

Appendix 5

Air Quality Impact Assessment

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Air Quality Impact Assessment

For

Amendment of Plan to

**Rezone from “Residential (Group D)” (“R(D)”), “Residential (Group E)”
 (“R(E)” and an area shown as ‘Road’
 to “Residential (Group C)3) (“R(C)3”**

**on the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11
 at Various Lots in Demarcation District 210 and Demarcation District 244
 and Adjoining Government land
 Ho Chung, Sai Kung, New Territories, Hong Kong**

**Prepared by: Prudential Surveyors International Limited
 Version: A
 Date: August 2023**

TABLE OF CONTENT

1. Introduction	4
2. Site Description	4
2.1 Site and its Surroundings	4
2.2 Proposed Development	5
3. Background Air Quality	5
3.1 Air Quality Legislations, Standards & Guidelines	5
3.2 Air Sensitive Receivers (ASRs).....	7
3.3 Existing Air Environment	7
3.4 Air Quality Monitoring	7
3.5 Findings and Discussion	8
4. Conclusion	11

List of Figures

Figure 1.1	Location Plan
Figure 2.1	Site Surroundings
Figure 3.1	Block Plan
Figure 3.2	Buffer Zone for the Proposed Development

List of Tables

Table 2.1	Proposed GFA of Houses
Table 3.1	Hong Kong Air Quality Objectives
Table 3.2	Guidelines on Usage of Open Space Site (Table 3.1 of HKPSG Ch.9)
Table 3.3	EPD Air Quality Monitoring Record at Tseung Kwan O Station in 2022

List of Appendix

Appendix A	Email from Transport Department (TD) on confirmation of road type
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1. Introduction

- 1.1.1 This Air Quality Assessment is to support a planning permission from the Town Planning Board (TPB) under Section 12A of the Town Planning Ordinance (CAP. 131) for a proposed rezone of the Subject Site from “Residential (Group D)” (“R(D)”), “Residential (Group E)” (“R(E)” and an area shown as ‘Road’ to “Residential (Group C)3” (“R(C)3” within various lots within DD210 and DD244 and adjoining government land in Ho Chung, Sai Kung, New Territories. The application Site (**the Site**) is composed of 3 parcels, namely Parcel A, B and C. [refer to **Figure 1.1**]
- 1.1.2 The owner of the application site has the intention to construct six individual houses with twelve car parking spaces in Parcel A and B of the Site and two individual house with four car parking spaces in Parcel C of the Site.

2. Site Description

2.1 Site and its Surroundings

A site visit was carried out on 6th July 2023, per the observations from the site visit, the Site is surrounded by rural dwellings, vehicle workshops, light industry, vegetation, former ATV Production Centre (abandoned), Che Kung Temple, residential developments, refuse collection point and New Territories Exempted Houses (NTEHs). The details of the planned context and the current context of the surroundings are as follows [refer to **Figure 2.1**]: -

Planned Context

- to the north east of the Site are 15 planned houses with valid planning permission until 16.04.2025;
- to the far south of the Site are 48 planned houses with valid planning permission until 9.6.2027;

Current Context

- to the north of the Site are some 2- and 3-storey rural dwellings;
- to the east of the Site is some vehicle repair workshops and other light industry uses in rural industrial setting;
- to the southeast of the Site is an area zoned “Green Belt” (“GB”) under the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11 (the OZP) with rich vegetation;
- to the further south is the former ATV Production Centre (abandoned) and Che Kung Temple;
- to the distance south (about 500 metres) are the residential developments of Dynasty Lodge (34 houses) and Villa Royale (10 blocks with 30 units);
- to the west of the Site is a refuse collection point (RCP) and vehicle repair workshops; and
- to the further west is Luk Mei Village with a mixture of traditional single-storey village dwellings and modern 3-storey New Territories Exempted Houses (NTEHs).

2.1.1 Apart from residential buildings, there are scattered structures in the vicinity of the Site intended primarily for industrial uses including an unnamed warehouse, a motor repair workshop (Bayview Motors Company), a food factory under Koon Yick Food Manufacturing Company (冠益華記食品廠) (“Koon Yick”).

2.2 Proposed Development

2.2.1 The proposed development (the Proposed Development) is to erect six individual houses in Parcel A and B of the Site and two individual house in Parcel C of the Site. The proposed gross floor area (GFA) of the houses are summarised in Table 2.1.

