Annex D

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot
Environmental Impact Assessment (EIA)
Supplementary Information to Advisory Council on the Environment (ACE)

Index

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COMMENTS		RESPONSES
	Members have raised concerns on various issues at the 140th EIA Subcommittee meeting held on 11 September 2017. The Project Proponent is invited to provide the following supplementary information and attend the full Council meeting on 9 October 2017:-	**Mission and Vision** SHD is a piece of land supporting railway operations, which can be transformed into homes for 14,000 families. The Corporation has the intention to create a world class sustainable community at SHD which is served by the MTR system. The EIA proposal represents a baseline for the proposed SHD development. ACE's suggestions and comments are much appreciated and they will be taken into consideration in order to continue to improve the current scheme during the MLP stage after successful rezoning of the SHD site.
(i)	design concepts and considerations to further alleviate the landscape and visual impact of the residential buildings and podium, such as review of the building layout/design, massing/heights of the buildings, façade/podium treatment, colour schemes, etc. with a view to harmonizing with the landscape character of the surrounding area;	The proposed conceptual development scheme (**Appendix I**) has incorporated a list of planning and design considerations including building disposition, height profile (stepped podium), permeability (breezeways and airpaths), greening and façade treatment to minimise negative impacts to the surrounding landscape. In formulating the proposed conceptual development scheme for the EIA, due considerations have also been given to address relevant Study Brief requirements and other guidelines e.g. EIAO Technical Memorandum, Sustainable Building Design Guidelines and Urban Design Guidelines, etc. These included baseline study under the context of the landscape and visual impact assessment, which had considered Physical Aspects (e.g. geology, topography, soils, vegetation, hydrological and climate features including microclimate (such as landscaped garden)), Human Aspects (e.g. coastal waters, artificial shoreline, plantation, urbanized development and roads & urban infrastructure) and Aesthetic Aspects (e.g. the landscape setting within the visual envelope including the views available, visual amenity and visual character) of the Project. The potential outcomes are illustrated in the artist

COMMENTS		RESPONSES
		impressions on the conceptual greening framework at the civic square and the landscaped terrace (**Appendix II**). About 30% of greenery would be provided within the Project and would transform SHD into a sustainable green urban node. Please refer to S11.4-11.6 and S11.8 of the EIA Report for information. The scheme design will be further enhanced at the detailed design stage to allow further permeability and variations in building height. As the development will be implemented under many development packages and over a long period of time, the buildings will naturally form a township of different designs, colours, textures and materials which will reduce the visual massing and eliminate monotonous appearance. Further articulation of the podium deck at detailed design and the adoption of soft landscaping including green walls will allow the development to harmonise with the landscape character of the surrounding area.
(ii)	feasibility of the project contributing to the waterfront/coastline which is a specific landscape element of the site; providing connectivity of residents to access the northern site boundary and maximizing their use of the waterfront;	In order to maximise the use and enjoyment of the waterfront, the design will provide: i) Staircases and lifts connecting the development's podium level with the waterfront ii) A landscaped waterfront promenade along the northern edge of the development's podium level iii) A minimum of 2m setback for the majority of the depot edge along the waterfront for planting of trees, architectural features, green walls and landscaped seating areas in order to create a pleasing and lively backdrop to the waterfront (see Indicative Perspective, **Appendix III**), iv) Reserved footbridge connection point at development's podium level to the potential Siu Ho Wan Reclamation and/or promenade leading to the Tung

COMMENTS		RESPONSES
		Chung East New Town Extension. The Corporation will continue to work with relevant Government departments to optimise the design of promenade at the waterfront.
(iii)	feasibility of alternative designs to avoid installing fixed windows for sensitive facades at the southernmost row of residential buildings;	The current design has located all the openable windows of living rooms and bedrooms facing to the north for the buildings of self-protecting building design along the southern site boundary fronting North Lantau Highway (i.e. the southernmost row of buildings) to minimise the impacts of road traffic noise and rail noise. Openable windows will be provided at non-noise sensitive rooms to facilitate cross ventilation. Fixed glazing will be provided at the habitable rooms at the southern façade to provide extra daylight and views in addition to the openable windows at the north (**Appendix IV**). Further investigation will also be made at detailed design stage to maximise cross-ventilation. With the advancement in noise mitigation technology in the future, further use of acoustic window/balcony as noise mitigation measures will be reviewed in the implementation stage. Please refer to S2.4.2.15, S2.4.3.11 and S2.4.3.12 of the EIA for information.
(iv)	detailed explanations on the considerations given to choose the Western Station option instead of the Central Station option;	The key station design considerations and site constraints have been taken into account which included minimizing the disturbance to depot operations, train services and possible risks at the construction of new station, limiting the potential impacts to North Lantau Highway (NLH), Lantau North (Extension) Country Park and Tai Ho Priority Site, construction waste caused by station site formation works, and the transport planning considerations of the future public transport interchange (PTI) and Tai Ho Interchange. Please refer to **Appendix V** for details.

COMMENTS		RESPONSES
		With respect to the western station location, provisions have been made within the topside development for a range of options for residents and visitors to reach the railway station: a retail spine is proposed in the middle of the topside development with direct connection to the station to extend the reach of the station to the East, making the journey to the station enjoyable and provide daily convenience to the residents. Extensive covered walkway system at the podium level connecting the residential towers to the station will be provided. In order to encourage the use of bicycle in support of a sustainable environment, bicycle tracks at the podium level and bicycle park near the station will also be provided.
(v)	the master layout plan and relevant sections for the project;	Please refer to section (i) of this document.
(vi)	information on measures that would be implemented for the project to become a sustainable community and low carbon development;	With reference to the Sustainable Design Guidelines promulgated by Buildings Department and the provision of a new MTR station to follow the Transit-Oriented Development (TOD) principle, the topside residential development will be targeted to achieve at minimum the Hong Kong BEAM Plus Gold accreditation to create a low carbon sustainable community. The Corporation also aims at achieving a rating as high as practicable under BEAM Plus (Neighbourhood) during the Master Layout Plan stage. The following green measures will be implemented, subject to detailed design: • Electric vehicle charging at all residential and visitor carparking spaces; • High performance building system and equipment, such as low energy absorbent glazing, sunshading, free cooling, air conditioning system and lighting,

COMMENTS		RESPONSES
		regenerative lifts, variable speed escalators, EMSD energy efficiency labelled appliances (e.g. inverter type air conditioners), building management system, etc.; • Rainwater recycling for irrigation to reduce freshwater consumption. Efficient water taps, showers and water appliances as per Water Efficiency Labelling Scheme will be provided at residential units, as well as dual flush water closet for reduction of freshwater use and sewage discharge; and • Waste reduction facilities for collection, sorting, storage and disposal of waste and recovered materials. Programme for food waste recycling will be introduced, with installation of decomposer on-site for turning the food waste into soil fertilizer for landscape purpose. In addition, in view of the proximity of the future Organic Waste Treatment Facilities Phase 1 with the Project, the Corporation will coordinate with relevant Government departments to make use of this opportunity for room to enhance treatment of food wastage.
(vii)	information on air ventilation assessment, microclimate study and view study done to justify the locations of the breezeways/airpath and view corridor;	The breezeways/ local air paths and visual corridors are planned at strategic locations that were technically assessed through qualitative air ventilation and visual assessments. These technical studies found that such strategic locations would enhance air ventilation and visual permeability across the Project Site which would lead to least adverse impact to the surrounding area. An Air Ventilation Assessment (AVA) - Expert Evaluation (EE) Report was prepared and had been submitted and reviewed by Planning Department. The AVA-EE was conducted based on the prevailing wind directions under annual and summer wind conditions based on the available wind data and windroses (including RAMS published by PlanD, measured data by HKO and the Site Wind Availability Study of an adjacent planned Tung Chung East. The AVA-EE had confirmed that two of the

