Appendix 8

Air Ventilation Assessment

Prepared for

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PROPOSED RESIDENTIAL DEVELOPMENT(S) WITH RETAIL, PUBLIC VEHICLE PARK AND SOCIAL WELFARE FACILITIES AT VARIOUS LOTS AND ADJOINING GOVERNMENT LAND AT FUNG YUEN, TAI PO, NEW TERRITORIES

AIR VENTILATION ASSESSMENT (EXPERT EVALUATION)

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1. INTRODUCTION

1.1 Project Background

1.1.1 This S.12A application is to seek the Town Planning Board's approval for the proposed amendments to the Draft Tai Po Outline Zoning Plan No. S/TP/31 ("the OZP") for the proposed development at various lots and adjoining Government land at Fung Yuen, Tai Po, New Territories ("the Development Site").

1.1.2 The proposed development will include residential development(s) with supporting retail and public vehicle park facilities in Area (A); and a social welfare complex comprising a Residential Care Home for the Elderly ("RCHE") and a Day Care Unit ("DCU") for the Elderly in Area (B).

1.1.3 The Applicant submitted an S.12A Planning Application (No. Y/TP/38) to TPB in 2022 to rezone the current western portion of the "CDA(1)" zone to "R(B)13" zone to enable a proposed residential development with retail facilities and public vehicle park, and amending the maximum building height restriction of the "G/IC" zone from 2 storeys to 8 storeys to the south of the "CDA(1)" zone for a proposed 8-storey Social Welfare Complex. While tremendous effort has been put to address and resolve the comments from Planning Department and relevant Government departments during circulation of the application, it is noted that majority of the Government departments have no further adverse comment on the technical assessments attached to Application No. Y/TP/38 since almost 3 years efforts being put by the Applicant & consultancy team.

1.1.4 Taking into account comments received from relevant Government departments and in order to achieve a wholistic planning scheme for the entire "CDA(1)" zone, the Applicant has put forward to include the CDA(1) Future Phase proposed in Application No. Y/TP/38 into the Development Site of this Application. The Proposed Development Proposal in this Application is largely the same as that under Application No. Y/TP/38. The Development Site of this Application is solely formed by the previous development sites, i.e. Area (A), Area (B) and the "CDA(1)" Future Phase. The total GFA, PR, building height, no. of units and estimated population of the Development Proposal is almost exactly the same as that under Application No. Y/TP/38.

1.1.5 An Air Ventilation Assessment (AVA) Study report – Expert Evaluation (EE) was prepared as one of the technical supporting documents for the previous S.12A application (No. Y/TP/30). The application was later withdrawn. The Indicative Development Proposal has been further reviewed and resubmitted in last S.12A application (No. Y/TP/38). In response to the concern from PlanD, the rezoning area has been extended to include the original Subsequent Phase site location of the approved MLP accommodating the undeveloped potential of the remaining CDA (1) zone.

1.1.6 In the current application, the Development Site boundary differs from aforementioned application (No. Y/TP/38) but two separated development portions [viz. Area (A) and Area (B)] currently zoned CDA(1) and "G/IC" respectively on the Draft Tai Po Outline Zoning Plan ("OZP") No. S/TP/31 will be remained. The development site Area (A) would consist of two phases (Phase I & Phase II) where Phase II is area of the unacquired lots within the remaining "CDA(1)" zone previously known as "CDA(1) Future Phase" in last S.12A application (Y/TP/38).

1.1.7 The proposed amendments subject of this S12.A application include:

- rezoning of the site falling within "Comprehensive Development Area (1)" ("CDA(1)") to "Residential (Group B)13" ("R(B)13") zone [Area (A)]; and

- relaxation of the maximum building height restriction of the site falling within "Government, institution or community" ("G/IC") zone from 2 storeys to 8 storeys [Area (B)].

1.1.8 Ramboll Hong Kong Limited is commissioned by the Applicant to prepare the Air Ventilation Assessment (AVA) Study report – Expert Evaluation (EE) based on this rezoning proposal. Architectural drawings and technical information are provided by the Applicant.

1.2 Objective

1.2.1 This AVA-EE report has been prepared to evaluate if the proposed development would have any impact on the overall air ventilation performance of the assessment area by comparing the Proposed Development with the existing condition.

1.3 Development Site and its Environs

1.3.1 **Figure 1** shows the location of the Development Site and its environs. The Development Site (comprising Area (A) and Area (B)) consists of various lots and adjoining Government land at Fung Yuen, Tai Po. It is known as Fung Yuen which is at the northern fringe of Tai Po New Town. The Development Site consists of two separate portions (Area (A) currently zoned "CDA(1)" and Area (B) currently zoned "Government , Institution or Community" ("G/IC")).

1.3.2 There are existing residential development Case Papillon (+20mPD) & Mont Vert (+102mPD) to its north and Fung Yuen Road to its east, Tai Po Industrial Estate (+70mPD) and Ting Kok Road to its further southeast and south.

1.3.3 Village type developments to the immediate east, southwest, west and northwest include Tin Sam (around +8mPD to 17mPD), Yue Kok Tsuen (around +10.9mPD to 33mPD), Fung Mei Wai (formerly Kau Shi Wai) (around +17mPD) and Lau Hang (around +20mPD) respectively.

1.3.4 Tai Po Hospital (+59mPD), Fu Heng Estate (+110mPD), Chung Nga Court (+110mPD), Fu Tip Estate (+143mPD) and planned public housing developments at Chung Nga Road West (+172mPD), and Alice Ho Miu Ling Nethersole Hospital (around +66.5mPD) are distributed to the further west to southwest of the Development Site. A "Green Belt" ("GB") zone is situated between the village type developments at the immediate west of the Development Site and Tai Po Hospital.

1.3.5 To the southeast, south and further west of the Development Site are areas zoned "G/IC". Fung Yuen Playground and a site occupied by Society of Horticulture are situated within "G/IC" zone to the southeast.

1.4 Existing Site

1.4.1 Area (A) of the Development Site is mostly covered with vegetation with a watercourse running within and mainly along the eastern side of the Development Site adjoining Fung Yuen Road. Area (B) is currently occupied by sewage pumping station (along its southern boundary but without any massive aboveground structure) and has the watercourse running and occupying its western part. Area (A) and Area (B) are separated by at least 40m. the Development Site is readily available for development as it is well-supported by existing infrastructure in terms of drainage, sewerage and roads.

1.5 Building Height Limit of Current CDA(1) & G/IC Zones

1.5.1 The CDA(1) zone, within which Area (A) is located, is subject to building height restriction (BHR) varying from 1 storey to 28 storeys as delineated in the outline zoning plan. Areas with BHR of 19-, 23-, 26- and 28-storey, located to the north of the Development Site, have been developed, now known as Mont Vert. The two areas planned for maximum 17 storeys in the CDA(1) zone (within Area (A)) have not yet been developed.

1.5.2 On the other hand, the G/IC zone is subject to limit of 2 storeys.

1.5.3 The extracted copy of the outline zoning plan showing the CDA(1) & G/IC zones is shown in **Appendix 1.**

1.6 Proposed Scheme

1.6.1 **Appendix 2** shows the tentative scheme of the Proposed Development. The Proposed Development in Area (A) Phase I consists of 6 residential towers (T1 to T6) with building heights of 23 - 29 storeys (excluding 3 levels of basement) (around +85mPD to +102mPD), 3-storeys standalone clubhouse, 2-storeys commercial & public vehicle park (+21mPD), and 8-storeys RCHE cum DCU (+36mPD). The Proposed Development in Area (A) Phase II consists of 1 residential tower (T7) with building heights of 30 storeys with entrance lobby on ground floor (around +99mPD).

1.6.2 Under the Proposed Development, the master layout echoes the curvilinear configuration and disposition of Mont Vert aligned along the north-south direction generally. The shape of the Development Site has wider frontage facing E/W and results in less obstruction of air circulation under N/S wind. There are building setbacks from the northern and southern site boundary. Adequate setback separations (around 5m to 36m) between proposed residential towers are also provided to enhance wind penetration and avoid wall-effect. Low-rise of commercial & public vehicle Park is located at the western side of T6.

1.6.3 The building height of the residential towers has been revised to create a harmonious urban context and ensure compatibility with surrounding developments in the vicinity through adopting distinct stepped height profile descending downwards from the Development Site to Tai Po Industrial Estate with further reduction towards the waterfront promenade. There are 4 different height bands of +102mPD (T6), +99mPD (T4, T5 and T7),), +96mPD (T1 and T3) and +85mPD (T2), descending downwards from the north towards south in Area (A).

1.6.4 There is existing stream running within and along the eastern side of the Development Site. In order to retain the existing stream, the building would deposit further away from Fung Yuen Road and maintain larger separation from Tin Sam area to the east of the Development Site. The design of the building disposition would provide separations between building blocks to enable wind penetration across the Development Site.

1.6.5 Regarding RCHE cum DCU, the proposed building is oriented along north-south direction which minimised the obstruction of air circulation under N/S wind. There are building setback of 6m from eastern site boundary. Since the existing stream will occupy western portion of Area (B), no building will be provided on western side so that a long setback of at least 18m is maintained between the building and western site boundary.

2. SITE WIND AVAILABILITY DATA

2.1 Site Wind Availability Data From RAMS

2.1.1 According to the Planning Department's website, a meso-scale Regional Atmospheric Modeling System (RAMS) was used to produce a simulated 10-year wind climate at the horizontal resolution of 0.5 km x 0.5 km covering the whole territory of Hong Kong. The simulated wind data represents the annual, winter and summer wind condition at various levels, i.e. 200 m, 300 m, and 500 m above terrain.

2.1.2 The RAMS data of the grid (X: 081, Y: 074) and (X: 081, Y: 073) have been extracted from the Site Wind Availability Data of Planning Department's website.

2.1.3 Based on the wind roses with different heights (200, 300 or 500m) available, the 200 m site wind availability data represents wind data that takes into account the topographical effect around the Development Site. Therefore, a lower level of wind roses at 200 m height is selected to study the prevailing wind condition as it represents the incoming wind to the Development Site and considers the influence on the prevailing winds by the surrounding topography.

2.1.4 According to the wind roses at 200m altitude, both annual and summer prevailing wind directions for the Development Site are E, ESE and SE. **Figure 2a** shows the relevant wind roses diagrams representing the frequency and wind speed distribution at 200m height in annual and summer conditions. The wind frequency data is provided in **Table 2.1** below.