Propose House	Gross Floor Area (GFA) (sqm) (about)
House 1	283.35
House 2	283.35
House 3	283.35
House 4	283.35
House 5	283.35
House 6	283.35
House 7	345.75
House 8	345.75
Total	2,391.6
Average	298.95

Table 2.1 Proposed GFA of Houses

3. Background Air Quality

3.1 Air Quality Legislations, Standards & Guidelines

3.1.1 This Air Quality Impact Assessment were made reference to the Hong Kong Planning Standards and Guidelines (HKPSG) and the Air Pollution Control Ordinance (Cap. 311) (APCO).

Air Pollution Control Ordinance (APCO)

3.1.2 The Air Pollution Control Ordinance (APCO) provides the statutory authority for controlling air pollutants from a variety of sources. The Hong Kong Air Quality Objectives (AQOs) stipulate the statutory limits of air pollutants and the maximum allowable numbers of exceedance over specific periods should be met. With passage of the Air Pollution Control (Amendment) Ordinance 2013 by the Legislative Council on 10 July 2013, the AQOs listed in Table 3.1 have been effective since 1 January 2014.

Pollutant	Averaging time	Concentration limit[1] ($\mu\text{g}/\text{m}^3$)	Allowable number of exceedances
Sulphur Dioxide (SO ₂)	10-minute	500	3
	24-hour	125	3
Respirable Suspended Particulates (RSP)(PM ₁₀) [2]	24-hour	100	9
	Annual	50	Not Applicable
Fine Suspended Particulates (FSP)(PM _{2.5}) [3]	24-hour	75	9
	Annual	35	Not Applicable
Nitrogen Dioxide (NO ₂)	1-hour	200	18
	Annual	40	Not Applicable
Ozone (O ₃)	8-hour	160	9
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Lead (Pb)	Annual	0.5	Not Applicable

Table 3.1 Hong Kong Air Quality Objectives

Notes:

[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 293 Kelvin and a reference pressure of 101.325 kilopascal.

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

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

Hong Kong Planning Standards & Guidelines (HKPSG)

3.1.3 Chapter 9 of The Hong Kong Planning Standards & Guidelines (HKPSG) provides guidance for environmental considerations in the planning application of both private and public sectors.

3.1.4 The minimum buffer distance from the emission sources are recommended by the HKPSG and are summarised in Table 3.2.

Polluting Source	Parameter	Buffer Distance [1]	Permitted Uses
Road and Highways	<i>Type of Road</i>		
	Trunk Road and Primary Distributor	> 20m	Active and passive recreation uses
		3 - 20m	Passive recreational uses
		< 3m	Amenity areas
	District Distributor	> 10m	Active and passive 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	

Table 3.2 Guidelines on Usage of Open Space Site (Table 3.1 of HKPSG Ch.9)

Notes:

[1] The buffer distance is the horizontal, shortest distance from the boundary of the industrial lot, the position of existing chimney or the edge of road kerb, to the boundary of open space sites.

3.2 Air Sensitive Receivers (ASRs)

3.2.1 During the operation, representative ASRs of this project are the proposed residential houses within the Site. Figure 3.1 shows the layout of the proposed residential development.

3.3 Existing Air Environment

Vehicular Emission Sources

3.3.1 The proposed development is primarily affected by the local traffic including Luk Mei Tsuen Road/ Ho Chung North Road and the nearby Hiram’s Highway.

Industrial Emission Sources

3.3.2 From the area survey, it has revealed that there are 3 chimneys in the vicinity of the Site, which belongs to Koon Yick Food Manufacturing Company.

3.4 Air Quality Monitoring

3.4.1 Although there is no air quality monitoring station located immediately close to the Site, there is currently an air quality monitoring station operated by Environmental Protection Department (EPD) located at a distance from the Site, namely Tseung Kwan O

monitoring station (situated at Tseung Kwan O Sports Centre). Despite this, in terms of geographical location, this monitoring station is considered the closest to the Site. The annual average of air pollutants in $\mu\text{g}/\text{m}^3$ monitored at this station for the year 2022 are summarised in Table 3.3.

Pollutant	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	AQO
Nitrogen Dioxide (NO ₂)	22*	40
Respirable Suspended Particulates (RSP)	22*	50
Fine Suspended Particulates (FSP)	13*	35

Table 3.3 EPD Air Quality Monitoring Record at Tseung Kwan O Station in 2022

Note: Annual average marked with asterisk denotes the data for calculation did not evenly distribute in the year.