COMMENTS		RESPONSES
		four proposed breezeways running in N-S directions would be effective in allowing annual and summer prevailing winds including NE, ENE and S winds to travel along whilst one of the proposed breezeways running in E-W directions would be effective in allowing annual prevailing E wind to travel along. Six airpaths running in NW-SE also supplements the airflow within the Proposed Development. An Outdoor Wind Environment Simulation (by CFD modelling) has also been conducted to assess the microclimate on the podium deck of the current proposed development scheme. The building layout and/or disposition will be further refined to enhance the permeability so that the microclimate would be further enhanced in the MLP Stage. Upon the CFD findings under E and S winds, the average wind speed at upper deck under S wind would be relatively lower than that under E wind. It would be due to the shielding effect by the Lantau North Country Park located to the immediate south of the Project Site. The self-protecting building along NLH would shield the incoming S wind, but the proposed breezeways and local air paths would favour wind penetration. The microclimate would be further enhanced through the revising the building layout in the next stage. On the other hand, sea breeze would also be expected given the Project Site is near the coastline. With the shallow site perpendicular to the sea breeze, sea breeze would easily penetrate through the available building separation and proposed breezeways/ local air paths. The average wind speed of upper deck of Project Site was found to be 1.8m/s (0.01-6.6m/s) and 1.6m/s (0.02-4.6m/s) under E and S winds, respectively. Such light breeze can be felt on face and leaves rustle under Beauford Scale. The currently proposed scheme with the proposed breezeways/ local air paths is therefore coherent and acceptable. Pls refer to Appendix VI for the summary of the AVA-EE and S2.4.2.11 of the EIA

<table>
<tr><th colspan="2">COMMENTS</th><th>RESPONSES</th></tr>
<tr><td></td><td></td><td>Report for details.</td></tr>
<tr><td>(viii)</td><td>confirmation on the targeted standard to be achieved under the BEAM Plus rating system for the topside development; and</td><td>The Corporation has confirmed at the EIA Subcommittee meeting that it is planned to achieve the BEAM Plus New Buildings Gold rating for all residential development, which will be included as a tender requirement for developers. Well-designed BEAM Plus buildings aim to reap the benefits of better indoor environment, minimised pollution to the external environment, energy-efficient buildings and reduction of unsustainable consumption of scarce resources through good designs of planning of site, materials, energy use, water use and indoor environmental quality. The Corporation also aims at achieving a rating as high as practicable under BEAM Plus (Neighbourhood) during the Master Layout Plan stage.

MTRCL’s residential developments with BEAM Plus Gold achievement are tabulated for information below:

<table>
<tr><th>Year</th><th>Property</th><th>BEAM Plus Standard Awarded</th></tr>
<tr><td>2017</td><td>LOHAS Park Package 8</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2017</td><td>Tai Wai Residential Development</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2017</td><td>Grand Austin Residential Development (Grand Austin)</td><td>BEAM Plus Gold (Final Assessment)</td></tr>
<tr><td>2017</td><td>Long Ping Station South</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2016</td><td>LOHAS Park Package 6</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2016</td><td>LOHAS Park Package 5</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2016</td><td>Austin Site C Residential Development (The Austin)</td><td>BEAM Plus Gold (Final Assessment)</td></tr>
<tr><td>2015</td><td>Tsuen Wan West Station (Cityside) (Parc City)</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2015</td><td>Tsuen Wan West Station (Tsuen Wan 6</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
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<table>
<tr><th colspan="2">COMMENTS</th><th>RESPONSES</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>Residential) (Pavillia Bay)</td><td></td></tr>
<tr><td>2015</td><td>LOHAS Park Package 4 (Wings at Sea)</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2015</td><td>Long Ping Station North (Spectra)</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2014</td><td>Tsuen Wan West Station (Bayside) (Ocean Pride/Ocean Supreme)</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
<tr><td>2013</td><td>Nam Cheong Station (Cullinan West)</td><td>BEAM Plus Gold (Provisional Assessment)</td></tr>
</table>
</td></tr>
<tr><td>(ix)</td><td>drawings showing the provision of natural daylight and ventilation to the depot.</td><td>Nearly 90% of the depot is occupied by rail tracks and train stabling berths which normally require a minimal level of lighting. The main workshop and offices which require artificial lighting will be strategically located at the edge of the depot to capture natural daylight so as to minimise energy consumption for lighting requirements. Please refer to Appendix VII for detailed explanation.

Mechanical ventilation is normally not required by rail tracks and train stabling berths. Cross ventilation allowed by the open-sided depot at both the south and north sides will be sufficient for rail tracks and train stabling berths. Whilst main workshop and offices will require mechanical ventilation, their fresh air intake and exhaust louvres will be strategically located to avoid potential nuisance to residents at topside development.

Skylight will also be incorporated in the podium deck design to provide natural lighting to the podium level, including the commercial/retail facilities.</td></tr>
<tr><td>(x)</td><td>To provide some drawings in the coming ACE meeting showing the design and location of the PTI as such information is not available in the EIA report.</td><td>A Public Transport Interchange (PTI) (about 8,000m^2 in area, subject to detailed design) with provisions for franchised bus, taxi, coach and shuttle services etc. has been planned adjacent to the integrated station concourse for convenient interchange at the podium level. The EIA Report has considered the impacts caused by the PTI located at the southern side underneath the podium deck, as summarized below:</td></tr>
</table>