Table 2.1 Summary of RAMS Data and Wind Direction at 200m

Wind Direction	X: 081, Y: 074		X: 081, Y: 073	
	Probability for Annual Condition (%)	**Probability for Summer Condition (%)**	**Probability for Annual Condition (%)**	**Probability for Summer Condition (%)**
N	3.8%	0.8%	3.9%	0.8%
NNE	5.4%	0.8%	4.3%	0.7%
NE	3.7%	1.1%	3.8%	1.2%
ENE	7.9%	3.1%	8.3%	3.5%
E	**29.4%**	**14.0%**	**30.0%**	**15.1%**
ESE	**16.0%**	**12.0%**	**14.3%**	**11.5%**
SE	**9.1%**	**14.5%**	**8.4%**	**13.6%**
SSE	4.4%	9.9%	4.1%	9.1%
S	3.1%	7.9%	3.2%	7.7%
SSW	3.8%	10.0%	4.2%	10.7%
SW	2.4%	6.9%	2.6%	7.3%
WSW	2.2%	6.2%	2.2%	5.6%
W	2.6%	6.0%	3.0%	6.8%
WNW	2.0%	3.8%	2.1%	3.7%
NW	1.9%	2.0%	2.5%	2.0%
NNW	2.2%	0.9%	3.0%	0.8%

Note: Bolded characters highlighted in grey represent the selected prevailing wind directions for evaluation.

2.2 Simulated Site Wind Availability Data from Term Consultancy for Expect Evaluation and Advisory Services on Air Ventilation Assessment (PLNQ37/2007) Final Report for Tai Po Area

2.2.1 According to the wind availability data from the Term Consultancy for AVA Services - Cat. A1 - Term Consultancy for Expert Evaluation and Advisory Services on AVA (PLNQ 37/2007) - Final Report for Tai Po Area completed in August 2010 (referred as Tai Po-EE), it stated that the annual wind of the study area is mainly from the East, with a smaller component of the North. The Summer wind is mainly coming from the East and the Southerly quarters. For air ventilation study, for the main built up areas, it is evaluated that the Easterly component should be the most important to respect.

2.2.2 4 locations (A to D) are defined according to the dataset of Tai Po-EE. The Development Site is nearest to Location A of the Tai Po Areas. The annual prevailing winds for the Location A at 120m are mainly from E, while the summer prevailing winds are mainly from E and SE at the lower atmospheric boundary layers. The relevant Site Wind Availability Data (SWAD) from Tai Po-EE is presented in **Figure 2b.**

2.2.3 Based on both sets of wind data, it is considered that the annual prevailing winds come from E, ESE and SE directions. While in summer condition, the prevailing winds mainly come from E, ESE and SE directions.

2.3 Topography

2.3.1 The Proposed Development is located at the northern fringe of Tai Po New Town that is relatively flat. According to the Tai Po-EE, the natural topography of the area descends from the high level at north-east and south of Tai Po New Town. Wind from the north to northeast will be affected by the hills. Turbulence and re-circulation of wind when it moves downhill towards the Development Site is expected. In general, north to northeast wind will be slightly weakened by shielding effects of the hills. Whereas, with long separation from the mountains at the south, winds from the south would not be significantly affected by them. Therefore, the influence of local topography to the wind flow pattern around the Development Site is considered minor.

2.3.2 In particular, the area that the Development Site resides is of valley shape. It was identified as one of the two identified valley wind systems in the Tai Po-EE. Based on the valley topography, more wind will be towards downhill from north. As discussed in Tai Po-EE, while this valley wind system is less important than another one from the south over Wilson Trail stage 7, both valley wind systems should be respected and not obstructed. Therefore, N wind should also be considered in this evaluation.

2.4 Building Morphology

2.4.1 All noise barriers, elevated structures, planned and committed development, if any, are considered in this report. After checking by the site visit for existing developments and the published information in Statutory Planning Portal under the Town Planning Board regarding planned / committed developments in the model area, the Development Site is surrounded by high- to low-rise developments, e.g. Mont Vert to the north, some village type developments to the east, north, southwest and west and Tai Po Industrial Estate to the southeast.

2.4.2 The building height information of these identified developments was extracted from Geo-Reference Database (BG1000) provided by Survey and Mapping Office/ Lands Department, and as shown in **Table 2.2** below. As higher building masses are concentrated to the north, northwest and northeast of the Development Site, it is likely

that wind availability from these directions (e.g. N wind) will be lowered due to the existing building morphology.

Table 2.2 Building Height of Surrounding Development

Name of Development	Maximum Building Height mPD	Maximum Building Height m	Location from the Development Site
Mont Vert	~102	~ 80	North
Village type developments including Tin Sam, Yue Kok, Fung Mei Wai, Lau Hang	~8 to 33	~10	Immediate East, Southwest & West
Tai Po Industrial Estate	~70	~65	Southeast
Alice Ho Miu Ling Nethersole Hospital	~66.5	~46	Southwest
Tai Po Hospital	~59	~37	West
Fu Heng Estate	~110	~100	West
Chung Nga Court	~110	~100	West
Fu Tip Estate	~143 to 172	~95 to 132	West

2.5 Summary of Existing Site Wind Availability

2.5.1 According to the wind availability data from Tai Po-EE, it is stated that the annual wind of the study area is mainly from the East, with a smaller component of the North. The Summer wind is mainly coming from the East and the Southerly quarters. For the dataset of the Location A, the annual wind directions of the Development Site is from E, while the summer prevailing winds are mainly from E, ESE and SE.

2.5.2 According to the wind roses at 200m from RAMS data, the annual prevailing wind directions for the Development Site are E, ESE and SE; whereas the summer prevailing wind direction are E, ESE and SE.

2.5.3 Based on both wind data, it is considered that the annual prevailing winds come from E, ESE and SE directions, and with N wind also concerned based on identified valley wind system. While in summer condition, the prevailing winds mainly come from E, ESE and SE directions.

2.5.4 It is anticipated that the surrounding traffic network and open space would be the main air corridors, including Fung Yuen Road, Ting Kok Road, open space sandwiched between the Development Site and the village type developments to the immediate north and west and GB zone in further east and west.

2.5.5 Under E wind condition, the presence of low-rise developments to the east of the Development Site should not impose any significant obstruction to wind flow. In addition, the section of Ting Kok Road acts as wind corridor for E wind direction.

2.5.6 The topography on the northern side is generally higher but separated away. The existing high-rise Mont Vert to the north will reduce the wind availability to the Development Site under N wind.

2.5.7 In addition, under ESE and SE wind directions, wind should flow atop Tai Po Industrial Estate towards the Development Site and its surroundings. As a result, the wind availability at pedestrian level is expected to be reduced.

2.5.8 **Figure 3** to **Figure 5** show the E, ESE/SE and N prevailing wind directions under exiting condition (with no massive aboveground structure onsite).

3. EXPERT EVALUATION OF AIR VENTILATION PERFORMACE OF THE PROPOSED DEVELOPMENT

3.1 Important Areas

3.1.1 Important surrounding areas that the public would often access have been identified as the following:

- Fung Yuen Playground;
- Roads surrounding the Development Site (Fung Yuen Road, Ting Kok Road); and
- Nearby residential and village-type developments.

3.2 Evaluation of Merit/Demerit of Design Features of the Proposed Development

3.2.1 Under the Proposed Scheme, various good design feature beneficial to air ventilation such as separation of building from site boundary, optimal building disposition and building separation advantageous to prevailing wind penetration are incorporated. The details of the mitigation measures in the site layout for enhancing the air ventilation of the Development and the surrounding areas are summarised below and illustrated in **Appendix 2**.

- Under this proposal, the development is mainly residential in nature. Development includes residential towers, clubhouse, commercial & public vehicle park and RCHE & DCU. Therefore, a podium-free design with underground parking facilities is adopted to minimise building footprint at grade and in turn possible wind blockage due to bulky podium mass otherwise.

Area (A)

- Building separation of not less than 30m in width, aligning in approximately along E-W direction, is proposed to be incorporated between T5 & T4/T7. This separation facilitates wind penetration mainly from E directions (which is most prevailing under annual situation and important under summer situation as well) to benefit its downstream areas including Lau Hang.
- Building separation of not less than 15m in width, aligning in approximately along E-W direction, is proposed to be incorporated between T1 & T4/T7. This separation facilitates wind penetration from prevailing E direction as well.
- Building separation of not less than 15m in width, aligning in approximately along SE-NW, is proposed to be incorporated between T1 & T2/T3. This separation facilitates wind penetration mainly from ESE and SE directions (most prevailing under summer situation and important under annual situation) to benefit wind entry to the open areas within the Development Site and its downstream areas including Lau Hang.
- Building separation of not less than 20m in width, aligning in approximately along SE-NW, is proposed to be incorporated between T5 & T6. This separation facilitates wind penetration mainly from ESE and SE directions to benefit wind entry to the open areas within the Development Site and its downstream areas including Lau Hang.
- High-rise building setbacks are provided. Setback from the northern and eastern site boundaries for T6 (36m and 5m respectively), from eastern site boundary for T1 (9m) and from the southern site boundary for T2 (7m) of the Development

Site in Area (A) will facilitate wind penetration to flow around the building mass of the development and benefit its surrounding areas.

- High-rise building is avoided at the southwest corner of the Area (A). In addition, there is some building setback of T1 and T2 (9m and 7m). This will allow southeast wind to flow to Fung Mei Wai, Lai Hang and Case Papillon areas easier.

Area (A) & Area (B)

- There exists a stream running within and along eastern side of the Area (A). In order to preserve the existing stream, building on west side of the stream (T1 to T5) within the Area (A) needs to be deposited further away from Fung Yuen Road to the east. Therefore, wider building separation from eastern boundary and Tin Sam area can be maintained. Regarding the Area (B), since the western portion is already occupied by the stream, the building must be erected among eastern portion to avoid direct impact on the stream. Nevertheless, building orientation and disposition is designed to maximise setback (6m) from eastern boundary adjoining Fung Yuen Road. Such separation will facilitate N wind entry to the open areas downstream including Tai Po Industrial Estate.

3.2.2 Further discussion of the scheme based on the good design features above is included below.

Air corridors/ Air paths

3.2.3 It is noted that there is no massive aboveground building development within the Development Site under existing condition. Therefore, there is no wind blockage and diversion effect when wind pass through the Development Site (see **Figure 3** to **Figure 5**).

3.2.4 The existing Mont Vert, will result in some obstruction to N wind flow. N wind will mainly flow along Fung Yuen Road. When under E to SE wind, there is no problem for wind to penetrate through the Development Site and reach Fung Mei Wai, Lau Hang & Case Papillon to the west and northwest.