3.5 Findings and Discussion

Operation Phase

Vehicular Emission Sources and Evaluation of Impacts

- 3.5.1 Local traffic including Luk Mei Tsuen Road/ Ho Chung North Road and Hiram’s Highway were identified as possible air pollution sources. As confirmed with Transport Department (TD), Hiram’s Highway is rural road and Luk Mei Tsuen Road/ Ho Chung North Road is feeder road and the confirmation email from TD dated 3rd July 2020 is attached in Appendix A. In order to minimise the adverse impact on ASRs from potential air pollution source, a separation distance of 5m between the sensitive uses of the proposed development and the road edge of Luk Mei Tsuen Road was proposed, which satisfies the buffer distance requirement for Local Distributor (i.e. >5m) for active and passive recreation uses according to Chapter 9 of HKPSG as per Table 3. No adverse vehicular emission impact is anticipated upon incorporation of the required buffer distance as stipulated in Chapter 9 of HKPSG into the master layout plan. The 5m buffer zone between the sensitive uses of the proposed development and the road edge of Luk Mei Tsuen Road/ Ho Chung North Road is shown in Figure 3.2.

Industrial Emission Sources and Evaluation of Impacts

- 3.5.2 As mentioned in Section 3.3, at Koon Yick, there are 3 chimneys like structures at the east façade with diameter of around 20cm and exhaust at around 7m above ground (mAG).
- 3.5.3 The concerned Koon Yick Foods Factory is an active Chinese sauces manufacturer (Food Factory License Number 29 98 803889). Based on site survey conducted on July 6th 2023 all three chimneys were observed to be inactive.



Photo of the 3 chimneys at Koon Yick taken at 10:00am on July 6th 2023

Furthermore, with reference to an approved planning application for a residential development in the vicinity (A/SH-HC/316), the owners of Koon Yick had confirmed that the three chimneys are not in operation, as per interview conducted with them on 07.09.2020.

- 3.5.4 During the site visit, no odour nuisance has been identified near Koon Yick and at the Application Site.
- 3.5.5 Therefore, no adverse impact from industrial emission is anticipated.

Construction Phase

Dust Sources and Evaluation of Impacts

- 3.5.6 Major dust emitting construction activities will be the excavation works, foundation works and construction activities (e.g. the construction of superstructure). Fugitive dust would be generated. 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.
- 3.5.7 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 site boundary adjoins a road, street, service lane or other area accessible to the public;

- 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;
- minimise 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; and
- throttle down or switch off unused machines or machine in intermittent use.

3.5.8 Considering the small scale of work, 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 foundation works and superstructure works is not anticipated. Quantitative construction dust assessment is considered not necessary.

3.5.9 Operation of Powered Mechanical Equipment (PME) during demolition/construction work would emit gaseous air pollutants such as nitrogen dioxide (NO₂) 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. Since the number of PME expected to be used on-site will be limited, no significant impact is anticipated.