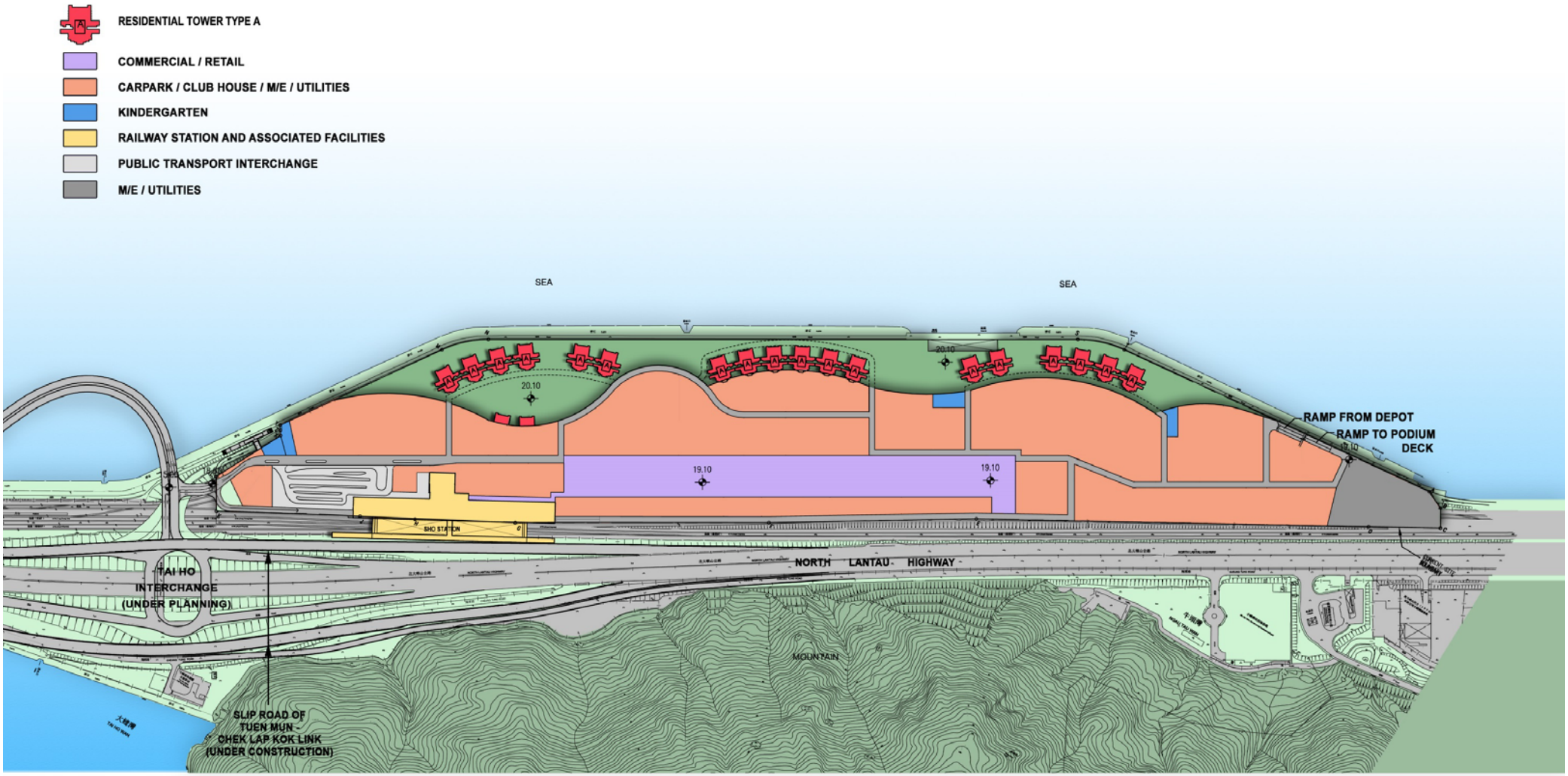
COMMENTS		RESPONSES
		Noise: The PTI would be enclosed within the proposed podium underneath the proposed residential buildings, and the location of ingress and egress is designed with no-line-of sight at the noise sensitive uses. Suitable sound absorption material will also be installed to control the reverberation time. For the ventilation systems, recommendations have been made to install noise control measures such as sound attenuators to ensure that statutory noise limits at the sensitive receivers are complied with. **Air Quality**: The EIA has recommended the requirements in "The Practice Note on Control of Air Pollution in Semi-Confined Public Transport Interchange (ProPECC PN 1/98). The following are the key recommendations. - Both fresh air supply units and exhaust air units should be provided; - Locate the fresh air intakes at suitable locations to capture fresh air of a quality comparable to the ambient background level; - Exhaust air outlets should be located away from nearby residents; - Fresh air delivery outlets should be positioned at a low level to discharge fresh air towards the passengers; and - An air quality monitoring shall be operated inside the PTI from time to time to check the adequacy of the fan operation schedule or the interlocked fan operation system; - Other than those in ProPECC PN 1/98, provision for charging facilities to enable the future development of electric vans and buses in the future. During the subsequent design and subject to technology advancement, the following innovative and environmental-friendly initiatives on the proposed PTI would be further explored:

COMMENTS		RESPONSES
		- Fresh air intakes and exhaust air louvres at strategic locations to avoid short circulating and exhaust air louvres will be located away from air receptors as far as practicable (eg fresh air intakes could be facing the sea front where the air quality is better and the exhausts to be located at the southern end of the podium where top-side residential developments are set back from the podium edge) - Air quality sensors to facilitate fan control at two-speeds or variable speeds in different zones to save energy while achieving the indoor air quality; - Daylight sensors to control lighting by dimming in different zones to save energy; - Chemical and /or carbon filters to absorb pollutants and dust and clean up the exhaust air discharged into the atmosphere; - Better conditions at passenger waiting areas by means of enhanced air movement and / or incorporation of City Air Purification System that removes particulate matters.