3.2.5 **Figure 6** to **Figure 8** illustrate the prevailing wind from E, ESE/SE and N wind directions for the Proposed Scheme.

3.2.6 Under the Proposed Scheme, the building T6 in Area (A) is the east most block. It provides setback from Fung Yuen Road to the east. N wind can flow through the building setback and penetrate downward areas. On the other hand, there are building setback of 6m from eastern site boundary and no proposed building development in southwestern corner of Area (B). The setback area in connection with Fung Yuen Road can act as air path to allow wind penetration for N wind. When under E to SE wind, since the block disposition is away from Case Papillon, there is negligible wind blockage impact on it. Furthermore, wind availability among Fung Mei Wai/Lau Hang will be maintained through provision of building separation (not less than 30m between T5 & T4/T7 and not less than 15m between T1 & T4/T7 for E wind flow; not less than 15m between T1 & T2/T3 and not less than 20m between T5 & T6 for ESE & SE wind flow) and aligned with the prevailing wind directions. It will act as air path to allow wind penetration for E to SE wind.

3.2.7 Moreover, low-rise commercial & public vehicle park (+21mPD) and RCHE & DCU (+36mPD) are proposed. Some high level of ESE and SE wind flow atop these building structures and towards downwards. There will be some reduced wind availability only among Fung Mei Wai and its surroundings under ESE and SE wind.

Building Disposition and Development Permeability

3.2.8 The building disposition of Proposed Scheme is generally sufficient for air ventilation. It will welcome prevailing E to SE wind penetration under annual and summer condition.

3.2.9 Under the Proposed Scheme, various building gaps and building setbacks are incorporated in the design of the proposed development at the Development Site, which would allow annual and summer wind penetration. There is not less than 30m building separations between T5 & T4/T7 and between T1 & T4/T7 (not less than 15m) to facilitate E wind flow along this building separation towards surrounding areas, especially Fung Mei Wai, Lau Hang. The building gaps between T1 & T2/T3 and between T5 & T6 (not less than 20m) can facilitate SE and ESE wind penetration to downwind area especially Lau Hang.

3.2.10 In addition, ESE and SE wind can reach the open spaces inside the Development Site.

3.2.11 It also provides at least 5m building setback from all site boundaries near T5, T6, T3, T1, Clubhouse and RCHE & DCU so that wind can flow around building through the building setback area.

3.2.12 Low-rise commercial & public vehicle park (+21mPD) and RCHE & DCU (+36mPD) are proposed. Some E, ESE, and SE wind at high level can flow atop these building structures and towards downwind area.

3.2.13 Comparing to the existing environment, the building footprint of proposed blocks in the Proposed Scheme would impose some wind blockage impacts. However, various mitigated measures/ wind enhancement features are incorporated in the design of the Proposed Scheme, which would allow wind penetration across the Development Site and minimise the impact.

Building Height

3.2.14 The Proposed Scheme with higher building height might result in more wind blockage impact and it is more difficult for wind to pass over the high-rise building and come to the pedestrian level when compared to the existing condition. As there are wind corridors immediate to the Development Site and that air paths are created through provision of building gaps and setback, wind availability in the surrounding would mainly rely on the wind corridors and wind flows at pedestrian level, instead of wind coming down to pedestrian area from above the building.

3.2.15 The taller building height would generate a larger wake area affecting further downstream areas, and it result in more wind blockage impact when compared to the existing condition. However, it could generate relatively more downwash wind from wind at upper level which may benefit other surrounding area. Under E, ESE and SE wind condition, the building orientation of T3 to T6 would capture more portion of high-level E wind and create downwash to the pedestrian level within the Development Site and immediate surrounding areas (e.g. Tin Sam). As such, it is anticipated that the downwash due to Proposed Scheme could benefit the air ventilation performance of the area nearby the residential towers at the pedestrian level in some extent.

3.2.16 It is considered that blockage effect due to higher building height is minor and can be offset by provision of building separations, and increased downwash effect which is of secondary importance. The Proposed Scheme with good design features incorporated is expected to have air ventilation performance not significantly inferior to the existing situation.

3.3 Directional Analysis of the development

3.3.1 As discussed in **Section 2.1** and **2.3**, winds from E, ESE and SE direction are prevailing annually whereas winds from E, ESE and SE are dominant in summer. In addition, the existing air path for N wind penetration was identified as important in Tai Po-EE. Therefore, any difference under these more prevailing/important wind directions would contribute more to the overall impact.

E Wind

3.3.2 Under E wind condition (see **Figure 6**), the proposed high-rise residential building blocks, commercial & public vehicle park and Social Welfare Complex within the Development Site would obstruct E wind from penetrating into its downstream areas such as Phoenix Villa, Lau Hang and Fung Mei Wai. With the provision of building separations between T5 & T4/T7 (not less than 30m) and between T1 & T4/T7 (not less than 15m), E wind would penetrate through these building separations and reach further downstream on western side of the Development Site. Therefore, blockage impact on leeward area, especially Lau Hang, and Fung Mei Wai can be reduced. Besides, the E wind would penetrate through the building setback (around 7m) from T2 and southern site boundary of Area (A) towards the downwind areas such as Phoenix Villa.

3.3.3 E wind would also penetrate atop the low-rise proposed commercial & public vehicle park in Area (A) and proposed Social Welfare Complex in Area (B) and reach the downwind pedestrian area under Proposed Scheme. Moreover, the building setback (around 16m) from the Social Welfare Complex in Area (B) and the southern site boundary of Area (B) would facilitate E wind penetration to benefit area such as Ting Kok Road & Yue Kok.

3.3.4 The potential obstruction to prevailing E wind has been reduced in the design. Therefore, adverse air ventilation impact to the surrounding downwind areas is not expected under E wind condition.

ESE and SE Winds

3.3.5 Under ESE and SE wind conditions, the proposed high-rise residential buildings of the Development Site would obstruct the ESE and SE prevailing wind from reaching the downstream areas such as Phoenix Villa, Lau Hang, Fung Mei Wai, Lau Hang and Case Papillon.

3.3.6 Under the Proposed Scheme, various building design measures are proposed to be incorporated in the proposed development. As shown in **Figure 7**, building separation between T5 & T6 and between T1 & T2/T3 along SE-NW direction are proposed in order to alleviate any possible air ventilation impacts. The incoming ESE and SE wind would flow through the proposed building separations (not less than 15m) then penetrate the Development Site and towards downstream areas such as Lau Hang. In addition, building setback of T6 from northern site boundary of Area (A) (around 36m), T2 from southern site boundary of Area (A) (around 7m), proposed Social Welfare Complex from southern site boundary of Area (B) (around 16m) are provided. More ESE and SE winds could flow through these open space and penetrate towards the downstream areas including Phoenix Villa, Fung Mei Wai, Lau Hang and Case Papillon. Moreover, some portion of ESE and SE wind would flow atop the proposed Social Welfare Complex (+36mPD) and reach the downward pedestrian areas including Fung Mei Wai and Phoenix Villa. Therefore, unfavourable impact in terms of air ventilation performance on the surrounding areas is not anticipated. .

N Wind

3.3.7 Under N wind direction, the existing high-rise buildings at Mont Vert to the north will reduce the wind availability to the Development Site. N wind will mainly flow along Fung Yuen Road and the agricultural area with low-rise building structures to the east and west of the Development Site respectively. With the already limited N wind flow to the Development Site, there is limited additional impact by the high-rise building blocks in the Proposed Scheme blocking the N wind from reaching its downstream areas such as Ting Kok Road, Yue Kok, Fung Yuen Road, Fung Yuen Playground, and Tai Po Industrial Estate. With the provision of eastern building setback along Fung Yuen Road and open space at southwestern corner in Area (B), the N wind would penetrate through the Development Site around the building easier and further flow towards the downward areas. Therefore, the proposed mitigation measures in the Proposed Scheme would enable more N wind penetration across the Development Site to reach downwind area, including Ting Kok Road, Fung Yuen Playground, Tai Po Industrial Estate, and further south portion of Fung Yuen Road. Adverse impact in terms of air ventilation to the surrounding areas is not anticipated under N wind condition.

3.4 Summary of Relative Air Ventilation Performance

3.4.1 The existing condition of the Development Site is an undeveloped land mostly covered with vegetation so that there is generally no wind blockage at all.

3.4.2 The main frontage of Development Site is facing east/west. If no mitigation measures are incorporated into the Proposed Scheme, there would be rather significant wind blockage impact to E to SE wind flow to downwind area. Wind availability among areas including Case Papillon, Lau Hang, Fung Mei Wai, Phoenix Villa will be reduced.

3.4.3 The opportunity to create wind corridors within the Development Site has been optimized and the proposed mitigated measures such as effective building separations and building setback from site boundaries have been incorporated in the design of the site layout to allow wind penetration.

3.4.4 The Proposed Scheme has provided adequate building separations and setbacks (T6 with around 5m setback from eastern site boundary, T1 with around 9m setback from eastern site boundary, T2 with around 7m setback from southern site boundary in Area (A); proposed Social Welfare Complex with around 6m to 18m setback from east and south boundaries in Area (B)) from identified air path along Fung Yuen Road and Ting Kok Road to facilitate prevailing wind flow. It is anticipated that the concerned prevailing wind flow is possible to penetrate through the building gaps (4 numbers of gaps of not less than 15m) and building setback from site boundaries towards downwind area. The potential blockage impact can be effectively reduced.

4. CONCLUSION

4.1.1 A qualitative assessment on the air ventilation performance of the Proposed Development has been carried out.

4.1.2 According to the findings of the quoted Tai Po-EE, the annual wind of the urban areas of the study area is mainly from the East, with a small component of the North. Agreed with the RAMS data, the annual prevailing wind comes from E, ESE, SE, and N, while the summer prevailing wind comes from E, ESE, SE, and N directions.

4.1.3 By considering the existing topography and the location of the existing built areas, it is likely that annual prevailing N wind flow would be obstructed due to existing high-rise buildings to the north while annual and summer prevailing E to SE wind is generally unobstructed currently.

4.1.4 The wind corridor for N wind penetration is mainly along Fung Yuen Road and not significantly impacted by the development. The Proposed Scheme respected the wind corridor and provided more building separations from Fung Yuen Road with provision of not less than 5m building setback of T6 (eastmost block) from the eastern site boundary.

4.1.5 When compared to the existing condition, there is additional building blocks within the Development Site and the main frontage of the Development Site is facing east/west so that it would inevitably have more wind obstruction impact under E to SE wind directions which reduce wind availability of downwind area. In addition, the higher building height can result in increase of wind blockage to area further. In the proposed scheme, the impact is mitigated by provision of various building setback and building separations in the Proposed Scheme.

