llewelyn davies
ARCHITECTS PLANNERS DESIGNERS
Llewelyn-Davies Hong Kong Ltd

14 October 2026

The Secretary
Town Planning Board
c/o Planning Department
15/F North Point Government Offices
333 Java Road
Hong Kong

By Hand and Email

Dear Sir

Section 16 Planning Application for Proposed Mixed-Use Development (Proposed Flat with Permitted Commercial Uses) in Planning Area 32B, Hung Shui Kiu, New Territories (Application No. A/HSK/619)

Reference is made to the captioned application received by the Town Planning Board (the Board) on 16 June 2026 and Further Information submitted on 25 August 2026.

In response to the departmental comments received in September 2026, the Applicant would like to substantiate the captioned application by submitting herewith this Further Information for the Board's consideration. This Further Information comprises a responses-to-comments table with the following attachments:-

- **Attachment A:** Revised Planning Statement
- **Attachment B1:** Revised SIA Report (Textual Revisions)
- **Attachment B2:** Pipe Information
- **Attachment C:** Revised Environmental Review (Textual Revisions)

Thank you for your kind attention. Should there be any queries, please do not hesitate to contact the undersigned at [redacted] or our Mr. Man Ho at [redacted] / Miss Cody Yu at [redacted].

Yours faithfully
for Llewelyn-Davies Hong Kong Ltd

Winnie Wu
Planning Director

WW/MH/cy

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cc
DPO/TM&YLW - Ms. Carman CHEUNG / Mr. Max WONG (by email)

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	Departmental Comments	Responses to Comments
1.	**Comments from Chief Engineer / Construction, Water Supplies Department**	
1.1	Table 3 – For residential, please adopt a flushing water unit demand of 104 L/head/day instead of 70 L/head/day.	The flushing water unit demand of 104 L/head/day for residential will be updated in detailed design stage.
1.2	Table 3 –The fresh water demand for the resident's recreation facilities, retail and restaurant in Site A should be included as service trade with a unit demand of 40 L/head/day in accordance with DI1309. Therefore the fresh water unit demand for the resident's recreation facilities and retail should be removed.	The fresh water demand for the resident's recreation facilities, retail and restaurant in Site A should be considered as service trade in accordance with DI1309. The submitted WSIA is considered to have adopted a more conservative demand. Nonetheless, it will be reviewed at subsequent detailed design stage.
1.3	Table 3 & Annex 2 – Please provide a breakdown of the fresh water and flushing water unit demand for restaurants for our consideration. Please note that WSD does not accept water unit demands from GESF as a reference.	The fresh water and flushing water unit demand for restaurants will only be defined accurately at subsequent detailed design stage. The fresh water and flushing water unit demand for restaurants will be reviewed accordingly.
1.4	Drawing No. AREA32B/WSIA/FIGURE3 – There are no proposed water mains to be constructed by WSD. Please liaise with WDO of CEDD and update this drawing based on the latest information accordingly.	Noted. The latest water main alignment for connection will be further liaised with respective Government departments and to be adopted at subsequent detailed design stage.
1.5	Drawing No. AREA32B/WSIA/FIGURE3 – Please note that only one set of lead-in connections would be provided to your site. Therefore, please combine those lead-in connections under this application and those reserved for future connections.	Noted. The latest water main alignment for connection will be further liaised with respective Government departments and to be adopted at subsequent detailed design stage.
1.6	Drawing No. AREA32B/WSIA/FIGURE3 – Please present your fresh water lead-in connection as DN200 instead of NS250 for clarity. Furthermore, please also add a separate lead-in connection for fire-fighting water mains and seek comments from Fire Services Department.	The latest lead-in connection and inclusion of a separate lead-in connection for fire-fighting water mains will be submitted to WSD and Fire Services Department for comments and approval at subsequent detailed design stage.

	Departmental Comments	Responses to Comments
1.7	Drawing No. AREA32B/WSIA/FIGURE3 – Please liaise with WDO of CEDD to upsize the proposed fresh water mains to the south of your site from DN250 to DN300 and update this report accordingly.	The applicant will further review and propose to upsize the fresh water mains to the south of Site 32B from DN250 to DN300 (if required) at subsequent detailed design stage.
1.8	Drawing No. AREA32B/WSIA/FIGURE4 – Please note that only one set of lead-in connections would be provided to your site. Therefore, please combine those lead-in connections under this application and those reserved for future connections.	Noted. The latest water main alignment for connection will be further liaised with respective Government departments and to be adopted at subsequent detailed design stage.
1.9	Drawing No. AREA32B/WSIA/FIGURE4 – Please present your flushing water lead-in connection as DN100 instead of NS125 for clarity.	To avoid confusion of lead-in connection with flushing water mains constructed by CEDD, NS125 is adopted to match with the notation used by CEDD for Hung Shui Kiu NDA. The details will be further liaised with respective Government departments and to be adopted at subsequent detailed design stage.
1.10	Annex 2 – Please note that WSD does not accept water unit demands from GESF as a reference. Please provide alternative references accordingly.	Please note that the fresh water and flushing water unit demand will only be determined more accurately at subsequent detailed design stage. They will be reviewed and submitted to the satisfaction of WSD.
1.11	Annex 2 – Please show the water demand estimation of restaurant for Site A and Site B separately.	Ditto. Please see responses to Item 1.10 above.
1.12	Annex 2 – The flushing water demand for restaurants in Site A should also be included.	Ditto. Please see responses to Item 1.10 above.
1.13	Annex 3 & 4 – Please use the internal pipe diameter for the hydraulic analysis.	Noted. Internal pipe diameter will be adopted for hydraulic calculation during detailed design stage.

	Departmental Comments	Responses to Comments
2.	**Comments from District Planning Office, Tuen Mun and Yuen Long West Section, Planning Department**	
	Urban and Green Design Requirements Brief	
2.1	Table 5.1: The exact wordings of the relevant Urban and Green Design Requirements should be quoted and compared against. For example, while the UDB stipulates a direct covered walkway linking Area 32B and Area 32C at +23mPD, the proposed development indicates a level of +19mPD. Strong justifications must be provided for any deviations from the UDB requirements.	Noted. The requirements under UDB to provide a direct covered walkway linking Area 32B and 32C will be respected. Openings for provision of covered walkway / potential footbridge connection have been reserved in the current Proposed Scheme (see latest MLP in **Attachment A** – **Revised Planning Statement** for reference). Illustrative diagrams have also been prepared and updated in **Attachment A** to illustrate the spatial planning framework and the relationship with the UDB with the subject proposed development.
2.2	Master Layout Plan (MLP), Landscape Master Plan (LMP) and relevant floor plans: Please specify the width/height/type of possible footbridge connection/covered walkways to/from Area 32B and 32C. Please also indicate on plan the ground floor level retail frontage facing the promenade in Site B.	The width / height and types of footbridge connections / covered walkway will be subject to detailed design and submission for approval of respective Government departments at subsequent detailed design stage.
	Development Parameters	
2.3	Table 3.1: Please provide precise figures (rounded to 2 decimal places) for the proposed PR.	Please find the updated Development Schedule in **Attachment A** for consideration.
2.4	Table 3.1: Referring to Para. 3.1.6, 3.1.7, Table 3.1, Figure 3.6, 3.7 and Point 9.4 from your R-to-C table dated 25.8.2026, please clarify whether the "Pay for What You Build" Pilot Scheme under LAO PN No, 2/2026 ("the Scheme") is intended to apply to the non-commercial GFA within Site A. If the Scheme applies solely to the non-domestic developments within Site B, please revise the GFA calculations (if applicable) accordingly to demonstrate full compliance with the Scheme.	Noted. The proposed non-domestic development intensity of the Initial Phase Development at 32B (Site B) will amount to at least 60% of the "maximum non-domestic development intensity" of Site B under the subject S16 planning application (i.e. 67,766 * 60% = about 40,660m^2). In this regard, the non-domestic development parameters of the entire Application Site (i.e. 32B) at Sites A and B have been reviewed. The non-domestic development mix have been slightly adjusted accordingly. Please see updated Development Schedule in **Attachment A** for consideration. Detailed implementation arrangement and lands matter will be subject to separate discussions with relevant authorities at subsequent stages.

	Departmental Comments	Responses to Comments
2.5	Phased implementation: In relation to (ii)(2) above, please indicate on plans the proposed non-domestic GFA to be implemented within Site A and Site B for the first and remaining phases respectively. The locations/structures/sections to be included in respective stages of development should be clearly presented.	**Site A**: 100% of the GFA will be implemented in Phase 1. **Site B**: 60% of the GFA will be implemented in Phase 1. Please see Sections 3.1.6 and 3.1.7 in **Attachment A** for reference. Details of structures and etc. will only be further developed at subsequent detailed design stage.
3.	**Comments from Chief Town Planner / Urban Design and Landscape, Planning Department**	
	Advisory Comment	
3.1	The applicant should be advised that approval of the application does not imply approval of tree works such as pruning, transplanting and felling. Application for any tree works should be submitted to relevant departments for approval.	Noted.
3.2	For compliance of site coverage of greenery requirements under PNAP APP-152, submission should be made to Building Department for comments and approval.	Noted.
4.	**Comments from Director of Electrical and Mechanical Services**	
4.1	No particular comment on the document from electricity supply safety aspect.	Noted.
4.2	In the interests of public safety and ensuring the continuity of electricity supply, the parties concerned with planning, designing, organizing and supervising any activity near the underground cable or overhead line under the mentioned document should approach the electricity supplier (i.e. CLP Power) for the requisition of cable plans (and overhead line alignment drawings, where applicable) to find out whether there is any underground cable and/or overhead line within and/or in the vicinity of the concerned site.	Noted.

	Departmental Comments	Responses to Comments
4.3	Please be reminded to observe the Electricity Supply Lines (Protection) Regulation and the "Code of Practice on Working near Electricity Supply Lines" established under the Regulation when carrying out works in the vicinity of the electricity supply lines.	Noted.
5.	**Comments from Project Manager / Major Works, HyD**	
	Advisory Comment	
5.1	The applicant is encouraged to fully utilise self-mitigation measures against road traffic noise from Kong Sham Western Highway at the residential blocks in Site A to comply with the relevant noise criteria, thereby avoiding the implementation of the relevant Noise Barriers of the Project. While noting that a detailed Road Traffic Noise Impact Assessment would be submitted by the applicant during the design stage of its development, the applicant is encouraged to review and agree at the detail design stage that the implementation of the relevant Noise Barriers of the Project is not required with utilisation of adequate self-mitigation measures at the residential blocks in Site A.	Noted.
5.2	Self-mitigation measures against road traffic noise from Kong Sham Western Highway should be incorporated into the detailed Road Traffic Noise Impact Assessment to be submitted by the applicant for Site A. Such measures may include building setback, low-rise development design, fixed glazing, sliding doors with automatic door closers, maintenance windows, A/C platforms with maintenance windows, solid fence walls, solid planters, acoustic windows, acoustic balconies, and sound-absorptive architectural treatments, as appropriate. The assessment should demonstrate compliance with the relevant noise criteria, covering scenarios with and without implementation of the relevant Noise Barriers of the Project.	Noted.

	Departmental Comments	Responses to Comments
6.	**Comments from Project Manager (West), Civil Engineering and Development Department**	
	<u>DIA</u>	
6.1	It is understood that there is no major change in the drainage catchment area and lead-in location. However, the pipe information (e.g. invert level, pipe size) and hydraulic checking is missing, please supplement/clarify.	Noted. The pipe information provided by CEDD is supplemented in **Appendix 1 in Attachment B2** for your reference. As mentioned in the DIA report, same site area and the drainage characteristics are similar to HSK OZP. No additional runoff is anticipated. The Application Site is within HSK/HT NDA and adopts the lead-in location proposed by HSK/HT NDA. A hydraulic model was carried out to assess the hydraulic performance of the proposed drainage system within HSK/HT NDA. Therefore, hydraulic calculation is deemed not necessary.
	<u>SIA</u>	
6.2	Please be clarified that the base case planned ADWF for the subject site is 1,517m³/day instead of 2,389.4m³/day as mentioned in the SIA, please update.	Noted the base case planned ADWF for the subject site is 1,517m³/day instead of 2,389.4m³/day.
6.3	The sewage flow proposed by the applicant (2,088.58m³/day in ADWF) is larger than that under base case, inducing additional flow to gravity sewer, SPS1 and SPS2 with associated rising mains, and HSKEPP. The applicant shall review the sewerage impact and propose mitigation measures for DSD and EPD's acceptance.	With reference to the recently published 2026 Policy Address, 3 University Towns will be developed. One of which will be situated in the core area of Hung Shui Kiu New Development Area, which is located in the same sewage catchment of the Subject Site. Thus, the above changes in land use and planned development parameters of these original commercial sites will lead to changes in discharge to the HSK sewage pumping station No.1. In addition, sewage flow from other committed residential / commercial / mixed-use developments is necessary to be considered within the HSK/HT NDA. The entire sewage system of HSK/HT NDA will have to be reviewed again by respective Government department (e.g. CEDD) in one go taking into account all these changes in planned developments (i.e. UniTown, other committed developments nearby and the subject Proposed Development).

	Departmental Comments	Responses to Comments
		Subject to the outcomes the above review, it is anticipated that the Government will be responsible for upgrading the public sewerage infrastructures including sewage pumping stations and sewage treatment work where necessary. Accordingly, the Applicant will undertake the upgrading works including connecting sewer and associated manhole(s) for the Subject Site. Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated Sewerage Impact Assessment upon receipt of updated information on the sewerage system under discharge condition of the subject S16 planning application. The Applicant will remain close liaison with respective Government departments at subsequent development stages respectively. Relevant texts of the SIA report have been updated. Please see **Attachment B1** for reference.
6.4	The pipe information (e.g. invert level, pipe size) is missing, please supplement/clarify.	Noted. The pipe information provided by CEDD is supplemented in **Appendix 2 in Attachment B2** for your reference.
6.5	The fresh water and flushing water demands proposed by the applicant are 2,054.3m³/day and 684.1m³/day, respectively, compared with the corresponding base-case demands of 1,459m³/day and 383m³/day. These demands are higher than those under the base-case scenario. The increased water demands are expected to induce additional flow within the adjacent fresh water and flushing water distribution networks and may affect the hydraulic performance of the system. The applicant shall review the water supply impact with consideration of the accumulative effect of adjacent developments and propose mitigation measures for WSD's acceptance.	Similar to the responses-to-comment of Item 6.3, the water demand and supply will also be reviewed at subsequent development stages. Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated Water Supply Impact Assessment under discharge condition of the subject S16 planning application.
6.6	It is noticed that additional water supply lead-ins are proposed. The no. of lead-ins shall be subject to WSD's acceptance.	Noted. WSD's approval will be sought during detailed design of the lead-ins location at subsequent detailed design stage.

	Departmental Comments	Responses to Comments
7.	**Comments from Department of Environmental Protection**	
	Air Quality	
7.1	Section 2.3.1: Please revise to "No existing or planned industrial chimneys have been identified within 200 m from the boundary of the Application Site after population intake of the Proposed Development, based on the best available information".	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.2	Section 2.5.1: Please revise the last two lines to "…and potential kitchen exhaust from the food and beverage areas, if any".	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.3	Section 2.5.3: Please add "appropriate Air Pollution Control Equipment such as" before "exhaust hood" in Line 2. Please also revise "cooling" in Line 6 to "cooking".	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.4	Section 2.7.2: Please correct the typo "aera" in Line 2.	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.5	Section 2.7.3: • Please review whether "safely" in Line 6 should be revised to "safety". • Please delete the last sentence as it is not justified.	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.6	Section 2.7.4: Please revise "insurmountable" in the last sentence to "adverse".	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.7	Section 2.8.1: Please revise the last sentence to "…, the proposed development will not be subject to adverse air quality impacts from vehicular emissions".	Revised accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.8	Sections 2.8.2 and 6.2.2: Please revise to "All existing and planned air pollutant and odour emission sources within the 500m assessment area have been identified based on the best available information. No adverse air quality impacts on the air-sensitive uses of the proposed development are anticipated".	Sections 2.8.2 and 7.2.2 (previous 6.2.2) are revised accordingly, please refer to the revised Environmental Review under **Attachment C**.

	Departmental Comments	Responses to Comments
7.9	Table 2.1: The description of ASR A2 is unclear. Please review.	The description of ASR A2 is revised to "Planned Commercial Use at Area 32C", please refer to the revised Environmental Review under **Attachment C**.
7.10	Please review the numbering in Section 2.9 as there are two "Section 2.9.1".	The numbering of Section 2.9 is revised, please refer to the revised Environmental Review under **Attachment C**.
7.11	Section 2.9.1, PDF Page 10: • Please remove "representing existing & planned ASRs" in Line 3. • Figure 2.2 is missing. • Please delete "Figure 2.1" from the last sentence.	Revised and rectified accordingly, please refer to the revised Environmental Review under **Attachment C**.
7.12	Section 2.9.1, PDF Page 11: • Please revise "Pollutant" in Line 8 to "Pollution". • As the same number is used for two different quantities, i.e. 13,601m³ for excavation volume and 13,601m2 for the work site area, please confirm whether 13,601m³ is a real excavation estimate or an accidental carry-over from the site area total. • Please revise "15 tones" to "15 tonnes". • Please confirm whether there are any concurrent projects within the 500m of the project site boundary and if yes, their cumulative air quality impacts during construction should be assessed.	Section 2.9.1 is renamed to Section 2.9.2. • Revised accordingly, please refer to the revised Environmental Review under **Attachment C**. • It is a real excavation estimation. As there is no basement, it is assumed the excavation depth is 1m. Therefore, the estimated excavation volume 13,601m^2 x 1m = 13,601m^3 • Revised accordingly, please refer to the revised Environmental Review under **Attachment C**. • Cumulative air quality impacts during construction due to concurrent projects are added in Section 2.9.3. Please refer to the revised Environmental Review under **Attachment C**.
7.13	Section 6.2.1: Please revise the section to "As no air-sensitive uses, including openable windows, fresh air intakes for mechanical ventilation, and recreational uses in open areas, will be located within the buffer zones for nearby roads as required under the HKPSG, and no existing or planned chimneys have been identified within 200m of the boundary of the Application Site, it is not anticipated that the proposed development will be subject to adverse air quality impacts arising from road traffic or industrial chimneys".	Section 7.2.1 (previous 6.2.1) revised accordingly, please refer to the revised Environmental Review under **Attachment C**.

	Departmental Comments	Responses to Comments
	Noise Impact	
7.14	S3 – Noted that the hotel development in Site B is used to provide noise screening effect to the traffic noise from Kong Shum Western Highway for the residential units in Site A. The future NIA submission should critically review if there are any changes on the design / height of the proposed hotel / office in site B or the interfacing issue of building structure of the Site B will be constructed after the population intake of Site A.	Noted.
7.15	S4.4 – The potential noise impact for the SGMTS should be categorized as Transit Noise instead of Railway Noise. Please address in a separate section.	Potential noise impact for the SGMTS is moved to Section 5, please refer to the revised Environmental Review under **Attachment C**.
7.16	S5.3.5 – Please clarify and revise if Section 5 is addressing the potential construction noise impact instead of road traffic noise impact.	Section 6.3.5 (previous 5.3.5) is revised, please refer to the revised Environmental Review under **Attachment C**.
7.17	S6 – The concerned section is incomplete. Please review and revise.	S6 is renamed to S7. Conclusion of Transit Noise Impact Assessment is added in Section 7.5. Please refer to the revised Environmental Review under **Attachment C**.
	SIA	
7.18	Section 2.2.1 & Annex 4: We note that the base case of the Proposed Development references the relevant OZP and ODP. The Consultant should ensure the latest OZP and ODP are referenced and their numbers are named in section 2.2.1.	Noted. Please be clarified that the OZP reference mentioned in Section 2.2.1 refers to the draft Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/3. The ODP reference is same as the one mentioned in the same section of SIA report (i.e. Outline Development Plan (ODP) No. D/HSK/1).
7.19	Section 2.2.1 & Annex 4: For the baseline key design parameters of the Application Site (e.g. sewer connection arrangements, projected population, sewage estimates, etc.), the Consultant should make reference to the approved SIA report for the HSK/HT NDA conducted by CEDD, rather than using the development mix in the latest OZP and ODP (if any).	Refer to information provided by CEDD in this RtoC, the base case sewage flow is 1,517m^3/d. No breakdown of each sewage flow type to verify the development mix according to ODP No. D/HSK/1. Due to insufficient information provided, the hypothetical base case scenario using development mix according to the latest OZP and ODP is formed for sewage generation estimation.

<table>
<tr><th></th><th>Departmental Comments</th><th>Responses to Comments</th></tr>
<tr><td>7.20</td><td>Section 4.1.2: Please note that the design capacities of SPS 1 and SPS 2 are under CEDD's further review. Please consult CEDD to ensure the latest design capacities of SPS 1 and SPS 2 are quoted.</td><td>Noted. According to CEDD information provided, the design capacities of SPS 1 and SPS 2 are as follows:

<table><tr><th>Sewage Pumping Stations</th><th>Design Pumping Capacity (m3/day)</th></tr><tr><td>SPS1</td><td>30,077</td></tr><tr><td>SPS2</td><td>46,121</td></tr></table></td></tr>
<tr><td>7.21</td><td>Section 5.1.1: Instead of mentioning an indicative manhole (i.e. FMH01), please check and specify the proposed public manhole (FMH105a?) to which the sewerage from FMH01 will be discharged.</td><td>Noted. The public manhole and associated sewer provided by CEDD is attached in Appendix 2 in Attachment B2 for your reference.

With reference to the recently published 2026 Policy Address, 3 University Towns will be developed. One of which will be situated in the core area of Hung Shui Kiu New Development Area, which is located in the same sewage catchment of the Subject Site. Thus, the above changes in land use and planned development parameters of these original commercial sites will lead to changes in discharge to the HSK sewage pumping station No.1. In addition, sewage flow from other committed residential / commercial / mixed-use developments is necessary to be considered within the HSK/HT NDA. The entire sewage system of HSK/HT NDA will have to be reviewed again by respective Government department (e.g. CEDD) in one go taking into account all these changes in planned developments (i.e. UniTown, other committed developments nearby and the subject Proposed Development)

Subject to the outcomes the above review, it is anticipated that the Government will be responsible for upgrading the public sewerage infrastructures including sewage pumping stations and sewage treatment work where necessary. Accordingly, the Applicant will undertake the upgrading works including connecting sewer and associated manhole(s) for the Subject Site.</td></tr>
</table>

	Departmental Comments	Responses to Comments
		Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated Sewerage Impact Assessment upon receipt of updated information on the sewerage system under discharge condition of the subject S16 planning application. The Applicant will remain close liaison with respective Government departments at subsequent development stages respectively. Relevant texts of the SIA report have been updated. Please see **Attachment B1** for reference.
7.22	Annex 2: Based on the assumed 3-min backwash duration, the instantaneous peak flow for Outdoor pool should be (8.21m³/day) / (180s/day) = 0.046m³/s instead of 0.023m³/s. Please check the calculations for both outdoor pool and indoor pool.	Noted. The swimming pool backwash calculated for outdoor pool and indoor pool is 0.046m^3/s and 0.031m^3/s respectively. Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated SIA to update the swimming pool backwash under discharge condition of the subject S16 planning application.
7.23	Annex 3: Please specify the proposed invert levels of the upstream terminal manhole (i.e. FTMH01) and the downstream public manhole (FMH105a?) in the calculation.	Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated SIA to specify the proposed invert levels of the upstream terminal manhole (I.e. FTMH01) and the downstream public manhole (FMH105a) when updated information becoming available under discharge condition of the subject S16 planning application.
7.24	Annex 3: For note (4), please confirm whether FMH01 refers to the proposed public manhole FMH105a to be constructed by CEDD.	Please be clarified that FMH01 refers to the proposed public manhole FMH105a to be constructed by CEDD. As per the responses-to-comments of Item 7.21 above, CEDD is reviewing the sewage flow to develop a holistic view of overall sewerage catchment and scheme. Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated SIA under discharge condition of the subject S16 planning application.

	Departmental Comments	Responses to Comments
8.	**Comments from Chief Engineer / Mainland North, Drainage Services Department**	
	<u>DIA</u>	
8.1	Section 3 and 4 refers - Please confirm with CEDD to ensure the drainage characteristics of the subject site is consistent to that in the latest approved DIA.	Noted. Similar drainage characteristics is envisaged between a pure commercial development and commercial cum residential development. No additional runoff is anticipated.
	<u>SIA</u>	
8.2	Section 4.2.1 refers – Please verify whether the total ADWF in the base-case sewage estimation aligns with the latest approved SIA for HSK/HT/NDA. Should the base-case estimation vary, how would the additional sewage be accommodated by the pumping station?	Please note the total ADWF in the base-case sewage estimation is subjected to further review. With reference to the recently published 2026 Policy Address, 3 University Towns will be developed. One of which will be situated in the core area of Hung Shui Kiu New Development Area, which is located in the same sewage catchment of the Subject Site. Thus, the above changes in land use and planned development parameters of these original commercial sites will lead to changes in discharge to the HSK sewage pumping station No.1. In addition, sewage flow from other committed residential / commercial / mixed-use developments is necessary to be considered within the HSK/HT NDA. The entire sewage system of HSK/HT NDA will have to be reviewed again by respective Government department (e.g. CEDD) in one go taking into account all these changes in planned developments (i.e. UniTown, other committed developments nearby and the subject Proposed Development) Subject to the outcomes the above review, it is anticipated that the Government will be responsible for upgrading the public sewerage infrastructures including sewage pumping stations and sewage treatment work where necessary. Accordingly, the Applicant will undertake the upgrading works including connecting sewer and associated manhole(s) for the Subject Site.

	Departmental Comments	Responses to Comments
		Should the Board consider appropriate, the Applicant would have no objection for stipulation of relevant approval conditions on submission of updated SIA upon receipt of updated information on the sewerage system under discharge condition of the subject S16 planning application. The Applicant will remain close liaison with respective Government departments at subsequent development stages respectively. Relevant texts of the SIA report have been updated. Please see **Attachment B1** for reference.
8.3	Section 5.1.2 – Please confirm with CEDD to ensure the subject application has been taken into account in their updating SIA report and sewer and SPS design.	Noted. The Applicant will remain close liaison with CEDD at subsequent development stages to ensure the subject application has been taken into account in their updating SIA report and sewer and SPS design. As explained in responses-to-comments of Item 8.2 above, the overall sewerage arrangement and capacity will be reviewed in accordance with the latest planning framework. The Applicant would have no objection for stipulation of relevant approval conditions on submission of updated SIA upon receipt of updated information on the sewerage system under discharge condition of the subject S16 planning application. Relevant texts of the SIA report have been updated. Please see **Attachment B1** for reference.
8.4	Section 5.1.4 refers – it mentioned that sewage discharged from the Application Site contribute to about 7.2% of the capacity of the SPS1. Hence, the sewerage impact is considered insignificant. Please provide justification that this sewage discharge was already accounted for in the original design capacity of SPS1 and that no additional sewage has been introduced. In addition, please advise the original allowable sewage discharge from the Application Site.	Please refer to responses-to-comment of Items 8.2 and 8.3 above. With reference to the information provided by CEDD, the base case sewage flow is 1,517m^3/d which will be subjected to review at subsequent stages.

