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**Attachment 6**

**Replacement Pages of Air Ventilation Assessment**

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## FIGURES

- Figure 1.1 Location of the Application Site and its Environs
- Figure 1.2 Master Layout Plan of the Baseline Scheme and the Proposed Scheme
- Figure 2.1 RAMS Annual and Summer Wind Roses Representing  $V_{\infty}$  of the Area under Concern at 200m Above Ground (X:030 Y:033) and (X:030 Y:034)
- Figure 2.2 Hong Kong Observatory Hong Kong International Airport (Chek Lap Kok) Weather Station Annual and Summer (July) Wind Rose from 1986 to 2023
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- Figure 3.2 Illustration of Wind Flow from ESE Wind Direction
- Figure 3.3 Illustration of Wind Flow from E Wind Direction
- Figure 3.4 Illustration of Wind Flow from S Wind Direction
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## APPENDICES

- Appendix 1 Master Layout Plan of the Proposed Scheme

## 2.2 Hong Kong Observatory (HKO) Weather Data

2.2.1 The Hong Kong Observatory has weather stations located throughout Hong Kong which measure meteorological data of the environment. Wind roses under annual and summer conditions at Chek Lap Kok, the closest HKO station near the Application Site as indicated in **Figure 2.2**. However, the Chek Lap Kok Station is relatively far from the Application Site at over 3 km and is expected to be influenced by the local topography and building morphology. Therefore, data from the HKO Station is not suitable for the Application Site and the RAMS data at grids (X: 030 Y: 033) and (X: 030 Y: 034) is recommended to be used for the directional analysis of the Application Site.

## 2.3 Topography and Building Morphology

### Topography

2.3.1 General speaking, the terrain of Application Site itself as well as its vicinity area is relatively flat. The terrain surrounding the Application Site to the further south, east, and west is characterized by hilly landscapes. For example, approximately 2.5 km to the east lies Pok To Yan, with a height of about +520 mPD. To the southeast, at a distance of 1.5 km, is the peak of Wo Liu Tun which rises to about +320 mPD. Meanwhile, Nei Lak Shan is situated around 2.5 km to the southwest, reaching a height of +750 mPD. On the other hand, to the north of the Application Site is the Tung Chung Bay which is open for wind penetration.

2.3.2 Easterlies and south easterlies flowing to the Application Site are anticipated to encounter Pok To Yan and Wo Liu Tun respectively and experience minor hindrance before flowing down as downwash. The far distance between the elevated topography and the Application Site is also anticipated to allow the majority of E, ESE, and SSE wind to recover before reaching the Application Site. Hence, it is believed that the topography would not affect the wind availability in the Tung Chung West area.

### Building Morphology – Existing Development

2.3.3 There are several existing developments surrounding the Application Site. The building height information of these identified developments are extracted from Geo-Reference Database (BG1000) provided by the Survey and Mapping Office/ Lands Department and **Table 2.2** can be referred to for the building heights of the existing surrounding structures.

2.3.4 The Application Site is surrounded by a combination of low-rise and high-rise developments in all directions excluding the west beyond the Tung Chung River and the sea to the north. The building blockage effect due to the surrounding developments is anticipated. For example, a portion of easterly winds flowing towards the southern portion of the Application Site will encounter the Mun Wo House creating an immediate wind wake and reducing wind availability in its immediate surroundings. Similarly, prevailing summer southerly winds will encounter both Mun Hong House and Mun Tai House hindering wind flow towards the Application Site. It is also anticipated that open spaces and roads around the proposed development will act as wind corridors for the Application Site. Overall, the impact of the existing morphology is expected to be moderate.

