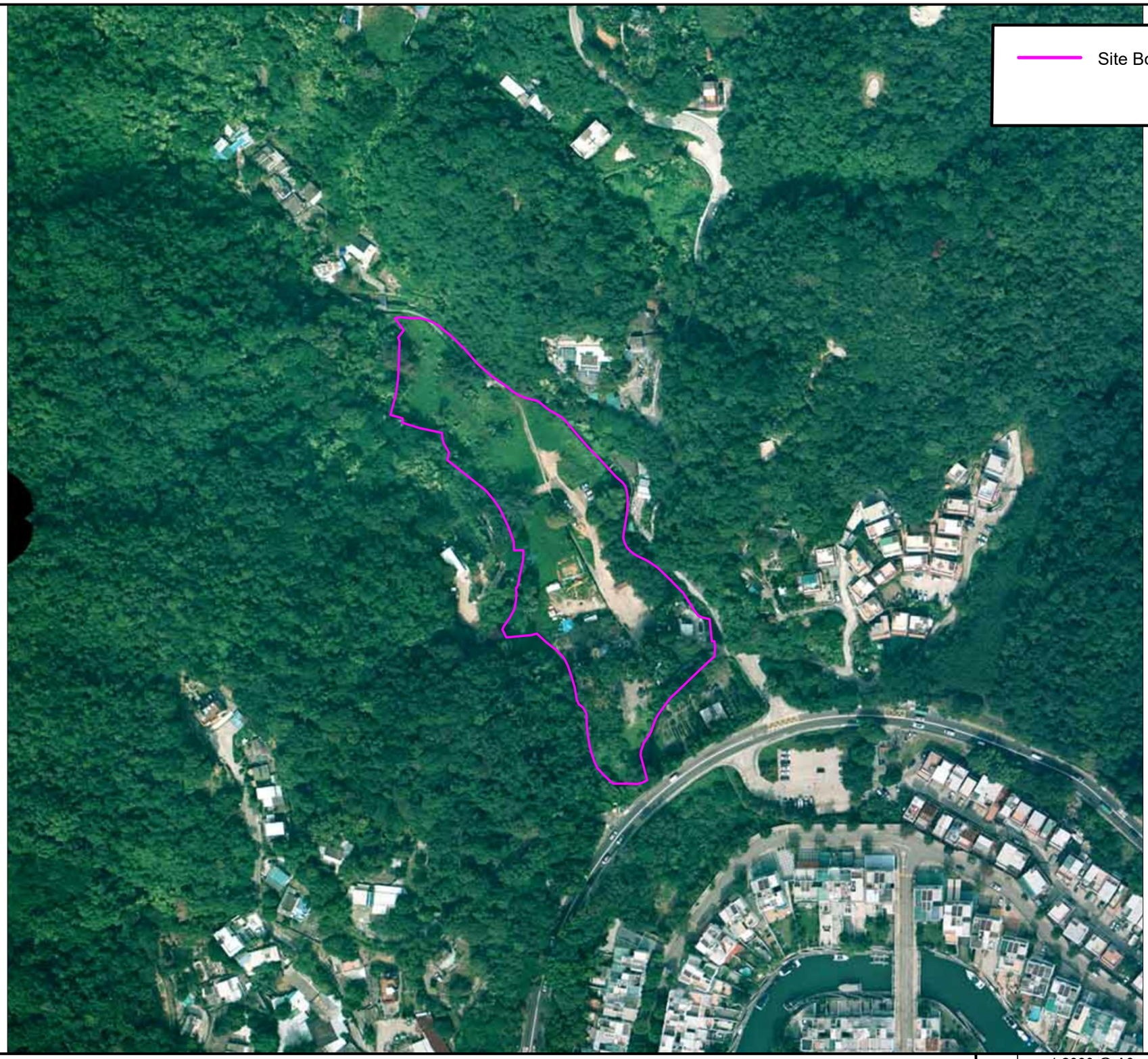
Year: 2007 **Photo no.:** 2007_CW79322

Description: The site was mainly covered by flora and the road development was still ongoing