Appendix I

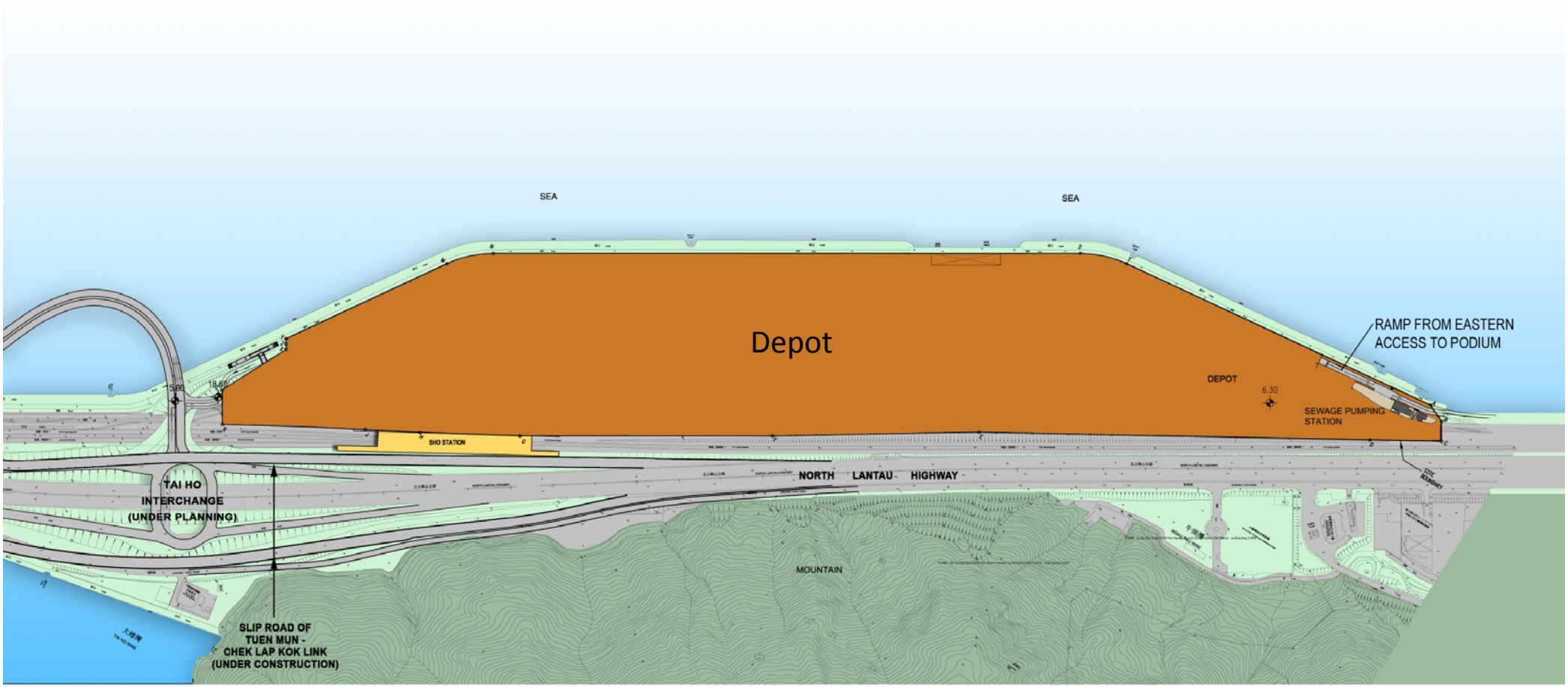
Development Scheme

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot



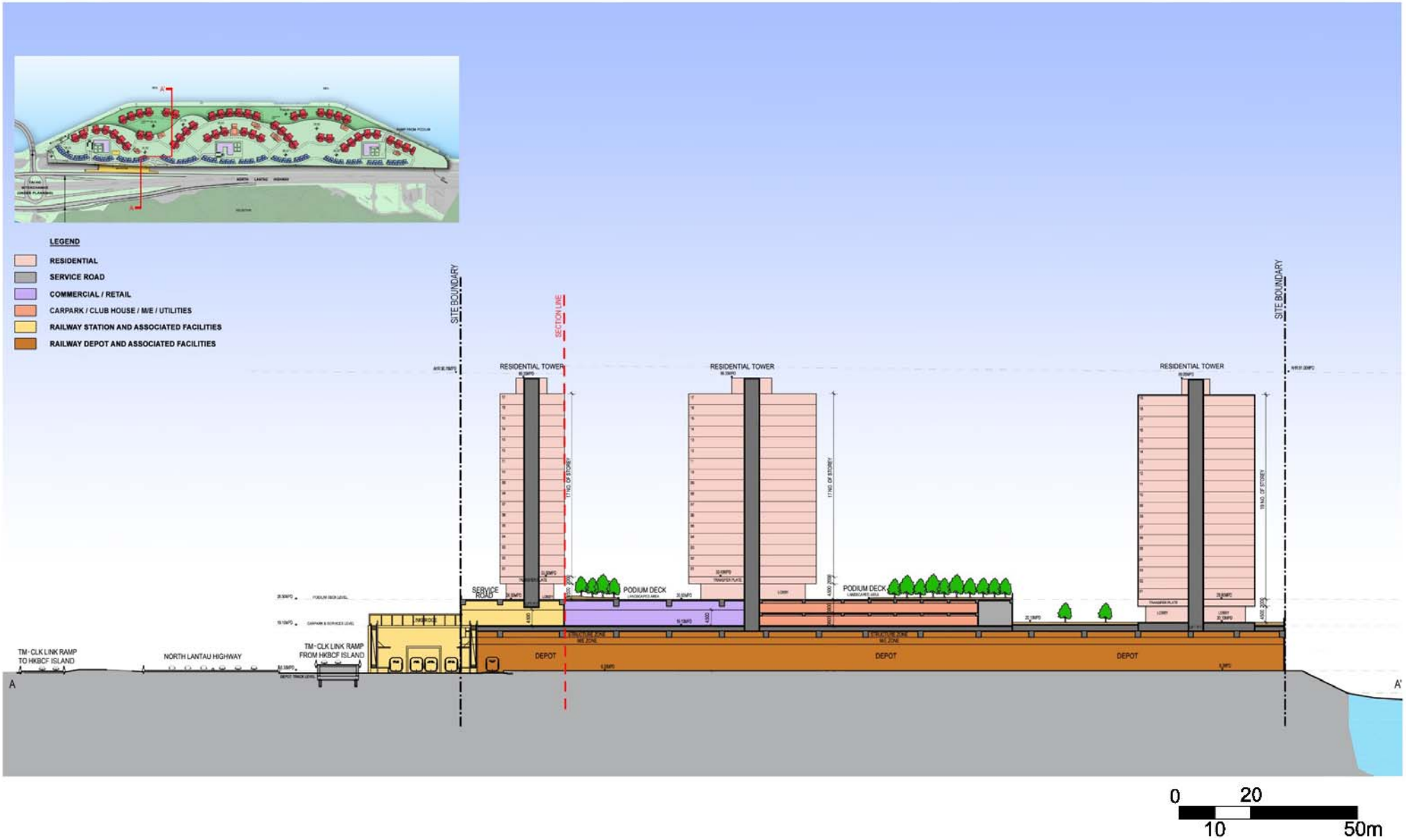
Podium Level

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot



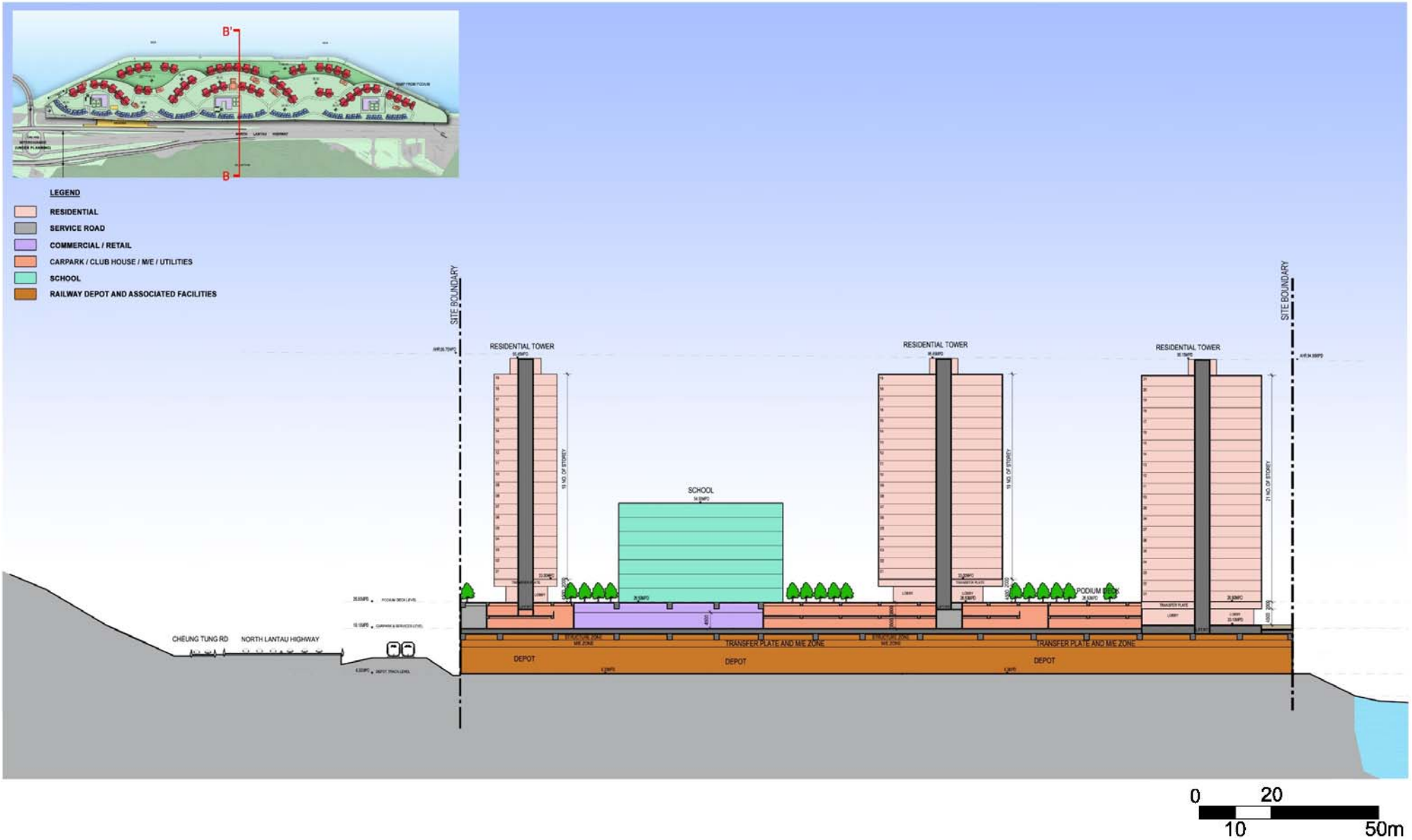
Ground Level

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot



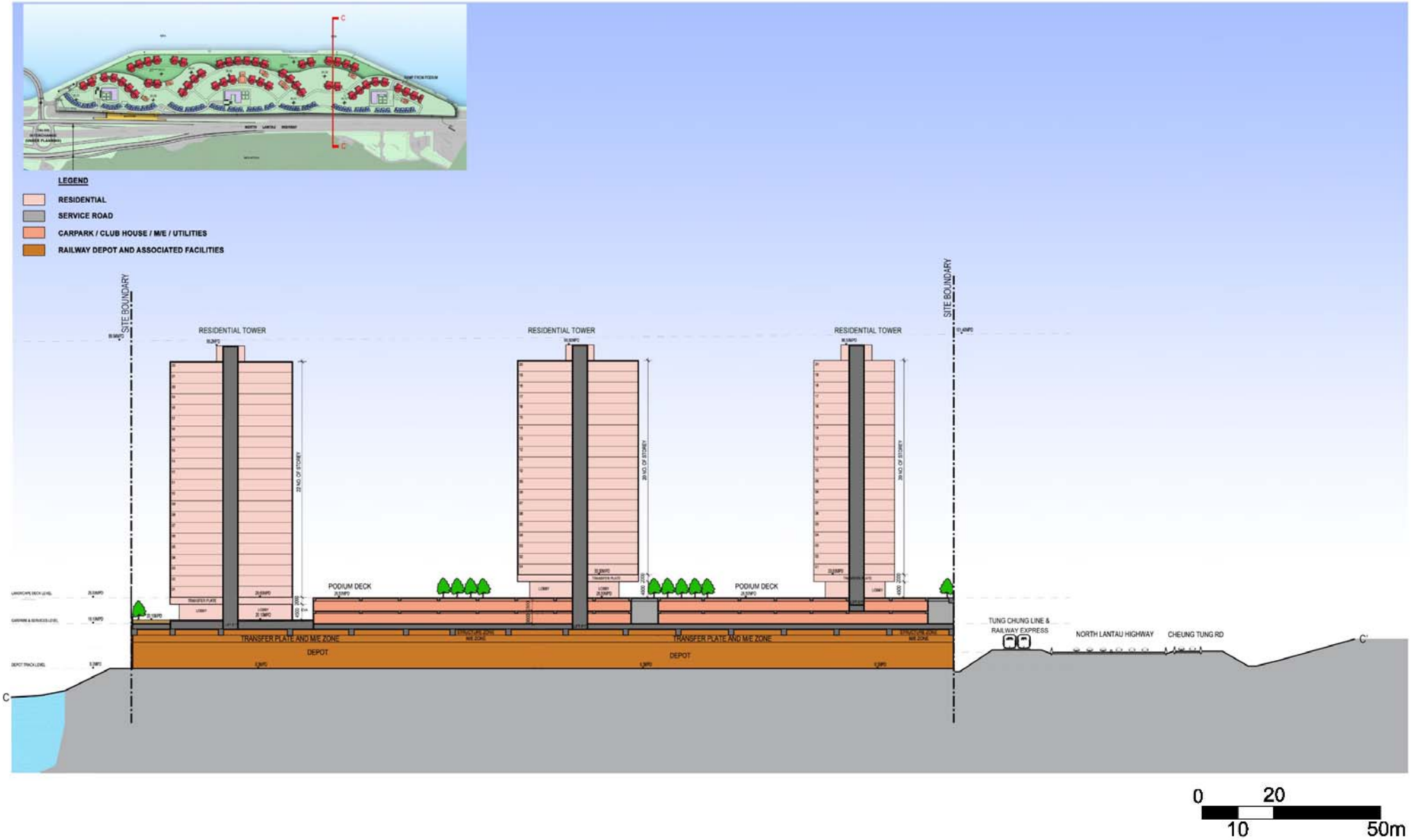
Site Section

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot



Site Section

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot

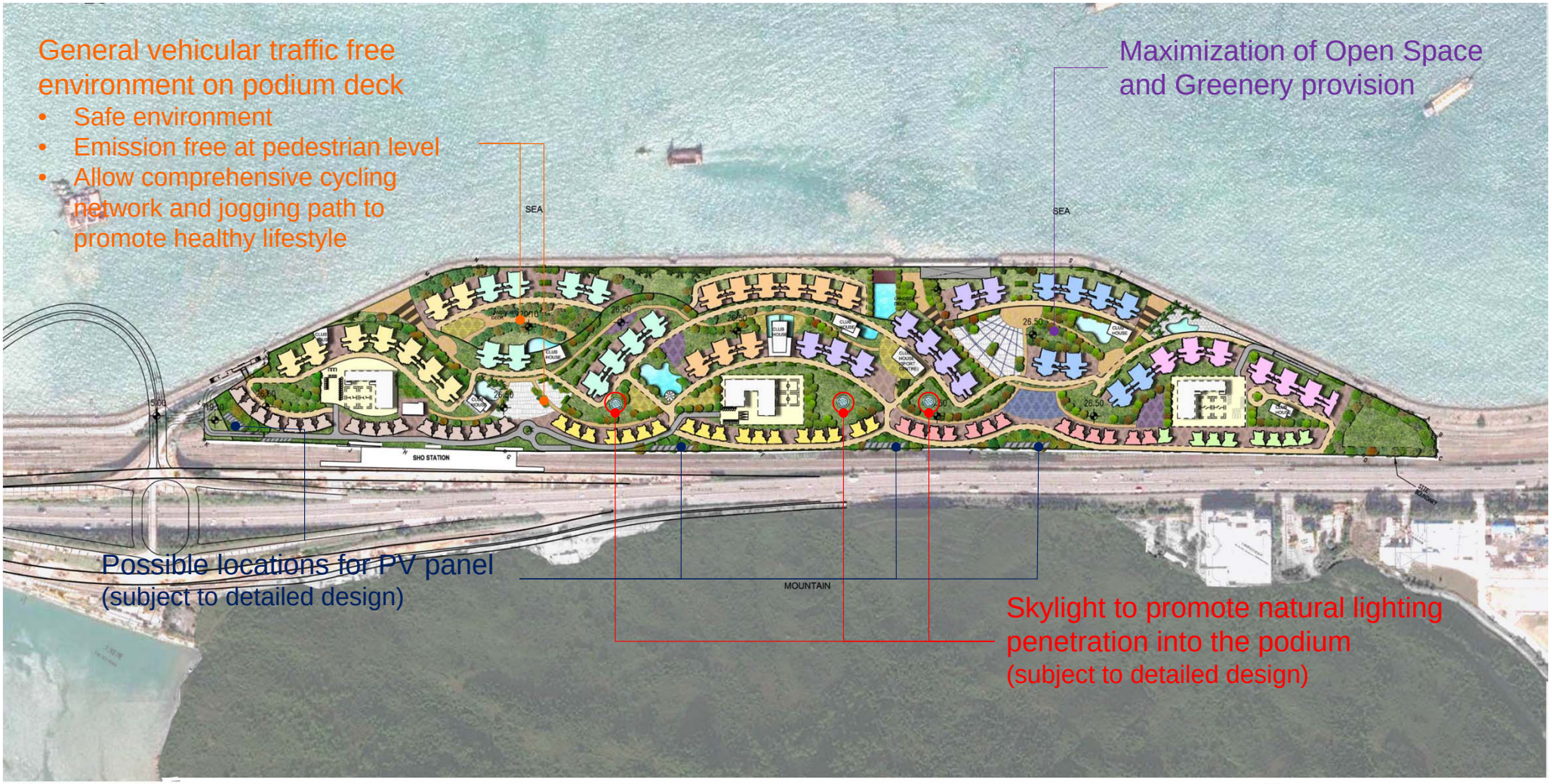


Site Section

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot

Design Idea

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot


General vehicular traffic free environment on podium deck
• Safe environment
• Emission free at pedestrian level
• Allow comprehensive cycling network and jogging path to promote healthy lifestyle
Maximization of Open Space and Greenery provision
SEA
SEA
SHO STATION
MOUNTAIN
Possible locations for PV panel
(subject to detailed design)
Skylight to promote natural lighting penetration into the podium
(subject to detailed design)
0 20 100
10 50 200m