### Building Morphology – Planned Development

- 2.3.5 According to the OZP and the Recommended Outline Development Plan (RODP) of this Tung Chung West area, there are several mid to high-rise developments surrounding the Application Site. **Table 2.2** highlights the building heights of the surrounding planned developments.
- 2.3.6 Under the Public Housing Development at Tung Chung Area 42, 46 (Application No. A/I-TCTC/67), there are several planned high-rise public housing developments located further south and southeast of the Application Site. Site Area of Area 42 is around 39,800 m<sup>2</sup> and Area 46 at around 11,100 m<sup>2</sup> and both have an permissible maximum building height of +170 mPD.
- 2.3.7 Moreover, as outlined by the RODP in the Tung Chun West EIA Report (EIA-233/2015), the vicinity of the Application Site includes a variety of mid to low-rise structures. To the east of the Application Site, Areas 66a, 66b, and 67 accommodate mid-rise commercial developments with maximum heights of +35 mPD, +25 mPD, and +20 mPD, respectively. Also in the eastern proximity, low-rise buildings dedicated to Government, Institution, or Community (GIC) uses presents in Areas 36a & 36b. To the west and southwest, Areas 81 and 91 are low-rise residential buildings, with building height restrictions set at +20 mPD and +25 mPD.
- 2.3.8 Area 81 is located downstream from prevailing annual and summer wind; hence, it is not anticipated to affect the surrounding wind environment. Additionally, Areas 36a, 36b, 66a, 66b, 67, and 91 are located upstream of the prevailing annual and summer wind directions. However, due to their low maximum building height, it is anticipated that prevailing annual and summer winds may skim over these planned structures and reach the Application Site. Wind blockage is anticipated from the high-rise developments proposed within Areas 42 and 46. Incoming southerly and southeasterly winds may experience blockage upon encountering the high-rise developments of the planned areas. Nevertheless, the layout plan under the Public Housing Development at Tung Chung Area 42 and 46 indicates that the planned development has incorporated mitigation measures such as building setbacks and building gaps to allow wind flow to reach further downstream areas. Therefore, taking into consideration the various planned developments, potential wind blockage produced by these planned structures is considered to be moderate.

**Table 2.2 Building Height of the Surrounding Developments**

Name of Development	Building Height (mPD)	Location relative to the Application Site
Yat Tung Estate	+121.3 to +123.9	Northeast
Mun Wo House	+126.0	East
Hong Chi Shiu Pong Morninghope School	+21.6	Southeast
Mun Tai House	+102.4	Southeast
Mun Hong House	+127.2	Southeast
Mun Shun House	+126.8	Southeast
Wong Ka Wai Village Houses	+12.0 to +25.7	Southeast
Ha Ling Pei Village Houses	+11.4 to +23.4	Southeast
Sheung Ling Pei Village Houses	+15.4 to +28.8	Southeast
Tung Chung Service Reservoir	~100	Southeast

affect wind availability, when developing the Proposed Scheme due consideration has been given so that the design can respect the existing wind corridor along Chung Yat Street by providing sufficient building setback from southern site boundary line. For example, the Proposed Scheme maintains the air path at the southern portion through a podium setback design, which creates an air path not less than 15m wide. ESE wind flowing through this setback can flow beyond the Tung Chung River to reach other downwind locations such as Area 81 of the TCWNT. Although, the Proposed Scheme has a taller building height as compared to the Baseline Scheme, other building setback have been proposed. For instance, the Proposed Scheme widens the building setback at the northern portion of the Application Site creating a wind path of no less than 15m allowing ESE wind to flow along the northern edge of the Application Site. Also, the proposed building height is still lower than the building height at the adjacent Mun Tung Estate. High-level wind can still flow over the proposed structures. Moreover, as the Application Site is adjacent to Tung Chung Stream and there is no sensitive use immediately downstream, it is expected that wind can gradually recover via the river bank and Tung Chung Stream to reach other downwind locations.

- 3.3.5 Overall, while the building height is generally higher in the Proposed Scheme, and might induce a wake in its immediate surrounding area to the west of the Application Site. The Proposed Scheme has maintained and strengthened the mitigation measures provided under the Baseline Scheme to minimise air ventilation impact via proper design and building setback. Hence, wind performance is anticipated to be comparable between the two schemes.