Cinotech Consultants Limited

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N



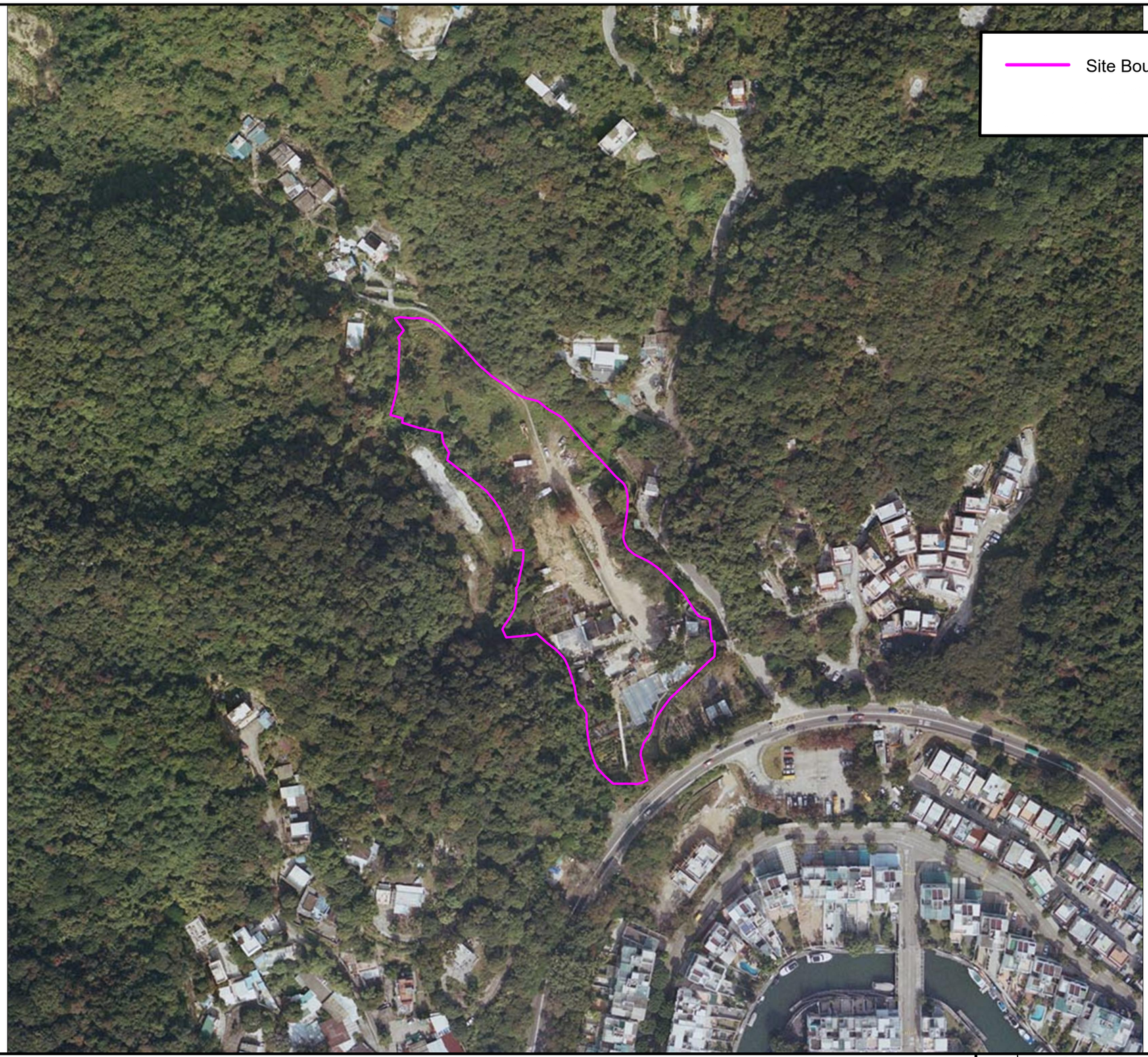
CINOTECH
Cinotech Consultants Limited

Year: 2011 **Photo no.:** 2011_CS35170

Description: More vegetation was removed from the site compared to 2007, and the cleared areas were paved. Some gardening was found just outside the southern boundary of the Site.