	Departmental Comments	Responses to Comments
8.5	Section 7.1.2 refers – please clarify the rationale for excluding swimming pool backwash.	Swimming pool backwash is an instantaneous peak flow rate instead of an average dry weather flow. Therefore, the ADWF presented in SIA is excluding the backwash for swimming pool. The peak flow generated from the Proposed Development has taken into account of the backwash for swimming pool for hydraulic checking.
8.6	The SIA report needs to meet the satisfaction of SIG/EPD, the planning authority of sewerage infrastructure.	Noted.

Attachment A

Revised Planning Statement

Section 16 Planning Application for Proposed Mixed-Use Development (Proposed Flat with Permitted Commercial Uses) in Planning Area 32B, Hung Shui Kiu, New Territories (Application No. A/HSK/619)

Planning Statement

October 2026

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In association with

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EXECUTIVE SUMMARY

Purpose of Submission

This Planning Statement is prepared to seek permission from the Town Planning Board (the Board) for proposed mixed-use development (proposed flat with permitted commercial uses) (hereafter referred to as the "Proposed Development") in Planning Area 32B, Hung Shui Kiu, New Territories (hereafter referred to as the "Application Site") under Section 16 (S16) of the Town Planning Ordinance (CAP. 131).

The Application Site involves an area of about 13,601.02m^2 and is located within Hung Shui Kiu / Ha Tsuen (HSK/HT) New Development Area (NDA). It falls within "Commercial (1)" ("C(1)") zone on the Draft Hung Shui Kiu and Ha Tsuen Outline Zoning Plan (OZP) No. S/HSK/3. According to the Notes of the OZP, commercial uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', etc. are always permitted in "C(1)" zone, while 'Flat' use is under Column 2, i.e. permission from the Board is required. Developments within this zone are subject to maximum building height of 200mPD and plot ratio of 9.5. As the Proposed Development proposes provision of 'Flat' use, this S16 planning application is hereby submitted, which does not involve any changes to the maximum building height and plot ratio as stipulated on the OZP.

Indicative Development Proposal

The Application Site is divided into Site A and Site B. Site A is for proposed residential development with a commercial podium, and therefore **Site A is the subject matter of this planning application**; while Site B involves proposed hotel / office, i.e. purely for commercial uses that are always permitted, and therefore **Site B is not the subject matter of this planning application**. Therefore, **the layout, development parameters and uses in Site B are indicative only and not for approval under the subject planning application**.

In Site A, there are 3 residential towers. Commercial uses and carpark are provided in the podium underneath the residential towers. Above the podium are 40 to 43 residential storeys.

In Site B, which is for indicative purpose only, there are 2 hotel / office blocks. Commercial uses and carpark are provided in the podium.

The total plot ratio of the Proposed Development in the Application Site will be not more than 9.5; among which majority (i.e. 55% of the GFA) will be for the as-of-right permitted non-domestic uses, whereas the remaining plot ratio (i.e. 45% of the GFA) will be for the proposed residential use which is the subject of this application. The building height of all

proposed building blocks will be not more than 200mPD. The development parameters of the Proposed Development will comply with the OZP.

Development Justifications

Major development justifications in support of the Proposed Development are listed as follows:

- The Proposed Development is in line with latest Government policy to allow greater flexibility for residential use within commercial zones in HSK/HT NDA;
- The Proposed Development is in line with Government's policy to address housing needs;
- The overall development mix of the Proposed Development will reinforce HSK's Town Centre as a vibrant knowledge and innovation hub;
- The Proposed Development with reasonable scale of residential use acts as a catalyst to encourage early implementation of HSK/HT NDA;
- The Proposed Development is a timely response to the evolving development needs and maximising the strategic value of land resources;
- Design merits are proposed; and
- The Proposed Development is feasible in technical terms.

In light of the justifications presented, we sincerely seek favourable consideration from the Board on this S16 planning application.

行 政 摘 要

(聲明:此中文譯本僅供參考,如中文譯本和英文原文有歧,應以英文原文為準。)

申請目的

此規劃綱領旨在向城市規劃委員會(下稱「城規會」)根據城市規劃條例(第131章)第16條申請規劃許可,在新界洪水橋第32B規劃區(下稱「申請地點」)作商住混合發展(擬議分層住宅及准許的商業用途)(下稱「擬議發展」)。

申請地點位於洪水橋/廈村新發展區內,面積約為13,601.02平方米。申請地點在《洪水橋及廈村分區計劃大綱草圖編號S/HSK/3》(下稱「大綱圖」)上劃為「商業(1)」地帶。根據大綱圖的註釋,商業用途例如「辦公室」、「酒店」、「商店及服務行業」、「食肆」等在「商業(1)」地帶為經常准許的用途,而「分層住宅」則為第二欄用途,需要城規會的准許。「商業(1)」地帶內的發展最高建築物高度為主水平基準以上200米,最高地積比率為9.5。由於擬議發展牽涉擬議「分層住宅」用途,申請人以此提交此第16條規劃申請,當中並不牽涉大綱圖所規定的最高建築物高度及地積比率的改動。

擬議發展計劃

申請地點分為地盤A與地盤B。地盤A擬作住宅發展,並設有商業平台,**因此僅有地盤A涉及本申請的申請事項**;地盤B則擬建酒店/辦公室,屬經常准許的商業用途,**所以地盤B並不涉及本申請的申請事項**。因此,**地盤B的佈局、發展參數及用途僅屬示意性質,並非今次規劃申請的審批範圍**。

地盤A內設有3幢住宅大樓。住宅大樓下方的平台提供商業用途及停車場。平台以上為40至43層的住宅樓層。

地盤B(僅作示意用途)設有2幢酒店/辦公室大樓。平台內提供商業用途及停車場。

擬議發展於申請地點的總地積比率不多於9.5,大部份的地積比率(總樓面面積的55%)將用作經常准許的非住用用途,餘下的地積比率(總樓面面積的45%)將用作住宅用途,即是次規劃申請的申請事項。所有擬議大樓的建築物高度將不超過主水平基準以上200米。擬議發展的發展參數將符合大綱圖的規定。

發展理據

以下為支持擬議發展的理據：

- 擬議發展與政府近期在洪水橋/廈村新發展區內的商業用地提供彈性以作住宅用途的策略方針相符；
- 擬議發展與政府回應房屋需求的策略方針相符；
- 擬議發展的發展用途組合可以提供多樣化的發展，進一步鞏固洪水橋市中心作為知識及創新的樞紐；
- 擬議發展提供適量的住宅用途，可作為帶動洪水橋/廈村新發展區內其他發展的催化劑；
- 擬議發展項目適時回應不斷演變的發展需求，並充分發揮土地資源的策略價值；
- 擬議發展提供了設計增益；及
- 擬議發展在技術層面上可行。

基於以上的發展理據，現懇請城規會接納是次規劃申請。

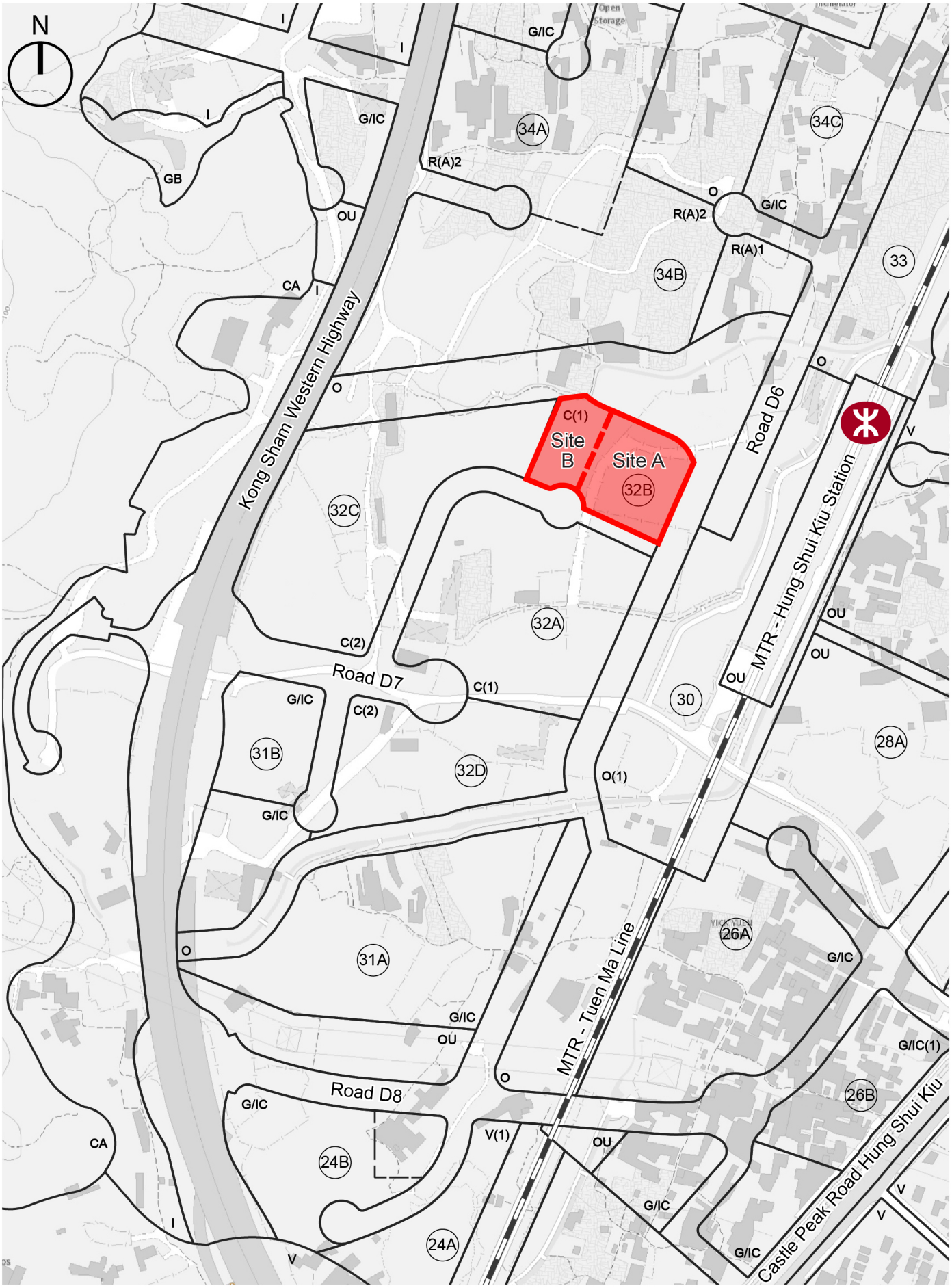
1 INTRODUCTION

1.1 Purpose of Submission

1.1.1 This planning application is submitted to seek permission from the Town Planning Board (the Board) in support of a proposed mixed-use development (proposed flat with permitted commercial uses) (hereafter referred to as the "Proposed Development") in Planning Area 32B in Hung Shui Kiu (hereafter referred to as "Application Site") under Section 16 (S16) of the Town Planning Ordinance (CAP. 131).

1.1.2 The Application Site is zoned "Commercial (1)" ("C(1)") on the Draft Hung Shui Kiu and Ha Tsuen Outline Zoning Plan (OZP) No. S/HSK/3 (**Figure 1.1** refers) and lies within Hung Shui Kiu / Ha Tsuen (HSK/HT) New Development Area (NDA). According to the Notes of the OZP, the Application Site is subject to maximum plot ratio (PR) of 9.5 and maximum building height of 200mPD. Commercial uses including 'Hotel', 'Office', 'Eating Place', 'Shop and Services', etc. are under Column 1, i.e. always permitted; while 'Flat' use is under Column 2, which requires planning permission from the Board. In view of recent Government directives promoting greater flexibility for accommodating residential use in commercial sites within HSK/HT NDA, the Applicant hereby proposes to introduce residential use, among other commercial uses, in the Application Site, which requires the submission of this planning application for the proposed 'Flat' use. This planning application does not involve any changes to the maximum building height and PR as stipulated on the OZP.

1.1.3 The Application Site is further divided into Site A and Site B (see **Figure 1.1**). Only Site A involves residential use (i.e. 'Flat' use under Column 2), while Site B is purely for commercial uses. Therefore, **only Site A is the subject matter of this planning application** which requires planning permission from the Board for the proposed 'Flat' use, while **Site B is for indicative purpose only, and not for approval** under this planning application.



llewelyn davies	Title: Extract of the Draft Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/3	Checked	DH	Drawn PW
		Rev	0	Date Oct 2026
		Scale NA		Figure 1.1

1.2 Report Structure

1.2.1 This Planning Statement consists of the following sections:

Section 2:	describes the Application Site context and planning context;
Section 3:	presents the details of the indicative development scheme;
Section 4:	summarises the key findings of various technical assessments on environmental, air ventilation, traffic, drainage, sewerage and water supply aspects;
Section 5:	presents the planning justifications for the Proposed Development; and
Section 6:	concludes the Planning Statement.

1.2.2 Detailed technical assessments and other supplementary information are attached in **Appendices A to G**.

Appendix A	Extract of the Extant OZP
Appendix B	Landscape Master Plan
Appendix C	Traffic Review
Appendix D	Environmental Review
Appendix E	Drainage Impact Assessment
Appendix F	Sewerage Impact Assessment
Appendix G	Water Supply Impact Assessment

2 SITE AND PLANNING CONTEXT

2.1 Site Location

2.1.1 The Application Site is in Planning Area 32B on the Draft Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/3. It lies within a greater area currently known as Hung Shui Kiu (**Figure 2.1** refers). Its site area is about 13,601.02m^2.

2.2 Surrounding Context

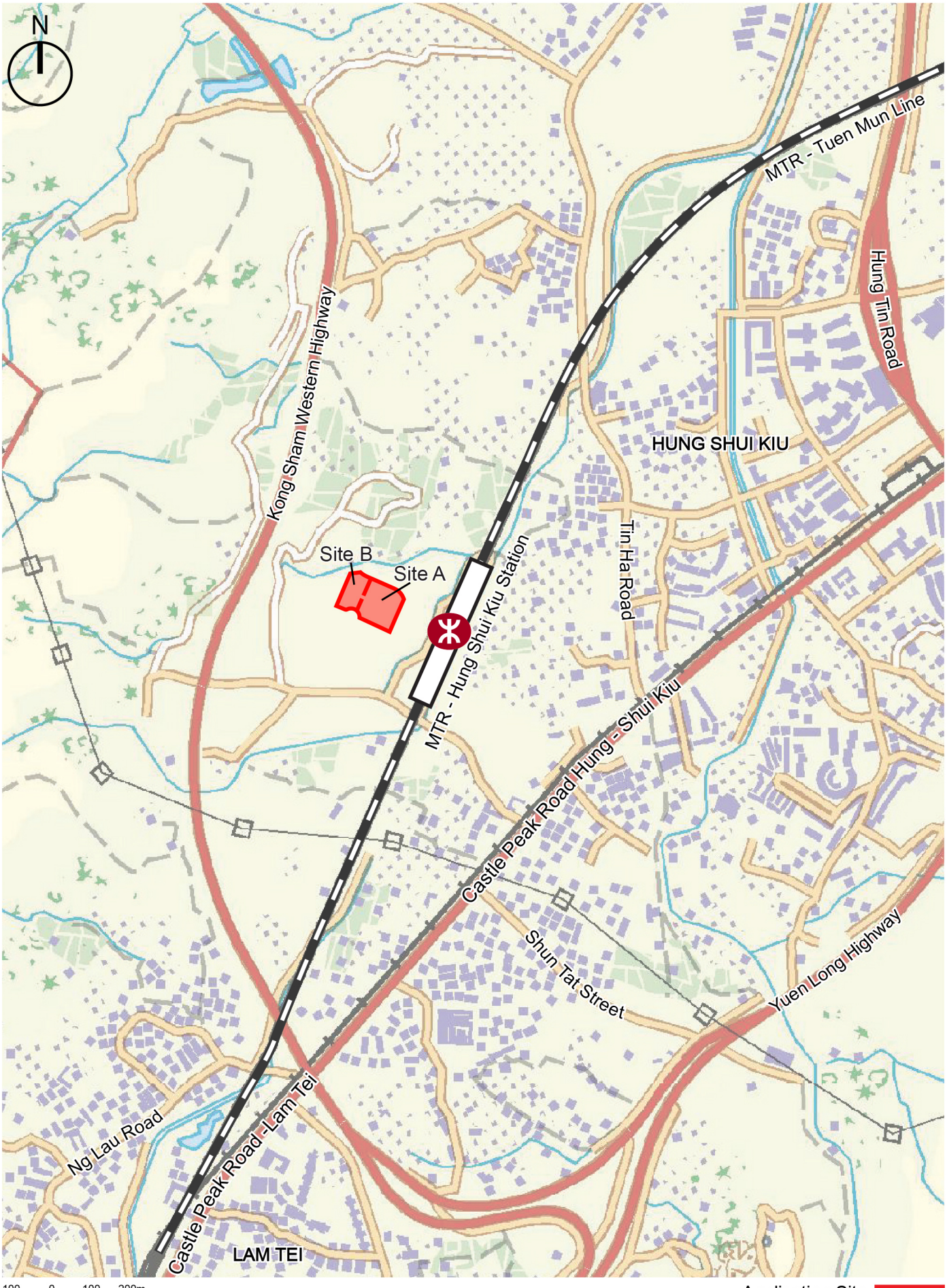
2.2.1 Under the planning for HSK/HT NDA, the Application Site will form part of the future Town Centre of HSK. Planning and Urban Design Concept Plan extracted from the extant OZP in **Figure 2.2** refers. The Application Site abuts the future HSK Station of Tuen Ma Line (TML), Regional Plaza and Green Transit Corridor. The target completion year of HSK Station is 2030. Also, HSK Station of Hong Kong-Shenzhen Western Rail Link connecting HSK/HT NDA and Qianhai of Shenzhen will be at the immediate west of HSK Station of TML. The existing Kong Sham Western Highway lies to the further west of the Application Site.

2.3 Planning Context

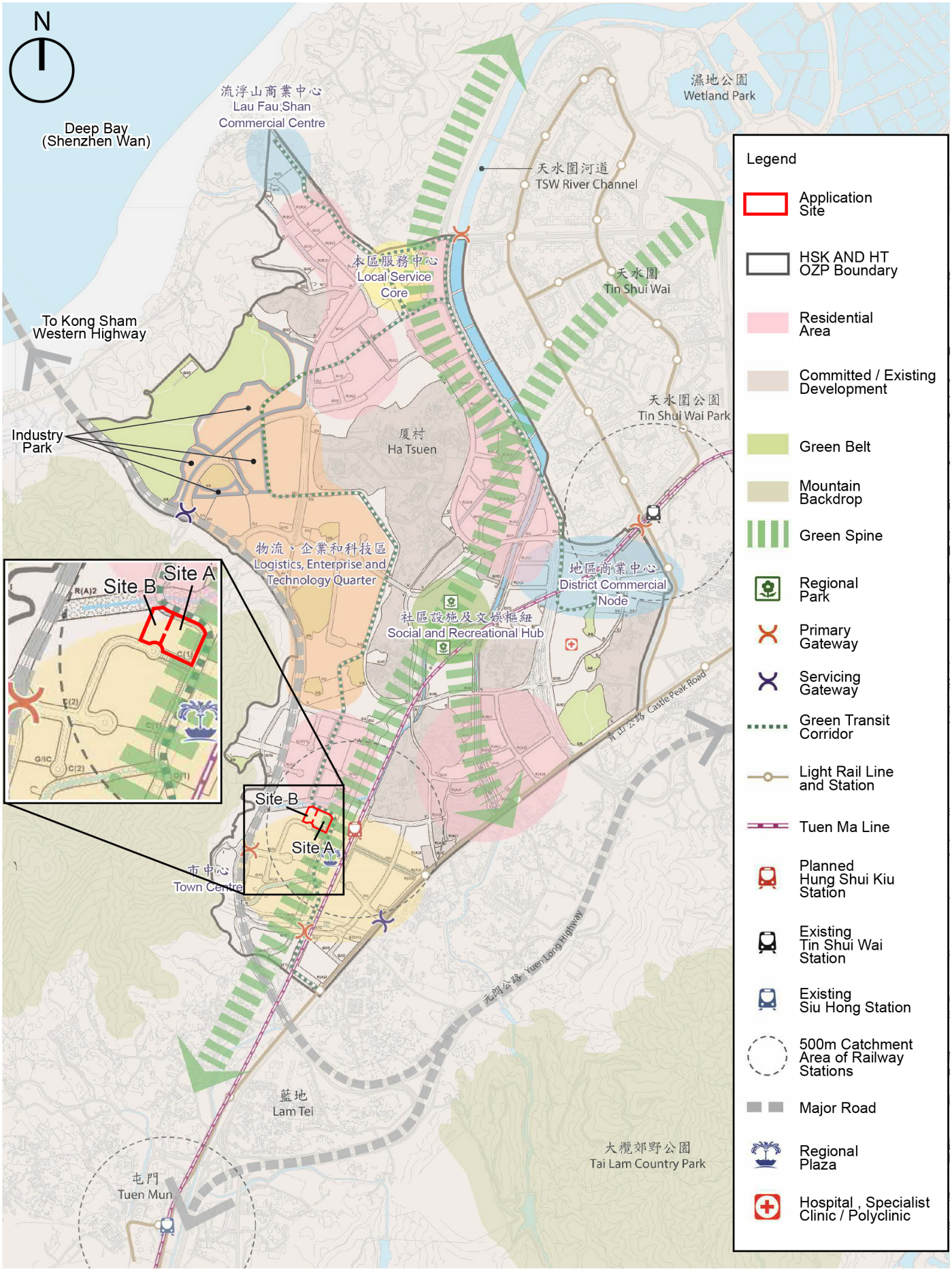
Statutory Planning Context

2.3.1 The Application Site falls within "C(1)" zone on the Draft Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/3. The maximum PR and building height for the Application Site as per OZP is 9.5 and 200mPD respectively.

2.3.2 According to the OZP, commercial uses including 'Hotel', 'Office', 'Eating Place', 'Shop and Services', etc. are always permitted in "C(1)" zone; while 'Flat' use is under Column 2, planning permission from the Board is therefore required for the proposed residential use in Site A of the Application Site (**Figure 1.1** refers). Extract of the extant OZP is attached under **Appendix A**.



llewelyn davies	Title: Location Plan	Checked	DH	Drawn PW
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llewelyn davies

Title

Planning and Urban Design Concept Plan of HSK / HT NDA

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Scale NA		Figure 2.2	

Latest Government Policy to Increase Flexibility for Accommodating Residential Use in Commercial Sites

2.3.3 Having considered broader market forces, industry feedback and other relevant factors and to expedite the implementation of new projects within Northern Metropolis, the Government has announced various policy directives in recent years to allow residential use in commercial sites. In particular, in relation to HSK/HT NDA:

- Since August 2024, the Government has introduced a series of policy directives to increase flexibility in accommodating residential uses within commercial sites, particularly in the HSK/HT NDA. In particular, the Government indicated that some non-domestic GFA on commercial sites could be reallocated for residential purposes. This policy is seen as a response to industry feedback as well as a reflection of the broader market changes, and serves as a facilitative measure to enable the timely implementation of developments in Northern Metropolis;

- Subsequently in 2025-26 Budget announced in February 2025, in view of the relatively sluggish commercial property market, the Government announced that it will consider rezoning some of the commercial sites for residential use and allowing greater flexibility of land use;

2.3.4 This planning application is prepared based on the above latest Government policy to propose 'Flat' use in Site A of the Application Site.

3 Indicative Development Proposal

3.1 Proposed Development Parameters

3.1.1 Only Site A involves residential use (i.e. 'Flat' use under Column 2), while Site B is purely for commercial uses. Therefore, **only Site A is the subject matter of this planning application** which requires planning permission from the Board for the proposed 'Flat' use, while **Site B is for indicative purpose only, and not for approval** under this planning application.

3.1.2 **Figures 3.1** to **3.7** show the Master Layout Plan, floor plans and section plans for the Proposed Development. The major development parameters are tabled below.