4.1.6 Although the buildings in the Proposed Scheme would induce impact in terms of wind availability to the surrounding area when compared with the existing condition, the Proposed Scheme maximises building separation from nearby air corridor, provides building setback along site boundary and have optimal building disposition with various building gaps of adequate widths created to increase the development permeability. These mitigation measures are essential for mitigating air ventilation impact to the surrounding areas.

4.1.7 For the E wind condition, the building separations between T5 & T4/T7 (not less than 30m) and another building separation between T1 & T4/T7 (not less than 15m) allow wind penetration along this building separation towards surrounding downwind areas. For the ESE and SE wind directions, the building gaps between T1 & T2/T3 (not less than 15 m) and between T5 & T6 (not less than 20m) can provide opportunity for wind penetration as well.

4.1.8 In addition, the Proposed Scheme has provided around 5m setback from eastern site boundary for T6, around 9m setback from eastern site boundary for T1, around 7m setback from southern site boundary for T2 in Area (A); around 6m to 18m setback from east and south boundaries for the proposed Social Welfare Complex in Area (B) to further improve the development permeability.

4.1.9 Considering above, with the provision of the mitigation measures to facilitate wind flow under the concerned prevailing wind directions, adverse air ventilation impact on the surrounding areas is not anticipated.

Figures

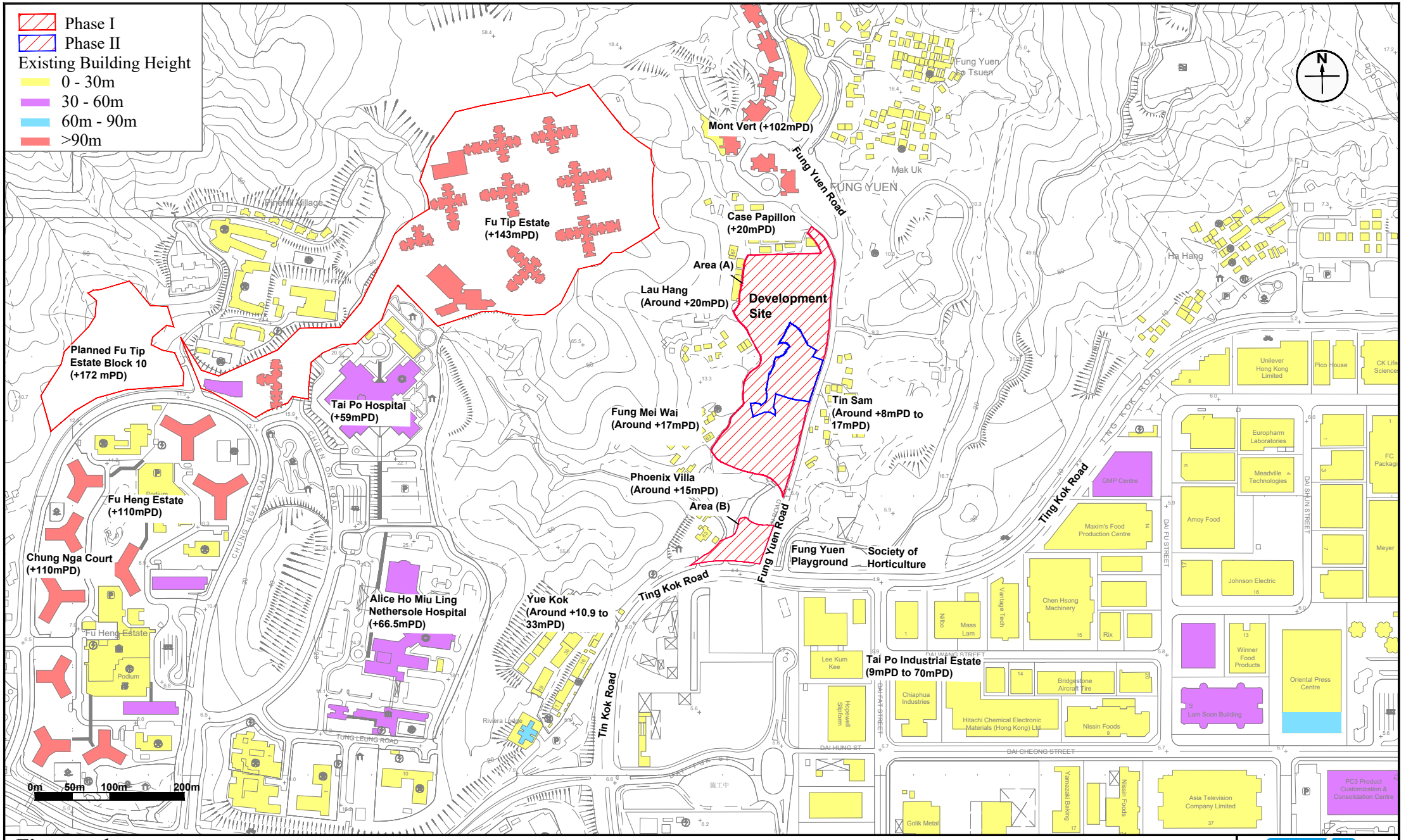


Figure: 1

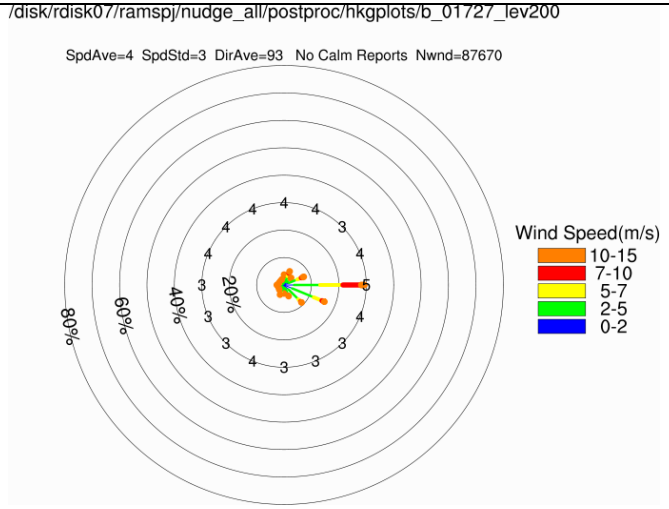
Title: Location of the Development Site and Its Environs

Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories

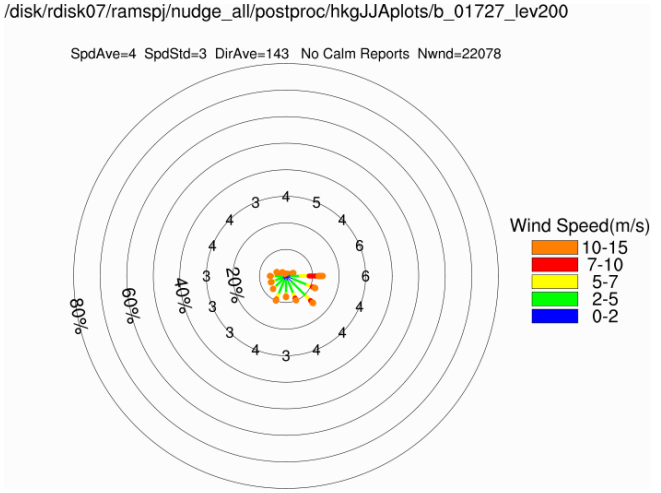
RAMBOLL

Drawn by:	MK
Checked by:	CC
Rev.:	4.1
Date:	Aug 2025

(81,74)

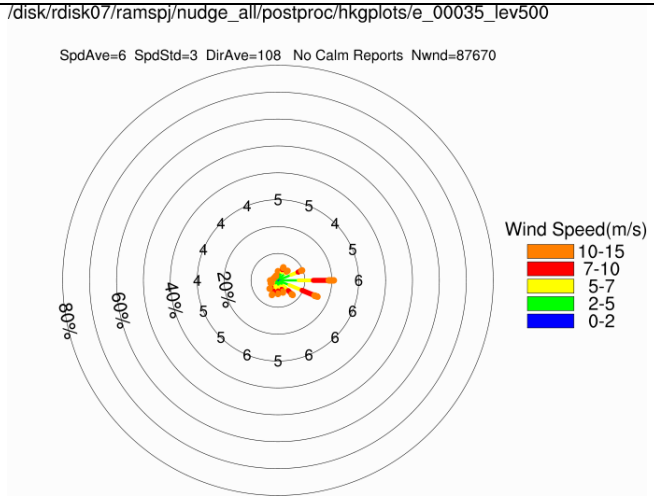


Annual Wind

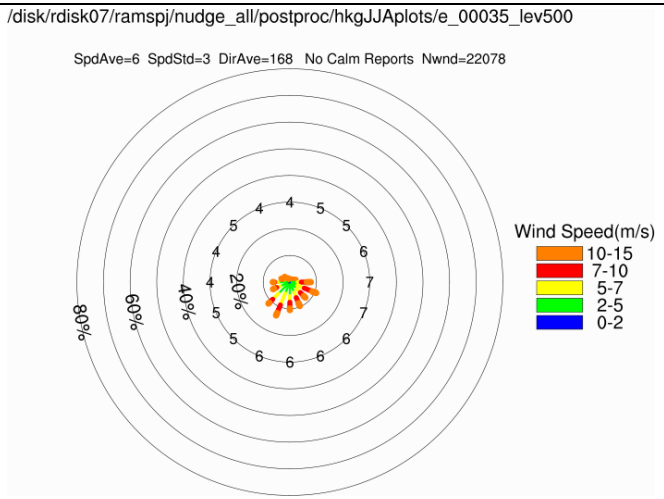


Summer Wind

(81,73)