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N



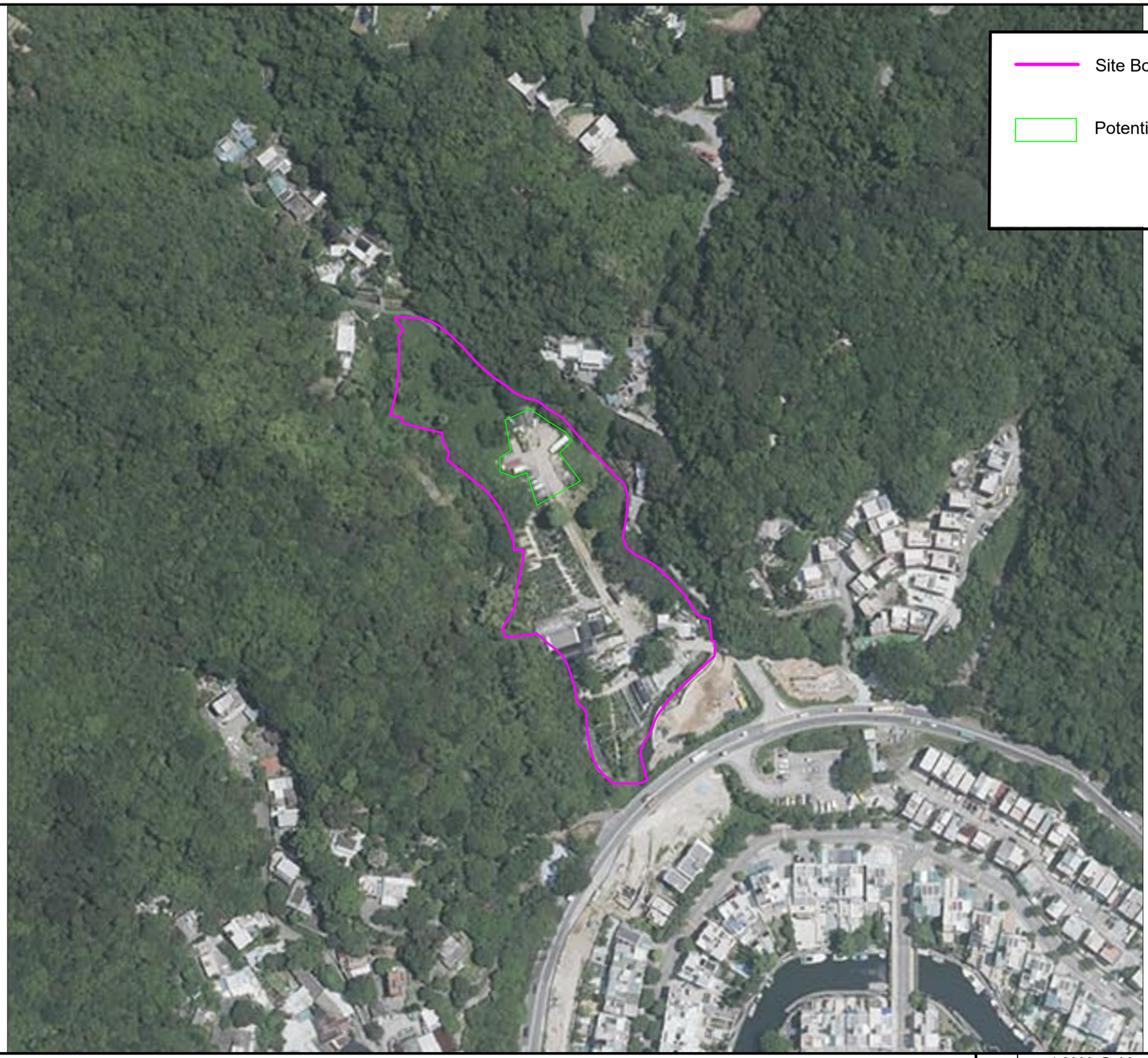
Year: 2015 **Photo no.:** 2015_CS57777

Description: Horticultural activities were recorded, as some greenhouses were observed in the southern part of the Site.