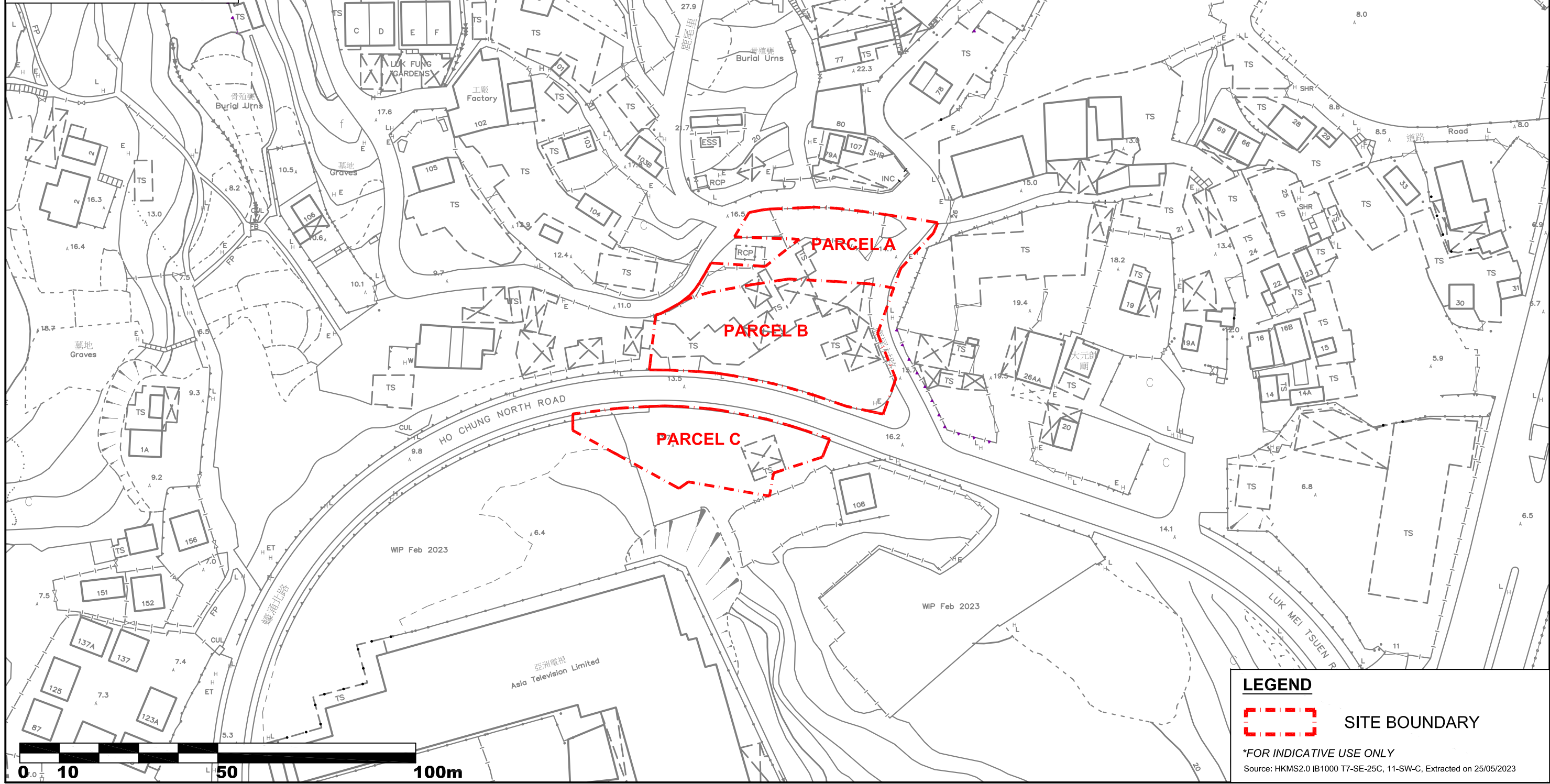
4. Conclusion

- 4.1.1 The proposed development may be subject to vehicular emission impact from roads nearby during the operation phase. However, with the incorporation of the 5 meter buffer zone, no significant adverse air quality impact due to vehicular emission is expected.
- 4.1.2 There is no active industrial chimney in the vicinity of the Site. Hence, no adverse air quality impact to the proposed development is anticipated.
- 4.1.3 Relevant mitigation measures would be incorporated during construction phase to minimise potential adverse impact on the air quality.


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Figures

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 SITE BOUNDARY

**FOR INDICATIVE USE ONLY*

Source: HKMS2.0 IB1000 T7-SE-25C, 11-SW-C, Extracted on 25/05/2023

File Name :
Source :

PRUDENTIAL 利達行
SURVEYING · LAND ADVISORY · VALUATION 行

ADDRESS: 2/F & 3/F TUNG HIP COMMERCIAL BUILDING
244 DES VOEUX ROAD CENTRAL HONG KONG
TEL: 2507 8333
FAX: 2598 6576

JOB TITLE:
Amendment of Plan to Rezone from "Residential (Group D)" ("R(D)", "Residential (Group E)" ("R(E)") and an area shown as "Road" to "Residential (Group C)3" ("R(C)3") on the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11 at Various Lots in Demarcation District 210 and Demarcation District 244 and Adjoining Government land, Ho Chung, Sai Kung, New Territories, Hong Kong