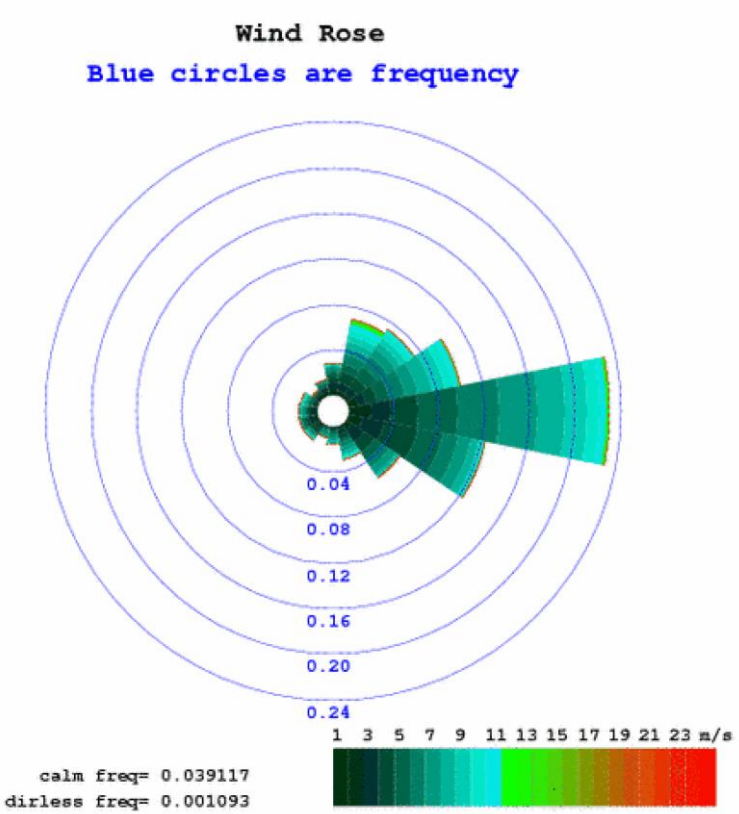


Annual Wind

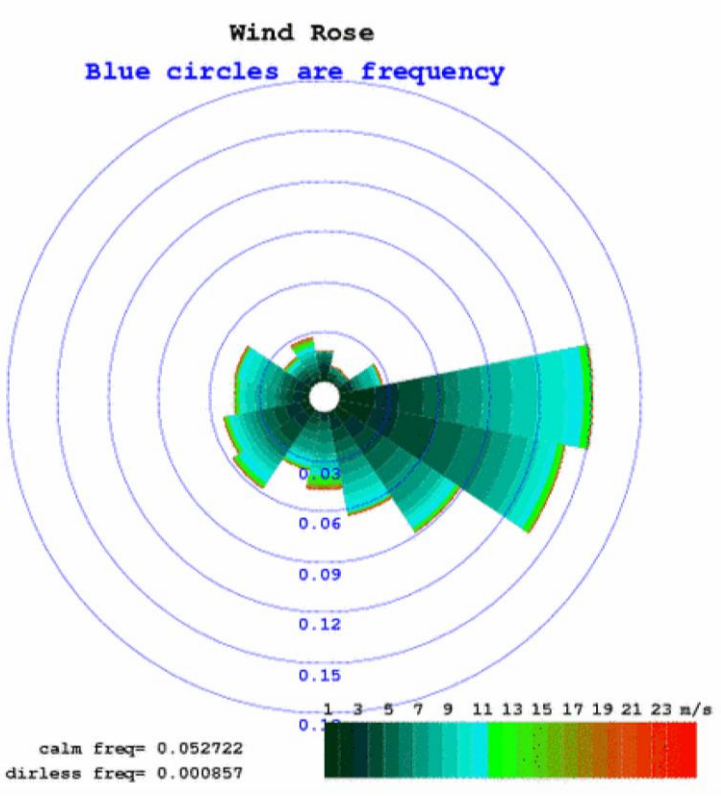


Summer Wind

Figure: 2a	RAMBOLL
Title: Relevant Wind Rose Diagram at 200m from RAMS (X:81, Y:74) and (X:81, Y:73)	Drawn by: MK
	Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.1
	Date: Jul 2025



Annual Wind



Summer Wind

Figure: 2b	RAMBOLL
Title: Experimental Site Wind Availability Data from Term Consultancy for Expect Evaluation and Advisory Services on Air Ventilation Assessment (PLNQ37/2007) Final Report for Tai Po Area at 120m	Drawn by: MK Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.1 Date: July 2025

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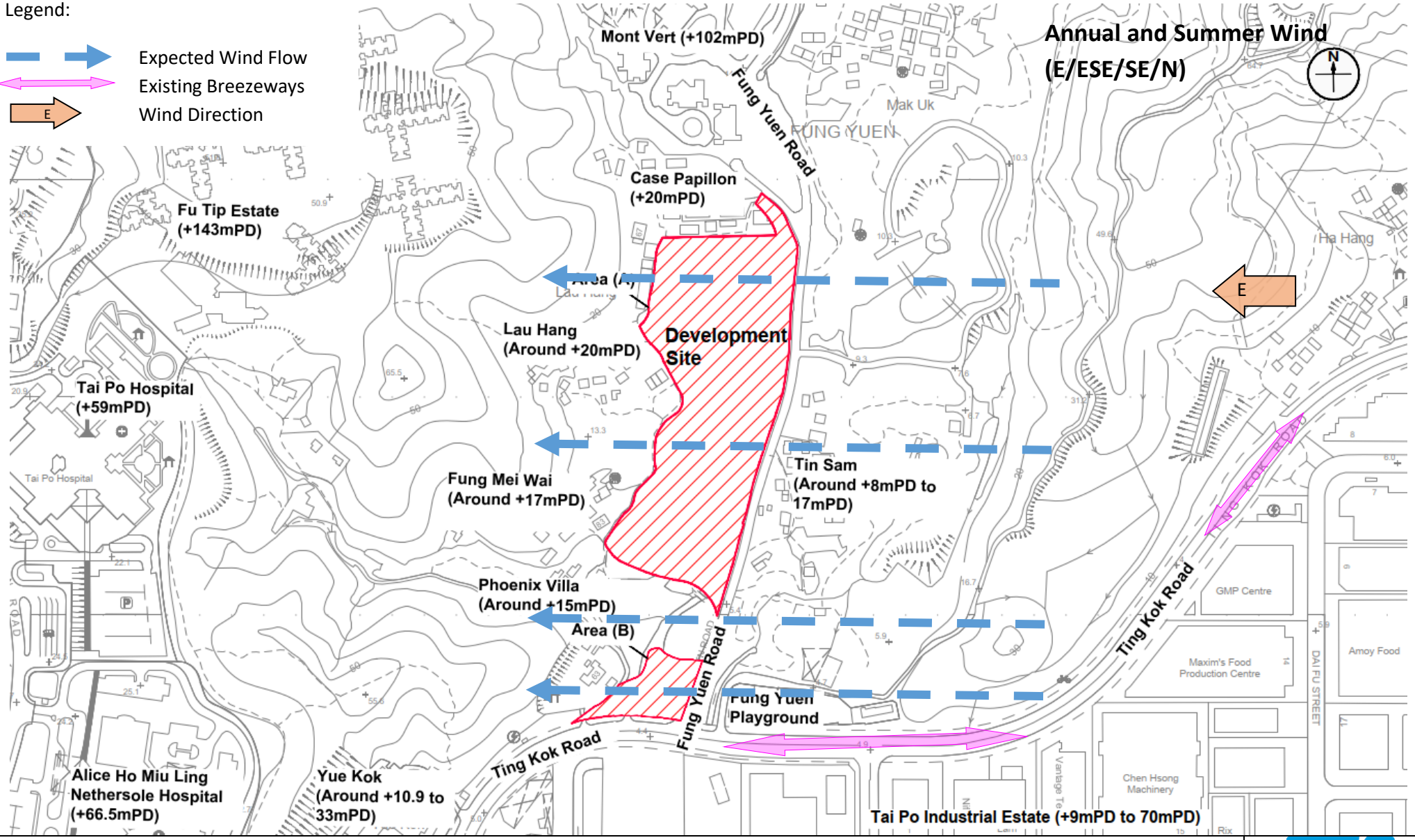

Figure: 3	RAMBOLL
Title: Illustration of Wind Flow from E Wind Direction for Existing Condition	Drawn by: MK Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.2 Date: Aug 2025

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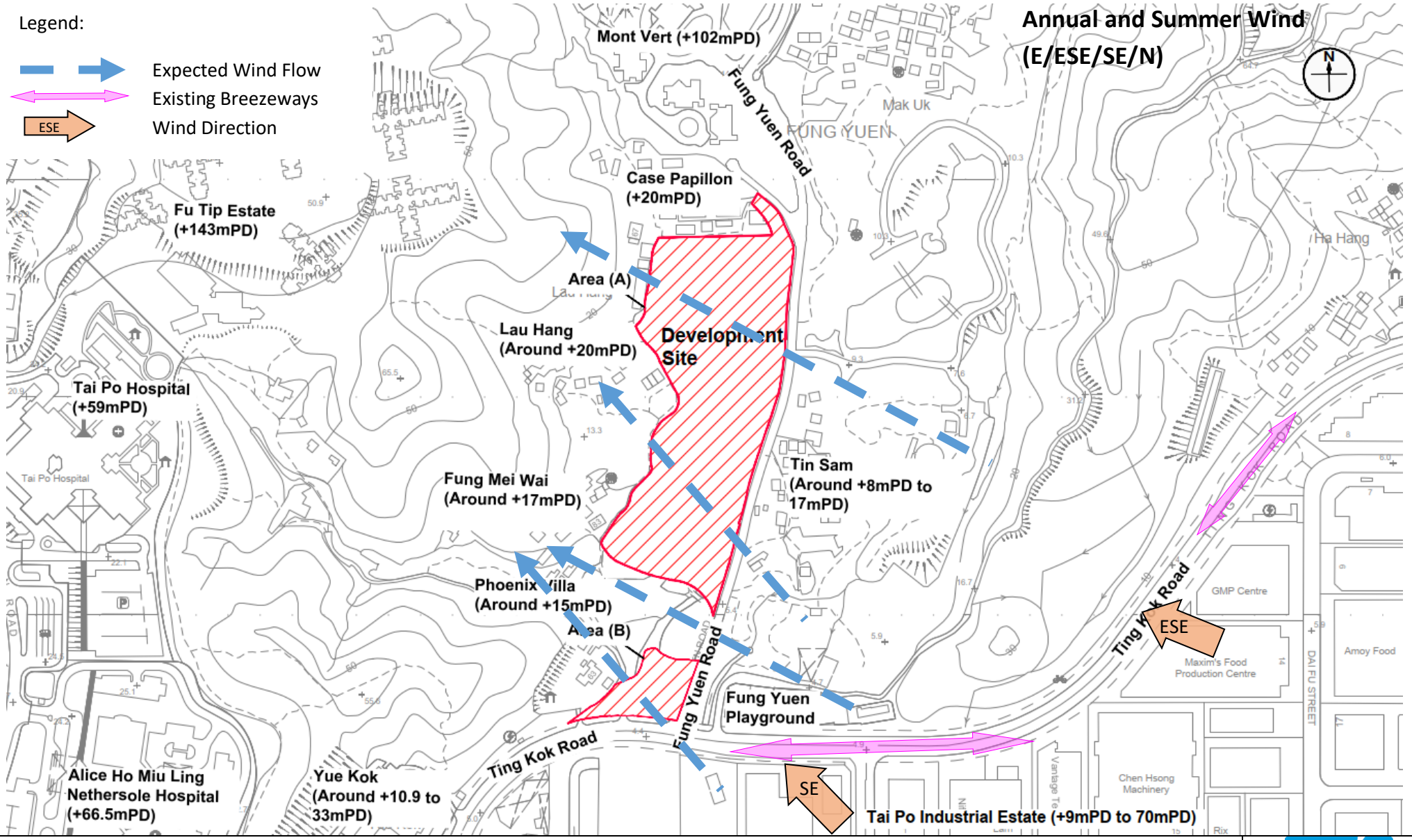