### 3.4 Wind Flow from E Direction

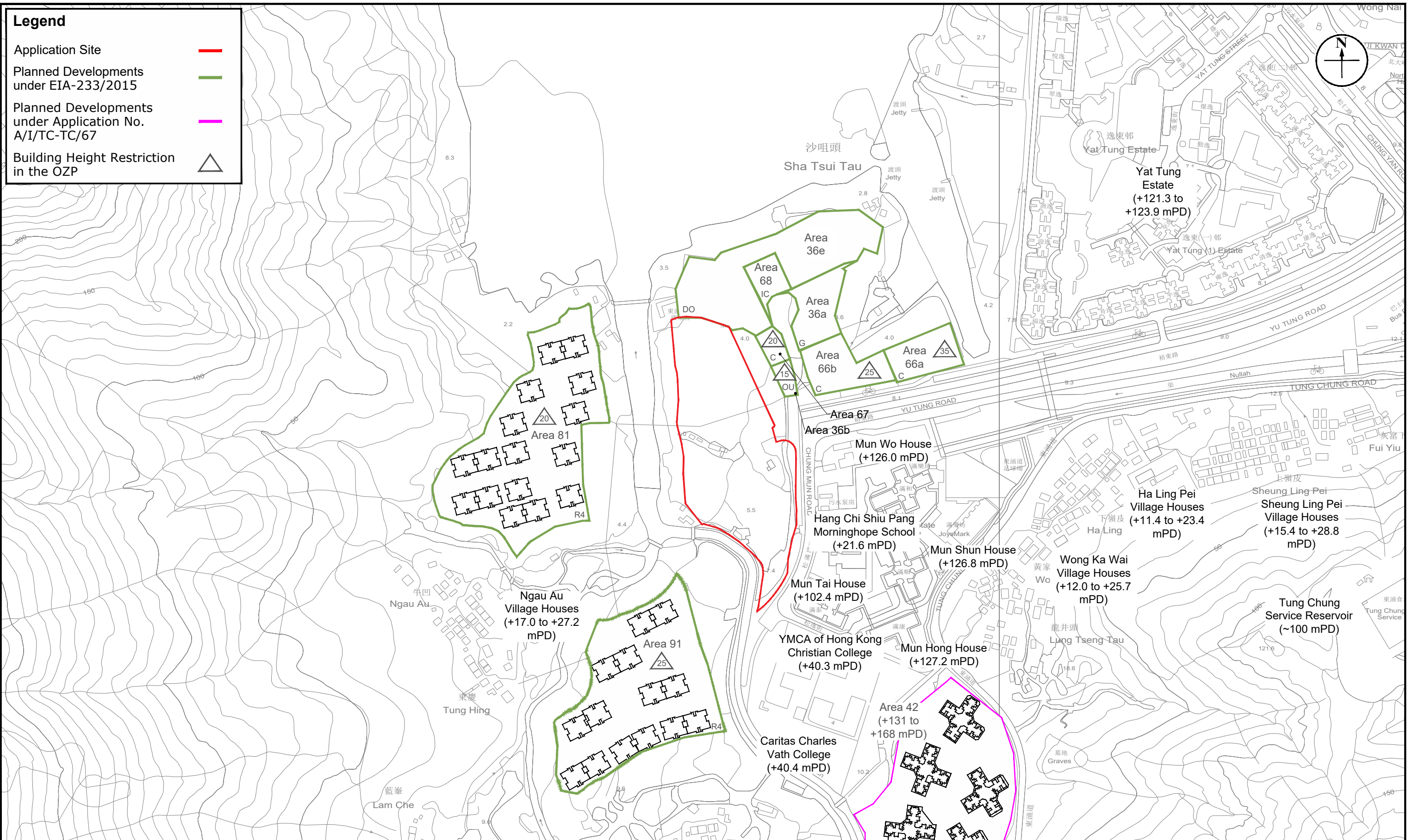
- 3.4.1 **Figure 3.3** illustrates the prevailing wind flow from E wind direction under the Baseline Scheme and Proposed Scheme.
- 3.4.2 Similar to ESE wind, the existing Mun Tung Estate to the east of Chung Mun Road and the future developments in the commercial and G/IC zones to the north of Yu Tung Road would limit easterly wind flow to the Application Site. At present, wind flow is particularly limited at the southern portion of the Application Site due to the existing tall residential towers (about 102mPD) of Mun Wo House, Mun Shun House, and Mun Tai House at Mun Tung Estate. Under the current condition, Yu Tung Road would serve as an existing wind corridor in the area which would reach the central portion of the Application Site.
- 3.4.3 Under the Baseline Scheme, remaining E wind flowing from planned developments at of TCWNT east of the Application Site will encounter the clusters of low-rise residential blocks under the Baseline Scheme hindering pedestrian-level wind flow to further downstream areas. Nevertheless, the E wind could flow along the northern edge of the Application Site. Furthermore, the Baseline Scheme provides a 20m NBA at the centre of the Application Site to accommodate easterly wind flow from the Yu Tung Road breezeway. E wind reaching the NBA will penetrate the Application Site with a turn of no less than 15 degrees and reach further downstream areas such as the low-rise buildings in Area 81 of the TCWNT.
- 3.4.4 The increase in building height under the Proposed Scheme is anticipated to create a wind wake at the immediate downwind locations of residential towers. However, it should be noted that the immediate downwind location of the Application Site is the embankment and estuary of Tung Chung River and in the absence of any immediate sensitive receivers. Building setback from the western site boundary line is already adopted in the design to allow wind to gradually recover via the space created. The planned Area 81 of the TCWNT at further downwind location is relatively far away