Cinotech Consultants Limited

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N



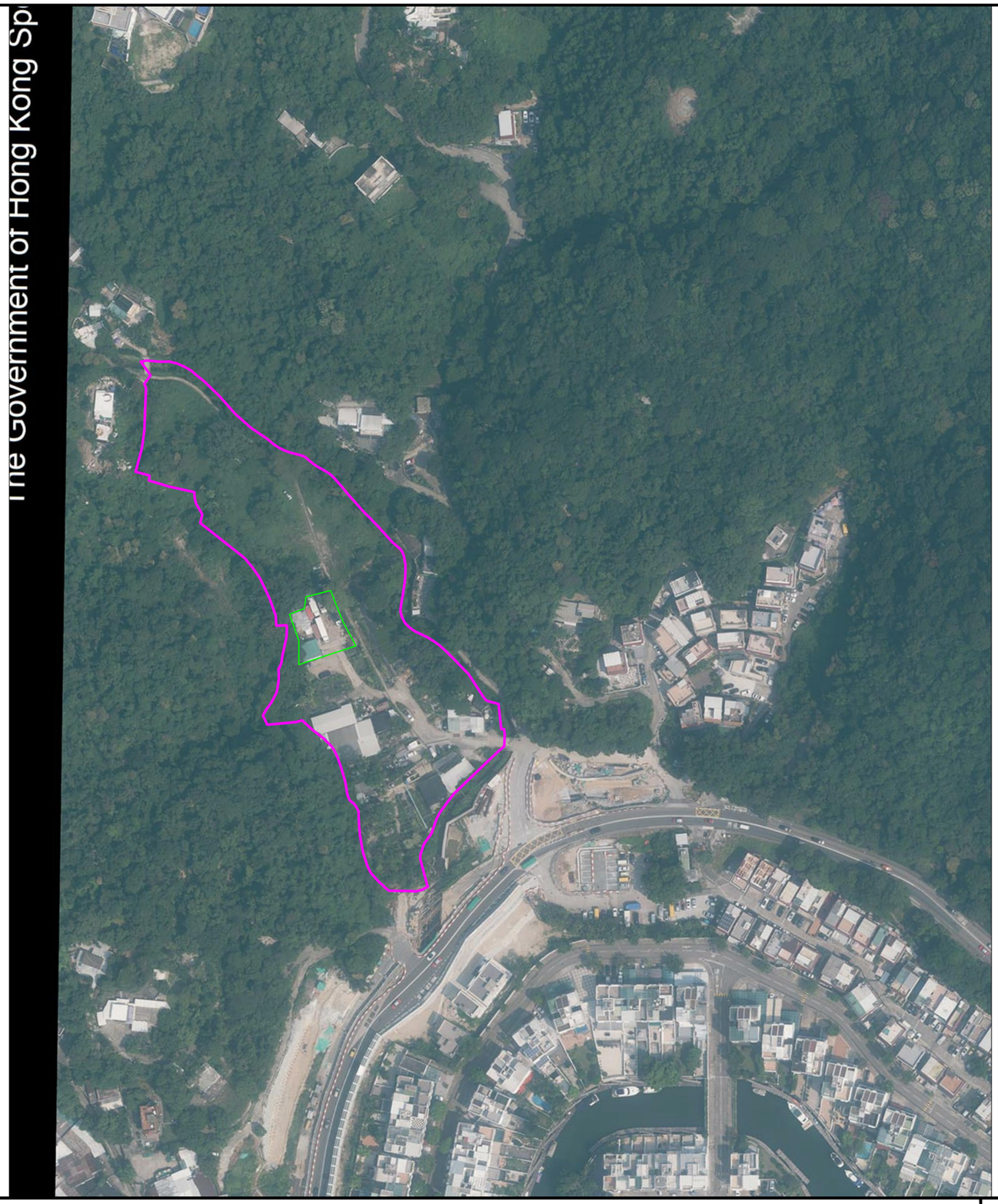
CINOTECH
Cinotech Consultants Limited

Year: 2017 **Photo no.:** 2017_E027214C

Description: Horticultural activities were recorded, as some greenhouses were observed in the southern part of the Site. Some vehicles were also parked in the northern part (Circled in green) of the Site.