Figure: 4	RAMBOLL
Title: Illustration of Wind Flow from ESE and SE Wind Directions for Existing Condition	Drawn by: MK Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.2 Date: Aug 2025

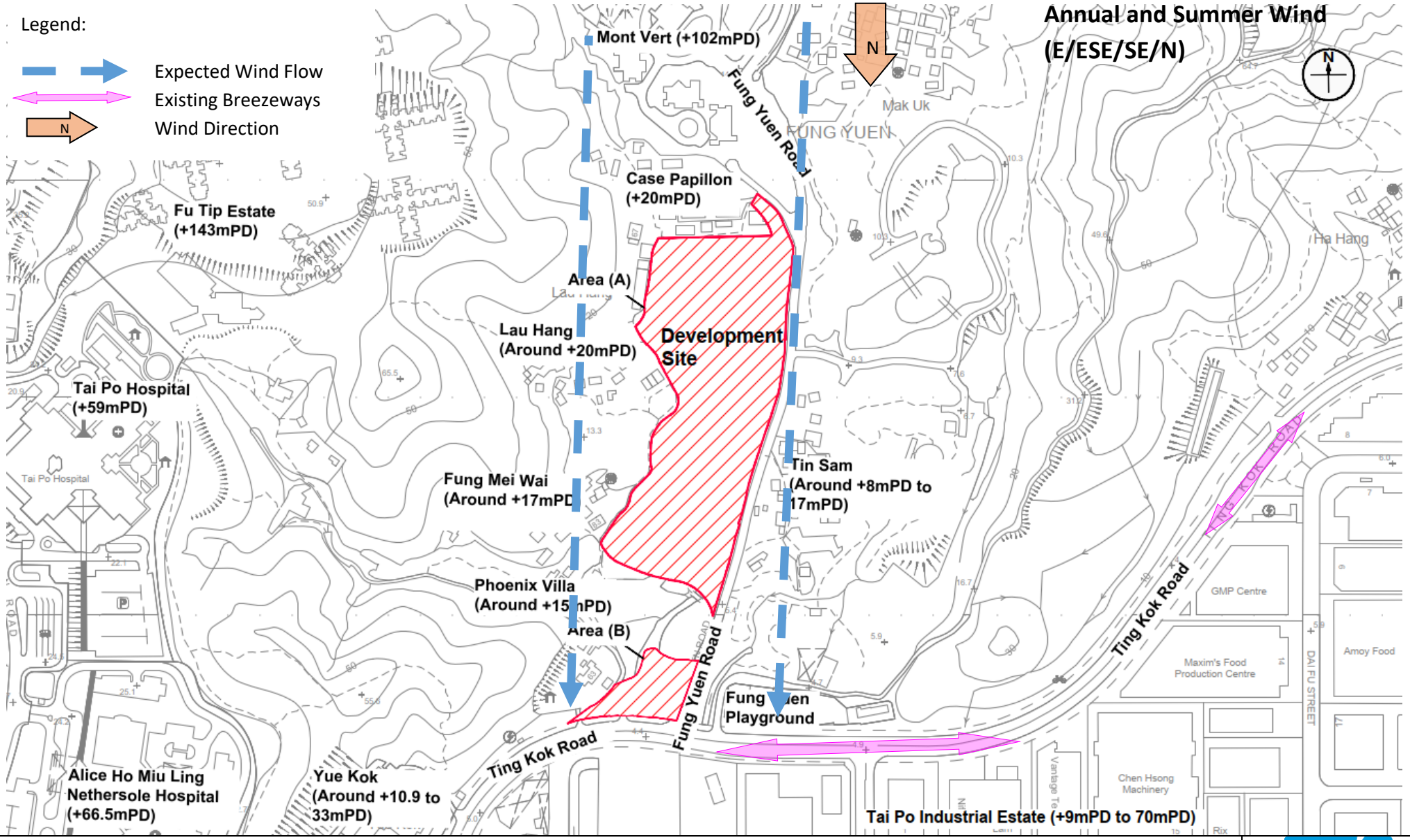

Figure: 5	RAMBOLL
Title: Illustration of Wind Flow from N Wind Direction for Existing Condition	Drawn by: MK
	Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.2
	Date: Aug 2025

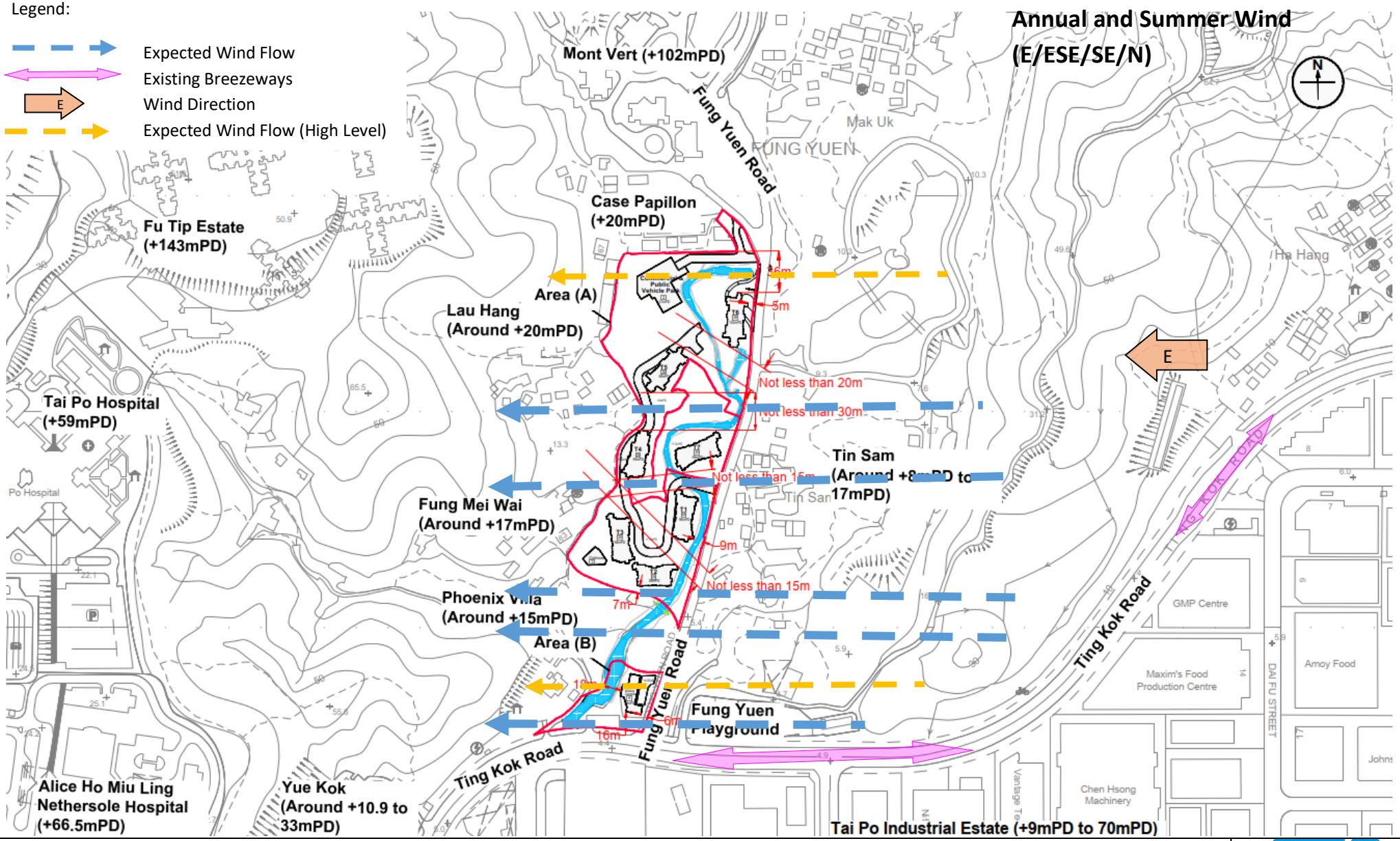

Figure: 6	RAMBOLL
Title: Illustration of Wind Flow from E Wind Direction for Proposed Scheme	Drawn by: MK Checked by: CC
Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories	Rev.: 4.2 Date: Aug 2025