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

Title: Master Layout Plan		Checked	DH	Drawn MH
		Rev		Date Oct 2026
		Scale		Figure 3.1



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: G/F Plan	Checked	DH	Drawn: MH
		Rev		Date: Oct 2026
		Scale		Figure: 3.2



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: 1/F Plan	Checked	DH	Drawn: MH
		Rev		Date: Oct 2026
		Scale		Figure: 3.3



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

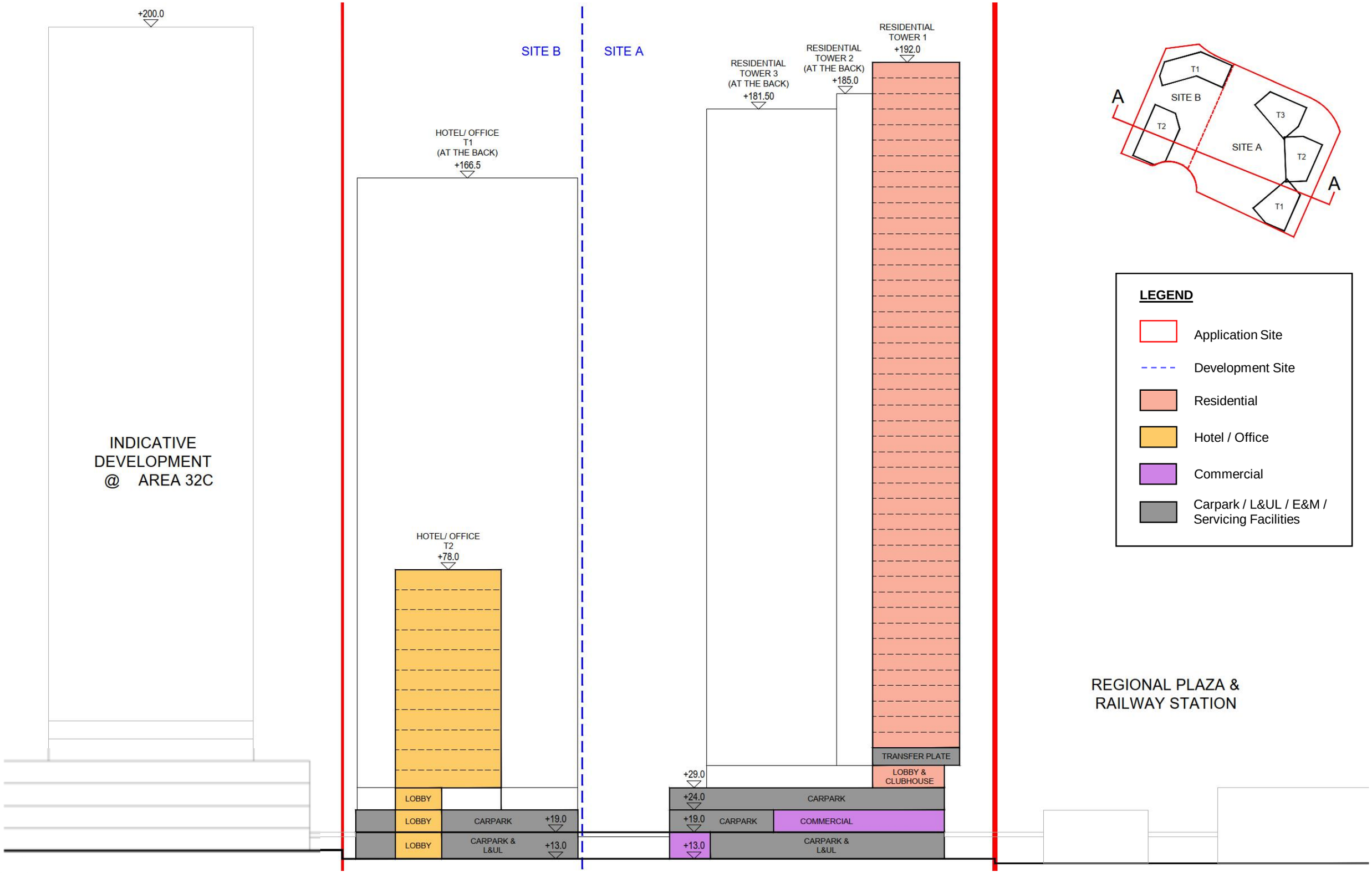
	Title: 2/F Plan	Checked	DH	Drawn: MH
		Rev		Date: Oct 2026
		Scale		Figure: 3.4



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: 3/F Plan	Checked	DH	Drawn: MH
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		Scale		Figure: 3.5



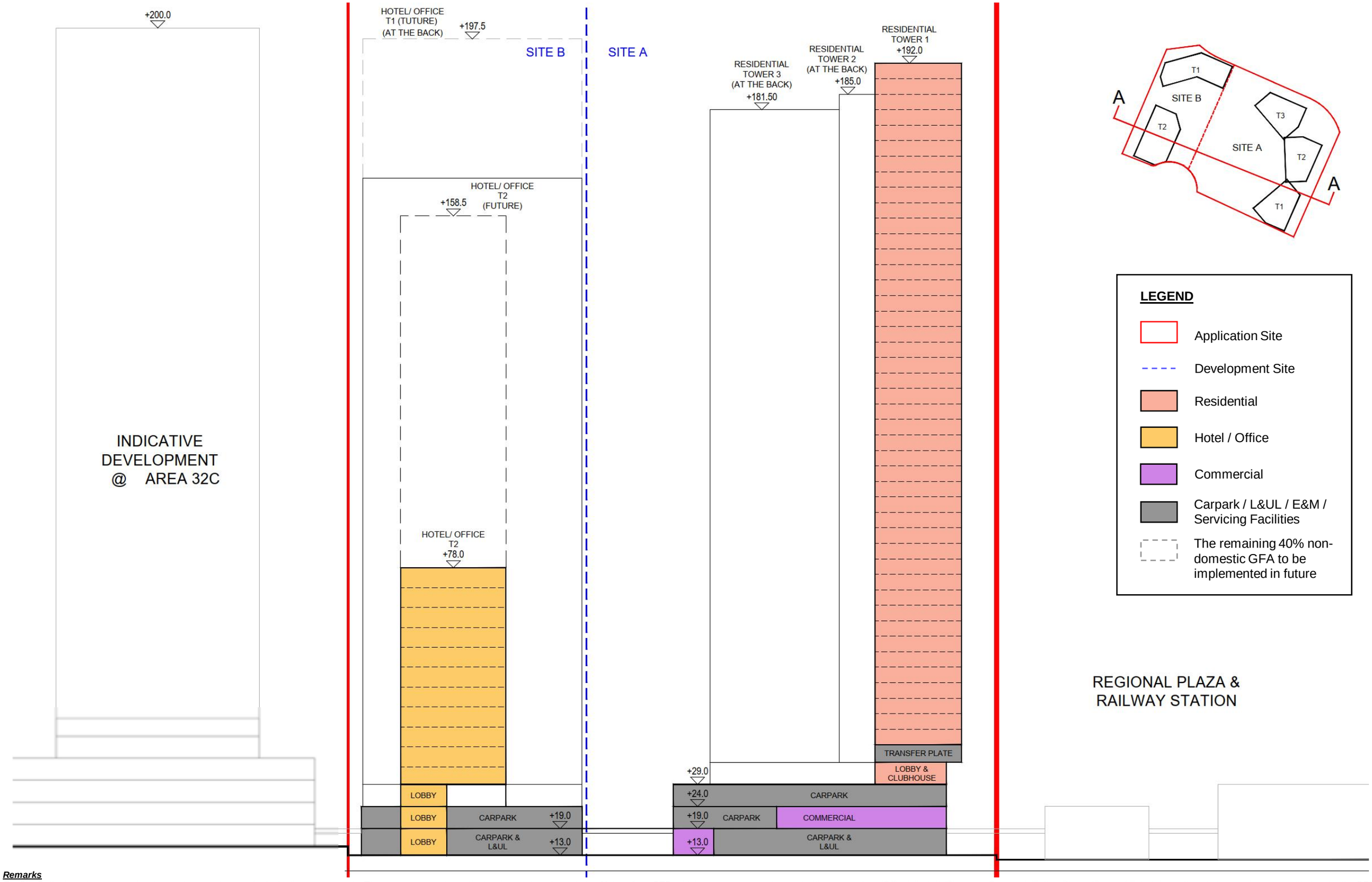
Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

Title

Section Plan (Phase 1)

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Scale		Figure	3.6



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: Section Plan (Future Scenario)	Checked	DH	Drawn MH
		Rev		Date Oct 2026
		Scale		Figure 3.7

Table 3.1 Development Schedule for the Application Site

	Overall	Site A	Site B
Site Area	13,601.02m^2	8,966.68m^2	4,634.34m^2
Total PR (not more than)	9.50	6.85	14.62
• **Domestic**	4.27 (45%)	6.48	-
• **Non-domestic** (1)	5.23 (55%)	0.37	14.62
Total GFA (not more than)	129,210.35m^2 (2)	61,444.35m^2	67,766.00m^2
• **Domestic**	58,144.35m^2 (45%)	58,144.35m^2	-
• **Non-domestic** (1)	71,066.00m^2 (55%) (3)	3,300.00m^2	67,766.00m^2
Building Height	Not more than 200mPD	Not more than 200mPD	Not more than 200mPD
No. of Towers	5	3	2
No. of Storeys (4)			
• **Residential**	40 – 43	40 – 43	-
• **Non-domestic**			
- Topside	33 - 47	-	33 - 47
- Podium	3	3 (5)	2 (5)
No. of Flats	1,240 (6)	1,240 (6)	-
No. of Hotel Rooms	1,260	-	1,260
Anticipated Population	3,348 (7)	3,348 (7)	-
Private Open Space	Not less than 3,348m^2	Not less than 3,348m^2	-
Resident's Recreational Facilities	2,325m^2 (8)	2,325m^2 (8)	-

(1) The non-domestic uses and development parameters as illustrated under the subject planning application are for indicative purpose and subject to detailed design. The proposed non-domestic uses and development parameters under the subject planning application conform to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', 'Place of Recreation, Sports or Culture' and etc. are always permitted under the OZP.

(2) The ratio of total domestic to non-domestic GFA of the two proposed developments within Area 32B is 45% : 55%.

(3) Drawing upon the spirit of the "Pay for What You Build" Pilot Scheme, about 60% of the non-domestic GFA in Area 32B – Site B (i.e. about 67,766 * 0.6 = 40,660m^2) will be implemented first.

(4) Excludes transfer plate and refuge floor (if applicable).

(5) Includes 2 storeys of aboveground car park.

(6) An average flat size of 47m^2 is assumed.

(7) A person per flat of 2.7 is assumed.

(8) Or such other areas of clubhouse as may be approved by the Buildings Department based on the total permissible domestic GFA for individual land parcel (site under the Buildings Ordinance) at the future General Building Plans.

Details of the Proposed Development

3.1.3 The Application Site involves Site A and Site B. In Site A, there are 3 residential towers above a commercial podium of 3 storeys accommodating carpark (G/F and 2/F) and commercial uses (G/F and 1/F) such as 'Eating Place', 'Shop and Services', etc. that are always permitted. Clubhouse for the residential development is provided on 3/F.

3.1.4 In Site B, there are two non-domestic blocks for hotel / office uses. Carpark and commercial uses are provided on G/F and 1/F.

Proposed Development Mix

3.1.5 Upon development, the Application Site will form a mixed-use development with residential use and commercial uses. The PR for domestic use is 4.27 and that for non-domestic use is 5.23; i.e. the ratio of domestic GFA to non-domestic GFA is 45% : 55%. The total PR will be not more than 9.5, in compliance with the maximum PR restriction and primary planning intention for commercial use predominantly as stated on OZP.

Phasing Arrangement for the Non-domestic Uses

3.1.6 In order to refine the existing arrangements for land grant and land premium payment to ease the upfront capital pressure on developers, encourage phased development, and accelerate the development of the Northern Metropolis, the Chief Executive has introduced a "Pay for What You Build" mechanism in the 2025 Policy Address. Lot owners are allowed to carry out phased development and pay the required land premium as determined according to the actual GFA and the "preferred use" as proposed by the lot owners.

3.1.7 Against this background, the Applicant proposes phased implementation of the non-domestic uses: i.e. 60% of the non-domestic GFA in Area 32B – Site B will be implemented first, while the remaining 40% of the non-domestic GFA will be implemented at later stage in future. The demarcation of the non-domestic uses to be implemented under the phased implementation strategy are illustrated on **Figures 3.6** and **3.7** and tabulated below:-

Area 32B (Site B)	**Phase 1 (to be implemented 1st)**	**Remaining Phase (to be implemented at later stage)**
T1	Mainly hotel	*(subject to detailed design)*
T2	Mainly office	
GFA (about m^2)	40,660m^2 (60%)	27,106m^2 (40%)
	67,766m^2 (100%)	

Remarks: The demarcation of non-domestic uses is for indicative purpose and subject to detailed design. Commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', 'Place of Recreation, Sports or Culture' and etc. are always permitted under the OZP.

3.2 Pedestrian Connectivity

3.2.1 To ensure seamless pedestrian connectivity within the Application Site and with the surroundings, the Applicant has made reference to the Urban and Green Design Requirements Brief for Private Development Sites, which provides guidelines on the connections within Town Centre of the NDA and other urban design measures.

3.2.2 Within the Application Site, a footbridge connection will be provided, managed and maintained by the Applicant to link up Site A and Site B as an internal connection. A pedestrian connection to the Regional Plaza and HSK Station to the east and another connection to Planning Area 34B to the north, will be provided by the Applicant. An opening is reserved by the Applicant for possible connection to Planning Area 32A to the south. Management and maintenance of these three connections will be subject to further discussion and agreement with relevant Government departments / parties.

3.2.3 For possible pedestrian connection to Planning Area 32C to the west, which is still under planning, the Applicant has reserved opening within the boundary of the subject Proposed Development, so as to allow future pedestrian connection to be connected to the Application Site. The detailed design, management and maintenance will be subject to further coordination with the future developers of the adjacent developments and respective Government departments in future.

3.2.4 For illustration of the design merits undertaken by the subject S16 planning application, please refer to **Figure 5.2**.

3.3 Landscape Design

3.3.1 A Landscape Master Plan has been prepared and attached under **Appendix B**.

3.3.2 For open space provision, at least 1m^2 per person of private open space will be provided within Application Site. For greenery provision, an area of not less than 30% of the total greenery will be provided in accordance with the requirement of PNAP APP-152.

3.4 Access Arrangement and Internal Transport Facilities

3.4.1 2 run-in / out points will be provided at 13mPD on G/F (**Figure 3.2** refers). The vehicular access for Site A will also serve Site B via connected internal road. The remaining access point is a run-in / out for Site B's car park. The locations of the run-in / out points have already made reference and aligned to the road design of Road L22 prepared and gazetted by the Government under HSK/HT NDA[1].

3.4.2 For Site A, which is for residential development with a commercial podium, the internal transport facilities (including car parking spaces and loading / unloading (L/UL) bays) will be provided on G/F and 2/F. For Site B, the internal transport facilities will be provided on G/F and 1/F.

3.4.3 For detailed breakdown of the internal transport facilities provision, please refer to Section 4.3 and the Traffic Review under **Appendix C**.

3.5 Implementation

3.5.1 The Proposed Development (except for the remaining non-domestic GFA to be implemented at a later stage under the arrangement of "Pay for What You Build" Pilot Scheme) is anticipated to be completed in 2033. Nonetheless, for technical review purpose, the maximum total GFA permitted for the Application Site has been taken into account.

[1] PWP Item Nos. 7787CL (Part) and 7829CL Hung Shui Kiu / Ha Tsuen New Development Area Advance Works Phase 3 and Stage 2 Works – Site Formation and Engineering Infrastructure.

4 Technical Appraisal

4.1 Environmental Aspect

4.1.1 An Environmental Review has been prepared and enclosed under **Appendix D** to assess if the Proposed Development would be subject to air quality impact, traffic noise impact and railway noise impact.

4.1.2 For air quality aspect, as no openable windows, fresh air intakes and recreational uses in open spaces fall within the 5m buffer distance from local distributor (the planned Road L22), the Proposed Development will not be subject to unacceptable impacts.

4.1.3 For traffic noise impact, according to the Environmental Impact Assessment (EIA) of HSK NDA Planning and Engineering Study – Investigation, sites near to the Application Site will comply with noise criteria with implementation of mitigation measures. It is anticipated that the traffic noise level at the Application Site will be similar to these sites due to close proximity. Mitigation measures will be implemented where necessary to ensure compliance with the noise criteria.

4.1.4 Regarding railway noise impact, similar to traffic noise impact, the EIA of HSK NDA has assessed the railway noise levels in the sites near to the Application Site. With implementation of mitigation measures, all these sites will not be subject to unacceptable railway noise. As the Application Site is located farther to HSK Station than the assessed sites, and the recommended setback distance of 70m has been complied with, it is anticipated that the Application Site would not be subject to adverse railway noise impacts. Mitigation measures will be proposed where necessary.

4.1.5 Overall, the Proposed Development would be acceptable from environmental perspective.

4.2 Air Ventilation Aspect

4.2.1 According to the OZP, the major air paths / breezeways in the NDA include (see **Figure 2.2**):

1. The north-south running Regional Plaza and the adjoining open space spines diverting wind to penetrate through the Town Centre to Tin Sam Tsuen, San Lee Uk Tsuen and various villages in Ha Tsuen;

2. Northeast-southwest running Castle Peak Road could divert wind to developments along the road; and

3. Breezeways provided along major roads, rail corridors, proposed pedestrian streets, revitalised river channels and open spaces.

4.2.2 With reference to HSK NDA Planning and Engineering Study – Investigation – Stage 3 Air Ventilation Assessment (Final), in addition to the potential air paths and breezeways identified in the OZP, the proposed road to the south of Planning Area 32B and to the east of Planning Area 32C would further enhance wind penetration nearby, along the road connection.

4.2.3 The Application Site is not located within any air path or breezeway, therefore, the Proposed Development would not impose any significant air ventilation impacts on the surrounding sites.

4.3 Traffic Aspect

4.3.1 A Traffic Review has been prepared and attached under **Appendix C**. The Traffic Review has proposed the internal transport facilities provision and reviewed the traffic impact induced by the Proposed Development.

4.3.2 Based on an indicative mix of retail, hotel and office uses (i.e. uses that are always permitted) that is subject to revision in future, proposed internal transport facilities provision with reference to Hong Kong Planning Standards and Guidelines are tabled in Section 2.3 of the Traffic Review and extracted below for easy reference:

Table 4.1 Proposed Internal Transport Facilities Provision

Site	Use	Type	No.
Site A	Residential	Residential parking space	168
		Visitor parking space	15
		Motorcycle parking space	13
		L/UL bay	3
		Bicycle parking space	248
	Retail	Car parking space	35
		Motorcycle parking space	4
		L/UL bay	5
Site B (future scenario; development mix is indicative only)	Retail	Car parking space	3
		Motorcycle parking space	1
		L/UL bay	1
	Hotel	Car parking space	10
		Motorcycle parking space	1
		L/UL bay for goods vehicle	5
		Lay-by for taxi and private car	4
		Lay-by for single-deck tour bus	3
	Office	Car parking space	177
		Motorcycle parking space	18
		L/UL bay	13

4.3.3 To assess potential traffic impact induced by the Proposed Development, the Traffic Review has compared the traffic generations from a hypothetical scheme with that from the proposed scheme. The hypothetical scheme is formulated based on the commercial mix suggested in the previous version of the Hung Shui Kiu and Ha

Tsuen Outline Development Plan No. D/HSK/1 for the Application Site.

4.3.4 According to assessment result, the traffic generations under the proposed scheme would be much less than that under the hypothetical scheme under both AM and PM peak hours. Therefore, there would not be insurmountable traffic impacts imposed on the surrounding road network.

4.4 Drainage, Sewerage and Water Supply Aspects

4.4.1 A Drainage Impact Assessment (see **Appendix E**) has been conducted to review the feasibility of the Proposed Development. The surface runoff of Proposed Development is mainly from rainfall, and it will be directed to existing drainage channel via planned storm drains to be constructed in HSK/HT NDA. With reference to Drainage Impact Assessment of Planning Application No. A/HSK/452, a hydraulic model was established in accordance with Drainage Services Department's guidelines to assess the hydraulic performance of the proposed drainage system within HSK/HT NDA. The result showed that the proposed drainage system was sufficient to cater for the peak flows arising from the planned HSK/HT NDA. It is noted that drainage lead-in is proposed by Civil Engineering and Development Department (CEDD) for runoff discharge from the Application Site. The Proposed Development will adopt the proposed drainage arrangements to be implemented by CEDD under HSK/HT NDA project. As the Proposed Development will not bring significant changes to drainage characteristics, no adverse impact on the drainage system is anticipated.

4.4.2 A Sewerage Impact Assessment (see **Appendix F**) has been conducted to assess the potential sewerage impact arising from the Proposed Development. The sewage impact is assessed by comparing the sewage generated between Base Case (based on Outline Development Plan No. D/HSK/1) and the Proposed Development. The comparison result shows that the sewage generated from the Proposed Development (i.e. 2088.6m^3/day) is less than Base Case (i.e. 2389.4m^3/day), it is anticipated that the Proposed Development will not result in any adverse impact to the future sewerage system in HSK/HT NDA.

4.4.3 The sewage generated from the Proposed Development will be conveyed to Sewage Pumping Station No. 1 via planned gravity sewers, and then to Sewage Pumping Station No. 2 via planned sewer rising mains and gravity sewers constructed by CEDD and then finally to planned HSK Effluent Polishing Plant. The

sewage discharged from the Application Site contributes to only about 7.2% of the capacity of Sewage Pumping Station No. 1. To conclude, no adverse impact is anticipated on planned sewerage system.

4.4.4 A Water Supply Impact Assessment has been prepared and enclosed under **Appendix G** to review the feasibility of the Proposed Development from water supply point of view. The estimated daily fresh water demand for the Proposed Development is 2,054m^3/day and the estimated daily flushing water demand is 684m^3/day. NS250 lead-in pipe is proposed to be tee-off from the planned fresh water main to supply fresh water for the Proposed Development. For flushing water, NS125 lead-in pipe is proposed to be tee-off from the planned flushing water main to provide flushing water for the Proposed Development. To conclude, no adverse water supply impact is anticipated.

5 PLANNING JUSTIFICATIONS

5.1 In Line with Latest Government Policy to Allow Greater Flexibility for Residential Use within Commercial Zones in Hung Shui Kiu / Ha Tsuen New Development Area

5.1.1 As mentioned in Section 2.3.3, the Government has introduced a series of policy directives to increase flexibility in accommodating residential uses within commercial sites, particularly in the HSK/HT NDA. In particular, the Government indicated that some non-domestic GFA on commercial sites could be reallocated for residential purposes. This policy is seen as a response to industry feedback as well as a reflection of the broader market changes, and serves as a facilitative measure to enable the timely implementation of developments in Northern Metropolis.

5.1.2 It is against this background the Applicant hereby proposes a residential development with permitted commercial uses in the Application Site to allow appropriate amount of residential use. The Proposed Development involving conversion of portion of the non-domestic GFA for residential use in the subject "C(1)" zone is therefore in line with the latest Government policy.

5.2 In Line with Government's Policy to Address Housing Needs

5.2.1 In March 2025, the Secretary for Development said that Hong Kong shows a rigid demand for private housing, therefore, the 2025-26 Land Sale List contains residential sites only. Given a weakened commercial market, in the 2026-27 Land Sale List, there are only residential sites being put on the list. It proves that even though Hong Kong is facing economic downturn in recent years after COVID 19, demand for private housing remains stable.

5.2.2 As emphasized in recent Policy Addresses, the Government will continue to enhance the speed, quantity, quality and efficiency of providing more housing, with the supply target for private housing in the next decade projected to be 126,000 units. As the implementation of Northern Metropolis is going full-speed, it is anticipated that the increased economic activities within the NDAs will cause increasing demand for private housing.

5.2.3 The Proposed Development will provide 1,240 residential units and is anticipated

to be completed in 2033. It can contribute to housing supply in medium term. This provision can meet Hong Kong's demand for private residential units, and support all sorts of economic uses planned within the Northern Metropolis. In the case of HSK/HT NDA, the Proposed Development can meet the housing needs of students and staff in the UniTown and the working population in the future Hung Shui Kiu Industry Park.

5.3 Overall Development Mix will Reinforce Hung Shui Kiu's Town Centre as Vibrant Knowledge and Innovation Hub

5.3.1 The Application Site is located within the Town Centre of the HSK/HT NDA (**Figure 2.2** refers). The Town Centre is planned around the future HSK Station and is envisaged as the key commercial, civic and transportation hub of the NDA, accommodating a diverse range of uses including offices, commercial facilities, government, institution and community (GIC) facilities, public transport interchanges and the Regional Town Plaza. In line with the Government's latest planning initiatives to establish a University Town within the HSK/HT NDA, the area is expected to emerge as a major education and innovation cluster, attracting local, Mainland and international talent. Given its role as the principal gateway and focal point of the NDA, it is important to foster a balanced mix of commercial, residential, educational and supporting uses that can create a dynamic, inclusive and people-oriented urban environment. A predominantly commercial development pattern would limit activity outside normal business hours and would not fully realise the Town Centre's potential as the vibrant heart of the NDA.

5.3.2 The Proposed Development seeks to introduce residential use within the Application Site whilst maintaining a strong commercial component, with approximately 55% of the total GFA reserved for commercial uses, including hotel and office developments. The proposed residential population will complement the planned commercial, educational and institutional developments within the Town Centre, helping to establish a sustainable live-work-study ecosystem. During daytime, office, retail, educational and innovation-related activities associated with the emerging University Town will generate significant economic and social vibrancy. Beyond office and academic hours, the resident population and associated supporting services will sustain continuous activity and enhance street-level vitality. The proposed development will therefore contribute to creating a diverse, resilient and vibrant town centre that supports the Government's vision for the HSK/HT NDA as a strategic growth node in the Northern Metropolis, serving as

a desirable place to live, work, learn, innovate and do business.

5.4 Proposed Development with Reasonable Scale of Residential Use Acts as a Catalyst

5.4.1 As mentioned above, the Proposed Development involves conversion of non-domestic GFA for domestic use only. This development mix of 45% (domestic) : 55% (non-domestic) will have a positive impact to the overall implementation of HSK/HT NDA. The implementation of residential use in an early stage can provide an early population in-take to promote economic sustainability of the commercial core, and thus further expedites development of the remaining commercial sites in the Town Centre. With residential development being a first mover, HSK Town Centre will be enriched with human and economic activities with social interactions, and such vibrancy is essential and serves as a basis to attract investments in this area to implement the commercial core planned to the west of HSK Station.

5.5 Positively Responding to the Evolving Development Needs and Maximising the Strategic Value of Land Resources

5.5.1 The planning context of the HSK/HT NDA has evolved significantly following the Government's latest Five-Year Plan, which identifies Hung Shui Kiu University Town as a key component of the Northern Metropolis and positions it as a centre for smart manufacturing, applied post-secondary education and international talent cultivation. The planned integration of education, technology, industry, talent and urban development is expected to generate new patterns of demand for commercial, residential and supporting uses. At the same time, the office market in Hong Kong continues to face structural challenges arising from changing workplace practices, evolving business requirements and increasing market competition. These circumstances warrant a review of the originally planned development mix to ensure that land resources within the Town Centre can respond effectively to the changing economic and social landscape while supporting the long-term vision of the University Town and the Northern Metropolis.

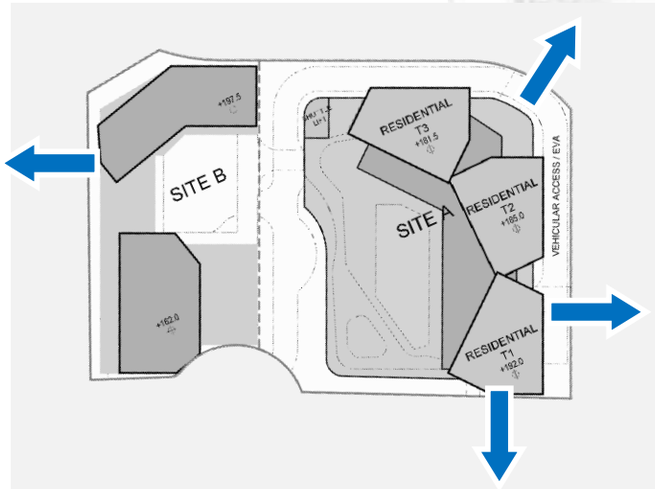
5.5.2 Against this background, valuable land resources within the Town Centre of the HSK/HT NDA should be utilised in a flexible and efficient manner to accommodate emerging development needs. The introduction of residential use into the Application Site represents a timely response to the Government's vision of fostering an integrated "live-work-learn" environment nearby the future University

Town. By complementing the planned commercial, educational and innovation-related developments, the Proposed Development will help create a critical mass of residents, students, professionals and visitors, thereby enhancing the vibrancy, resilience and sustainability of the Town Centre. The proposed development mix can also mitigate the risk of an oversupply of office accommodation while contributing to Hong Kong's ongoing housing needs and supporting the creation of a well-balanced and dynamic knowledge-based community.

5.6 Design Merits are Proposed

5.6.1 Good design elements and potential public pedestrian connections have been incorporated in the Proposed Development. The Proposed Development has made reference to the Urban and Green Design Requirements Brief for Private Development Sites (Annex II p.23-26) and provided design merits to enhance connectivity and walkability of the Town Centre of HSK/HT NDA as listed in **Table 5.1**. The Proposed Development will complement the Government's planning for HSK/HT NDA and enable seamless connection to the north and south of the HSK Town Centre (see **Figures 5.1 and 5.2**).

5.6.2 To ensure the effective implementation of the potential public pedestrian connections, the possible pedestrian connections and reserved openings for future connections will be carried forward by the Applicant. It should be highlighted that the detailed design, management and maintenance will still be subject to further coordination with the future developers of the adjacent developments and respective Government departments in future.