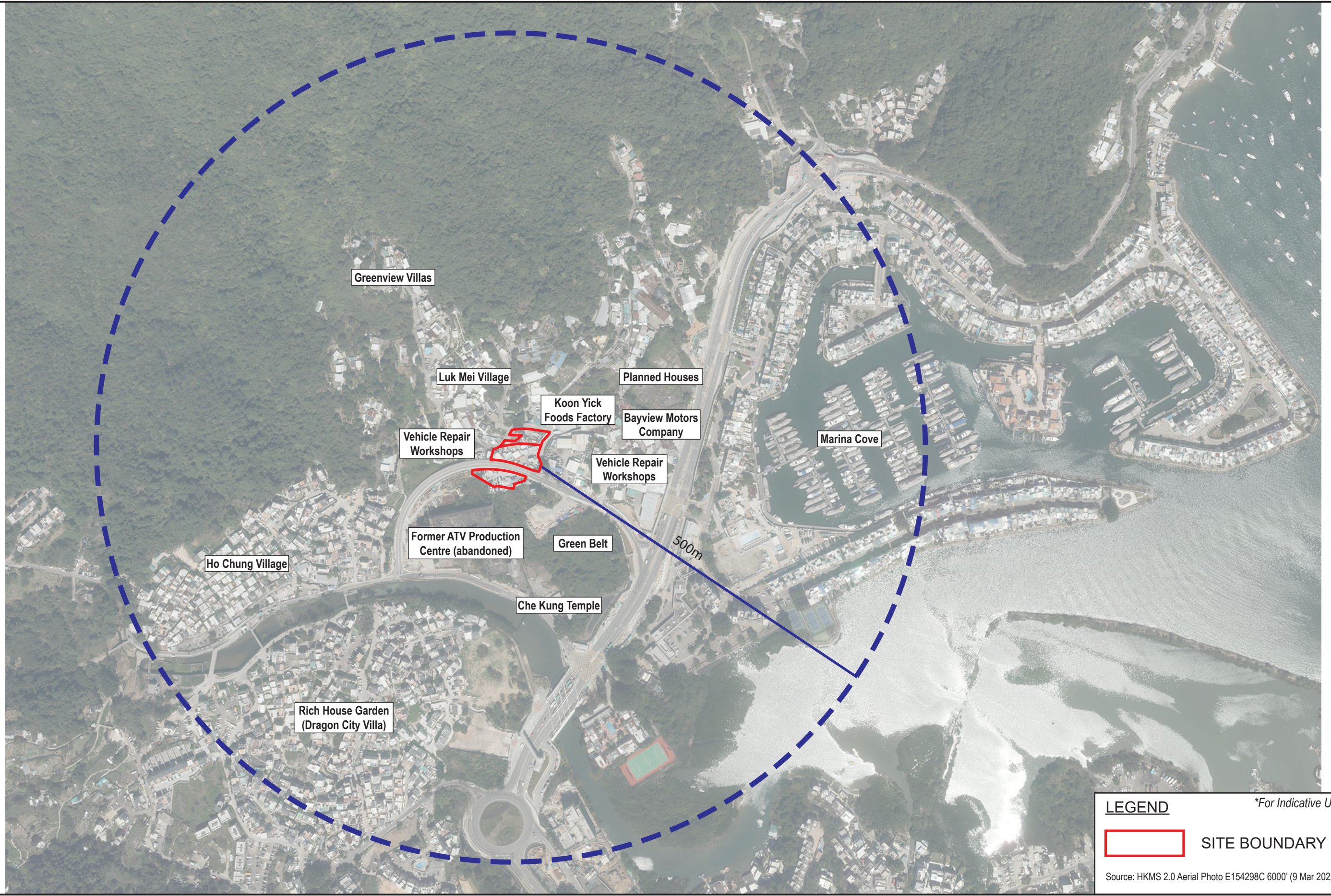
Drawing Title
LOCATION PLAN

Rev	Description	Date

Drawn	CN	Date	19/07/2023
Checked	RT	Approved	RT
Scale	1:1000 @ A3		

Drawing No.	Figure 1.1
Rev.	-

File Name :
Source :



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SITE BOUNDARY

Source: HKMS 2.0 Aerial Photo E154298C 6000' (9 Mar 2022)