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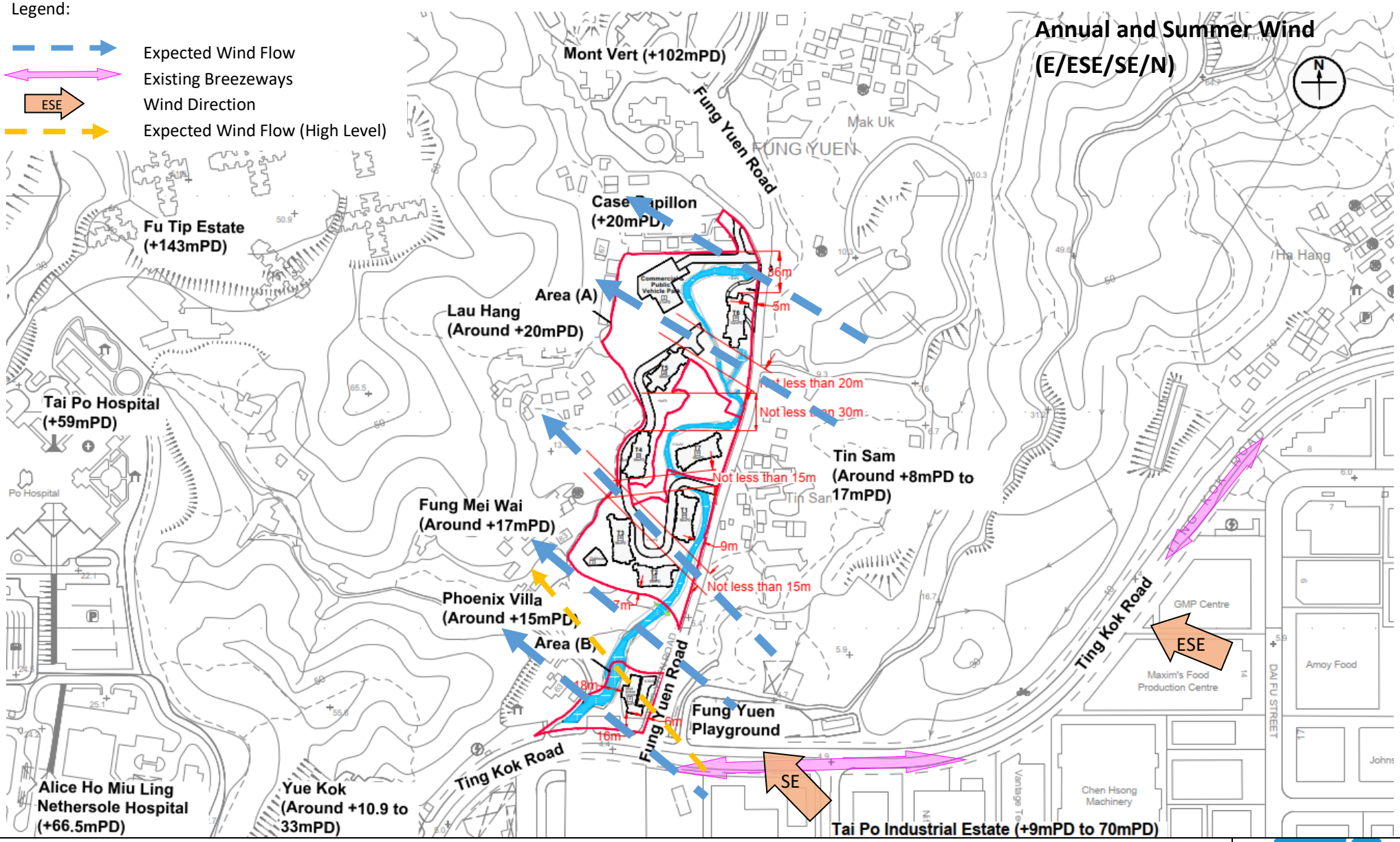


Figure: 7

Title: Illustration of Wind Flow from ESE and SE Wind Directions for Proposed Scheme

RAMBOLL

Drawn by: MK

Checked by: CC

Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories

Rev.: 4.2

Date: Aug 2025

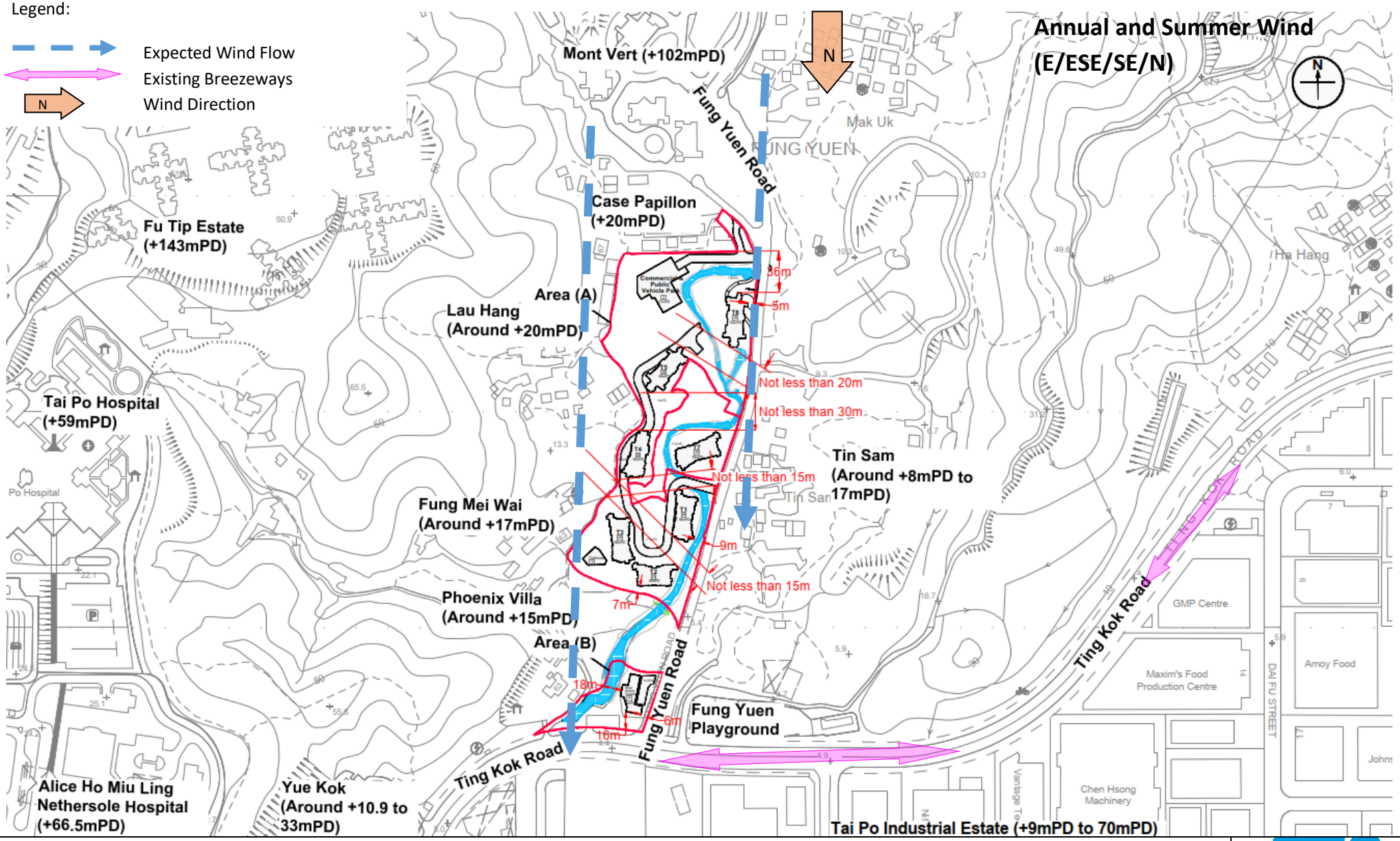


Figure: 8

Title: Illustration of Wind Flow from N Wind Direction for Proposed Scheme

Project: Proposed Residential Development(s) with Retail, Public Vehicle Park and Social Welfare Facilities at Various Lots and Adjoining Government Land at Fung Yuen, Tai Po, New Territories