POSSIBLE FOOTBRIDGE CONNECTIONS TO BE STUDIED IN FUTURE

TOWARDS QIANHAI

TOWARDS TIN SHUI WAI

NORTH

Residential Cluster

Area 34B

Area 34A

Area 32B

Area 32C

Campus Area

Regional Plaza

Area 27C

Area 28B

Area 27B

Living Community Area

Area 28A

Area 27A

Area 26A

Area 26B

KONG SHAM WESTERN HIGHWAY

CASTLE PEAK ROAD

Campus Area

Campus Area

TOWARDS TUEN MUN

LEGEND

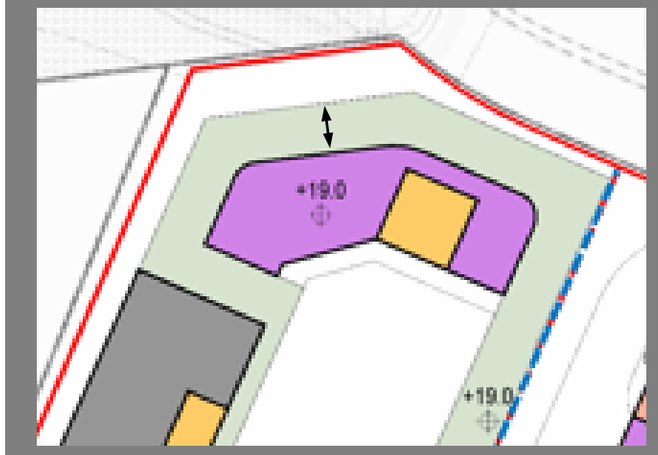
- Application Site
- Possible Pedestrian Connection Routes via the Subject Proposed Development
- Possible Footbridge Connections to be Studied in Future
- Smart and Green Mass Transit System
- Shopping Street
- Main at-grade Pedestrian Circulation
- Secondary Pedestrian Streets
- Elevated Connections linking up HSK Station to the East and West
- Connection between Regional Plaza and Campus Area
- River Channel with Riverside Promenade
- Elevated River Connection (connects River Channel through Green Deck within Campus Area)
- Living Community Area
- Campus Area in HSK University Town
- Residential Cluster
- Regional Plaza Precinct
- Hung Shui Kiu pilot area under large-scale land disposal

Title

Spatial Planning Concept – Enhanced Connectivity and Walkability via the Subject Proposed Development

Checked	DH	Drawn	MH
Rev		Date	Oct 2026
Scale		Figure	5.1

A terrace at 1/F with a minimum width of 6m and a retail façade fronting onto the 1/F terrace



1/F Plan (blow-up plan)

A minimum 6m-wide G/F setback between buildings and the site boundary facing the riverside promenade

A G/F retail frontage facing the riverside promenade



G/F Plan (blow-up plan)

POSSIBLE FOOTBRIDGE CONNECTION (SUBJECT TO DETAILED DESIGN)

HOTEL / OFFICE T1 +197.5

SITE B

T2 HOTEL / OFFICE +162.0

SHUTTLE LIFT

RESIDENTIAL T3 +181.5

SITE A

RESIDENTIAL T2 +185.0

CLUBHOUSE

RESIDENTIAL T1 +192.0

VEHICULAR ACCESS / EVA

POSSIBLE FOOTBRIDGE CONNECTION (SUBJECT TO DETAILED DESIGN)

ROAD L22

RAILWAY

Opening reserved for future possible public passageway and elevated connection to Planning Area 32C *

Public passageway and elevated connection between Site A and Site B *(to be provided and managed by Applicant)*

Public passageway and elevated connection to Planning Area 34B *

Public passageway and elevated connection to Regional Plaza and HSK Station *

POSSIBLE FOOTBRIDGE CONNECTION (SUBJECT TO DETAILED DESIGN)

POSSIBLE FOOTBRIDGE CONNECTION (SUBJECT TO DETAILED DESIGN)

Opening reserved for future possible public passageway and elevated connection to Planning Area 32A *

32A

Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

** While the public passageways / elevated connections / reserved openings will be provided by the Applicant, their detailed design, management and maintenance responsibilities will be subject to further coordination with the future developers of the adjacent developments and respective Government departments in future.*

Connections / Openings provided as per Urban and Green Design Requirements Brief

Connections / Openings proposed by the Applicant

	Title: Design Merits	Checked	DH	Drawn MH
		Rev		Date Oct 2026
		Scale		Figure 5.2

Table 5.1 Design Merits in the Proposed Development with Reference to Urban and Green Design Requirements Brief for Private Development Sites

Category	Requirement	Provision in the Proposed Development	Remarks
Urban Design Measures	Setbacks with Terraced Podium	• A minimum 6m wide ground floor setback between buildings and the site boundary facing the promenade • A ground floor level retail frontage facing the promenade • A terrace at 1/F with a minimum width of 6m • A retail façade fronting onto the 1/F terrace	--
	Covered Walkway on all Elevated Connections and Terraced Podium	• Footbridge connection between Site A and Site B provided • Opening within the Application Site boundary reserved to allow future possible pedestrian connection to Planning Area 32C	• Extra pedestrian connections to Planning Area 34B and HSK Station to be provided by the Applicant • Opening within the Application Site boundary reserved to allow future possible pedestrian connection to Planning Area 32A
Green Design Measures	Green Building	• BEAM Plus Certification with Provisional Gold or above rating	
	Electric Vehicle Charging Facilities	• Will be provided in the Proposed Development	--
	Automatic Refuse Collection System	• Will be explored in detailed design stage	--

Urban Design Concepts	"Blue-Green Axis Spine" connecting the Northern and Southern Riverine Channels	• Riverside setback provided	--

5.7 The Proposed Development is Technically Feasible

5.7.1 The PR of the Proposed Development will be not more than 9.5, i.e. in compliance with the maximum PR stipulated on the OZP. Therefore, the total GFA of the Proposed Development does not exceed what is allowed under the OZP. The Proposed Development involves a change in development mix by introduction of 'Flat' use only with no change in total PR, thus the technical feasibility confirmed under the Government's previous planning and study for HSK/HT NDA based on a maximum PR of 9.5 for the Application Site is still valid.

5.7.2 Nevertheless, the Applicant has conducted technical review under different technical aspects to further confirm that the proposed change in development mix, based on the ratio of 45% : 55%, is technically acceptable. As detailed in Sections 3 and 4 above, the Proposed Development is technically feasible from landscape, environmental, air ventilation, traffic, drainage, sewerage and water supply aspects. For details, please refer to **Appendices B to G**.

6 CONCLUSION

6.1 This Planning Statement supports a planning application submitted to the Board for proposed mixed-use development (proposed flat with permitted commercial uses) in Planning Area 32B, Hung Shui Kiu, New Territories under S16 of Town Planning Ordinance. The Application Site is zoned "C(1)" on the Draft Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/3, subject to maximum PR of 9.5 and building height of 200mPD. This planning application does not involve any changes to the maximum building height and PR as stipulated on the OZP.

6.2 The Application Site is divided into Site A and Site B. Site A is for proposed residential development with a commercial podium, and therefore **Site A is the subject matter of this planning application**. There are 3 proposed residential blocks in Site A. Site B involves 2 non-domestic blocks for proposed hotel / office, i.e. purely for commercial uses that are always permitted, and therefore **Site B is not the subject matter of this planning application**. Thus, **the layout, development parameters and uses in Site B are indicative only and not for approval under the subject planning application**.

6.3 The total PR of the Proposed Development will be not more than 9.5, of which majority (i.e. 55% of the GFA) will be for the as-of-right permitted non-domestic uses, whereas the remaining (i.e. 45% of the GFA) will be for the proposed residential use. The building height of the Proposed Development will be not more than 200mPD, complying with the building height restriction stipulated on OZP.

6.4 The Proposed Development is supported by the following planning justifications:

- The Proposed Development is in line with Government's latest policy directives to allow flexibility to provide residential use in commercial sites in HSK/HT NDA;
- The Proposed Development is in line with Government's policy to address housing demand;
- The overall development mix of the Proposed Development will reinforce HSK's Town Centre as a vibrant knowledge and innovation hub;
- The Proposed Development with an appropriate mix of residential use can act as a catalyst to encourage expedition of new developments in HSK/HT NDA;
- The Proposed Development is a timely response to the evolving development needs and maximising the strategic value of land resources;
- Design merits are proposed; and
- The Proposed Development is technically feasible.

6.5 In light of the above planning justifications, we sincerely seek favourable consideration from the Board on this planning application.

Attachment C

Revised Environmental Review (Textual Revisions)

Prepared for

Prepared by

Ramboll Hong Kong Limited

PLANNING APPLICATION FOR PROPOSED MIXED USE DEVELOPMENT AT HUNG SHUI KIU/HA TSUEN (AREA 32B)

ENVIRONMENTAL REVIEW REPORT

Date	**September 2026**
Prepared by	**Sally Chiu** **Assistant Environmental Consultant**
Signed	
Approved by	**Tony Cheng** **Senior Manager**
Signed	
Project Reference	**SHKHSK32EI00**
Document No.	**R10117_v1.2.docx**

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Figure 2.1 Buffer Distance for Planned Road L22

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Appendix 1.1 Revised Outline Development Plan (RODP) for Hung Shui Kiu and Ha Tsuen and Hung Shui Kiu and Ha Tsuen Outline Zoning Plan (No. S/HSK/3) (Southern Area)

Appendix 1.2 Master Layout Plan of the Proposed Development

Appendix 3.1 Traffic Noise Result in HSK NDA P&E Study

Appendix 4.1 Railway Noise Result in HSK NDA P&E Study

1. INTRODUCTION

1.1 Background

1.1.1 The Application Site (Area 32B) is in the southern part of the Hung Shui Kiu / Ha Tsuen New Development Area (HSK/HT NDA). It is zoned as "Commercial (1)" ("C(1)") under the current Hung Shui Kiu / Ha Tsuen Outline Zoning Plan ("OZP") No. S/HSK/3 [or known as "Site 4-13b" under the Revised Recommended Outline Development Plan (RODP) of the 2016 HSK NDA Planning & Engineering Study (see **Appendix 1.1**)]. The Application Site is shown in **Figure 1.1**.

1.1.2 Ramboll Hong Kong Limited is commissioned by the Applicant / project proponent to prepare an Environmental Review (ER) for the Proposed Development from an environmental aspect. The Proposed Development scheme adopted in the assessment is provided by the project architect.

1.1.3 The ER includes the following major environmental issues;

i. Qualitative air quality impact on the proposed development

ii. Review of the traffic noise impact from the adjacent road networks on the proposed development; and

iii. Review of the railway noise impact on the Proposed Development.

1.1.4 The Proposed Development will have population intake after completion of infrastructure surrounding the Proposed Development. The existing potential fixed noise sources are expected to be demolished before population intake. The future planned fixed noise sources are expected to comply with Hong Kong Planning Standards and Guidelines (HKPSG) criteria which is 5 dB(A) below Acceptable Noise Levels (ANL) or prevailing background noise. Therefore, adverse fixed noise impact is not expected.

1.2 Proposed Development

1.2.1 The Application Site comprises of 2 sub-sites, namely Application Site 32B – Site A and Application Site 32B – Site B

1.2.2 The master layout plan of the Proposed Scheme is shown in **Appendix 1.2**. Details of Proposed Development are summarized in **Table 1.1** below.

Table 1.1 Development Parameters for Proposed Development in Application Site

Development Parameters		Application Site 32B – Site A	Application Site 32B – Site B
Site Area (m^2)		8,967	4,634
Building Height (mPD)		200	200
GFA (m^2)	Residential	58,144 [1]	0
	Clubhouse	2,325	0
	Office / Hotel / Hostel Development	0	65,845
	Commercial	5,221	0
Remark: [1] 58,144m^2 of residential GFA in Application Site 32B – Site A can provide 1,240 no. of residential units. [2] GFA for non-domestic areas do not require approval and are indicative only.			

1.2.3 It is anticipated the Proposed Development will be completed in 2033.

1.3 Key Environmental Issues and Study Approach

1.3.1 Key Environmental issues and concerns as identified for the Project include:

Air

1.3.2 The potential air quality impacts arising from the vehicular emissions of the nearby roads and chimney emissions (if any). The detail will be discussed at **Section 2**.

Traffic Noise

1.3.3 The identified key noise sources in the vicinity of the Application Site include the road traffic noise from nearby road network. Practical noise mitigation measures should be recommended where required in order to satisfy the requirement of the HKPSG. The detail will be discussed at **Section 3.**

Railway Noise

1.3.4 EIA report of Agreement No. CE 2/2011 (CE) Hung Shui Kiu New Development Area Planning and Engineering Study – Investigation (HSK NDA P&E Study) is reviewed. Practical noise mitigation measures should be recommended where required in order to satisfy the requirement of HKPSG and Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Site (IND-TM). The detail will be discussed at **Section 4**.

Fixed Noise

1.3.5 Potential fixed noise sources associated with the proposed Development includes mechanical ventilation and air conditioning (MVAC) system equipment. Other building services equipment, such as water pumps, lift machine etc., will be enclosed within the plant rooms. The planned fixed noise sources shall be designed to meet the HKPSG requirement. With the mitigation measures, it is expected there would be no insurmountable noise impact from fixed noise sources of proposed Development to nearby noise sensitive receivers.

Land Contamination

1.3.6 Land contamination assessment and the decontamination work (if needed) will be conducted by the developer and submitted to the EPD for endorsement prior to the commencement of any construction/ development works.

2. QUALITATIVE AIR QUALITY IMPACT ASSESSMENT

2.1 Introduction

2.1.1 This section examines the potential air quality impacts arising from all relevant emission sources in the vicinity of the Application Site.

2.2 Environmental Legislation and Guidelines

2.2.1 The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance (APCO) (Cap. 311) and the Air Quality Objectives (AQO)
- Environmental Impact Assessment Ordinance (EIAO) (Cap. 499.S16), EIAO-TM, Annexes 4 and 12
- HKPSG

2.3 Impact of Industrial Emission

2.3.1 No existing or planned industrial chimneys have been identified within 200 m from the boundary of the Application Site after population intake of the Proposed Development, based on the best available information.

2.4 Impact of Vehicular Emission

2.4.1 The HKPSG has provided a set of guidelines to assess the potential air quality impacts generated from traffic. According to Table 3.1 in Chapter 9 of HKPSG, a number of horizontal buffer distance between kerb side of roads and sensitive uses is recommended for various types of road.

2.4.2 The Application Site will be bounded by planned road (Road L22) which is classified as local distributor, in accordance with the PEP Item No. 7787CL (Part) and 7829CL Hung Shui Kiu / Ha Tsuen New Development Area Advance Works Phase 3 and Stage 2 Works – Site Formation and Engineering Infrastructure issued by CEDD. According to the Table 3.1 of Chapter 9 of HKPSG, the recommended buffer distance from local distributor is >5m for active and passive recreational uses. The planned roads and its recommended buffer distance are shown in **Figure 2.1**.

2.4.3 In **Figure 2.1**, there is >5m buffer distance from local distributor to the residential development within Application Site 32B – Site A. For Application Site 32B – Site B, although part of the hotel development falls within the 5m buffer distance from the planned road (L22), the planned hotel relies on central ventilation and fresh air intake(s). It is confirmed that no air sensitive uses, including openable windows, fresh air intake of mechanical ventilation and recreational uses in the open area, would be located within the buffer zones.

2.4.4 As the Application Site is located within the HSK NDA, the above review is based on the current best available information, i.e. the roads networks within the 500m assessment areas from the proposed developments shown in the drawings from PWP Item Nos. 7787CL (Part) and 7829CL Hung Shui Kiu / Ha Tsuen New Development Area Advanced Works Phase 3 and Stage 2 Works – Site formation and Engineering Infrastructure.

2.5 Impact of emission source within Site

2.5.1 Within the Application Site, hotel and residential development are proposed. An above ground car park and commercial use in terms of retails will be provided to support the proposed development. As such, the potential air emission source would be the exhaust of the above ground car park and potential kitchen exhaust from the food and beverage areas, if any.

Above Ground Car Park

2.5.2 For the above ground car park proposed in the Application Site, its design and operation of the proposed carparks will comply with ProPECC PN 2/96 on Control of Air Pollution in Car Parks. There is no detailed layout of the carparks and its associated design at the moment, nevertheless, the future exhaust outlets will be located at the façade facing towards either the road D7 or the road L22, to avoid nuisance to any air-sensitive uses of the proposed development or other existing and planned ASRs.

Oily Fume & Cooking Odour

2.5.3 If there are any food and beverage (F&B) areas to be provided in the Proposed Development, appropriate Air Pollution Control Equipment such as exhaust hoods and grease trap will be provided and the air change rate for the F&B area will be designed according to the standard of kitchen as stipulated in Building Department's Practice Note for Authorized Persons (PNAP). Potential odour emissions will be minimised as far as practicable. The following considerations recommended in EPD's Control of Oil Fume and Cooking Odour from Restaurant and Food Business shall be taken into account in the detailed design when positioning the exhaust outlets:

- Locate the outlet at such a place where the ventilation is good and the emissions from them can be adequately dispersed without hindrance
- Provide sufficient separation distance from any sensitive receptor in the vicinity so that the emissions will not cause, or contribute to, an odour nuisance or other type of air pollution to the public
- Ensure the emissions from the exhaust system will be directed vertically upwards, unless it can be demonstrated by an environmental professional that other direction is more advantageous in preventing emissions from causing air pollution problems
- Ensure that emissions from the exhaust system will not be restricted nor deflected by, for example, the use of plates or caps

2.6 Impact of off-site planned PTI at Area 32A

2.6.1 According to the Outline Development Plan of HSK NDA, there is a planned PTI at the planned commercial site Area 4-13a, i.e. Planning Area 32A. Based on the best available information, there is no program of the construction and operation of the PTI, nor the design of the PTI. The shortest distance from the boundary of the Application Site to the boundary of the Area 4-13a is around 25m. Nevertheless, for the planned PTI which is constructed by other applicants, their design should take the surrounding air sensitive uses into account for the design of the openings and exhausts outlets, such that the potential nuisance to any air-sensitive uses in the surrounding areas to be minimized. According to the Explanatory Statement of the HSK Outline Zoning Plan (OZP) (S/HSK/3) for the Planning Area 32A, the future development of the site should be governed by Master Layout Plan (MLP) submission under lease. With the careful design of the future PTI by the owner of the Planning Area 32A, it is believed that the

operation of the future PTI should not pose any adverse impact nor nuisance to the surrounding air sensitive use, including the Application Site.

2.7 Impact of Future Industrial Use at Area 35

2.7.1 According to the HSK ODP, there is an industrial zone assigned at Planning Area 35 (two sub-zones are named as 3-50 and 3-51). The Planning Area 35 is about more than 250m west of the Application Site with the major highway Kong Sham Western Highway located in between.

2.7.2 Based on the current public available information, there is no specific use identified at this industrial use area or the operation information of future industrial use. The whole HSK NDA is still in a planning stage.

2.7.3 According to the notes of the industrial use in the OZP S/HSK/3, this industrial zone is intended primarily for general industrial uses to ensure an adequate supply of industrial floor space to meet demand from production-oriented industries. Information technology and telecommunications industries, office related to industrial uses, and selected uses akin to industrial production and would not compromise building and fire safety are also always permitted in this zone.

2.7.4 The separation from the planned industrial use and the Application Site is more than 250m with the major highway Kong Sham Western Highway and the planned commercial located in between. With this buffer separation, the potential nuisance from the planned industrial use to the Application Site should be minimized. Furthermore, the proposed use at the western boundary of the Application Site is Hotel, which is equipped with central ventilation system, i.e. not rely on openable windows for ventilation. The residential use is located behind the hotel use. With the further separation of the planned industrial use, the location of central ventilation building in between and the well planned use within the planned industrial zone, the future occupants at the residential portion of the Application Site is unlikely to be subject to any adverse air quality impact.

2.8 Conclusion for Operational Phase

2.8.1 As no openable windows, fresh air intakes and recreational uses in the open spaces fall within the 5m buffer distance from local distributor (L22), the proposed development will not be subject to adverse air quality impacts from vehicular emissions.

2.8.2 All existing and planned air pollutant and odour emission sources within the 500m assessment area have been identified based on the best available information. No adverse air quality impacts on the air-sensitive uses of the proposed development are anticipated.

2.9 Potential Impact Arising from Proposed Development – Construction Phase

2.9.1 During the construction phase of the Proposed Development, there may be potential air quality impacts upon the nearby air sensitive receivers (ASRs). The representative ASRs during construction phase among all Development Sites are identified and listed in Table 2.1 and their locations are shown in **Figure 2.2**.

Table 2.1 Distance of the ASRs from the Application Site Boundary

ASR IDs	Descriptions	Distance from the Application Site Boundary (m)
A1	Planned Commercial Use at Area 32A	~15
A2	Planned Commercial Use at Area 32C	~ 0
A3	Planned Residential Development at Area 34B	~58

Identification of Potential Emissions

2.9.2 Construction vehicles and machinery are a potential source of air pollutant emissions during the construction phase. Significant emissions are not anticipated from the criteria pollutants – NO_2, SO_2, and CO, etc. as only a limited number of diesel/ petroleum fuelled machinery would be operated at the Subject Site. Besides, the Subject Site is located at an area where supply of electricity is available. Therefore, the number of diesel/ petroleum fuelled machinery operated at the Subject Site shall be minimized as practically as possible with the use of electric construction machinery. Moreover, under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, only approved or exempted non-road mobile machineries (including mobile generator, air compressor, crawler crane, bulldozer, etc.) with a proper label are allowed to be used in the construction site, which would meet the prescribed emission standards and requirement. According to the requirements stipulated in the Air Pollution Control (Fuel Restriction) Regulations and its amendment, using liquid fuel with a sulphur content of less than 0.001% by weight (such as Ultra Low Sulphur Diesel) for the equipment should be fulfilled to control the SO_2 and PM emissions. Travelling of the dump trucks is another potential source of air emission of construction. At this planning application stage, there is no detailed information on the construction program or amount of excavated material to be handled. However, it is anticipated that the volume of excavated materials to be handled would be about 13,601 m^3 where no basement carpark is proposed. The excavation is for just removal of top soil for foundation. The period of excavation is anticipated to be around 6 months. There is likely to be around 9 dump trucks per day (assuming each truck can carry 15 tonnes and there is around 270 working days per year) during the site formation stage of the Development Site. Watering the haul road and the site once per hour would be implemented to minimize the potential dust emission during the travelling of the dump trucks within the site. With reference to other similar scale projects, the number of on-site diesel/petroleum fuelled machinery (20-21 machineries) to be used for construction works is limited owing to the small size of the work site with an area of 13,601 m2. In addition, availability of electricity supply during construction of the project will be explored and such requirement will be specified in future contract. If available, contractor should maximise use of electric non-road mobile machinery (NRMMs) and with least reliance of diesel fuelled equipment (e.g. for electricity powered stationary equipment such as pump instead of using generator). Moreover, air quality impact due to construction shall be reviewed at the later stage.

2.9.3 Based on the best available information, the potential concurrent project within 500m of the Project Site boundary is the Proposed Development at 32C. The major

construction dust and gaseous emission would be from earthworks. It is recommended that the future Contractor of the proposed development to closely liaise with concurrent projects to avoid cumulative air quality nuisance on nearby ASRs due to construction by programme arrangement of major dust and gaseous emission activities. Proper mitigation measures including watering frequently and good site practice will be implemented to ensure that their construction activities would not cause adverse construction dust impact. Therefore, adverse cumulative air quality impact arising from construction activities of the concurrent project are not anticipated.

Mitigation Measures for Fugitive Dust and Air Quality Impact

2.9.4 Since paved roads are already existing within the Subject Site, it is expected that the construction dust to be generated by vehicle movement within the Subject Site are limited. Air pollutant emission mostly arises from construction activities and can be effectively suppressed by incorporating proper mitigation measures into work procedures through contractual clauses with reference to EPD's Recommended Pollution Control Clauses for Construction Contracts, where applicable, good site management, and close monitoring by the resident engineers. The contractor shall be required to follow the requirements of the Air Pollution Control (Construction Dust) Regulations for demolition and construction of the project. With the adoption of good practices, it is expected that emission of construction dust can be kept at an acceptable level. Mitigation measures including but not limited to the followings with respect to demolition, infrastructure construction of a building should be implemented as appropriate.

In the case of demolition works:

- The area at which demolition work takes place shall be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the demolition activities so as to maintain the entire surface wet;
- For any wall of the building to be demolished that abuts or fronts upon a street, service lane or other open area accessible to the public, impervious dust screens or sheeting shall be used to enclose the whole wall to a height of at least 1m higher than the highest level of the structure being demolished;
- Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads or streets.

In the case of infrastructure construction works/ site formation/ excavation/ earthworks:

- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scaffolding from the ground floor level of the building;
- Any skip hoist for material transport shall be totally enclosed by impervious sheeting;
- Any relevant requirements set outs in Parts III and IV of Air Pollution Control (Construction Dust) Regulations shall be met;
- Vehicle washing facilities including a high pressure water jet shall be provided at every discernible or designated vehicle exit point;
- Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground

level shall be provided along the entire length of that portion of the site boundary except for a site entrance or exit;

- Locate all the dusty activities away from any nearby ASRs as far as practicable;
- Erect higher hoarding at the locations with ASRs in immediate proximity to the project site boundary;
- Avoid using exempted non-road mobile machineries;
- Consider connecting construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable.

The additional dust mitigation measures are described below:

Monitoring and Auditing

2.9.5 Regular site audit will be implemented to ensure that mitigation measures are in place.

General Site Management

2.9.6 Appropriate working methods should be devised and arranged to minimise air pollutant emissions and to ensure any installed control system and/or measures are operated and/or implemented in accordance with their design merits. No free falling of construction debris should be allowed, which should be let down by hoist or enclosed tunnel to the ground.

2.9.7 A high standard of housekeeping shall be maintained. Any piles of materials accumulated on or around the work areas shall be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas shall be carried out in a manner to minimize air emissions. Prior to cleaning, the materials should be handled properly to prevent fugitive dust emission. Any exposed earth shall be properly treated by compacting or hydro seeding, within 6 months after the last construction activity.

2.9.8 Frequent mist/ water spraying should be applied on dusty areas. The frequency of spraying will depend upon local conditions such as rainfall, temperature, wind speed and humidity. The amount of water spraying should be just enough to dampen the material without over-watering which could result in surface water runoff.

Material Stockpiling and Handling

2.9.9 The amount of stockpiling should be minimised where possible. Construction material or debris should be covered and stored inside enclosed areas. Other control measures such as enclosed or semi-enclosed windboard should be used, where applicable, to minimise dust emission. Regular watering is needed at areas such as storage piles, where there could be potential dust emission.

Dust Emissions from Site Traffic

2.9.10 Dust emission from construction traffic is generated predominantly from the travelling of dump trucks. Areas within the Subject Site where there are regular vehicle movements should have a hard surface. Speed controls at an upper limit of 10km/hr should be imposed and their movements should be confined to designated roadways within the Subject Site. All dusty vehicle loads should have side and tail boards covered by tarpaulin extending at least 300mm over the edges. Wheel-wash troughs and hoses should be provided at exit points of the Subject Site.