ADDRESS: 2/F & 3/F TUNG HIP COMMERCIAL BUILDING
244 DES VOEUX ROAD CENTRAL HONG KONG
TEL: 2507 8333
FAX: 2598 6576

JOB TITLE:
Amendment of Plan to Rezone from "Residential (Group D)" ("R(D)", "Residential (Group E)" ("R(E)") and an area shown as "Road" to "Residential (Group C)3" ("R(C)3") on the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11 at Various Lots in Demarcation District 210 and Demarcation District 244 and Adjoining Government land, Ho Chung, Sai Kung, New Territories, Hong Kong

Drawing Title
SITE SURROUNDINGS

Rev	Description	Date

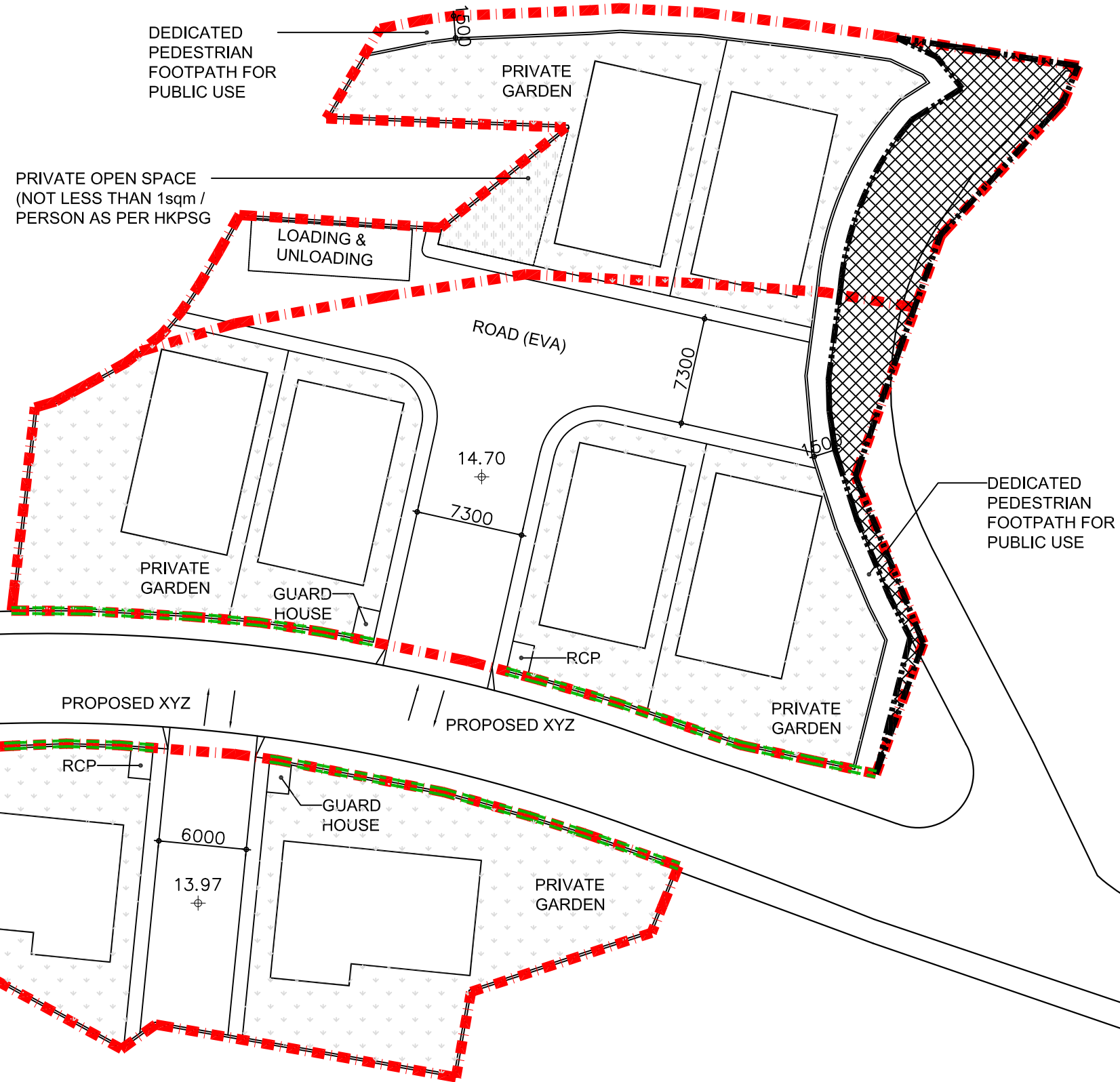
Drawn	CN	Date	08/08/2023
Checked	RT	Approved	RT
Scale	N.T.S.		