Design Idea

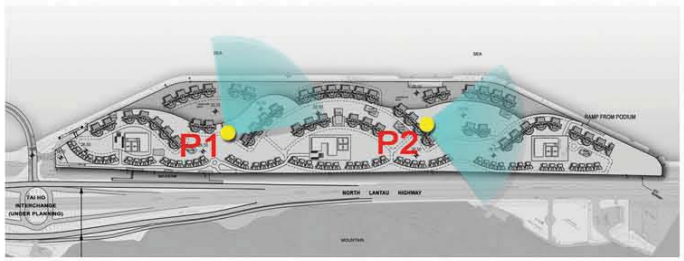
Design Idea

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot

Appendix II

P1 - View at Civic Square to the sea through the 30m wide landscaped corridor.

P2 - View to landscaped terrace and 30m wide corridor offering vista to a mountain backdrop.



For illustrative purpose only and subject to refinements and changes at the detailed design stage.

SKA SIMON KWAN & ASSOCIATES LTD. 關善明建築師事務所有限公司 | AECOM | ARUP

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot

Artist Impression on Conceptual Greening Framework

MTR

SCALE:	NOT TO SCALE	(A3)	FIGURE No.
DATE:			

For illustrative purpose only and subject to refinements and changes at the detailed design stage.

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AECOM

ARUP

Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot

Artist Impression of the Proposed Development Scheme

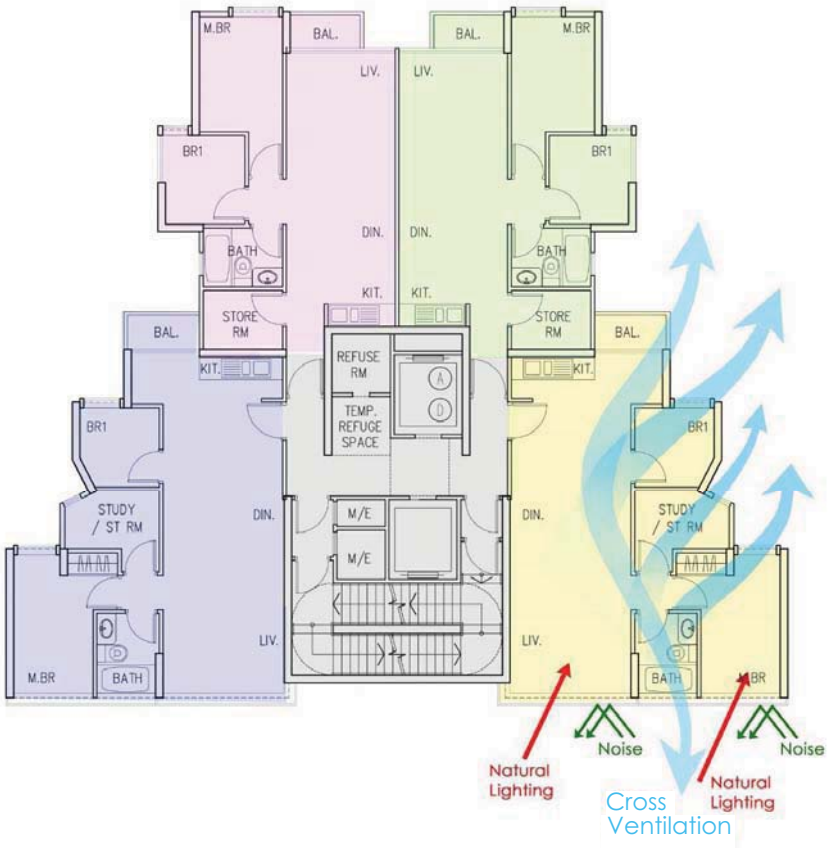
MTR

SCALE:	NOT TO SCALE	(A3)	FIGURE No.
DATE:	DEC 2016		

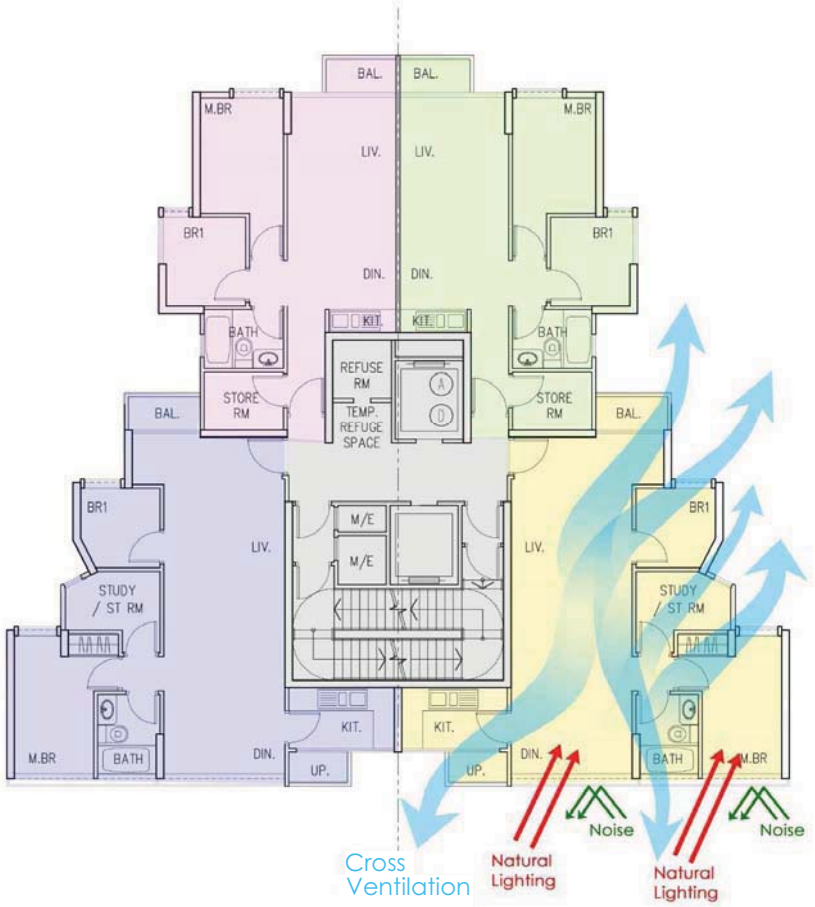
For illustrative purpose only and subject to refinements and changes at the detailed design stage.

Connection to waterfront

Appendix IV



Indicative Floor Layout
(Option 1)



Indicative Floor Layout
(Option 2)

Self Protected Building

Appendix V

The existing AEL/TCL lines have shared tracks along most of the southern perimeter of the site, and start bifurcated to four tracks (two outer ones for TCL and two inner for AEL). The western station option has least disruption arising from station works to the operating tracks in the vicinity. The existing AEL/TCL are two key rail lines linking the Lantau and Urban areas and disruption to their services should be avoided.