2.9.11 "Recommended Pollution Control Clauses for Construction Contracts" is available on the EPD website which set out the recommended air pollution control measures to be implemented by the contractor(s) during the construction stage of the Project.

2.9.12 With the adoption of good practices, it is expected that construction air quality impact can be minimized.

3. TRAFFIC NOISE IMPACT ASSESSMENT

3.1 Introduction

3.1.1 This section assesses the potential road traffic noise impacts on the noise sensitive uses of the Proposed Development. Practical mitigation measures are proposed to mitigate the potential noise impacts, where necessary.

3.2 Road Traffic Noise Impact Assessment

Assessment Criteria

3.2.1 Noise standards are recommended in Chapter 9, "Environment", of the HKPSG for planning against possible noise impact from road traffic, railway and aircrafts. According to the guidelines, the maximum allowed road traffic noise level, measured in terms of $L_{10(1\ hr.)}$, at noise sensitive facades of the Proposed Development is recommended to be 70 dB(A).

3.2.2 In the present scenario, the maximum noise levels due to traffic on the surrounding roads in terms of $L_{10(1\ hr)}$ should not exceed 70 dB(A) at the noise sensitive facades of the Proposed Development. This criterion applies to uses which rely on opened windows for ventilation.

Review of the Traffic Noise Impact

3.2.3 With reference to the EIA report of Agreement No. CE 2/2011 (CE) Hung Shui Kiu New Development Area Planning and Engineering Study – Investigation (HSK NDA P&E Study), although the traffic noise assessment of the Application Site is not conducted in the HSK NDA P&E Study, the traffic noise assessment of nearby sites, including Site 4-10 at Area 34B are conducted. Same as the Application Site, this 4-10 residential development is located at the same side of the Road D6. The traffic noise results of the nearby site is summarized in **Table 3.1** and attached in **Appendix 3.1**.

Table 3.1 Traffic noise results of the nearby sites

Site	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria after Mitigation
4-10	61-68	Yes

3.2.4 The Application Site and Site 4-10 are both located west of the Road D6 with a longer buffer distance and smaller angle of view from Road D6, it can be predicted that the maximum noise levels due to traffic on the surrounding roads of the Application Site in terms of $L_{10(1\ hr)}$ would be similar to that in Site 4-10 (i.e., <70 dB(A)).

3.2.5 For the local road L22 which is a dead-end road, the Application Site is located at its end with the proposed hotel portion located next to the roundabout of the L22. The residential towers shown in the indicative master layout plan are located at the southeastern end of the Application Site. With sufficient buffer distance and limited angle of view to the roundabout of the L22, it is anticipated that there should not have any significant noise impact upon the residential tower.

3.2.6 For the existing Kong Sham Western Highway and the adjacent Road P1, it is about 210m northwest from the boundary of the Application Site, and about 270m to 280m northwest from the residential portion of the proposed development. The large buffer distance from the proposed residential towers to the two major roads would reduce the noise level by equal to or more than 13 dB(A) in accordance with the Calculation of

Road Traffic Noise (i.e. 10*log(270m/13.5m). Moreover, the planned public housing developments at Area 34A and 34B with tentative completion year of 2032 are located northwest of the Application Site. The building structure of future public housing development would provide shielding for the traffic noise from the Kong Sham Western Highway and the Road P1 for the proposed development so that the noise level experienced by the proposed residential towers would be further largely reduced, even if there is a delay on the construction of the hotel portion of the proposed development. With sufficient buffer distance and presence of building structure located in between, it is anticipated that the proposed development is unlikely to be subject to adverse traffic noise impact from the Kong Sham Western Highway and Road P1.

3.2.7 Nevertheless, detailed calculation on the traffic noise level of the Application Site shall be conducted in next stage to further ensure the traffic noise level would not exceed 70dB(A). In case of any exceedance, mitigation measures, such as acoustic window and balcony shall be applied. Under the current public information, such as EPD's Practice Note ProPECC PN 5/23, the noise reduction provided by the acoustic window and balcony can be up to 8 dB(A) which is considered to be adequate to mitigate the relevant exceedance, if any, at the Application Site.

3.3 Conclusion

3.3.1 It is expected that the maximum noise levels due to traffic on the surrounding roads in terms of L10(1 hr) would not exceed 70 dB(A) with sufficient buffer distance and present of building structure in between.

3.3.2 Nevertheless, the whole HSK NDA is still under planning and there is no detail layout of the proposed development, detailed calculation on the traffic noise level of the Application Site shall be conducted in next stage under the lease to further ensure the traffic noise level would not exceed 70dB(A). In case of any exceedance, mitigation measures, such as acoustic window and balcony shall be applied.

4. RAILWAY NOISE IMPACT ASSESSMENT

4.1 Introduction

4.1.1 This section assesses the potential railway noise impacts on the noise sensitive uses of the Proposed Development. Practical mitigation measures are proposed to mitigate the potential noise impacts, where necessary.

4.2 Railway Noise Impact Assessment

Assessment Criteria

4.2.1 Noise standards are recommended in Chapter 9, "Environment", of the HKPSG for planning against possible noise impact from road traffic, railway and aircrafts. According to the guidelines, an averaged noise level, measured in terms of $L_{eq\ (24\ hr)}$ is recommended to be 65dB(A) and the maximum noise levels due to rail traffic during the night time (2300 – 0700) in terms of L_{max} is recommended to be 85dB(A).

4.2.2 The EIAO-TM and IND-TM stipulate the appropriate ANL for rail noise. The ANLs are dependent on ASRs of the NSRs and are shown in Table 4.4.

Table 4.1 Acceptable Noise Levels for Railway Noise

Time Period	ANL on Different Area Sensitivity Rating for Rail Noise, (L_{eq}, 30min, dB(A))		
	ASR "A"	ASR "B"	ASR "C"
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)	60	65	70
Night (2300 to 0700 hours)	50	55	60

4.2.3 The study area within Hung Shui Kiu and Ha Tsuen OZP is a developed area, in particular the surrounding uses are zoned "C" for commercial development. According to Table 1 in the IND-TM, the type of area should be (iii) Urban Area. Moreover, from the HSK NDA EIA, there is no major road with the daily traffic flow more than 30,000 vehicles and there is no industrial zone located in between, i.e. there is no influence factor surrounding the Application Site. As such, ASR "B" would be adopted.

Assessment Methodology

4.2.4 With reference to the EIA report of Agreement No. CE 2/2011 (CE) Hung Shui Kiu New Development Area Planning and Engineering Study – Investigation (HSK NDA P&E Study), although the railway noise assessment of the Application Site is not conducted in the HSK NDA P&E Study, the railway noise assessment of nearby sites, including Sites 4-25c and 4-29, are conducted. The railway noise results of the nearby sites under unmitigated scenario are summarized in **Table 4.2** and shown in **Appendix 4.1**.

Table 4.2 Railway noise results of the nearby sites - Unmitigated

Site	NSR ID	Area Sensitivity Rating	Predicted Unmitigated Overall Noise Level, dB(A)			
			L_{eq}, 30min, dB(A)		L_{max}	$L_{eq(24\ hr)}$
			Day & Evening (0700 to 2300 hours)	Night (2300 to 0700 hours)		
4-25c	WR-P6a	B	39-52	38-51	40-57	37-52
	WR-P6b	B	39-52	37-51	39-57	37-52
	WR-P6c	B	38-51	37-49	37-55	37-51
4-29	WR-P7a	B	44-56	43-55	49-63	44-56
	WR-P7b	B	47-59	45-**57** *	50-64	47-59
	WR-P7c	B	45-57	44-**56** *	50-64	45-57

Remark:

* **Bold and underline** indicates exceedance of the related criteria.

4.2.5 As shown in **Table 4.2**, there are exceedance at NSR ID WR-P7b and WR-P7c within Site 4-29, hence, mitigation measures are proposed in the HSK NDA P&E Study. The proposed mitigation measures and the railway noise results of the nearby sites under mitigated scenario are summarized in **Table 4.3**.

Table 4.3 Railway noise results of the nearby sites - Mitigated

Site	NSR ID	Proposed Mitigation Measures	Predicted Unmitigated Overall Noise Level, dB(A)			
			$L_{eq(30min)}$, dB(A)		L_{max}	$L_{eq(24\ hr)}$
			Day & Evening (0700 to 2300 hours)	Night (2300 to 0700 hours)		
4-29	WR-P7b	Layout set back to 70m from Tuen Ma Line (TML)	45-57	44-55	48-61	45-57
	WR-P7c	Layout set back to 70m from Tuen Ma Line (TML)	44-56	43-54	48-61	44-56

4.2.6 As the shortest distance between the WRL and the Application Site (~ 131m) is farther than that between the WRL and the Site 4-29 (55m) as well as the recommended setback (70m) under the EIA, no exceedance on $L_{eq(30min)}$ (Day and Evening hours), L_{max} and $L_{eq(24\ hr)}$ is expected.

4.2.7 Detailed calculation on the railway noise level of the Application Site shall be conducted in next stage to further ensure the railway noise level would not exceed the acceptable noise level of $L_{eq(30min)}$ (Day, Evening and Night hours), L_{max} and $L_{eq(24\ hr)}$. In case of any

exceedance, mitigation measures, such as layout set back and acoustic fins or provision of acoustic window/balcony shall be applied.

4.3 Conclusion

4.3.1 It is expected that there is no exceedance on Leq(30min) (Day, Evening and Night hours), Lmax and Leq(24 hr).

4.3.2 Detailed calculation on the railway noise level of the Application Site shall be conducted in next stage to further ensure the railway noise level would not exceed the acceptable noise level of $L_{eq(30min)}$ (Day, Evening and Night hours), L_{max} and $L_{eq(24\ hr)}$. In case of any exceedance, mitigation measures, such as layout set back and acoustic fins or provision of acoustic window/balcony shall be applied.

5. TRANSIT NOISE IMPACT ASSESSMENT

5.1 Review of the Smart and Green Mass Transportation System (SGMTS)

5.1.1 The Smart and Green Mass Transit System (SGMTS) in Hung Shui Kiu/Ha Tsuen and Yuen Long South New Development Areas is about 16 kilometres in length, most of which are dedicated roads. The SGMTS will adopt a green road-based mode without the need for physical rail tracks, aiming to providing the public with convenient feeder services to travel to various area within the HSK NDA, in accordance with the SGMTS website (https://www.hskhtsgmts.hk/en/home/)

5.1.2 In the SGMTS website, the project is still under design, and detailed information or operation mode of the SGMTS is not available at this stage. Nevertheless, the SGMTS will adopt a green road-based mode, requiring no physical tracks and overhead electrical cable which flexibly adjusting its routing and service frequencies. The design of the SGMTS can also minimize environmental impact while saving construction time and costs. In addition, innovative paving materials will be considered for the road surface in accordance with the SGMTS website.

5.1.3 The SGMTS is still under the planning stage and there is no detailed information about its final design and operation. Nevertheless, it is expected that the operation of SGMTS should not induce insurmountable impact upon the proposed development. Dedicated roads are assigned for the SGMTS only that the number of vehicles travelling is expected not to be many. Also, electricity vehicles may be adopted that the engine noise would not as noisy as traditional vehicles. According to the SGMTS website, the system travelling close the Application Site is about 4.5 km long with seven proposed stations. The travelling speed of the SGMTS is expected not to be as fast as major roads. With a relatively low speed, the noise from the traveling should not be high.

5.1.4 A detailed assessment will be carried out at later stage to review the potential noise impact from the SGMTS to the proposed development when the information is available. Practical mitigation measures will be considered if any unacceptable impact is identified.

6. CONSTRUCTION NOISE IMPACT ASSESSMENT

6.1 Introduction

6.1.1 During the construction phase of the Proposed Development, major noise impacts would arise from piling works, operation of Powered Mechanical Equipment (PME), and construction-related traffic.

6.2 Construction Noise Criteria

6.2.1 Construction noise is controlled under the Noise Control Ordinance (NCO) which prohibits the use of powered mechanical equipment (PME) during the restricted hours (7 p.m. to 7 a.m. on normal weekdays and any time on a public holiday, including Sunday) without a valid Construction Noise Permit (CNP) from the Authority. The criteria and procedures for issuing such a permit are specified in the "Technical Memorandum on Noise from Construction Works Other than Percussive Piling" (TM1). While there is no planned construction works to be carried out during the restricted hours, TM1 should be followed in case there is any need to carry out works in such time period in future.

6.2.2 With effect from 1 November 1996, the use of specified powered mechanical equipment (SPME) for carrying out construction work other than percussive piling and/ or the carrying out of prescribed construction work (PCW) within a designated area are also brought under control. The relevant technical details are provided in the "Technical Memorandum on Noise from Construction Work in Designated Areas" (TM2).

6.2.3 Percussive pilling is controlled similarly by a construction noise permit system and described in the NCO and the "Technical Memorandum on Noise from Percussive Piling" (TM3) which restrict the number of hours during which piling can be conducted. Percussive piling is prohibited between 7 p.m. and 7 a.m. and on holidays (including Sundays). Percussive piling during the daytime (i.e. between 7 a.m. and 7 p.m. on any day not being a holiday) may be carried out in accordance with the permitted hours and other conditions under a valid construction noise permit.

6.2.4 For construction works other than percussive piling, although TM1 does not provide control over daytime construction activities, noise limits as shown in below are set out in the "Practice Note for Professional Persons Environmental Consultative Committee" (ProPECC) PN 1/24.

Table 5.1 Noise Limit for Daytime Construction Activities

NSR	0700 to 1900 Hours on Any Day Not Being a Sunday or General Holiday, Leq (30min), dB(A)
Dwelling	75
School	70 65 (During Examination)

Notes:

(i) The above standards apply to uses which rely on opened windows for ventilation.

(ii) The above standards shall be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

6.3 Recommended Mitigation Measures for Construction Noise

6.3.1 Noise mitigation measures should be introduced in the Proposed Development to alleviate potential noise impacts on nearby NSRs if any. The Contractor(s) will be required under the contract to ensure regular maintenance of all plant and equipment, and that noise generation at source would be minimized and practicable noise mitigation measures would be in use. The Contractor(s) will be required to adopt quiet type construction plants (e.g. EPD's quality powered mechanical equipment (QPME) inventory), wherever practicable. Similarly, quieter method other than percussive piling will be adopted as far as practicable for any piling works subject to ground investigation result (which usually dictates the piling method). Movable noise barriers will also be erected around noisy plants in order to minimize noise generation at source. With these measures in place noise generation due to construction activities would be minimized.

6.3.2 The following general noise mitigation measures could be considered:

- Application of properly designed silencers, mufflers, acoustically dampened panels and acoustic sheds or shields, etc.;
- Use of electric-powered equipment where applicable instead of diesel-powered or pneumatic-powered equipment;
- Erecting noise enclosures/ movable noise barriers around noisy plants;
- Only well-maintained plants should be operated on-site;
- Plants should be serviced regularly during the construction programme;
- Noisy activities can be scheduled to minimize exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise;
- Noisy equipment such as emergency generators shall always be sited as far away as possible from noise sensitive receivers;
- Location of noise emitting plants at maximum possible distances from sensitive receivers;
- Contractual clauses for construction works; and
- Schedule of noisy operations during non-restricted hours where possible.

6.3.3 The above-mentioned noise mitigation measures will be included in the contractual clauses for implementation by the contractor(s) during the construction stage. With these measures in place, construction noise due to the Proposed Development can be minimized, and no significant noise impact is anticipated.

6.3.4 Requirements in relevant pollution control ordinances/regulations and the guideline document "Recommended Pollution Control Clause for Construction Contracts" also are relevant for construction noise control.

6.3.5 This section assesses the potential construction noise impacts on the noise sensitive uses of the Proposed Development. Practical mitigation measures are proposed to mitigate the potential noise impacts, where necessary.

7. CONCLUSION

7.1 Introduction

7.1.1 The key environmental issues associated with construction and operation phase of the Proposed Development are qualitatively reviewed in this report.

7.2 Air Quality

7.2.1 As no air-sensitive uses, including openable windows, fresh air intakes for mechanical ventilation, and recreational uses in open areas, will be located within the buffer zones for nearby roads as required under the HKPSG, and no existing or planned chimneys have been identified within 200m of the boundary of the Application Site, it is not anticipated that the proposed development will be subject to adverse air quality impacts arising from road traffic or industrial chimneys.

7.2.2 All existing and planned air pollutant and odour emission sources within the 500m assessment area have been identified based on the best available information. No adverse air quality impacts on the air-sensitive uses of the proposed development are anticipated.

7.3 Traffic Noise

7.3.1 It is expected that the maximum noise levels due to traffic on the surrounding roads in terms of L10(1 hr) would not exceed 70 dB(A) with the mitigation measures proposed in the HSK NDA P&E Study.

7.3.2 Detailed calculation on the traffic noise level of the Application Site shall be conducted in next stage to further ensure the traffic noise level would not exceed 70dB(A). In case of any exceedance, mitigation measures, such as acoustic window and balcony shall be applied with reference to the Practice Note ProPECC PN 5/23.

7.4 Railway Noise

7.4.1 It is expected that there is no exceedance on Leq(30min) (Day, Evening and Night hours), Lmax and Leq(24 hr).

7.4.2 Detailed calculation on the railway noise level of the Application Site shall be conducted in next stage to further ensure the railway noise level would not exceed the acceptable noise level of Leq(30min) (Day, Evening and Night hours), Lmax and Leq(24 hr). In case of any exceedance, mitigation measures, such as layout set back and acoustic fins shall be applied.

7.5 Transit Noise Impact Assessment

7.5.1 A detailed assessment will be carried out at later stage to review the potential noise impact from the SGMTS to the proposed development when the information is available. Practical mitigation measures will be considered if any unacceptable impact is identified.

7.6 Fixed Noise

7.6.1 The planned fixed noise sources shall be designed to meet the HKPSG requirement. With the mitigation measures, it is expected there would be no insurmountable noise impact from fixed noise sources of proposed Development to nearby noise sensitive receivers.

7.7 Construction Phase Impact

7.7.1 During construction, the project proponent would control noise, dust and site run-off nuisances to within established standard and guidelines through the implementation of relevant mitigation measures. In addition, the "Recommended Pollution Control Clauses for Construction Contracts", should also be implemented where necessary.

7.8 Further Study on Noise Impact

7.8.1 A detailed noise impact assessment (NIA) according to the actual building plan will be carried out at a later stage under the lease to confirm the location and extent of at-receiver mitigation measures, if it is required, to achieve full compliance with the road traffic noise, railway noise, fixed noise and transit noise criteria where applicable.

Figures

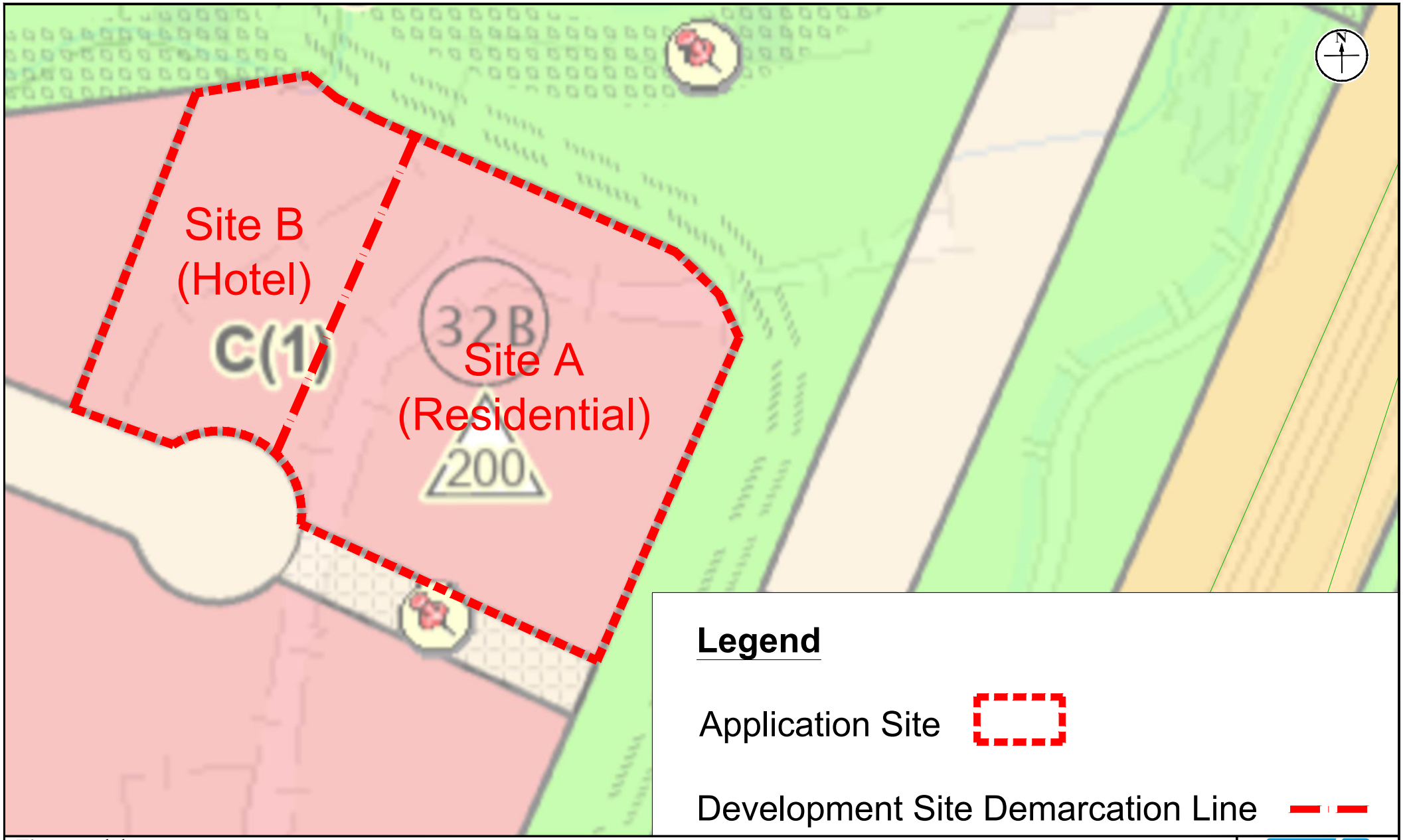


Figure: 1.1	RAMBOLL
Title: Location of Application Site	Drawn by: SC
	Checked by: TC
Project: Planning Application for Proposed Mixed Use Development at Hung Shui Kiu/ Ha Tsuen (Areas 32B)	Rev.: 1.0
	Date: May 2026

Q:\Projects\SHKHSK32EI00\05 Assessments\Fig_EA Report_32B.dwg

Remark

No air-sensitive uses including openable windows, fresh air intakes and recreational uses in the open spaces are allowed within the buffer zone

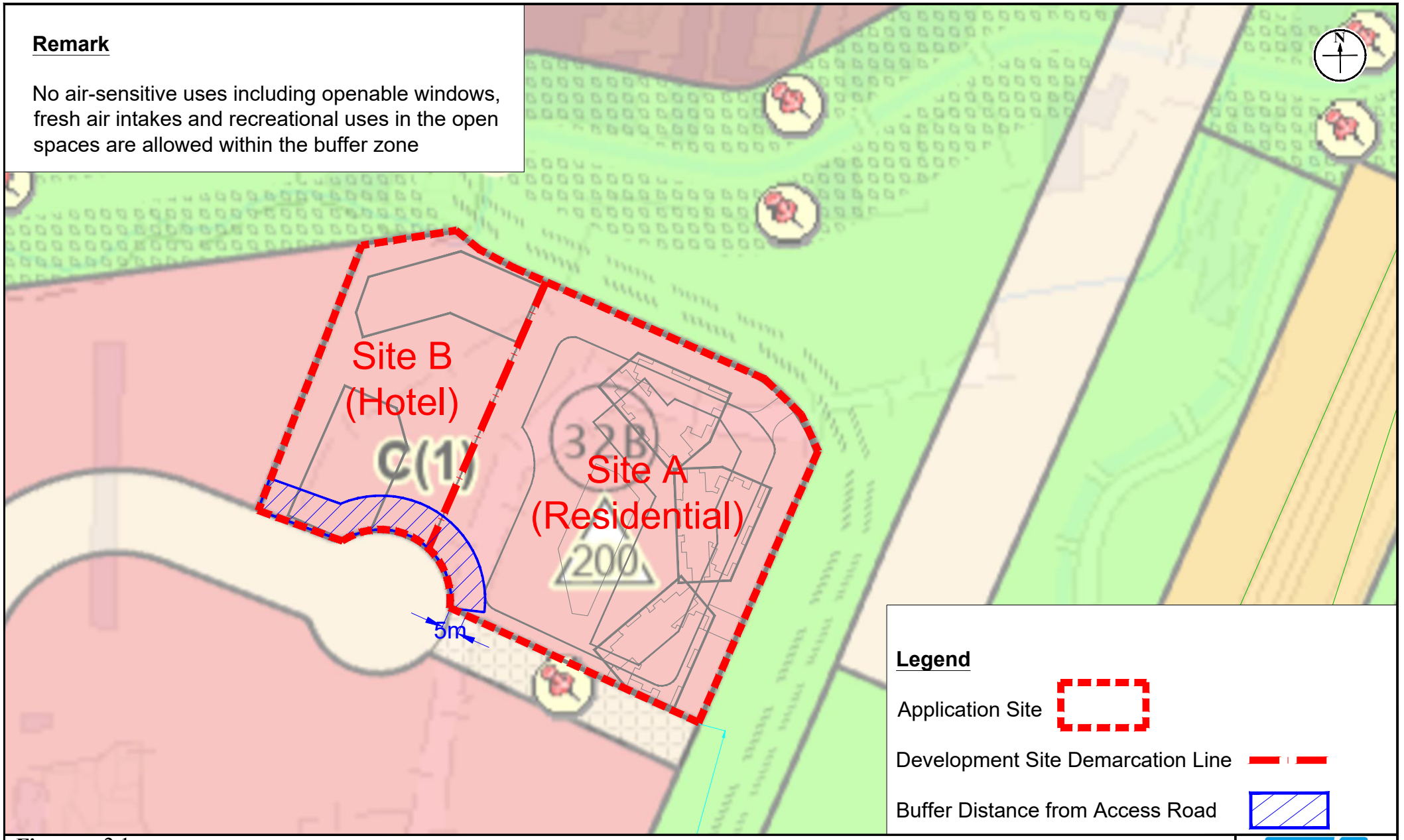


Figure: 2.1	RAMBOLL
Title: Buffer Distance for Planned Road L22	Drawn by: SC Checked by: TC
Project: Planning Application for Proposed Mixed Use Development at Hung Shui Kiu/ Ha Tsuen (32B)	Rev.: 1.0 Date: Dec 2024