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

N



Site Boundary

Potentially contaminated area

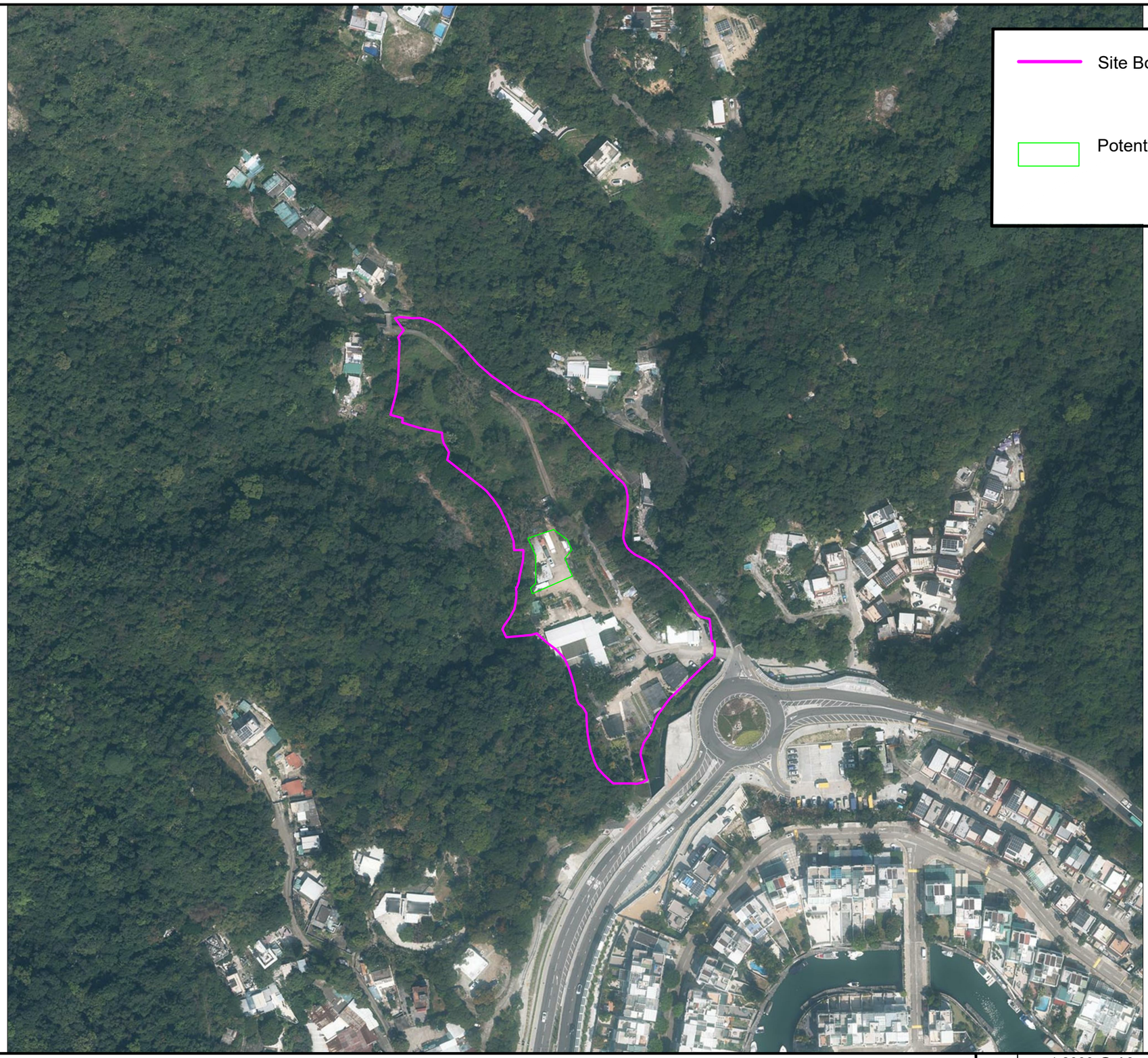
CINOTECH
Cinotech Consultants Limited

Year: 2019 **Photo no.:** 2019_E068815C

Description: No major changes were observed. Road development works in the south of the Site were in progress.

SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No. Appendix 7-1	REV -

N



Year: 2023 **Photo no.:** 2023_E194257C

Description: No major change was observed on the Site, while the construction of the roundabout next to the it was completed.

CINOTECH
Cinotech Consultants Limited

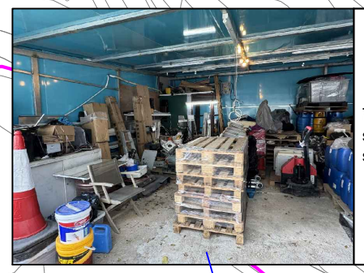
SCALE	1:2000 @ A3	DATE	17 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-1
		REV	-

APPENDIX 7-2
PHOTO RECORD FOR SITE WALKOVER

N

Site Boundary

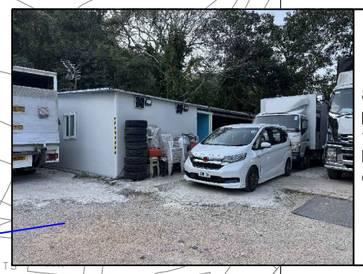
Potentially contaminated area



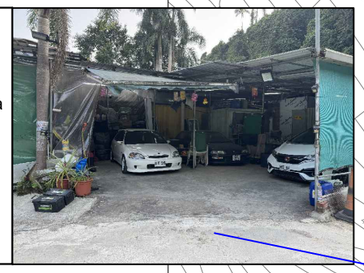
7. Temporary structure for storage use.

9. Temporary storage area of construction materials inside the assessment site.

6. Plant products for commercial use.



8. Another parking area of the landscaping company.

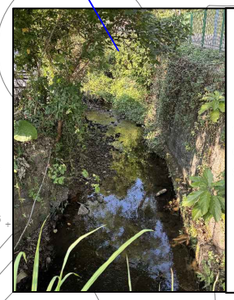


5. Parking area of the landscaping company

2. Forklift was used by the landscaping company.

4. Substrates which were used and stored.

3. Potted plants which were grown by the landscaping company.



1. Nullah at the entrance of the site

CINOTECH
Cinotech Consultants Limited

Application for Amendment of Plan under Section 12A of the Town Planning Ordinance (Cap. 131) to Rezone the Application Site from "Green Belt" and Area Shown as "Road" to "Residential (Group C)5" for Proposed Residential Development at Various Lots in D.D. 210 and Adjoining Government Land, Pak Wai, Sai Kung

Photo record for site-walkover

SCALE	1:1000 @ A3	DATE	31 December 2024
CHECK	KC	DRAWN	TC
JOB No.	IA24143	DRAWING No.	Appendix 7-2
		REV	-