Drawing No.	Figure 2.1
Rev.	-



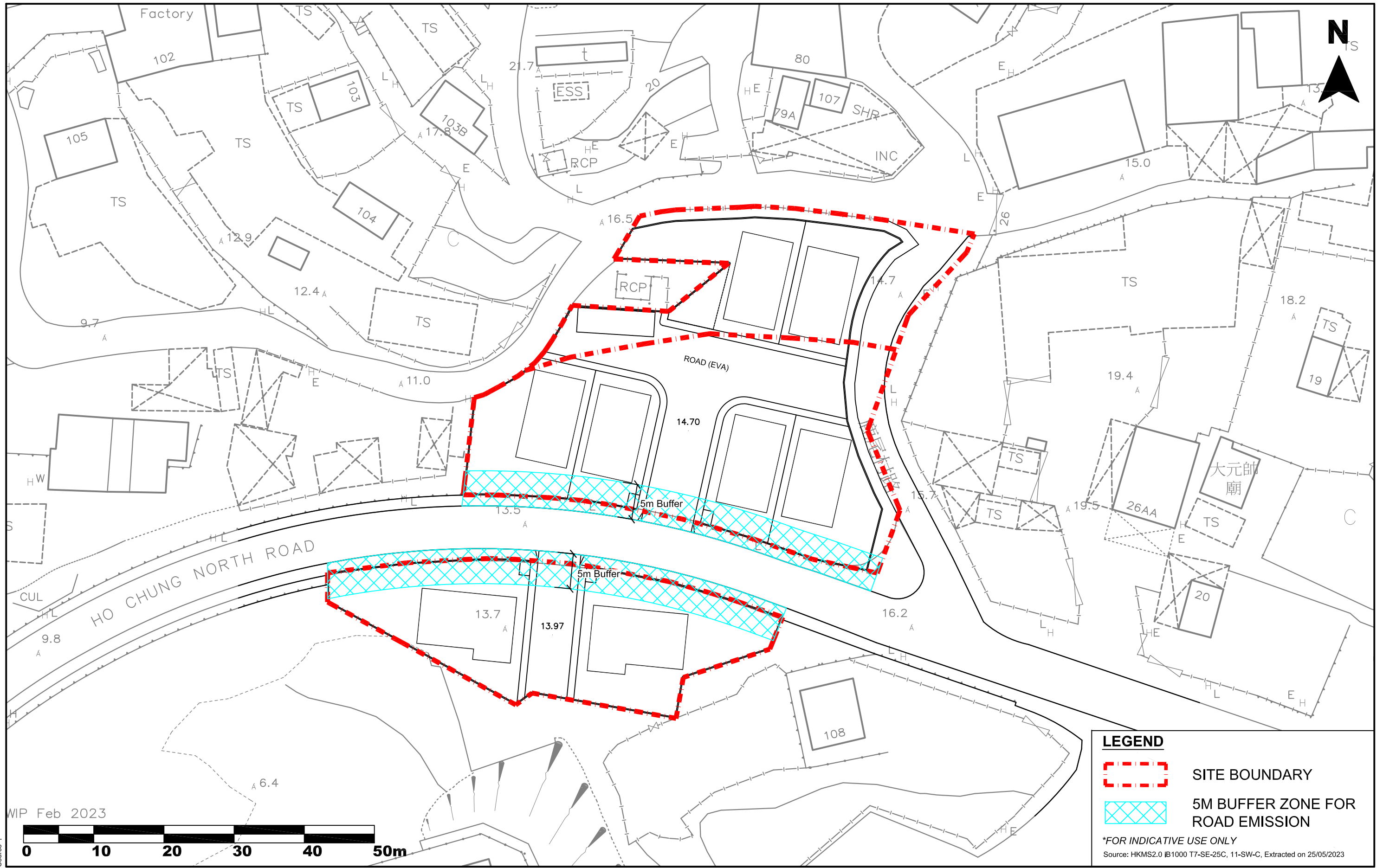
LEGEND

- SITE BOUNDARY
- AREA TO BE DEDICATED AS RIGHT OF WAY
- GREEN NOISE BARRIER
- PRIVATE GARDEN
- BUILDING FOOTPRINT
- PRIVATE OPEN SPACE