Q:\Projects\SHKHSK32EI00\05 Assessments\Fig_EA Report_32B.dwg

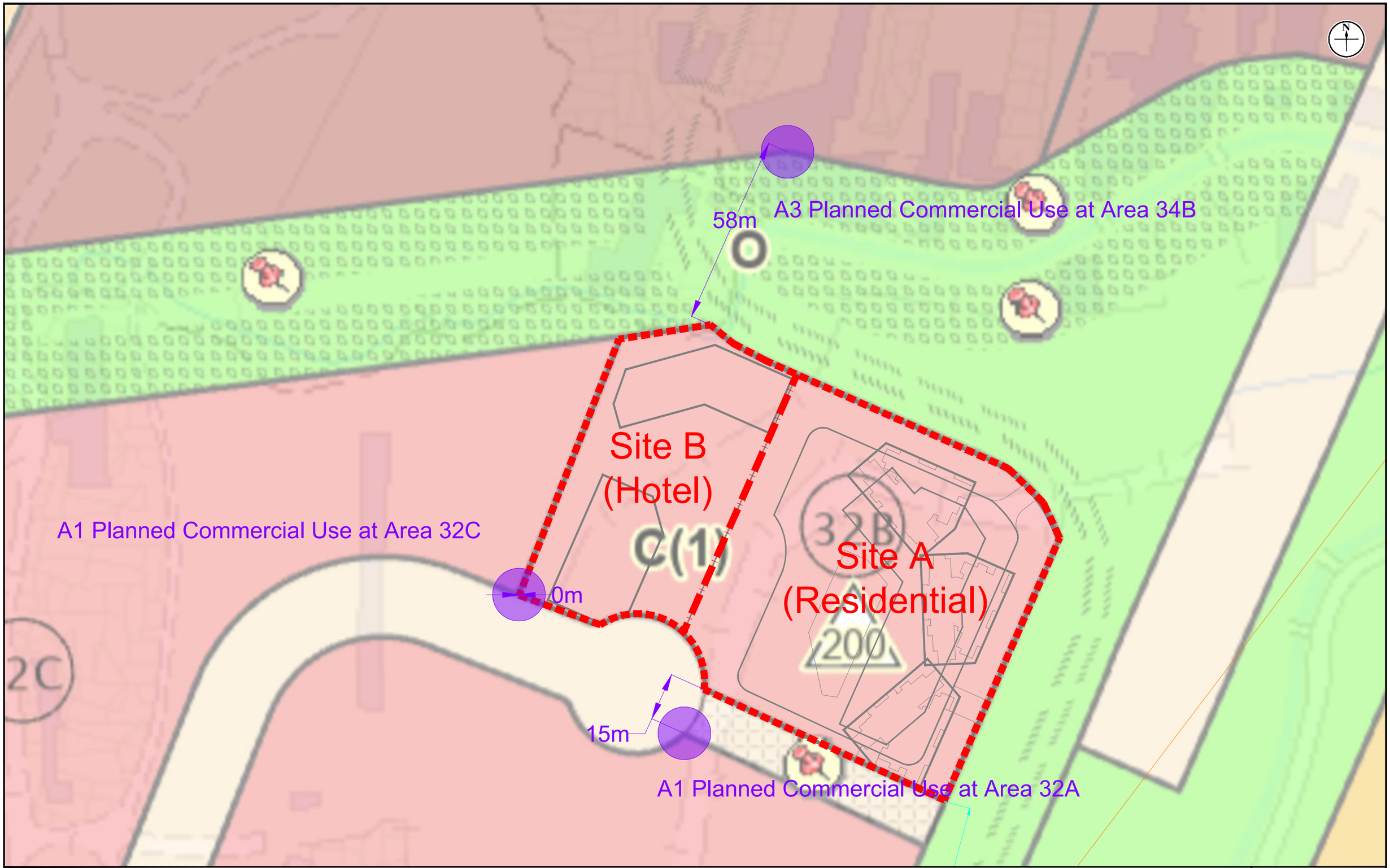
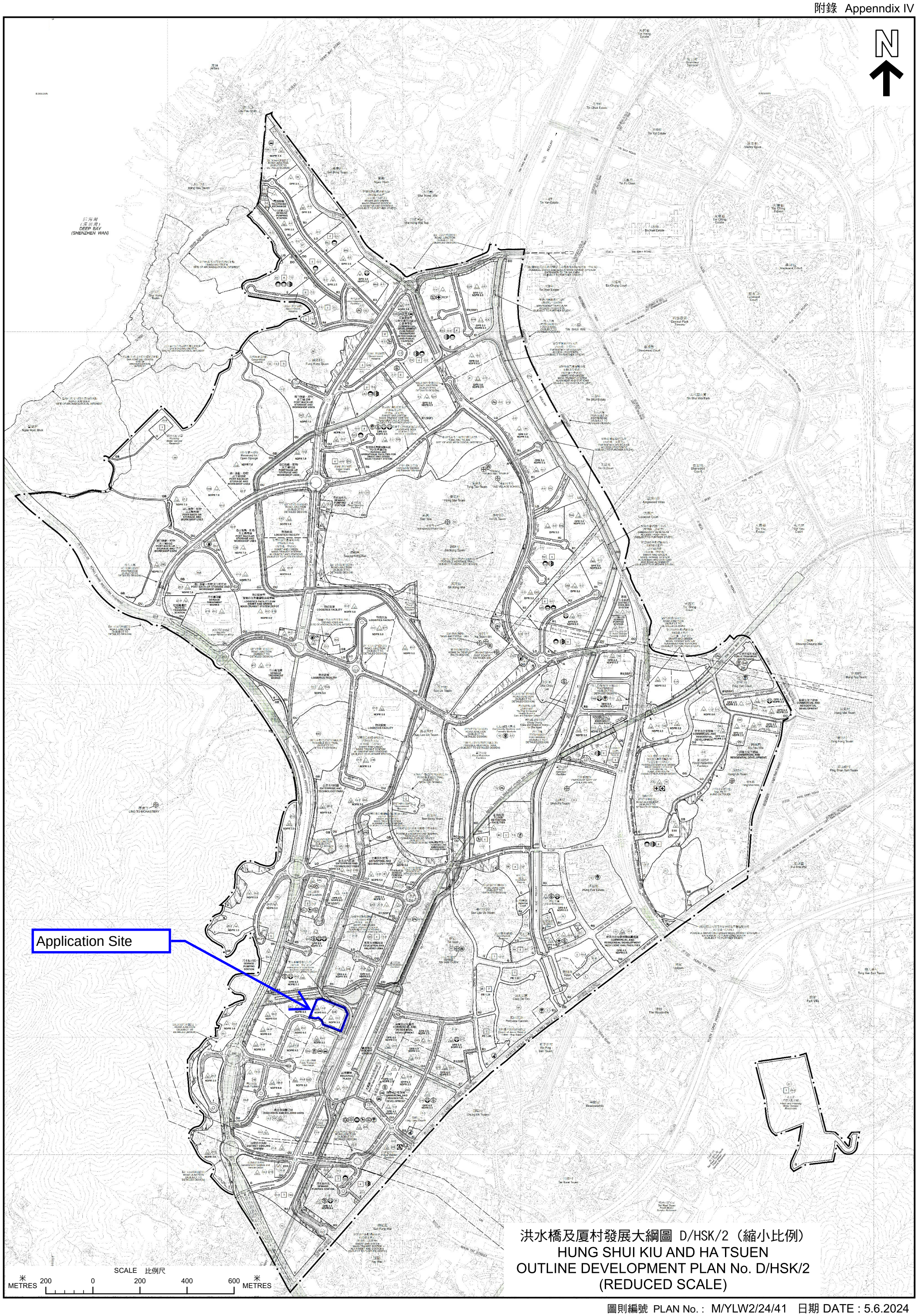


Figure:	2.2	RAMBOLL
Title:	Locations of ASRs during Construction Phase	Drawn by: SC
		Checked by: CC
Project:	Planning Application for Proposed Mixed Use Development at Hung Shui Kiu/ Ha Tsuen (32B)	Rev.: 1.0
		Date: Feb 2018

\\aphkfps3\Drive Q\Projects\SHKHSK32EI00\05 Assessments\Fig_EA Report_32B.dwg

Appendix 1.1 Revised Outline Development Plan (RODP) for Hung Shui Kiu and Ha Tsuen and Hung Shui Kiu and Ha Tsuen Outline Zoning Plan (No. S/HSK/3) (Southern Area)



洪水橋及厦村發展大綱圖 D/HSK/2（縮小比例）
HUNG SHUI KIU AND HA TSUEN
OUTLINE DEVELOPMENT PLAN No. D/HSK/2
(REDUCED SCALE)

圖則編號 PLAN No.： M/YLW2/24/41 日期 DATE : 5.6.2024

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19A/FIGURE 2.2.

CUT LINE A-A

SEE DRAWING NO. 60222570/TR19A/FIGURE 2.2.1

N

816000 E

817000 E

833000 N

832000 N

Application Site

Yuen Tau Shan

Kau Lee Uk Tsuen

San Sang Tsuen

San Uk Tsuen

Sha Chau Lei

Shek Po Tsuen

Kiu Tau Wai

Hung Uk Tsuen

San Lee Uk Tsuen

Tin Sum Tsuen

Chung Uk Tsuen

Sun Fung Wai

Nai Wai

Tsing Chuen Wai

KONG SHAM WESTERN HIGHWAY

CASTLE PEAK ROAD

YUEN LONG HIGHWAY

COMMUNITY FARMING AND FARMERS' MARKETS

HUNG FUK ESTATE

HOSPITAL, SPECIALIST CLINIC/ POLYCLINIC

RETENTION FACILITIES

(COMMERCIAL & RESIDENTIAL DEVELOPMENT WITH LIGHT RAIL FACILITIES)

COMMERCIAL & RESIDENTIAL

OU (REGIONAL PLAZA WITH LEISURE, FOOD & BEVERAGES USES)

OU (RAILWAY STATION)

OU (VEHICLE DEPOT)

FWSR & FLWSR

Ser Res

Plot File by: ZENGFX
PATH: P:\PROJECTS\60222570\Drawing\REPORT\TR19A\TR19A_714.dgn

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PROJECT
項目

HUNG SHUI KIU NEW DEVELOPMENT AREA PLANNING AND ENGINEERING STUDY - INVESTIGATION

CLIENT
業主

CEDD
土木工程拓展署
Civil Engineering and Development Department

規劃署
Planning Department

CONSULTANT
工程顧問公司

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ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核對

STATUS
狀況

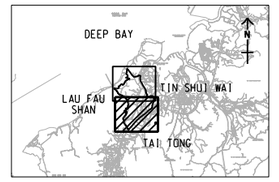
SCALE
比例

A3 1 : 10000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖 A3 1 : 500000



PROJECT NO.
項目編號

60222570

AGREEMENT NO.
協議編號

CE2/2011 (CE)

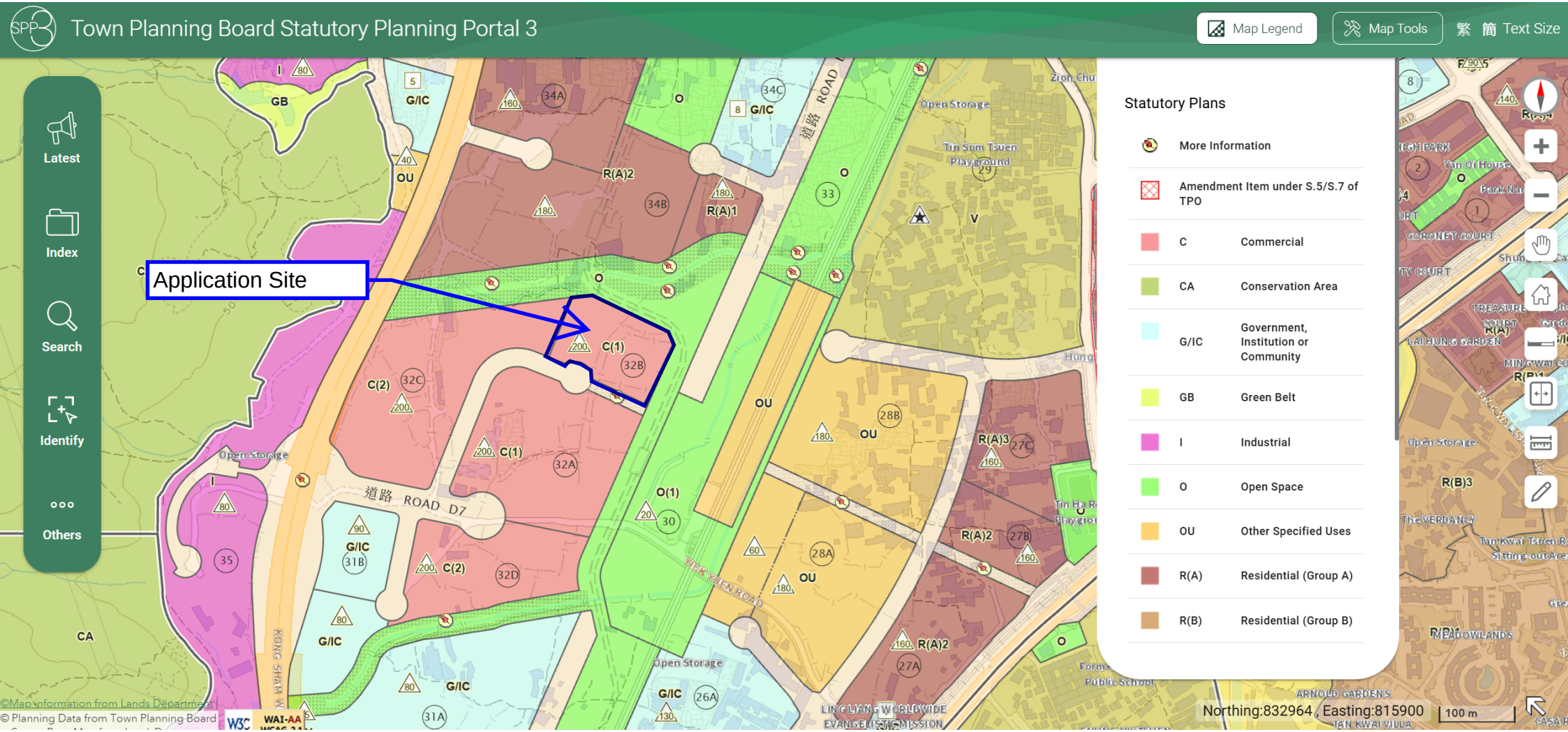
SHEET TITLE
圖紙名稱

REVISED RECOMMENDED OUTLINE DEVELOPMENT PLAN (RODP) (SOUTHERN AREA)

SHEET 2 OF 2

SHEET NUMBER
圖紙編號

60222570/TR19A/FIGURE 2.2.2


Town Planning Board Statutory Planning Portal 3
Map Legend
Map Tools
繁 簡 Text Size
Latest
Index
Search
Identify
Others
Application Site
Statutory Plans
More Information
Amendment Item under S.5/S.7 of TPO
C Commercial
CA Conservation Area
G/IC Government, Institution or Community
GB Green Belt
I Industrial
O Open Space
OU Other Specified Uses
R(A) Residential (Group A)
R(B) Residential (Group B)
道路 ROAD D7
YICK YUEN ROAD
Northing:832964 , Easting:815900
100 m
©Map information from Lands Department
© Planning Data from Town Planning Board
WAI-AA

Appendix 1.2 Master Layout Plan of the Proposed Development



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

Title: Master Layout Plan		Checked	DH	Drawn MH
		Rev		Date Sept 2026
		Scale		Figure 3.1



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: G/F Plan	Checked	DH	Drawn: MH
		Rev		Date: Sept 2026
		Scale		Figure: 3.2



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title				
	1/F Plan	Checked	DH	Drawn	MH
		Rev		Date	Sept 2026
		Scale		Figure	3.3



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

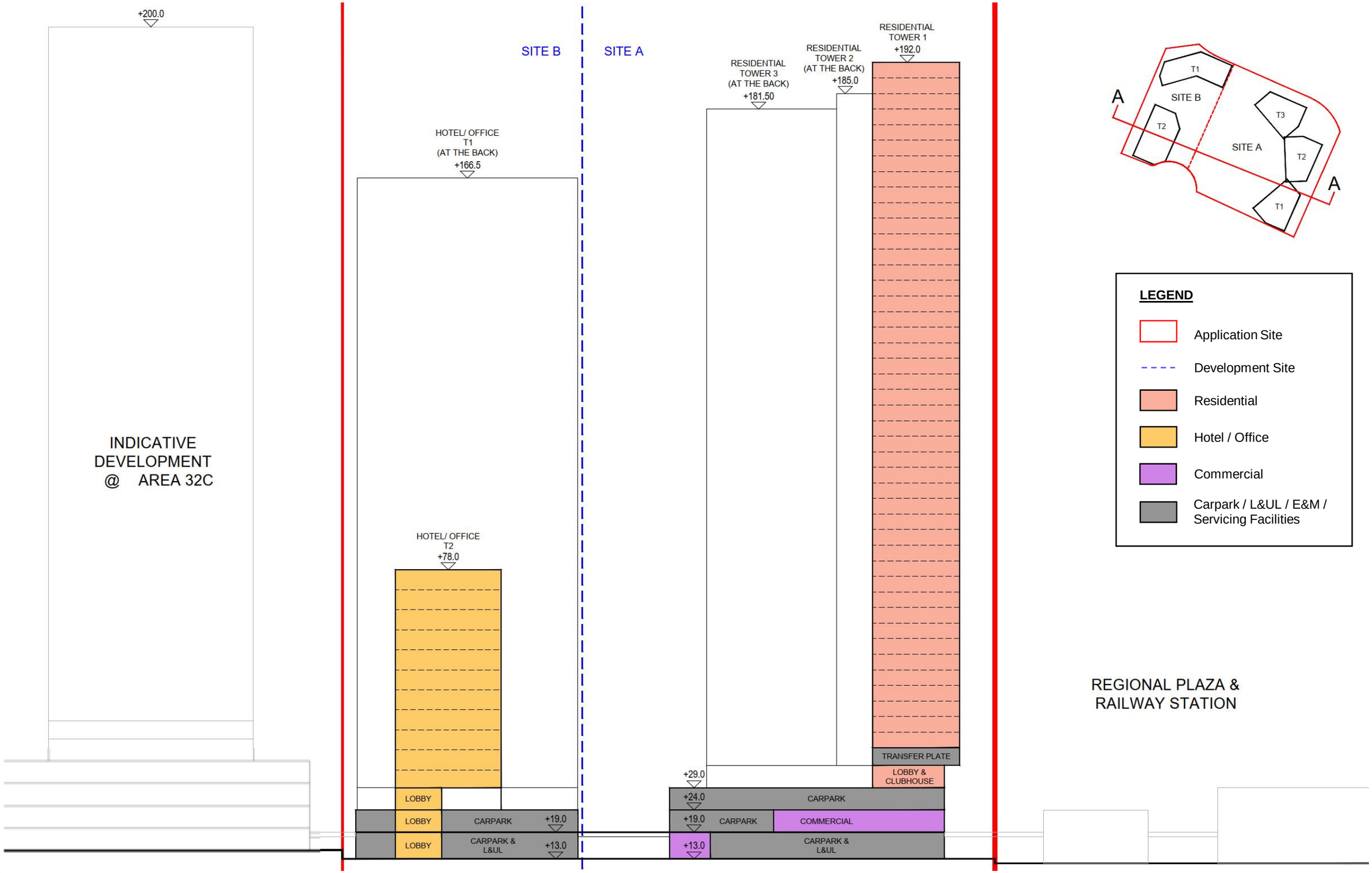
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		Rev		Date: Sept 2026
		Scale		Figure: 3.4



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

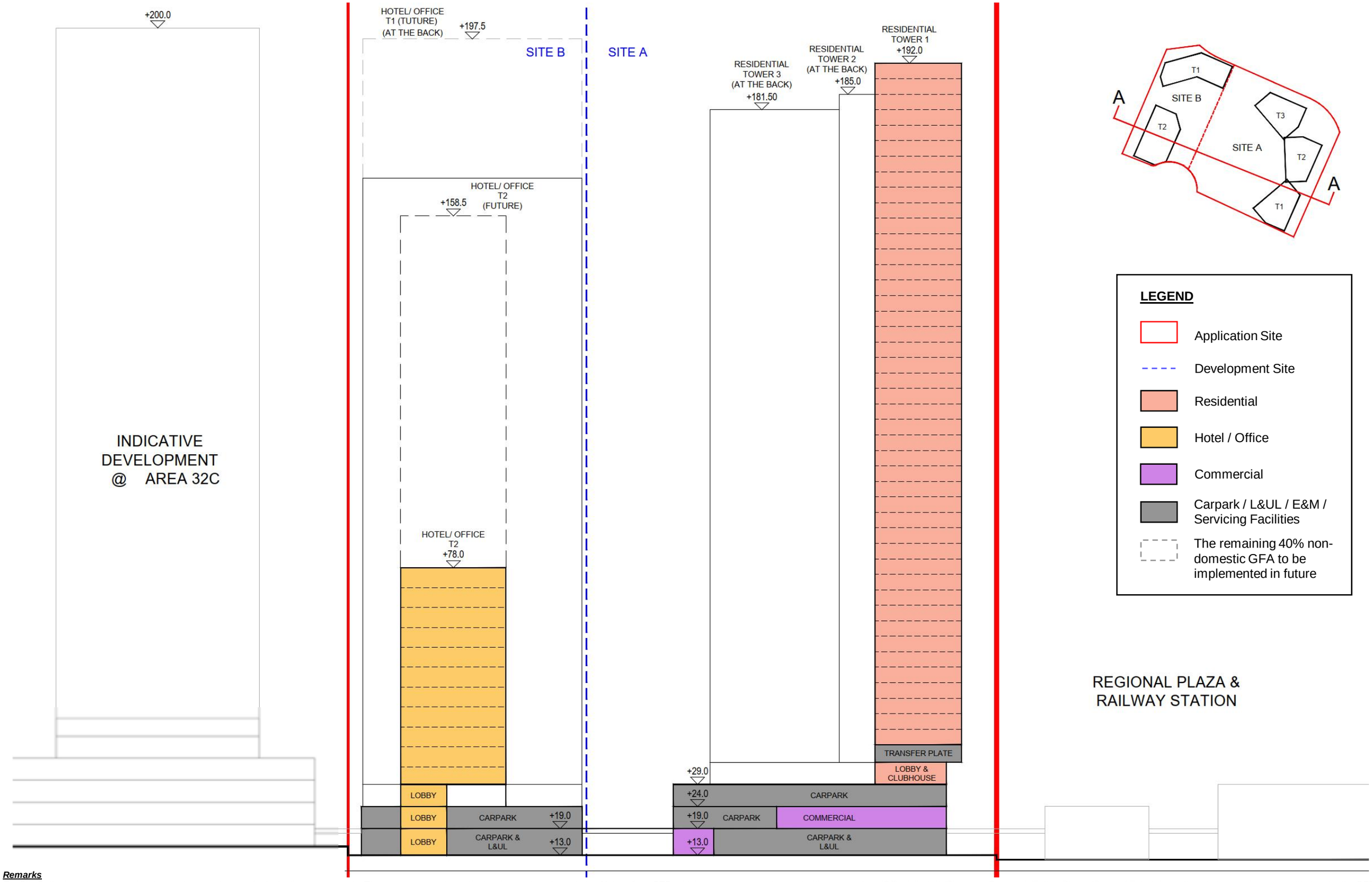
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		Rev		Date: Sept 2026
		Scale		Figure: 3.5



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: Section Plan (Phase 1)	Checked	DH	Drawn MH
		Rev		Date Sept 2026
		Scale		Figure 3.6



Remarks

For Site B, the layout, uses and development parameters are for indicative purpose only. The proposed non-domestic development conforms to the Notes of the OZP, which commercial development with uses such as 'Office', 'Hotel', 'Shop and Services', 'Eating Place', 'Place of Entertainment', and etc. are always permitted under the OZP.

	Title: Section Plan (Future Scenario)	Checked	DH	Drawn MH
		Rev		Date Sept 2026
		Scale		Figure 3.7

Appendix 3.1 Traffic Noise Result in HSK NDA P&E Study

NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19A/FIGURE 2.2.

CUT LINE A-A

SEE DRAWING NO. 60222570/TR19A/FIGURE 2.2.1

Reference Site

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Plot File by: ZENGFX
PATH: P:\PROJECTS\60222570\Drawing\REPORT\TR19A\TR19A_714.dgn

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PROJECT 項目

HUNG SHUI KIU NEW DEVELOPMENT AREA PLANNING AND ENGINEERING STUDY - INVESTIGATION

CLIENT 業主

CEDD 土木工程拓展署 Civil Engineering and Development Department

規劃署 Planning Department

CONSULTANT 工程顧問公司

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ISSUE/REVISION 修訂

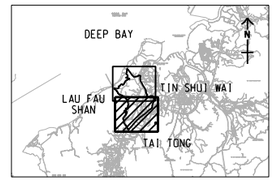
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核實

STATUS 階段

SCALE 比例: A3 1 : 10000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN 索引圖 A3 1 : 500000



PROJECT NO. 項目編號: 60222570

AGREEMENT NO. 協議編號: CE2/2011 (CE)

SHEET TITLE 圖紙名稱

REVISED RECOMMENDED OUTLINE DEVELOPMENT PLAN (RODP) (SOUTHERN AREA)

SHEET 2 OF 2

SHEET NUMBER 圖紙編號

60222570/TR19A/FIGURE 2.2.2

4.7 Traffic Noise Impact Assessment

Assessment Approach and Methodology

4.7.1 Road traffic noise impact is predicted using the methodology provided in the UK Department of Transport Calculation of Road Traffic Noise (CRTN) 1988. The computer model RoadNoise 2000 which complies with the CRTN is used for the prediction. The noise levels are presented in terms of noise levels exceeded for 10% of the one-hour period during the peak traffic flow, i.e. $L_{10(1hour)}$ dB(A).

4.7.2 Traffic noise is predicted based on the worst-case year traffic forecast within 15 years upon commencement of operation of the proposed roadwork according to Clause 3.4.5.2(vi)(a) of the EIA Study Brief. Based on the latest project programme, the proposed road network is expected to be in operation in operation in Year 2033. The assessment year for road traffic noise is taken as Year 2048 which is the maximum traffic projection within 15 years after full operation of the proposed roadwork. The peak traffic flow with the Project in Year 2048 is shown in **Appendix 4.7.1**. Transport Department (TD) has no comment on the traffic forecast adopted in this EIA study.

4.7.3 The following scenarios are studied in the assessment:

- Unmitigated scenario in Year 2048;
- Mitigated scenario in Year 2048; and
- Prevailing scenario in Year 2018 for indirect technical remedies eligibility assessment.

4.7.4 For the purpose of the traffic noise assessment in the EIA study, the roads within 300 m from the proposed Project boundary are included in the assessment. Road-plots of the traffic noise model with the extent of Project roads are depicted in **Appendix 4.7.2**. The friction course on Hung Tin Road (excluding slip roads) and Yuen Long Highway, existing noise barriers at Tin Ha Road, Hung Tin Road (in the vicinity of Hung Fuk Estate), Hung Chi Road, Hung Shui Kiu Tin Sum Road and all traffic noise mitigation measures and friction course as stated in the approved EIA Report of “Deep Bay Link” (EIA-078/2002) have been taken into account in the assessment. In this study, the planned Tuen Mun Western Bypass (TMWB) which is located next to planned Site 4-4 is also considered in the assessment with the assumption of the semi-enclosures on its slip-roads under unmitigated and mitigated scenarios.