The central location by realigning the TCL/AEL towards Siu Ho Wan Depot (SHD) was studied. The central station location by realigning TCL/AEL towards SHD would intrude across the test track which would disrupt the function of test track and temporary closure of TCL/AEL for track connection. This option is therefore causing disruption to train services and not considered viable.

The central location by extending the TCL tracks at the side of the shared tracks was studied and it has the following issues:

- The platform of the station under this option will be located at the tracks which are being share-used by TCL/AEL and longer additional TCL tracks modification would be required.
- Considering station platform has to be on flat level, extensive site formation works would need to be conducted in the vicinity of the operating tracks at the central location for Central Station option. The hard rock located at the location of Central Station will induce extra difficulties and great risks to the modification works next to the live tracks with both AEL/TCL running at over 130kph at this location. The extensive site formation works which would result in higher construction waste is also considered to be less environmental friendly.

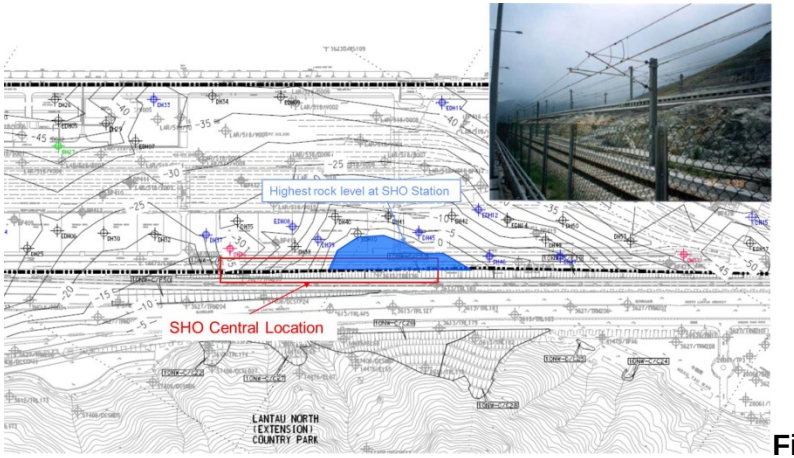


Figure 1 – Rock Level at SHO Central Location

- Because of the existing track configuration, the southern side platform of the central station option will encroach into existing North Lantau Highway (NLH). As indicated in **Figure 2 & 3,** permanent NLH road realignment, extending to the ramp of Tuen Mun Chek Lap Kok Link Road, will be required. Key issue arising from this realignment is that it will need to cut into the existing slope adjoining to the southern side of NLH. Slope works required for the realigned NLH would create a Natural Terrain Hazard to a large extent of the hillslope at the

vicinity and may extend beyond the Country Park boundary (i.e. Lantau North (Extension) Country Park). Moreover, the realignment works at affected area and the potential natural terrain improvement works will also encroach into Tai Ho Priority Site (indicative works area is approximate 1ha) and may impact directly on both existing vegetation and natural habitats.

- Furthermore, relatively higher construction dust, noise, waste and water quality impacts is anticipated from the construction works involved which would also result in higher indirect impact to the Tai Ho Priority Site. In view of this, this station option is not preferred from environmental point of view.

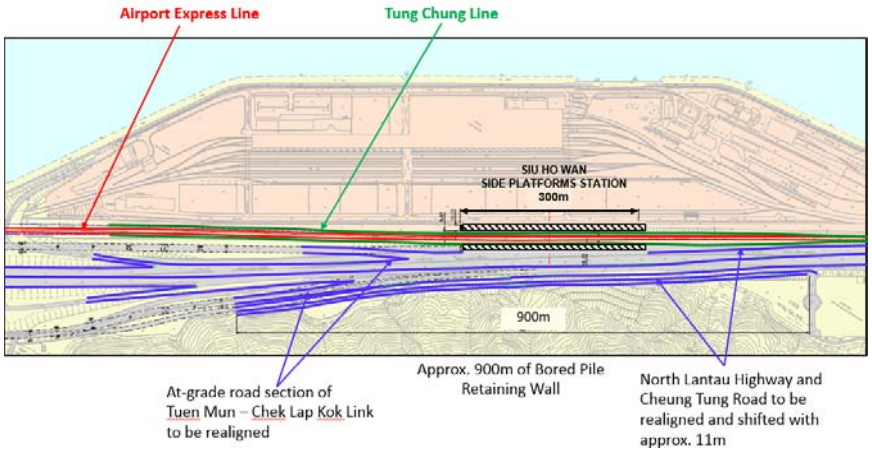


Figure 2 – NLH Road Realignment for Station at Central Location

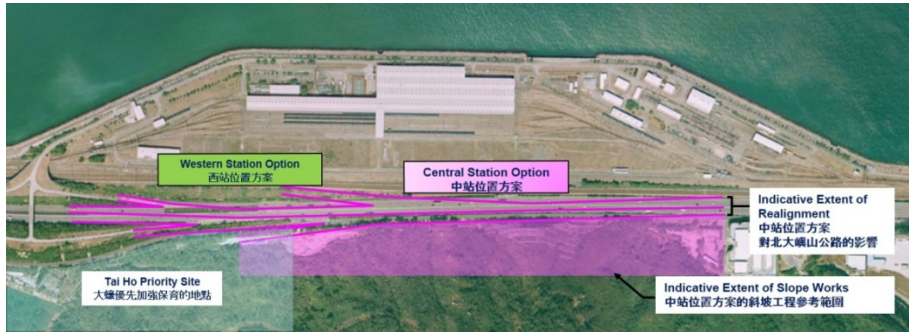


Figure 3 - Potential Construction Works within Tai Ho Priority Site

In addition the planned public transport interchange (PTI) will need to be located at the side of the station to facilitate road/rail interchange. The proposed public road connecting to the SHD site is the planned Tai Ho Interchange, which is located to the west of the site. Minimising the travelling distance between the PTI and Tai Ho Interchange would be favorable from planning perspective. For the Central Station option, the road leading to the PTI from Tai Ho Interchange will have to route through a longer length within the proposed SHD Topside Development than for the Western Station option, as such Central Station option is less desirable from planning perspective.

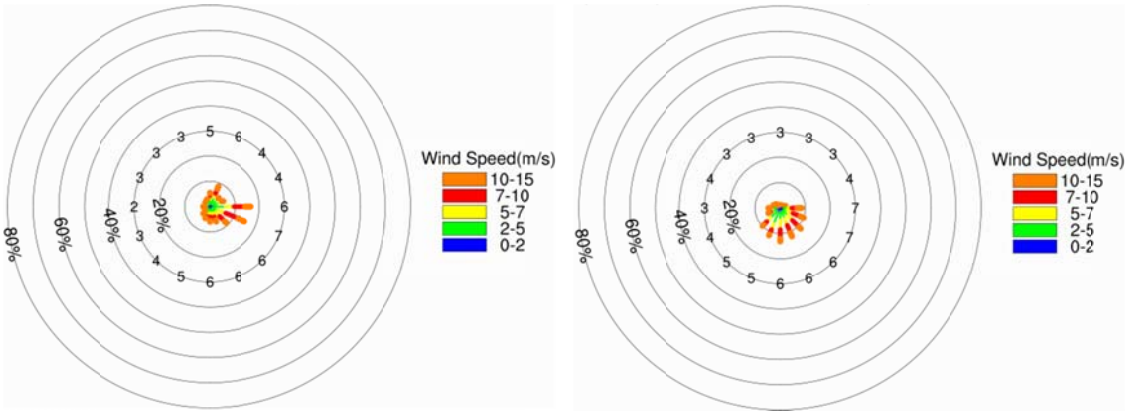
Based on the above factors considered, Western Station is recommended.