RAMBOLL

Drawn by: MK

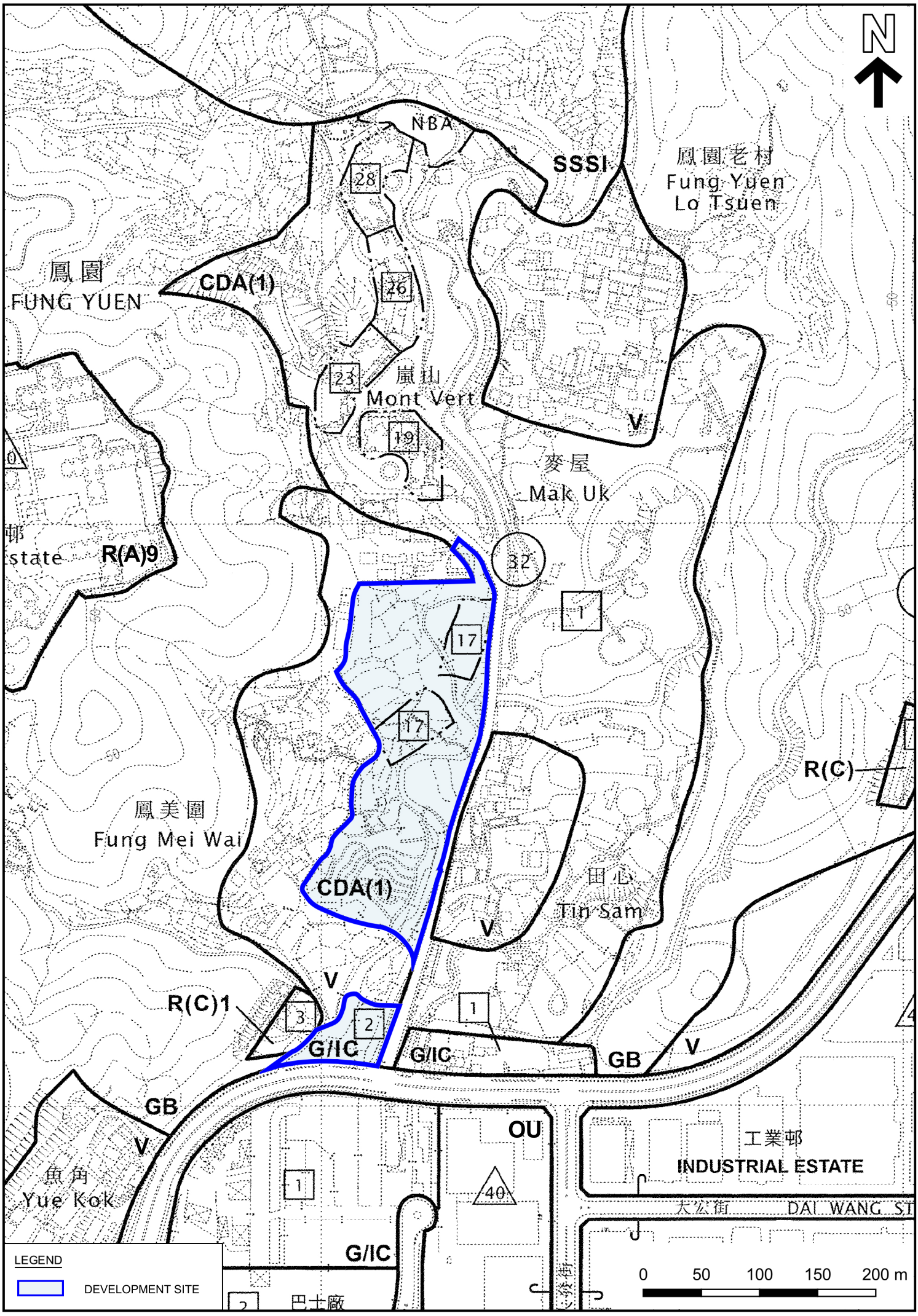
Checked by: CC

Rev.: 4.2

Date: Aug 2025

Appendix 1

The Indication Plan of the Zoning Context Plan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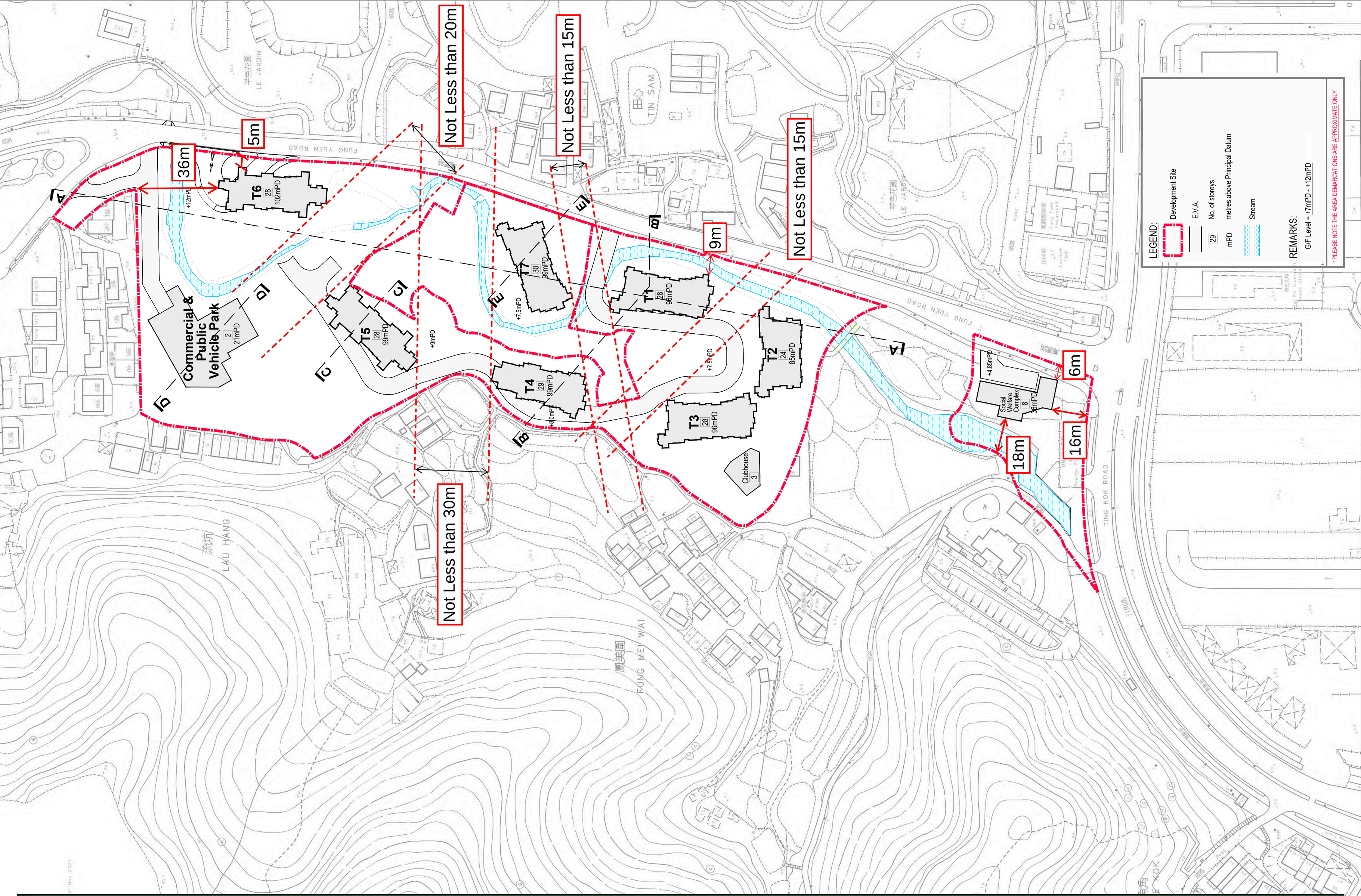
NBA
SSSI
鳳園老村
Fung Yuen
Lo Tsuen
鳳園
FUNG YUEN
CDA(1)
嵐山
Mont Vert
麥屋
Mak Uk
V
R(A)9
R(C)
鳳美園
Fung Mei Wai
CDA(1)
田心
Tin Sam
R(C)1
G/IC
GB
OU
工業邨
INDUSTRIAL ESTATE
大公街
DAI WANG ST
魚角
Yue Kok
巴士廠
LEGEND
DEVELOPMENT SITE
0
50
100
150
200 m

Appendix 2

The Indication Plan of the Proposed Scheme



REZONING APPLICATION AT FUNG YUEN ROAD, TAI PO, N.T.

Indicative Layout Plan

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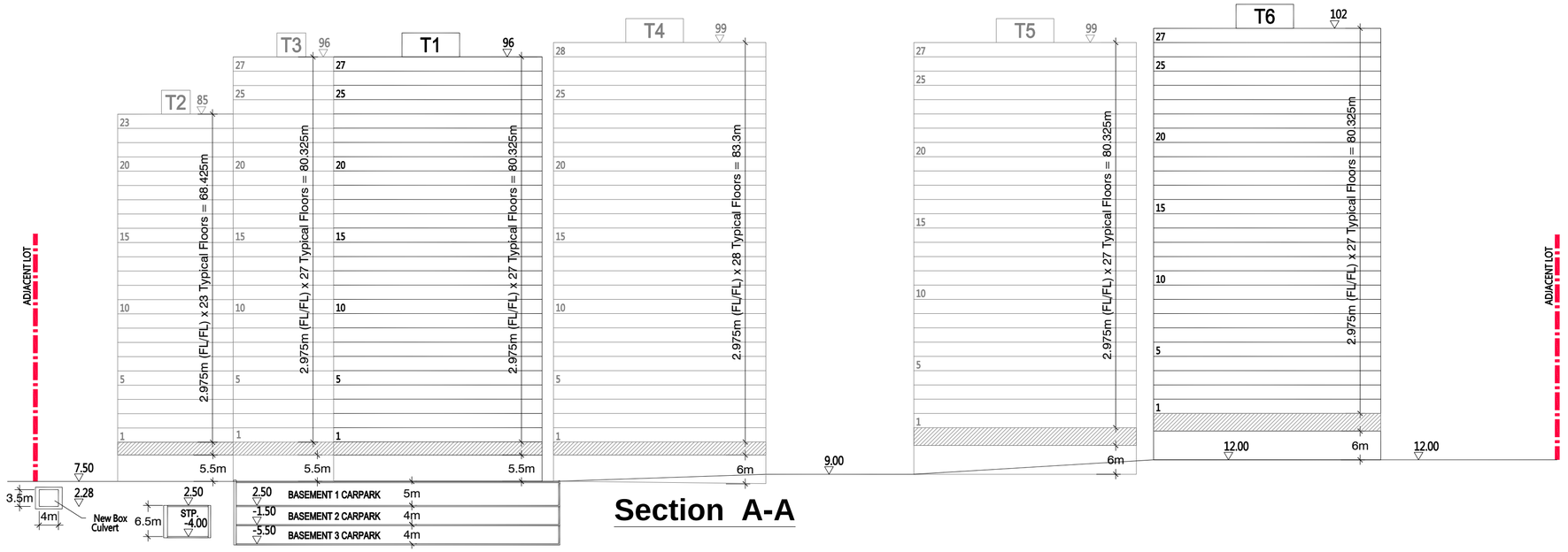

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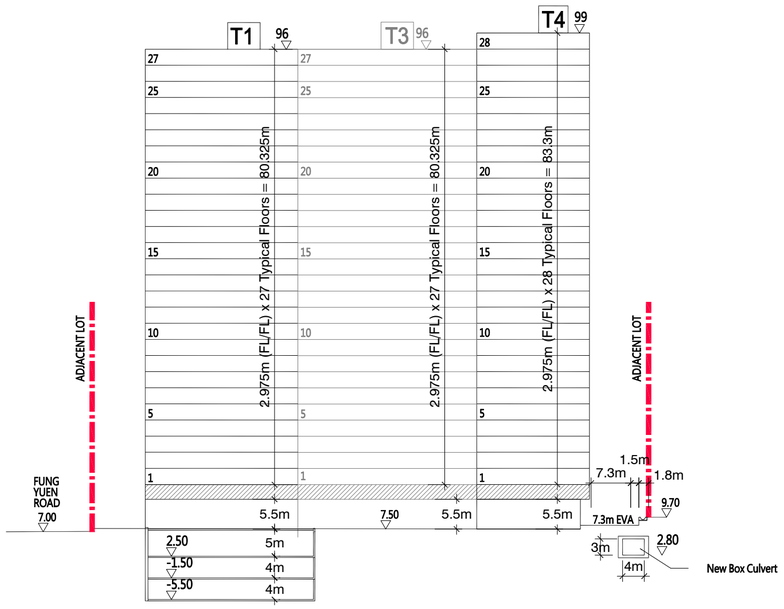

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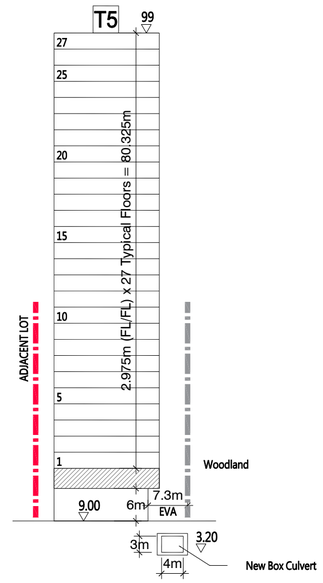

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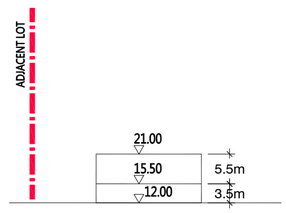

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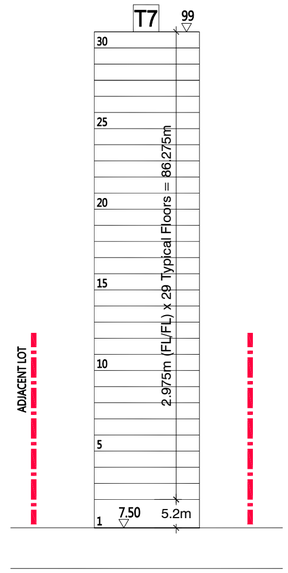

Section E-E

REZONING APPLICATION
AT FUNG YUEN ROAD,
TAI PO, N.T.

Diagrammatical Section Plan

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