4.7.5 The traffic speeds adopted for the roads in the noise models are summarised as follows and the traffic speed adopted for each road is presented in **Appendix 4.7.2**:

(a) KSWH and Yuen Long Highway: 80 km per hour;

(b) Tin Ying Road (for prevailing scenario only), Hung Tin Road and certain sections of Castle Peak Road: 70 km per hour; and

(c) Concerned roads other than those listed in (a) and (b) above: 50 km per hour.

4.7.6 Direct mitigation measures would be proposed in all situations where the predicted traffic noise level exceeds the criteria set in Table 1A of Annex 5 to the EIAO-TM by 1 dB(A) or more.

4.7.7 If any façades of NSRs are still exposed to predicted noise levels exceeding the relevant noise criteria after the implementation of all direct mitigation measures, provision of indirect technical remedies in the form of acoustic insulation and air conditioning should be considered under the EIAO-TM and EIAO Guidance Note No. 12/2010. The eligibility for indirect technical remedies would be tested against the following three criteria:

- The predicted overall noise level from the Project roads, together with other traffic noise in the vicinity must be above a specified noise level (for example, 70 dB(A) for domestic premises and 65 dB(A) for educational institutions. All are in $L_{10\ (1hour)}$);
- The predicted overall noise level is at least 1.0 dB(A) more than the prevailing traffic noise level, i.e. the total traffic noise level existing before the works to construct Project roads were commenced; and
- The contribution to the increase in the predicted overall noise level from the Project roads must be at least 1.0 dB(A).

Prediction and Evaluation of Environmental Impacts

4.7.8 The Revised RODP has incorporated environmentally friendly designs to avoid and/or reduce traffic noise impact to sensitive receivers. These designs include deletion of Tin Ying Road, provision of depressed roads with or without decking-over, allocation of non-sensitive uses at the noisy roads, traffic controls for heavy goods vehicles which centralising the cargo truck travelling along KSWH, Planned Road P1 and D1 would also be implemented to reduce the road traffic noise impact at those NSRs within the Project area. In addition, provision of EFTS would potentially reduce the road-based traffic volume, thereby reducing the potential traffic noise impact arising from the Project. In the Stage 2 Community Engagement which consulted the public on the PODP and facilitated formulation of the RODP, there were comments expressing concerns over the noise impact brought by Castle Peak Road. Taking into account the public concern, low noise road surfacing (LNRS) would be implemented, subject to design review, on the road section of Castle Peak Road in the vicinity of Project area. Different materials for LNRS are being reviewed and tested by the Government for application in Hong Kong. Environmental review will be conducted in due course to study how the use of new road surfacing material could help reduce traffic noise impacts.

4.7.9 Road traffic noise assessment has been conducted for the representative NSRs in the worst-case year 2048. The predicted traffic noise levels at the representative NSRs under the unmitigated scenario are presented in **Table 4.24** to **Table 4.26**. Whereas **Appendix 4.7.3** shows the details of the noise assessment results of the each assessment points of the NSRs at different assessment levels under unmitigated scenario.

Table 4.24 Summary of Unmitigated Road Traffic Noise Assessment Results (Existing NSRs outside the Project Area)

NSR ID	Description	Existing / Planned Use	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
E1-OA	Tin Wah Estate	Existing Residential	E1-OA_R01	70	66-67	Yes
E1-OB_R	Tin Shing Court	Existing Residential	E1-OB_R01	70	67-68	Yes
E1-OB_E0	Q.E.S. Old Students' Association Branch Primary School	Existing Educational	E1-OB_E01 to E1-OB_E02	65	56-74	No
E1-OB_E1	YLPMSAA Tang Siu Tong Secondary School	Existing Educational	E1-OB_E11 to E1-OB_E12	65	61-74	No
E1-OB_E2	Lions Clubs International Ho Tak Sum Primary School	Existing Educational	E1-OB_E21	65	57-69	No
E2-OA	Village House at Lau Fau Shan	Existing Village	E2-OA_R01	70	66-67	Yes
E2-OB	San Hing Tsuen	Existing Village	E2-OB_R01 to E2-OB_R03	70	71-72	No
E2-OC	Sha Kong Wai	Existing Village	E2-OC_R01 to E2-OC_R04	70	71-76	No
E2-OD	Tin Yan Estate	Existing Residential	E2-OD_R01	70	66-67	Yes
E4-OA	Tsing Cheun Wai	Existing Village	E4-OA_R01 to E4-OA_R04	70	71-73	No
E4-OB	Nai Wai	Existing Village	E4-OB_R01	70	77	No
E4-OC	Sun Fung Wai	Existing Village	E4-OC_R01 to E4-OC_R03	70	72-80	No
E4-OD	Chung Uk Tsuen	Existing Village	E4-OD_R01 to E4-OD_R04	70	74-78	No
E5-OA	Tong Fong Tsuen	Existing Village	E5-OA-R01 & E5-OA-R02	70	67-79	No
E5-OB	Hang Mei Tsuen	Existing Village	E5-OB-R01	70	75	No
E5-OC	Tai Tao Tsuen	Existing Village	E5-OC-R01	70	71	No
E5-OD	Uptown	Existing Residential	E5-OD_R01	70	71-76	No
E5-OE	Shung Tak Catholic English College	Existing Educational	E5-OE_E01	65	73-74	No
E5-OF	Treasure Court	Existing Residential	E5-OF_R01	70	73	No
E5-OG	Lai Hung Garden	Existing Residential	E5-OG_R01	70	74	No
E5-OH	Bauhinia Garden	Existing Residential	E5-OH_R01	70	74-75	No

Note: Full names of the abbreviations of uses should be referred to the List of Abbreviations.

Table 4.25 Summary of Unmitigated Road Traffic Noise Assessment Results (Existing NSRs within the Project Area)

NSR ID	Description	Use	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
E1-IA	Tseung Kong Wai	Existing Village	E1-IA_R01	70	76	No
E1-IB	Hong Mei Tsuen	Existing Village	E1-IB_R01	70	54-55	Yes
E1-IC	Tung Tau Tsuen	Existing Village	E1-IC_R01 to E1-IC_R03	70	64-69	Yes
E1-ID	Lo Uk Tsuen	Existing Village	E1-ID_R01	70	59	Yes
E1-IE	Sik Kong Wai	Existing Village	E1-IE_R01	70	69-70	Yes
E1-IF	Ha Tsuen Shi	Existing Village	E1-IF_R01 to E1-IF_R02	70	64-76	No
E1-IG	San Uk Tsuen	Existing Village	E1-IG_R01 to E1-IG_R03	70	65-69	Yes
E1-IH	Sha Chau Lei	Existing Village	E1-IH_R01 to E1-IH_R02	70	66-70	Yes
E1-IJ	San Sang Tsuen	Existing Village	E1-IJ_R01 to E1-IJ_R05	70	68-73	No
E1-IK	Shek Po Tsuen	Existing Village	E1-IK_R01 to E1-IK_R03	70	64-73	No
E2-IA	Fung Kong Tsuen	Existing Village	E2-IA_R01 to E2-IA_R02	70	72-76	No
E4-IA	Tin Sum Tsuen	Existing Village	E4-IA_R01 to E4-IA_R03	70	72-73	No
E4-IB	Tsing Chuen Wai	Existing Village	E4-IB_R01	70	69-72	No
E5-IA	Kiu Tau Wai	Existing Village	E5-IA_R01	70	64-69	Yes
E5-IB_R	Hung Uk Tsuen	Existing Village	E5-IB_R01 to E5-IB_R02	70	63-74	No
E5-IB_C	Chinese Mission Seminary	Existing Church	E5-IB_C01	65	73-74	No
E5-IC	San Lee Uk Tsuen	Existing Village	E5-IC_R01	70	73	No
E1-26	Existing Homes for the Elderly (Yeung Chun Pui and Ching Chung)	IC	E1-26_H01 to E1-26_H02	70	59-63	Yes
E4-30	Ling Liang Worldwide Evangelistic Mission Hung Shui Kiu Ling Liang Church	IC	E4-30_C01	65	72	No
E5-23	Sheffield Villas	R3	E5-23_R01 to E5-23_R12	70	64-66	Yes
E5-25	Hung Fuk Estate	RSc	E5-25_R01 to E5-25_R41	70	59-73	No
E5-31	Existing Residential Development	R2	E5-31_R01 to E5-31_R22	70	61-73	No
E5-35	Bellevue Court	R4	E5-35_R01	70	64-73	No
E5-39	Existing Residential Development	R3	E5-39_R01 to E5-39_R05	70	68-77	No
E5-44	The Church of Jesus Christ of Latter-Day Saints (Hung Shui Kiu)	R3	E5-44_C01 to E5-44_C02	65	68-71	No

NSR ID	Description	Use	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
O5-06	Committed Subsidised Sales Flat	R2(SSF)c	O5-06_R01 to O5-06_R24	70	59-75	No
O5-33	Committed Residential Development	R2	O5-33_R01 to O5-33_R31	70	72-73	No

Note: Full names of the abbreviations of uses should be referred to the List of Abbreviations.

4.7.10 Referring to **Table 4.24** and **Table 4.25**, the predicted noise levels at the representative existing NSRs outside and within the Project area would be in the range of 56 to 79 dB(A) and 54 to 77 dB(A), respectively. Most of representative existing NSRs would expose to the noise levels exceeding the relevant noise criteria. Mitigation measures are required to alleviate the potential adverse traffic noise impact.

Table 4.26 Summary of Unmitigated Road Traffic Noise Assessment Results (Planned NSRs within the Project Area)

NSR ID	Use	Description	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
P1-02	R2(SSF)c	Site 1-02	P1-02_R01 to P1-02_R31	70	57-75	No
P1-03	E	Site 1-03	P1-03_E01 to P1-03_E11	65	53-64	Yes
P1-04	R2c	Site 1-04	P1-04_R01	70	47-60	Yes
P1-05	R2c	Site 1-05	P1-05_R01 to P1-05_R11	70	57-67	Yes
P1-06	R2c	Site 1-06	P1-06_R01 to P1-06_R11	70	64-70	Yes
P1-08	R2c	Site 1-08	P1-08_R01 to P1-08_R22	70	66-74	No
P1-09	R2c	Site 1-09	P1-09_R01 to P1-09_R12	70	68-75	No
P1-12	R2	Site 1-12	P1-12_R01	70	68-73	No
P1-15	E	Site 1-15	P1-15_E01 to P1-15_E05	65	65-73	No
P1-17	R2	Site 1-17	P1-17_R01	70	57-63	Yes
P1-18	E	Site 1-18	P1-18_E01 to P1-18_E03	65	57-68	No
P1-19	R2	Site 1-19	P1-19_R01 to P1-19_R21	70	69-76	No
P1-21	R2c	Site 1-21	P1-21_R01 to P1-21_R21	70	54-69	Yes
P1-22	E	Site 1-22	P1-22_E01 to P1-22_E11	65	63-79	No
P2-02	R3	Site 2-02	P2-02_R01 to P2-02_R32	70	61-67	Yes
P2-03	R3	Site 2-03	P2-03_R01 to P2-03_R21	70	52-65	Yes
P2-07	R3	Site 2-07	P2-07_R01 to P2-07_R21	70	62-66	Yes
P2-09	E	Site 2-09	P2-09_E01 to P2-09_E02	65	57-66	No

NSR ID	Use	Description	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
P2-10	R3	Site 2-10	P2-10_R01 to P2-10_R31	70	62-70	Yes
P2-11	R3c	Site 2-11	P2-11_R01 to P2-11_R31	70	66-74	No
P2-14	R3	Site 2-14	P2-14_R01 to P2-14_R12	70	62-68	Yes
P2-15	E	Site 2-15	P2-15_R01	70	62-64	Yes
P2-16	E	Site 2-16	P2-16_E01 to P2-16_R15	65	63-69	No
P2-18	RR4	Site 2-18	P2-18_R01 to P2-18_R05	70	69-71	No
P2-19	RR4	Site 2-19	P2-19_R01	70	66-67	Yes
P2-24	E	Site 2-24	P2-24_E01 to P2-24_E11	65	59-70	Yes
P2-25	G	Site 2-25	P2-25_H01	70	69-71	No
P2-26	E	Site 2-26	P2-26_E01 to P2-26_E11	65	63-70	No
P2-28	E	Site 2-28	P2-28_E01 to P2-28_E02	65	60-68	No
P2-30	RSc	Site 2-30	P2-30_R01 to P2-30_R21	70	48-70	Yes
P2-31	R2(SSF)c	Site 2-31	P2-31_R01 to P2-31_R21	70	61-68	Yes
P4-01	G	Site 4-01	P4-01_R01 to P4-01_R13	70	64-75	No
P4-03	R2(SSF)c	Site 4-03	P4-03_R01 to P4-03_R11	70	61-76	No
P4-04	RSc	Site 4-04	P4-04_R01 to P4-04_R24	70	56-71	No
P4-05	RSc	Site 4-05	P4-05_R01 to P4-05_R14	70	65-72	No
P4-06	R2(SSF)c	Site 4-06	P4-06_R01 to P4-06_R12	70	66-74	No
P4-08	E	Site 4-08	P4-08_E01 to P4-08_E11	65	61-65	Yes
P4-09	R1c	Site 4-09	P4-09_E06	70	62-68	Yes
P4-17	OU	Site 4-17	P4-17_E01 to P4-17_E06	65	57-73	No
P4-20	RR4	Site 4-20	P4-20_R01 to P4-20_R04	70	64-72	No
P4-22	RSc	Site 4-22	P4-22_R01 to P4-22_R42	70	52-71	No
P4-24	R2(SSF)c	Site 4-24	P4-24_R01 to P4-24_R46	70	66-75	No
P4-25a	OU(C&R)	Site 4-25a	P4-25a_R01	70	65-69	Yes
P4-25b	OU(C&R)	Site 4-25b	P4-25b_R01 to P4-25b_R11	70	61-71	No
P4-25c	OU(C&R)	Site 4-25c	P4-25c_R01 to P4-25c_R11	70	52-60	Yes
P4-26	R1c	Site 4-26	P4-26_R01 to P4-26_R21	70	64-71	No

NSR ID	Use	Description	NAP ID	Criteria, dB(A)	Predicted Unmitigated Overall Noise Level, dB(A)	Compliance of Noise Criteria
P4-28	RSc	Site 4-28	P4-28_R01 to P4-28_R44	70	54-73	No
P4-29	OU(C&R)	Site 4-29	P4-29_R01 to P4-29_R31	70	50-71	No
P4-32	G	Site 4-32	P4-32_R01 to P4-32_R14	70	63-73	No
P4-33	E	Site 4-33	P4-33_E01 to P4-33_E03	65	67-75	No
P4-36	E	Site 4-36	P4-36_E02 to P4-36_R01	65	66-70	No
P5-07a	OU(C&R)	Site 5-07a	P5-07a_R01 – P5-07a_R21	70	55-71	No
P5-07b	OU(C&R)	Site 5-07b	P5-07b_R01 to P5-07b_R21	70	60-73	No
P5-08	OU(C&R)	Site 5-08	P5-08_R01 to P5-08_R11	70	69-73	No
P5-09	OU(C&R)	Site 5-09	P5-09_R01 to P5-09_R31	70	60-71	No
P5-14	E	Site 5-14	P5-14_E01 to P5-14_E11	65	67-74	No
P5-16	R2(SSF)c	Site 5-16	P5-16_R01 to P5-16_R11	70	58-79	No
P5-17	RSc	Site 5-17	P5-17_E04 to P5-17_R12	65	54-75	No
P5-21	E	Site 5-21	P5-21_E01 to P5-21_E02	65	61-66	No
P5-22	Site 5-22	R3	P5-22_R01 to P5-22_R03	70	65-77	No
P5-24	R2(SSF)c	Site 5-24	P5-24_R01 to P5-24_R23	70	43-68	Yes
P5-26	R2(SSF)	Site 5-26	P5-26_R01 to P5-26_R04	70	63-74	No
P5-28	G	Site 5-28	P5-28_H01 to P5-32_R01 to P5-32_R82	70	64-72	No
P5-32	OU(C&R)	Site 5-32	P5-32_R01 to P5-32_R82	70	62-80	No
P5-34	E	Site 5-34	P5-34_E01 to P5-34_E11	65	60-73	No
P5-37	E	Site 5-37	P5-37_E01 to P5-37_E02	65	70-74	No

Note: Full names of the abbreviations of uses should be referred to the List of Abbreviations.

4.7.11 For the planned NSRs within the Project area (see **Table 4.26**), the predicted road traffic noise levels would be in the range of 43 to 80 dB(A). Despite the environmentally friendly designs are considered in the Revised RODP, results indicate that most planned residential and educational NSRs would still exceed the noise criteria by up to 10 dB(A) and 14 dB(A) respectively. Hence, direct mitigation measures for these affected NSRs are required. For those non-compliance planned educational institutes, mitigation measures as discussed in **Section 4.7.15** are considered under the Class Assessment Document following ETWB Technical Circular (Works) No. 13/2003.

4.7.12 The total number of dwellings, classrooms and other NSRs that will be exposed to noise impact exceeding the criteria set in Annex 5 in the EIAO-TM have been calculated. It is estimated that a total of 786 of existing dwellings, 4352 planned dwellings, 120 existing classrooms, 445 planned classroom, 2 existing churches, 1 existing and 3 planned buildings of home for the elderly would be exposed to traffic noise impact under unmitigated scenario.

Direct Mitigation Measures

4.7.13 High volume of traffic flows of some major roads within or surrounding the Project, namely KSWH, Yuen Long Highway, Ping Ha Road, Tin Wah Road, Hung Tin Road, Castle Peak Road, Planned Road P1 and Planned Road D1, is expected in Year 2048. With the implementation of environmentally friendly designs in the Revised RODP, the noise barriers on KSWH according to its approved EIA Report and the LNRS on Castle Peak Road, exceedance of the noise criteria at some existing and planned NSRs are still predicted in the unmitigated scenario. Noise mitigation measures would therefore be required to alleviate the potential road traffic noise impact.

4.7.14 Noise mitigation measures in terms of: (i) vertical barriers and cantilever noise barriers on the Project roads; (ii)LNRS on Project roads; and (iii) alternative residential development layout (for Sites 5-8, 5-26 and 5-32) are proposed to alleviate adverse traffic noise impact on the affected NSRs. The details of proposed LNRS and noise barriers are summarised in below **Table 4.27** and **Table 4.28** with total length of mitigation measures rounded off to the nearest 10 m. The locations of the vertical barriers, cantilever noise barriers and extent of LNRS are shown in **Figures 4.7.1 – Figure 4.7.16**. The alternative residential development layouts are presented in **Figure 4.7.17 – Figure 4.7.27**. Different materials for LNRS are being reviewed and tested by the Government for application in Hong Kong. Environmental reviews will be conducted at the later design stage to review the proposed noise mitigation measures taking into account the latest design standard at that time for the application of the LNRS materials.

Table 4.27 Locations of Proposed Low Noise Road Surfacing

ID	Road	Length, m
LNS1	Not used	-
LNS2	Tin Wah Road	350
LNS3	Proposed Roundabout at Junction J2	210
LNS4	Proposed Road D1	500
LNS5	Proposed Road near Site2-26	280
LNS6	Proposed Road D1	400
LNS7	Proposed Road D1	640
LNS8	Proposed Road D1 (Depressed Section)	120
LNS9	Proposed Road L1	670
LNS10	Proposed Road P1	560
LNS11	Proposed Road L5	440
LNS12	Proposed Road D2	280
LNS13	Proposed Road D2 (Depressed Section)	180
LNS14	Proposed Road D2	1260
LNS15	Proposed Road L3	390
LNS16	Proposed Road D2	370
LNS17	Proposed Roundabout at Junction J8	190
LNS18	Ping Ha Road	110
LNS19	Not used	-

ID	Road	Length, m
LNS20	Kiu Fat Street	280
LNS22	Proposed Road near Site 5-13	730
LNS23	Hung Chi Road / Proposed Road L5	340
LNS24	Not used	-
LNS25	Note used	-
LNS26	Not used	-
LNS27	Proposed Road near Site 4-24	140
LNS28	Not used	-
LNS29	Proposed Road L2	670
LNS30	Proposed Road near Site 4-29	270
LNS31	Not used	-
LNS32	Proposed Road P1	790
LNS33	Proposed Road P1	380
LNS34	Proposed Road P1	610
LNS35	Proposed Road D8	480
LNS36	Proposed Road near Site 4-33	210

Table 4.28 List of Proposed Traffic Noise Mitigation Measures

Noise Barrier ID	Location	Barrier Type	Height, mAG	Length, m
CB1	Proposed Road D2	Cantilever	6+4.2 m at 45 degree	50
CB2	Not Used	-	-	-
CB3a	Proposed Road P1	Cantilever	5.5+2.5 m at 45 degree	80
CB3b	Proposed Road P1	Cantilever	5.5+2.5 m at 45 degree	130
CB4	Not Used	-	-	-
CB5	Proposed Road D2, near Site 1-22	Cantilever	6+4.2 m at 45 degree	130
VB2	Tin Wah Road / Lau Fau Shan Road	Vertical	5	140
VB3	Proposed Road D1	Vertical	3	120
VB4	Proposed Road D2	Vertical	5	140
VB5	Proposed Road D1	Vertical	5	90
VB6	Proposed Road D1	Vertical	5	150
VB7	Proposed Road D3	Vertical	4	60
VB8	Proposed Road D3	Vertical	4	50
VB9	Proposed Road D3	Vertical	4	50
VB10	Proposed Road D2	Vertical	4	180
VB11	Not used	-	-	-
VB12	Proposed Road D2	Vertical	6	110
VB13	Not used	-	-	-
VB14	Not used	-	-	-
VB15	Proposed Road D2	Vertical	5	30
VB16	Proposed Road D2	Vertical	5	60
VB17	Proposed Road D2	Vertical	5	20

Noise Barrier ID	Location	Barrier Type	Height, mAG	Length, m
VB17	Proposed Road D2	Vertical	5	20
VB18	Proposed Road D2	Vertical	4	60
VB19	Not used	-	-	-
VB20	Proposed Road L3	Vertical	7	110
VB21	Proposed Road D2/ Ping Ha Road	Vertical	7	50
VB22	Not used	-	-	-
VB23	Proposed Road D2/ Ping Ha Road	Vertical	7	130
VB24	Ping Ha Road	Vertical	7	160
VB25	Not used	-	-	-
VB26	Proposed Road L1	Vertical	5	70
VB27	Not used	-	-	-
VB28	Hung Tin Road	Vertical	5	90
VB29	Hung Tin Road	Vertical	7	80
VB30	Not used	-	-	-
VB31	Hung Tin Road	Vertical	7	60
VB32	Not used	-	-	-
VB33	Not used	-	-	-
VB34	Not used	Vertical	7	30
VB35	Proposed Road D5	Vertical	5	80
VB36	Proposed Road D5	Vertical	5	70
VB37	Proposed Road D5	Vertical	3	70
VB38	Proposed Road D5	Vertical	3	80
VB39	Proposed Road P1	Vertical	3	100
VB40	Proposed Road P1	Vertical	3	130
VB41	Proposed Road D2	Vertical	5	130
VB42	Not used	-	-	-

4.7.15 Regarding the noise exceedance on the planned education institutes at Sites 1-18, 1-22, 2-16, 4-33, 4-36 and 5-34, alternative layouts and 3 m high boundary wall (for Site 2-9, 4-33, 4-36 and 5-34 only) are also considered under the Class Assessment Document following ETWB Technical Circular (Works) No. 13/2003. The details of the proposed boundary wall are presented in **Table 4.29** and the alternative layouts are presented in **Figure 4.7.17 – Figure 4.7.27**.

Table 4.29 Details of Proposed Boundary Wall for Planned Education Institutes

Boundary Wall ID	Location	Barrier Type	Height, mAG	Length, m
VB1	Boundary Wall at Site 2-9	Vertical	3	65
VB43	Boundary wall at Site 4-36	Vertical	3	60
VB44	Boundary wall at Site 4-36	Vertical	3	120
VB45	Boundary wall at Site 4-33	Vertical	3	200
VB46	Boundary wall at Site 5-34	Vertical	3	150
VB47	Boundary wall at Site 5-34	Vertical	3	160

4.7.16 With the implementation of the above recommended noise mitigation measures, the noise levels at some of the representative NSRs would comply with the traffic noise criteria. However, exceedance of the traffic noise criteria would still be predicted at some of the representative existing NSRs due to existing roads and some planned NSRs due to existing roads including KSWH and planned local roads.

4.7.17 The predicted mitigated traffic noise levels at the representative existing NSRs outside and within the Project area, and the major noise source causing exceedance on the affected existing NSRs are presented in below **Table 4.30** and **Table 4.31**. **Table 4.32** summarises the predicted mitigated traffic noise levels at the planned representative NSRs.