File Name :
Source :

	ADDRESS: 2/F & 3/F TUNG HIP COMMERCIAL BUILDING 244 DES VOEUX ROAD CENTRAL HONG KONG TEL: 2507 8333 FAX: 2598 6576	JOB TITLE: Amendment of Plan to Rezone from "Residential (Group D)" ("R(D)", "Residential (Group E)" ("R(E)") and an area shown as "Road" to "Residential (Group C)3" ("R(C)3") on the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11 at Various Lots in Demarcation District 210 and Demarcation District 244 and Adjoining Government land, Ho Chung, Sai Kung, New Territories, Hong Kong	Drawing Title BLOCK PLAN			Drawn CN	Date 20/07/2023	Drawing No. Figure 3.1	
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				Rev	Description	Date			


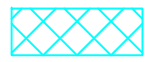


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Source :

WIP Feb 2023



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-  SITE BOUNDARY
-  5M BUFFER ZONE FOR ROAD EMISSION

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Source: HKMS2.0 IB1000 T7-SE-25C, 11-SW-C, Extracted on 25/05/2023

 <p>ADDRESS: 2/F & 3/F TUNG HIP COMMERCIAL BUILDING 244 DES VOEUX ROAD CENTRAL HONG KONG TEL: 2507 8333 FAX: 2598 6576</p>	<p>JOB TITLE: Amendment of Plan to Rezone from "Residential (Group D)" ("R(D)", "Residential (Group E)" ("R(E)") and an area shown as "Road" to "Residential (Group C)3" ("R(C)3") on the Approved Ho Chung Outline Zoning Plan No. S/SK-HC/11 at Various Lots in Demarcation District 210 and Demarcation District 244 and Adjoining Government land, Ho Chung, Sai Kung, New Territories, Hong Kong</p>	<p>Drawing Title BUFFER ZONE FOR THE PROPOSED DEVELOPMENT</p>	Drawn	CN	Date	07/08/2023	Drawing No. Figure 3.2
			Checked	RT	Approved	RT	
			Scale	1:500 @ A3		Rev.	-
			Rev	Description	Date		

Appendix A

Email from Transport Department (TD) on confirmation of road type

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Re: Application No. A/SK-HC/317 Proposed Houses with Minor Relaxation of Plot Ratio Restriction Various Lots in D.D. 210 and 244 and Adjoining Government Land, Ho Chung, Sai Kung

From : Ran WANG <ranwang@td.gov.hk>

Fri, Jul 03, 2020 09:51 AM

Subject : Re: Application No. A/SK-HC/317 Proposed Houses with Minor Relaxation of Plot Ratio Restriction Various Lots in D.D. 210 and 244 and Adjoining Government Land, Ho Chung, Sai Kung

To : Raymond TAM <raymondtam@pruden.com.hk>

Cc : Ally Au <ally.au@ppsintl.com>, Frank WONG <frankwong@pruden.com.hk>, stephenko@td.gov.hk, Vivian Zhu <vivianzhu@pruden.com.hk>

Dear Raymond,

I have no adverse comment on the proposed road type below.

Regards,
WANG Ran, Thomas
E/SK, TE/NTE, TD
Tel: 2399 2224
Fax: 2381 3799

From: Raymond TAM <raymondtam@pruden.com.hk>
To: Ran WANG <ranwang@td.gov.hk>
Cc: Ally Au <ally.au@ppsintl.com>, Frank WONG <frankwong@pruden.com.hk>, stephenko@td.gov.hk, Vivian Zhu <vivianzhu@pruden.com.hk>
Date: 07/03/2020 09:47 AM
Subject: Application No. A/SK-HC/317 Proposed Houses with Minor Relaxation of Plot Ratio Restriction Various Lots in D.D. 210 and 244 and Adjoining Government Land, Ho Chung, Sai Kung

Dear Thomas,

As advised by the Environmental Protection Department in connection to our Town Planning Application, can you please confirm our proposed classification of the following roads:

1. Hiram's Highway - Rural Roads
2. Ho Chung Road - Feeder Roads
3. Luk Mei Tsuen Road - Feeder Roads

4. Luk Cheung Road - Feeder Roads

Should you have any questions, please feel free to contact me on 2531-8727.

Thanks & Regards,

Raymond Tam

Senior Manager
Planning & Development

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