The location of the station option have been reviewed and presented in Section 2.3.7-2.3.10 and Appendix 2.2B of the EIA Report. The station option evaluation is presented above with further supplementary information for better illustration.

Appendix VI

A qualitative Air Ventilation Assessment (in form of Expert Evaluation) has been undertaken to aid the formulation of a proposed Development Scheme, with reference to the Sustainable Building Design Guidelines, to provide some 14,000 residential units, a neighbourhood shopping mall, a new MTR station and recreational, transport and supporting facilities.

Review on the available wind data (including RAMS published by PlanD, measured data by HKO and the Site Wind Availability Study of an adjacent planned Tung Chung East, as shown in Figure 1, Figure 2 and Table 1, and Figure 3 respectively), the annual prevailing wind is NNE/NE/ENE/E/ESE/SE directions and the summer prevailing wind is SE/SSE/S/SSW/SW/WSW directions.



Annual Wind Rose

Summer Wind Rose

Figure 1 Wind Roses at Grid (x: 041, y: 040) at 200m (Source: PlanD)

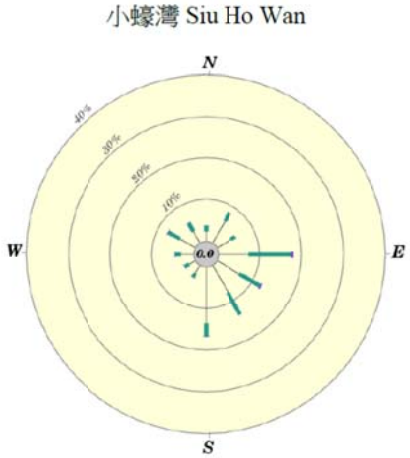
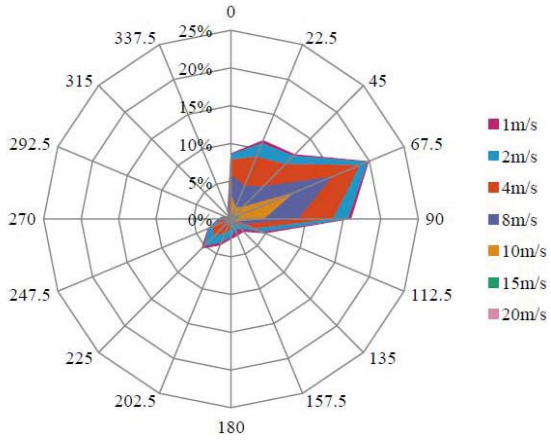


Figure 2 Annual Wind Rose recorded in the HKO Siu Ho Wan Weather Station in 2013

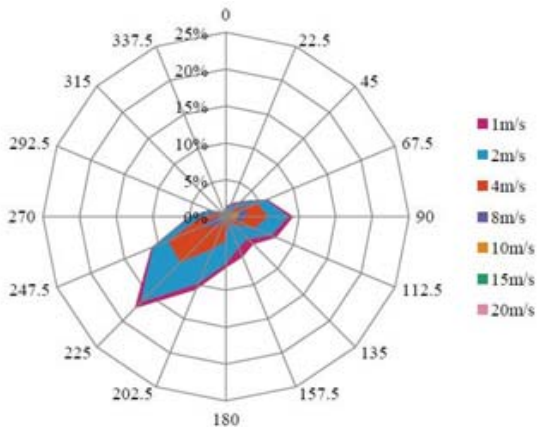
Appendix VI

Table 1 Prevailing Wind Recorded in the HKO Siu Ho Wan Weather Station during Summer 2013

Month	Prevailing Wind Direction
May	170°
June	160°
July	100°
August	170°
September	110°



Annual Wind Rose



Summer Wind Rose

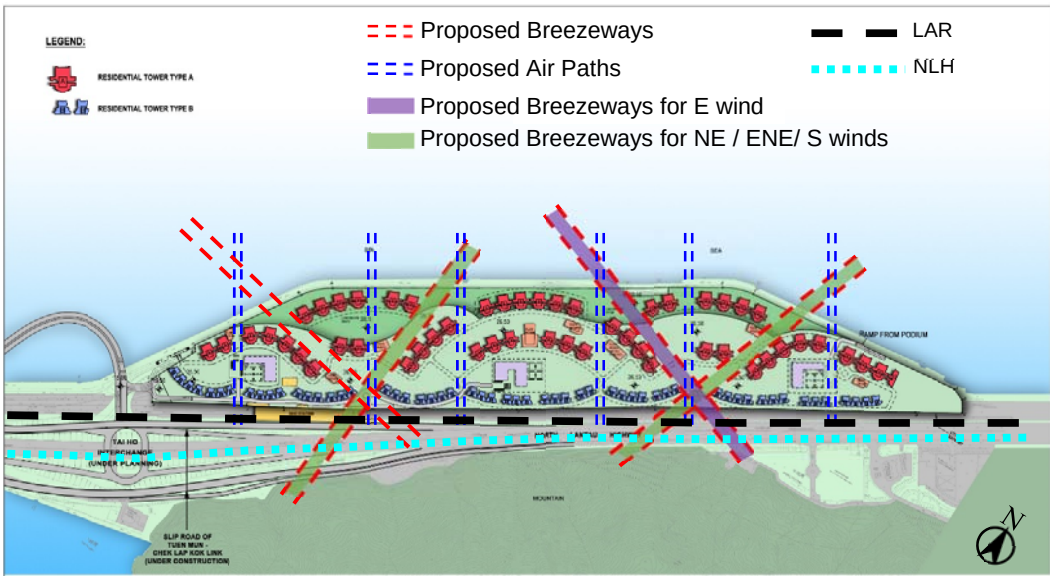
Figure 3 Tung Chung East - Wind Rose for Annual and Summer Probability Distribution, 200m Height

Given the shape of the Project Site is elongated which oriented in ENE-SSW direction, diagonal orientation of breezeways are proposed. Four 30m-wide breezeways are proposed. With the funnel-like building arrangement near two ends of proposed breezeways, more wind would enter the proposed breezeways. However, the presence of Lantau North Country Park to the southeast would predominately limit the wind availability to the Project Site. Upon the qualitative discussion on the wind performance on each group of prevailing wind directions identified, the performance of each proposed breezeways would vary:

- Two of four proposed breezeways running in N-S directions (highlighted in Green) would be more effective in allowing NE, ENE and S winds to travel along;
- One of four proposed breezeways running in E-W directions (highlighted in Purple) would be more effective in allowing E wind to travel along.

Six 15m-wide local air path running in NW-SE (Blue dotted lines) are the visual corridor which would also act as local paths that supplement the air flow within the Proposed Development.

Appendix VI



In addition, the building footprint of each residential blocks on the podium level would be minimized such that the permeability at podium level would be enhanced for better wind penetration.

Considering the significant distance of at least 780m (more than 7H) in between, the wind impact to the adjacent villages and the temple would be minimal. In sum, the Proposed Development would unlikely impose significant adverse ventilation impact to the existing villages to its southwest.

Quantitative AVA is recommended to further enhance wind performance within the Proposed Development at the detailed design stage

Appendix VII