from the proposed development (about 126m separation distance), the provided building setback at the Application Site together with the large open space at the embankment and estuary of Tung Chung River, would allow some wind to recover before reaching downstream receivers at the Area 81. As mentioned in Section 3.4.2, at present wind flow is already limited at the southern portion of the Application Site due to the existing tall residential towers at Mun Tung Estate. Additionally, the building gaps between building clusters allows for an NBA aligning from east to west direction which is in line with the NBA proposed in the Explanatory Statement of the OZP. As compared with the Baseline Scheme, the NBA created in Proposed Scheme has been designed to align the E wind direction and without any turn. E wind flowing from existing wind corridor at Yu Tung Road would be able to flow through and penetrate through the NBA at the Application Site with little to no hinderance to ventilate the Area 81 of the TCWNT. Furthermore, the Proposed Scheme has also provided further building setback at the northern site boundary as opposed to the Baseline Scheme, the building setback at the northern Site boundary creates an air path of no less than 15m wide allowing E wind to flow through the northern portion of the Application Site.

- 3.4.5 To sum up, although the high-rise towers under the Proposed Scheme may potentially reduce wind availability at the immediate downstream area, there are no immediate downwind sensitive receivers present. Existing wind availability is already limited at the southern portion of the Application Site due to the tall residential developments of Mun Tung Estate which blocks majority of E wind from flowing towards the proposed development. Nevertheless, building setback from site boundary line has been provided in design together with the river embankment and Tung Chung River to create a space for wind to recover. With the mitigation measures incorporated under the Proposed Scheme, notably the realignment of the NBA to better accommodate the direction of E wind, pedestrian-level E wind is expected to perform slightly better under the Proposed Scheme as compared to the Baseline Scheme.

### 3.5 Wind Flow from S Directions

- 3.5.1 **Figure 3.4** illustrates the wind flow of the Baseline Scheme and Proposed Scheme under S wind direction.
- 3.5.2 S wind is identified as a prevailing wind direction under both summer and annual conditions. The majority of S wind within the vicinity of the Site will come from the N-S aligned existing wind corridors such as those along Tung Chung Stream to the west and existing public road at Chung Mun Road to the east, and a slight portion of pedestrian-level southerly winds are expected to be hindered by the other existing low-rise developments to the south of the Application Site such as the YMCA of Hong Kong Christian College and planned development at Area 91 before it can arrive the Application Site. However, the majority of S wind flowing towards the Application Site will remain unhindered and can reach the Application Site.
- 3.5.3 Upon reaching the Application Site, the dense clusters of low-rise developments under the Baseline Scheme are anticipated to hinder S wind at pedestrian level, thus resulting in a decreased wind flow at immediate downstream areas to the north of the Application Site and district open space over there. High-level wind would still be able to flow around or above the building clusters due to their low-rise design.
- 3.5.4 On the other hand, for the Proposed Scheme, although the Proposed Development may likely hinder certain high-level S wind and decrease wind availability at downstream receivers, the Proposed Scheme has provided adequate building gaps and setbacks to accommodate S wind. >5m setback from the western site boundary



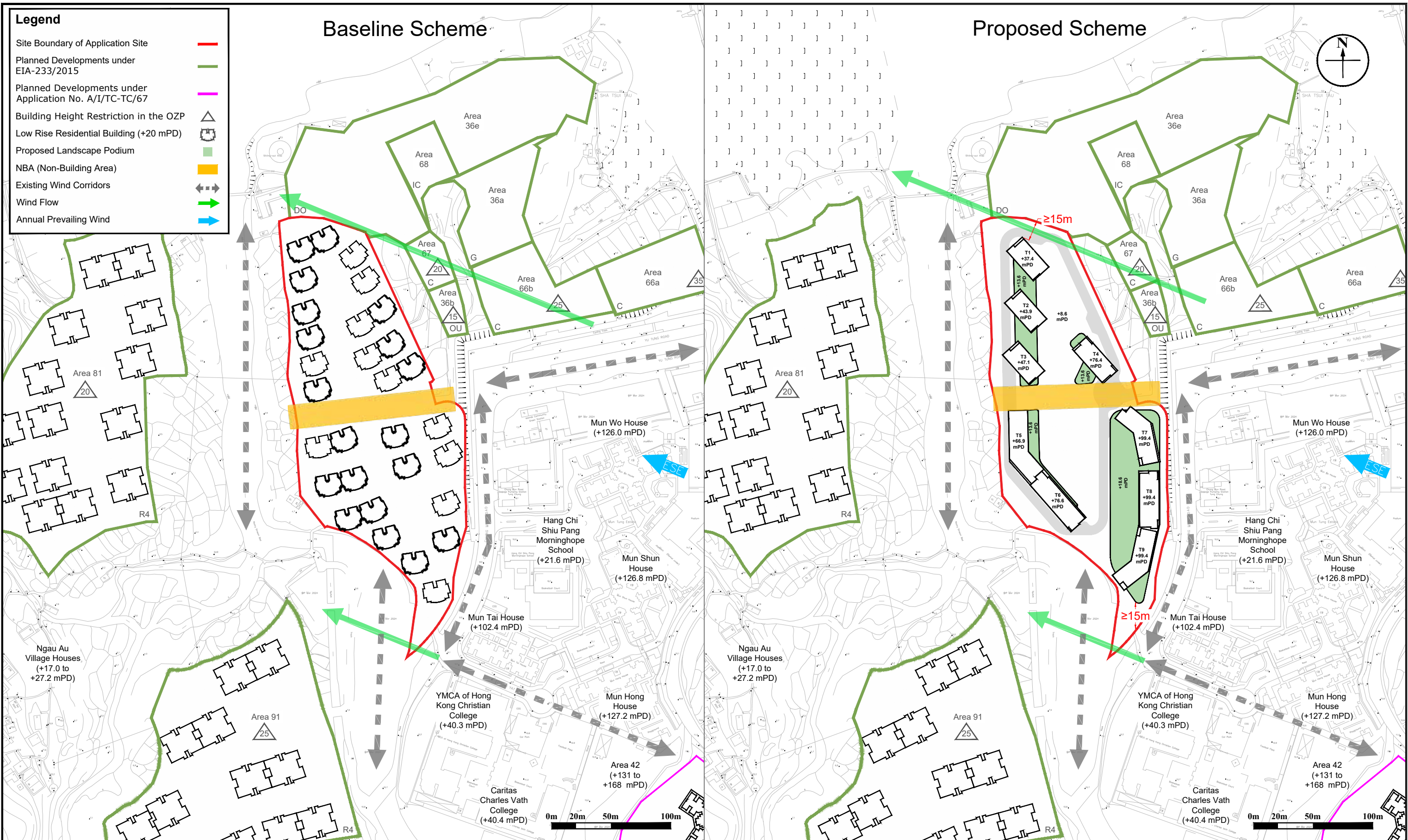
**Figure:** 1.1

**Title:** Location of Application Site and its Environ

**Project:** Section 12A Planning Application for Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C) 2" Zone to "Residential (Group B) " Zone Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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**Figure:** 3.2

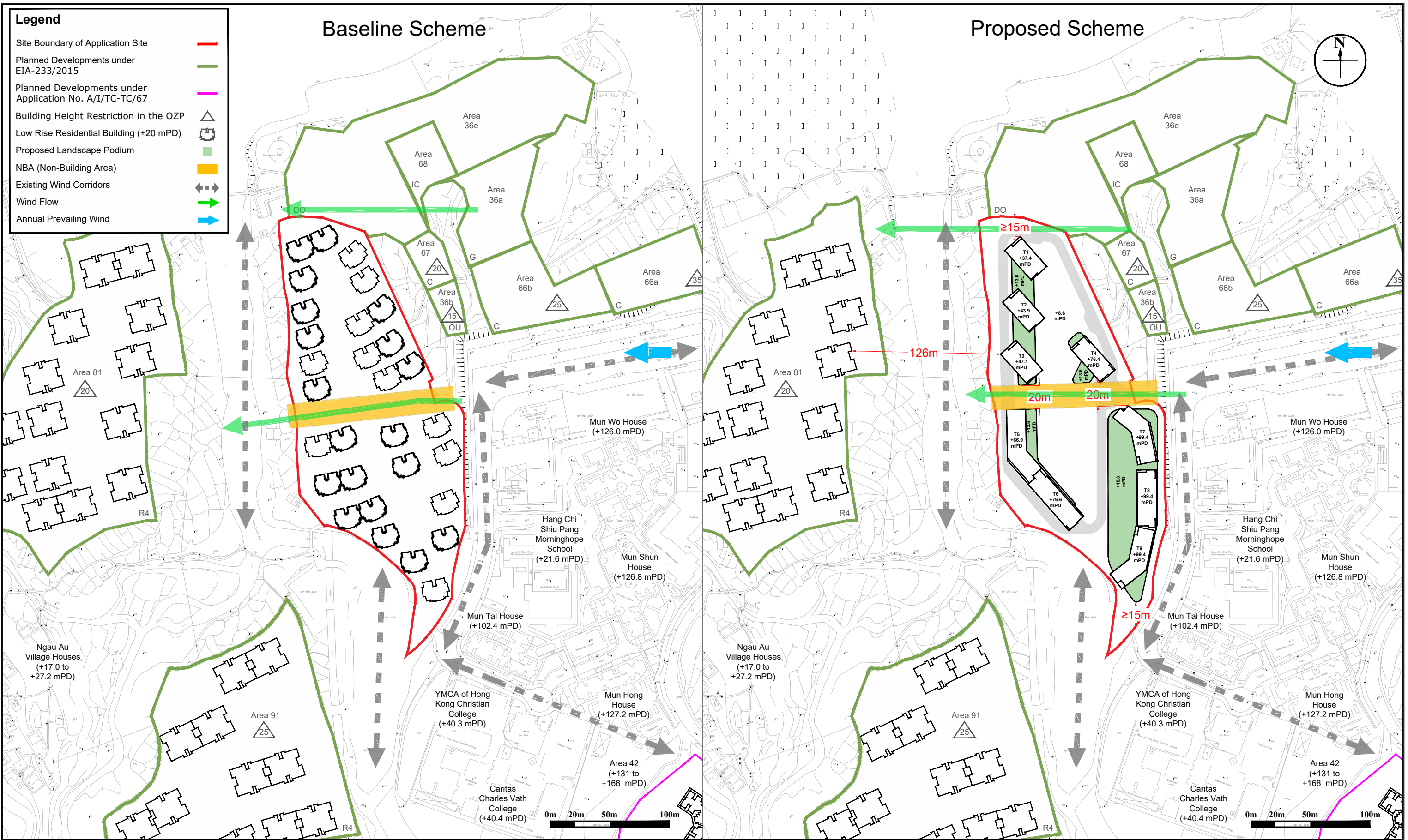
**Title:** Illustration of Annual Wind Flow (ESE)

**Project:** Section 12A Planning Application for Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C) 2" Zone to "Residential (Group B) " Zone Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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**Figure: 3.3**

**Title:** Illustration of Annual Wind Flow (E)

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**Figure:** 3.5

**Title:** Illustration of Summer Wind Flow (SSE)

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**Figure:** 3.6

**Title:** Illustration of Summer Wind Flow (SSW)

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