Table 4.30 Summary of Mitigated Road Traffic Noise Assessment Results (Existing NSRs outside the Project area)

NSR ID	Description	Existing / Planned Use	NAP ID	Criteria, dB(A)	Predicted Mitigated Overall Noise Level, dB(A)	Major Noise Source causing Exceedance
E1-OA	Tin Wah Estate	Existing Residential	E1-OA_R01	70	65-67	-
E1-OB	Tin Shing Court	Existing Residential	E1-IB_R01	70	62-66	-
E1-OB_E0	Q.E.S. Old Students' Association Branch Primary School	Existing Educational	E1-OB_E01 to E1-OB_E02	65	56-74	Ping Ha Road (East of Hung Tin Road)
E1-OB_E1	YLPMSAA Tang Siu Tong Secondary School	Existing Educational	E1-OB_E11 to E1-OB_E12	65	61-74	Ping Ha Road (East of Hung Tin Road). Hung Tin Road
E1-OB_E2	Lions Clubs International Ho Tak Sum Primary School	Existing Educational	E1-OB_E21	65	54-65	-
E2-OA	Village House at Lau Fau Shan	Existing Village	E2-OA_R01	70	66-67	-
E2-OB	San Hing Tsuen	Existing Village	E2-OB_R01 to E2-OB_R03	70	71-72	Lau Fau Shan Road
E2-OC	Sha Kong Wai	Existing Village	E2-OC_R01 to E2-OC_R04	70	64-70	-
E2-OD	Tin Yan Estate	Existing Residential	E2-OD_R01	70	66-67	-
E4-OA	Tsing Cheun Wai	Existing Village	E4-OA_R01 to E4-OA_R04	70	68-70	-
E4-OB	Nai Wai	Existing Village	E4-OB_R01	70	76-77	Castle Peak Road
E4-OC	Sun Fung Wai	Existing Village	E4-OC_R01 to E4-OC_R03	70	72-78	Castle Peak Road
E4-OD	Chung Uk Tsuen	Existing Village	E4-OD_R01 to E4-OD_R04	70	74-78	Castle Peak Road

NSR ID	Description	Existing / Planned Use	NAP ID	Criteria, dB(A)	Predicted Mitigated Overall Noise Level, dB(A)	Major Noise Source causing Exceedance
E5-OA	Tong Fong Tsuen	Existing Village	E5-OA-R01 & E5-OA-R02	70	66-79	Ping Ha Road (East of Hung Tin Road)
E5-OB	Hang Mei Tsuen	Existing Village	E5-OB-R01	70	75	Ping Ha Road (East of Hung Tin Road)
E5-OC	Tai Tao Tsuen	Existing Village	E5-OC-R01	70	71	Castle Peak Road, Hung Tin Road
E5-OD	Uptown	Existing Residential	E5-OD_R01	70	72-76	Castle Peak Road, Hung Tin Road
E5-OE	Shung Tak Catholic English College	Existing Educational	E5-OE_E01	65	73-74	Castle Peak Road, Hung Tin Road
E5-OF	Treasure Court	Existing Residential	E5-OF_R01	70	73	Castle Peak Road
E5-OG	Lai Hung Garden	Existing Residential	E5-OG_R01	70	74	Castle Peak Road
E5-OH	Bauhinia Garden	Existing Residential	E5-OH_R01	70	74-75	Castle Peak Road

Table 4.31 Summary of Mitigated Road Traffic Noise Assessment Results (Existing NSRs within the Project area)

NSR ID	Description	Use	NAP ID	Criteria	Predicted Overall Noise Level, dB(A)	Major Noise Source causing Exceedance
E1-IA	Tseung Kong Wai	Existing Village	E1-IA_R01	70	69-70	-
E1-IB	Hong Mei Tsuen	Existing Village	E1-IB_R01	70	54-55	-
E1-IC	Tung Tau Tsuen	Existing Village	E1-IC_R01 to E1-IC_R03	70	61-67	-
E1-ID	Lo Uk Tsuen	Existing Village	E1-ID_R01	70	56	-
E1-IE	Sik Kong Wai	Existing Village	E1-IE_R01	70	66-68	-
E1-IF	Ha Tsuen Shi	Existing Village	E1-IF_R01 to E1-IF_R02	70	62-67	-
E1-IG	San Uk Tsuen	Existing Village	E1-IG_R01 to E1-IG_R03	70	61-66	-
E1-IH	Sha Chau Lei	Existing Village	E1-IH_R01 to E1-IH_R02	70	66-70	-
E1-IJ	San Sang Tsuen	Existing Village	E1-IJ_R01 to E1-IJ_R05	70	68-73	Tin Ha Road
E1-IK	Shek Po Tsuen	Existing Village	E1-IK_R01 to E1-IK_R03	70	64-72	Hung Tin Road, Hung Chi Road
E2-IA	Fung Kong Tsuen	Existing Village	E2-IA_R01 to E2-IA_R02	70	67-68	-
E4-IA	Tin Sum Tsuen	Existing Village	E4-IA_R01 to E4-IA_R03	70	72-73	Tin Ha Road

NSR ID	Description	Use	NAP ID	Criteria	Predicted Overall Noise Level, dB(A)	Major Noise Source causing Exceedance
E4-IB	Tsing Chuen Wai	Existing Village	E4-IB_R01	70	67-70	-
E5-IA	Kiu Tau Wai	Existing Village	E5-IA_R01	70	61-66	-
E5-IB_R	Hung Uk Tsuen	Existing Village	E5-IB_R01 to E5-IB_R02	70	61-69	-
E5-IB_C	Chinese Mission Seminary	Existing Church	E5-IB_C01	65	73-74	Castle Peak Road
E5-IC	San Lee Uk Tsuen	Existing Village	E5-IC_R01	70	73	Tin Ha Road
E1-26	Existing Homes for the Elderly (Yeung Chun Pui and Ching Chung)	Homes for the Elderly	E1-26_H01 to E1-26_H02	70	58-60	-
E4-30	Ling Liang Worldwide Evangelistic Mission Hung Shui Kiu Ling Liang Church	Place of Worship	E4-30_C01	65	72	Castle Peak Road
E5-23	Sheffield Villas	Residential	E5-23_R01 to E5-23_R12	70	64-66	-
E5-25	Hung Fuk Estate	Residential	E5-25_R01 to E5-25_R41	70	61-74	Hung Tin Road, Hung Chi Road
E5-31	Existing Residential Development	Residential	E5-31_R01 to E5-31_R22	70	64-73	Castle Peak Road
E5-35	Bellevue Court	Residential	E5-35_R01	70	67-71	Castle Peak Road
E5-39	Existing Residential Development	Residential	E5-39_R01 to E5-39_R05	70	59-75	Castle Peak Road
E5-44	The Church of Jesus Christ of Latter-Day Saints (Hung Shui Kiu)	Residential	E5-44_C01 to E5-44_C02	65	72-73	Castle Peak Road, Tin Ha Road
O5-06	Committed Subsidised Sales Flat	Residential	O5-06_R01 to O5-06_R24	70	58-72	Ping Ha Road (East of Hung Tin Road)
O5-33	Committed Residential Development	Residential	O5-33_R01 to O5-33_R31	70	68-77	Hung Shui Kiu Tin Sum Road

Table 4.32 Summary of Mitigated Road Traffic Noise Assessment Results (Planned NSRs within the Project area)

NSR ID	Use	Description	NAP ID	Criteria	Mitigated Overall Noise Level, dB(A)	Require Additional Mitigation Measures
P1-02	Residential	Site 1-02	P1-02_R01 to P1-02_R31	70	54-72	Yes
P1-03	Educational	Site 1-03	P1-03_E01 to P1-03_E11	65	51-62	No
P1-04	Residential	Site 1-04	P1-04_R01	70	44-58	No
P1-05	Residential	Site 1-05	P1-05_R01 to P1-05_R11	70	56-66	No
P1-06	Residential	Site 1-06	P1-06_R01 to P1-06_R11	70	64-70	No
P1-08	Residential	Site 1-08	P1-08_R01 to P1-08_R22	70	63-70	No

NSR ID	Use	Description	NAP ID	Criteria	Mitigated Overall Noise Level, dB(A)	Require Additional Mitigation Measures
P1-09	Residential	Site 1-09	P1-09_R01 to P1-09_R12	70	58-69	No
P1-12	Residential	Site 1-12	P1-12_R01	70	66-70	No
P1-15	Educational	Site 1-15	P1-15_E01 to P1-15_E05	65	60-66	Yes
P1-17	Residential	Site 1-17	P1-17_R01	70	54-60	No
P1-18	Educational	Site 1-18	P1-18_E01 to P1-18_E03	65	53-65	No
P1-19	Residential	Site 1-19	P1-19_R01 to P1-19_R21	70	60-70	No
P1-21	Residential	Site 1-21	P1-21_R01 to P1-21_R21	70	52-67	No
P1-22	Educational	Site 1-22	P1-22_E01 to P1-22_E11	65	49-69	Yes
P2-02	Residential	Site 2-02	P2-02_R01 to P2-02_R32	70	61-67	No
P2-03	Residential	Site 2-03	P2-03_R01 to P2-03_R21	70	52-65	No
P2-07	Residential	Site 2-07	P2-07_R01 to P2-07_R21	70	62-66	No
P2-09	Educational	Site 2-09	P2-09_E01 to P2-09_E02	65	58-65	No
P2-10	Residential	Site 2-10	P2-10_R01 to P2-10_R31	70	61-69	No
P2-11	Residential	Site 2-11	P2-11_R01 to P2-11_R31	70	65-70	No
P2-14	Residential	Site 2-14	P2-14_R01 to P2-14_R12	70	62-67	No
P2-15	Educational	Site 2-15	P2-15_R01	70	62-64	No
P2-16	Educational	Site 2-16	P2-16_E01 to P2-16_R15	65	60-63	No
P2-18	Residential	Site 2-18	P2-18_R01 to P2-18_R05	70	68-70	No
P2-19	Residential	Site 2-19	P2-19_R01	70	65-67	No
P2-24	Educational	Site 2-24	P2-24_E01 to P2-24_E11	65	54-65	No
P2-25	Residential Home for the Elderly	Site 2-25	P2-25_H01	70	67-69	No
P2-26	Educational	Site 2-26	P2-26_E01 to P2-26_E11	65	59-66	Yes
P2-28	Educational	Site 2-28	P2-28_E01 to P2-28_E02	65	55-63	No
P2-30	Residential	Site 2-30	P2-30_R01 to P2-30_R21	70	47-70	No
P2-31	Residential	Site 2-31	P2-31_R01 to P2-31_R21	70	60-67	No
P4-01	Staff Quarters	Site 4-01	P4-01_R01 to P4-01_R13	70	62-72	Yes
P4-03	Residential	Site 4-03	P4-03_R01 to P4-03_R11	70	58-70	No
P4-04	Residential	Site 4-04	P4-04_R01 to P4-04_R24	70	54-70	No

NSR ID	Use	Description	NAP ID	Criteria	Mitigated Overall Noise Level, dB(A)	Require Additional Mitigation Measures
P4-05	Residential	Site 4-05	P4-05_R01 to P4-05_R14	70	56-72	Yes
P4-06	Residential	Site 4-06	P4-06_R01 to P4-06_R12	70	61-70	No
P4-08	Educational	Site 4-08	P4-08_E01 to P4-08_E11	65	61-64	No
P4-10	Residential	Site 4-10	P4-10_R01	70	61-68	No
P4-20	Residential	Site 4-20	P4-20_R01 to P4-20_R04	70	62-70	No
P4-22	Residential	Site 4-22	P4-22_R01 to P4-22_R42	70	52-70	No
P4-24	Residential	Site 4-24	P4-24_R01 to P4-24_R46	70	63-75	Yes
P4-25a	Other Use (Commercial and Residential)	Site 4-25a	P4-25a_R01	70	63-67	No
P4-25b	Other Use (Commercial and Residential)	Site 4-25b	P4-25b_R01 to P4-25b_R11	70	60-69	No
P4-25c	Other Use (Commercial and Residential)	Site 4-25c	P4-25c_R01 to P4-25c_R11	70	52-60	No
P4-26	Residential	Site 4-26	P4-26_R01 to P4-26_R21	70	61-71	Yes
P4-28	Residential	Site 4-28	P4-28_R01 to P4-28_R44	70	54-71	Yes
P4-29	Other Use (Commercial and Residential)	Site 4-29	P4-29_R01 to P4-29_R31	70	50-69	No
P4-32	Staff Quarters	Site 4-32	P4-32_R01 to P4-32_R14	70	61-70	No
P4-33	Educational	Site 4-33	P4-33_E01 to P4-33_E03	65	59-73	Yes
P4-36	Educational	Site 4-36	P4-36_E02 to P4-36_R01	65	58-65	No
P5-07a	Other Use (Commercial and Residential)	Site 5-07a	P5-07a_R01 - P5-07a_R21	70	53-68	No
P5-07b	Other Use (Commercial and Residential)	Site 5-07b	P5-07b_R01 to P5-07b_R21	70	57-73	Yes
P5-08	Other Use (Commercial and Residential)	Site 5-08	P5-08_R01 to P5-08_R11	70	66-70	No
P5-09	Other Use (Commercial and Residential)	Site 5-09	P5-09_R01 to P5-09_R31	70	57-69	No
P5-14	Educational	Site 5-14	P5-14_E01 to P5-14_E11	65	66-72	Yes
P5-16	Residential	Site 5-16	P5-16_R01 to P5-16_R11	70	55-74	Yes
P5-17	Residential	Site 5-17	P5-17_E04 to P5-17_R12	65	53-73	Yes

NSR ID	Use	Description	NAP ID	Criteria	Mitigated Overall Noise Level, dB(A)	Require Additional Mitigation Measures
P5-21	Educational	Site 5-21	P5-21_E01 to P5-21_E02	65	61-66	Yes
O5-22	Committed Residential Development (Site 5-22)	Residential	O5-22_R01 to O5-22_R03	70	65-77	Yes
P5-24	Residential	Site 5-24	P5-24_R01 to P5-24_R23	70	43-68	No
P5-26	Residential	Site 5-26	P5-26_R01 to P5-26_R04	70	56-70	No
P5-28	Residential Home for the Elderly	Site 5-28	P5-28_H01	70	64-72	Yes
P5-32	Other Use (Commercial and Residential)	Site 5-32	P5-32_R01 to P5-32_R82	70	63-77	Yes
P5-34	Educational	Site 5-34	P5-34_E01 to P5-34_E11	65	48-71	Yes
P5-37	Educational	Site 5-37	P5-37_E01 to P5-37_E02	65	70-74	Yes

4.7.18 As shown in **Table 4.30** and **Table 4.31,** the exceedance at the representative existing NSRs would be due to Ping Ha Road (East of Hung Tin Road), Lau Fau Shan Road, Castle Peak Road, Tin Ha Road, Hung Tin Road, Hung Chi Road and Hung Shui Kiu Tin Sam Road. A review is conducted to determine whether the traffic noise impact on these existing roads due to the Project would be considered significant. Findings as presented in **Appendix 4.7.6** indicate that significant traffic noise impact from the Project would only be predicted on Hung Chi Road and Hung Shui Kiu Tin Sam Road. Implementation of mitigation measures on these existing roads under this Project are proposed to alleviate the traffic noise impact as described in **Sections 4.7.19** to **4.7.21**.

Hung Chi Road

4.7.19 The facades of Hung Fuk Estate (E1-IK_R02 and EI-IK_R03) and Shek Po Tsuen (E5-25_R01) facing Hung Chi Road would be exposed to the traffic noise level exceeding the noise criterion of 70 dB(A) though existing 2 m high noise barrier at the Shek Po Tsuen side and 5 m high noise barrier in the vicinity of Hung Fuk Estate have been in place. To alleviate the adverse traffic noise impact on these facades, LNRS on the concerned road sections is proposed and the results indicate that the above affected facades would comply with the noise criterion of 70 dB(A). Different materials for LNRS are being reviewed and tested by the Government for application in Hong Kong. Environmental reviews will be conducted at the later design stage to review the proposed noise mitigation measures taking into account the latest design standard at that time for the application of the LNRS materials.

Hung Shui Kiu Tin Sam Road (East Section)

4.7.20 The planned NSRs at Sites 5-28, 5-32 and 5-33 facing Hung Shui Kiu Tin Sam Road (East Section) would be exposed to traffic noise levels exceeding 70 dB(A) though existing 3 m high noise barrier in the vicinity of Site 5-28 has been in place. Provision of noise barrier along the concerned road section are studied. It is noted that a number of existing run-ins will be required for Site 5-32, which will break off the alignment of the noise barrier. In addition, the existing space of planting strips allowing installation of noise barriers are limited. Provision of noise barrier for Sites 5-32 and 5-33 is not feasible. LNRS on the concerned road sections is proposed to alleviate the traffic noise

impact and the results indicate that the affected facades at Site 5-28 would comply with the noise criterion of 70 dB(A). Different materials for LNRS are being reviewed and tested by the Government for application in Hong Kong. Environmental reviews will be conducted at the later design stage to review the proposed noise mitigation measures taking into account the latest design standard at that time for the application of the LNRS materials.

Hung Shui Kiu Tin Sam Road (South of San Lee Uk Tsuen)

4.7.21 The planned residential NSRs at Site 5-33 and educational institute at Site 5-37 facing Hung Shui Kiu Tin Sam Road (South of San Lee Uk Tsuen) would be exposed to traffic noise levels exceeding 70dB(A) and 65 dB(A) respectively. Mitigation measure on this road section is studied. Due to the existing bus stops, the existing space of planting strips allowing installation of noise barriers are limited. Provision of noise barrier is not feasible. LNRS on the concerned road sections is proposed to alleviate the traffic noise impact. Different materials for LNRS are being reviewed and tested by the Government for application in Hong Kong. Environmental reviews will be conducted at the later design stage to review the proposed noise mitigation measures taking into account the latest design standard at that time for the application of the LNRS materials.

Castle Peak Road

4.7.22 With the enhancement of the existing noise environment with LNRS described in **Section 4.7.8,** the Project would reduce the noise emissions at Castle Peak Road.

4.7.23 It is noted that a retrofitting programme for Castle Peak Road (Hung Shui Kiu) has also been studied by EPD and an approximately 106 m long 5 m high vertical barrier along westbound of Castle Peak Road (Hung Shui Kiu Section) near Parkview Garden (with absorptive panels) would be implemented. However, for other sections of Castle Peak road (Hung Shui Kiu), there are following site constraints that provision of noise barriers/enclosures are not feasible or ineffectiveness.

4.7.24 Space Availability: The central reserve at Castle Peak Road (Hung Shui Kiu) is less than 2 m in width. Therefore, space is not adequate for horizontal clearance at both sides of the carriageways. In addition, there is not enough space to widen the width of the central reserve as there are bus stop and existing subway on the westbound of the carriageway of Castle Peak Road (Hung Shui Kiu Section) and Light Railway Transit (LRT) on the opposite side of the carriageway. This has imposed constraints for erection of noise enclosure and barrier.

4.7.25 Existing Structure: For the section fronting Treasure Court, there is an existing subway across Castle Peak Road and a ramp structure on both sides of the carriageway. The amenity area between the carriageway and the existing ramp structure is less than 2 m width. If the noise barriers are proposed, its foundations and columns would conflict with the existing subway structure.

4.7.26 Road Safety: A few existing bus bay located along Castle Peak Road. It could be another constraint since sightline of passengers and the bus drivers at bus bay would be much degraded after erection of a barrier structure so that the barrier should be set back from the carriageway. However, it would reduce the effectiveness of noise barrier.

4.7.27 Pedestrian/Vehicle Access: There are also many pedestrian access/vehicle access along Castle Peak Road. This imposed a constraint on the extent of the noise barrier and the short length of barriers (e.g. less than 30 m) is considered not acoustically effective in noise reduction due to the diffracted noise at the two ends of the noise barrier.

4.7.28 For the remaining roads including Ping Ha Road, Lau Fau Shan Road, Tin Ha Road and Hung Tin Road, as reviewed, the Project would not change the nature and the alignment of these roads, and would not induce significant change in the traffic capacity, traffic composition and traffic pattern of these roads. Therefore, the noise impact on these existing roads due to the Project is considered insignificant and should therefore be addressed under the policy endorsed by the Executive Council in November 2000 to address the noise impacts from existing roads if necessary and feasible. The engineering solutions under the policy include retrofitting of barriers and enclosures; and providing LNRS. The feasibility of the installation of noise barriers/enclosures on the concerned existing roads is studied and the outcome is summarised in the following paragraphs.

Ping Ha Road

4.7.29 With the existing 5 m high vertical barrier at Ping Ha Road in the vicinity of YLPMSAA Tang Siu Tong Secondary School and Q.E.S. Old Students' Association Branch Primary School, the predicted noise levels at these two schools would still exceed the noise criterion of 65 dB(A). Upgrading the existing noise barrier to cantilever noise barriers is not feasible as the existing foundation cannot allow extra loading.

Lau Fau Shan Road

4.7.30 Construction of noise barriers along Lau Fau Shan Road is considered not feasible as there is no sufficient space on footpath outside private land and there are a number of entrance accesses.

Tin Ha Road

4.7.31 Vertical noise barriers have been proposed at private land under “Hung Shui Kiu Development, Stage 2 – Widening of Tin Ha Road and Tan Kwai Tsuen Road”. However, no barrier is proposed in the final layout due to address public objections on land resumption for noise barrier. Therefore, it is not feasible to install noise barrier. Resurfacing with LNRS materials may be considered to be implemented where practicable by the Government.

Hung Tin Road

4.7.32 The existing Hung Tin Road outside the Shek Po Tsuen is constructed with retaining structures between the local roads and Hung Tin Road, therefore, there will be no space for installing noise barrier next to Hung Tin Road. In addition, construction of noise barriers along local road of Shek Po Tsuen is also considered not feasible as there is no sufficient space on footpath outside private land.

4.7.33 Except the above existing roads, exceedance at some planned NSRs would be due to KSWH (the section in the vicinity of Site 4-1 and Site 4-5) and some planned local roads. However, this section of the existing KSWH may not have sufficient structural capacity for installing more extensive noise barriers. Construction of a large extent of noise barrier along local roads is not feasible due to insufficient space. Therefore, additional mitigation measures including blank façade/acoustic windows would be considered for these planned residential NSRs. Provision of air conditioning and noise insulated windows for planned educational institutes under Class Assessment Document is proposed to alleviate the adverse traffic noise impact. With these mitigation measures in place, the noise levels at these affected planned NSRs would be within the respective noise criteria. Details of the additional mitigation measures proposed at the affected NSRs are summarised in **Table 4.33** below and its locations are shown in **Figures 4.7.17 – Figure 4.7.27**.

Table 4.33 Proposed Additional Mitigation Measures at Planned Sites

Site Ref. No.	Use	Proposed Additional Mitigation Measures	Applied to	Figure Reference
1-2	Residential	Acoustic Windows	1 - 17/F	Figure 4.7.19
1-15	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.21
1-22	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.21
2-26	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.20
4-1	Staff Quarters	Acoustic Windows	1 - 25/F	Figure 4.7.25
		Blank Façade	1 edge of 2 buildings	
4-5	Residential	Acoustic Windows	20 - 42/F	Figure 4.7.25
4-24	Residential	Acoustic Windows	1 - 20/F	Figure 4.7.26
4-26	Residential	Acoustic Windows	3 - 11/F	Figure 4.7.26
4-28	Residential	Acoustic Windows	1 - 2/F	Figure 4.7.26
4-33	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.27
5-7b	Residential/ Commercial	Acoustic Windows	1 – 9/F	Figure 4.7.22
5-14	Educational	Noise Insulated Windows and Air Conditioning	2 schools	Figure 4.7.23
5-16	Residential	Acoustic Windows	3 – 22/F	Figure 4.7.21
5-17	Residential	Acoustic Windows	4 – 29/F	Figure 4.7.22
5-21	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.23
5-22	Residential	Acoustic Balcony	1 - 21/F	Figure 4.7.24
5-28	Residential Home for the Elderly	Noise Insulated Windows and Air Conditioning[(a)]	1 Residential Home for the Elderly	Figure 4.7.24
5-32	Residential/ Commercial	Acoustic Windows	1 - 28/F	Figure 4.7.24
		Acoustic Balcony	1 – 9/F	
5-34	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.24
		Noise Insulated Windows and Air Conditioning	1 school	
5-37	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.24

Note:
(a) For Site 5-28, the need of additional mitigation measures would subject to whether the LNRS can apply on Hung Shui Kiu Tin Sam Road (East Section).

4.7.34 **Appendix 4.7.4** summarises the predicted traffic noise levels at various NSRs under mitigated scenario. It has been demonstrated that the noise impact can be mitigated to an acceptable level by employing a package of mitigation measures including: (i) noise barriers at some road sections of Project roads; (ii) application of LNRS on some Project road sections; (iii) alternative building layout and special building layout design such as blank façade design and provision of acoustic windows/acoustic balcony for planned residential NSRs; and (iv) boundary wall and provision of noise insulated windows and air conditioning for some educational institutes under Class Assessment Document. However, there is scope for adoption of alternative noise mitigation measures, for example, by means of alternative layout and design of individual developments at detailed design stage. Noise impact assessment at the planned residential sites is proposed to be conducted by future developers at the detailed design stage to study whether the future development layout would avoid exposing excessive traffic noise

levels so as to minimise the scale/extent of the proposed noise mitigation measures such as noise barriers and special building layout design. The requirement of noise impact assessment would be included in the lease condition or planning briefs of the residential sites.

4.7.35 With the implementation of mitigation measures, the total number of dwellings, classrooms and other noise sensitive element that will be benefited and protected has been calculated. It is estimated that a total of about 786 existing dwellings, 4352 planned dwellings, 120 existing classrooms, 455 planned classrooms and 1 existing and 3 planned buildings of home for the elderly would be benefited. A total of about 189 existing dwellings, 4352 planned dwellings, 30 existing classrooms, 455 planned classrooms and 1 existing and 3 planned buildings of home for the elderly would be protected.

Indirect Mitigation Measures for Existing NSRs

4.7.36 Review of the further mitigation measures have been conducted in consideration of the constraints and project nature. It is considered that all practicable direct mitigation measures, including: i) noise barriers at some road sections of Project roads; ii) application of LNRS on some Project Road sections; and iii) alternative building layout and special building design including blank façade design and provision of acoustic windows/acoustic balcony for planned residential NSRs and provision of noise insulated windows and air conditioning for planned educational institutes have been exhausted and no adverse residual impact is anticipated.

4.7.37 **Appendix 4.7.5** presents the eligibility test against the above three testing criteria stated in **Section 4.7.7** for indirect technical noise mitigation measures. All representative NSRs do not fall within the above three testing criteria, indirect mitigation measure is therefore not required under this Project.

Evaluation of Residual Environmental Impacts

4.7.38 The traffic noise impact from the Project can be properly mitigated by implementing the proposed noise control measures such as noise barriers on Project roads, LNRS and special building design on the planned developments. Residual road traffic noise impact is not anticipated.

Appendix 5.1 Railway Noise Result in HSK NDA P&E Study

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19A/FIGURE 2.2.

CUT LINE A-A

SEE DRAWING NO. 60222570/TR19A/FIGURE 2.2.1

N

816000 E

817000 E

833000 N

832000 N

Reference Site

Yuen Tau Shan

San Uk Tsuen

Sha Chau Lei

Kau Lee Uk Tsuen

San Sang Tsuen

Shek Po Tsuen

San Lee Uk Tsuen

Tin Sum Tsuen

Hung Uk Tsuen

Kiu Tau Wai

Chung Uk Tsuen

Sun Fung Wai

Nai Wai

Tsing Chuen Wai

KONG SHAM WESTERN HIGHWAY

CASTLE PEAK ROAD

YUEN LONG HIGHWAY

COMMUNITY FARMING AND FARMERS' MARKETS

RETENTION FACILITIES

HUNG FUK ESTATE

HOSPITAL, SPECIALIST CLINIC/ POLYCLINIC

(COMMERCIAL & RESIDENTIAL DEVELOPMENT WITH LIGHT RAIL FACILITIES)

COMMERCIAL & RESIDENTIAL

COMMERCIAL & RESIDENTIAL (PODIUM)

OU (REGIONAL PLAZA WITH LEISURE, FOOD AND BEVERAGES USES)

OU (RAILWAY STATION)

OU (RCP)

OU (SPS)

OU (ESS)

OU (E+TP)

OU (LF)

PTI

G (VEHICLE DEPOT)

FWSR & FLWSR

Ser Res

DEEP BAY

TIN SHUI WAI

LAU FAU SHAN

TAI TONG

AECOM

PROJECT
項目

HUNG SHUI KIU NEW DEVELOPMENT AREA PLANNING AND ENGINEERING STUDY - INVESTIGATION

CLIENT
業主

CEDD
土木工程拓展署
Civil Engineering and Development Department

規劃署
Planning Department

CONSULTANT
工程顧問公司

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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核實

STATUS
狀況

SCALE
比例

A3 1 : 10000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

A3 1 : 500000

PROJECT NO.
項目編號

60222570

AGREEMENT NO.
協議編號

CE2/2011 (CE)

SHEET TITLE
圖紙名稱

REVISED RECOMMENDED OUTLINE DEVELOPMENT PLAN (RODP) (SOUTHERN AREA)

SHEET 2 OF 2

SHEET NUMBER
圖紙編號

60222570/TR19A/FIGURE 2.2.2

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PATH: P:\PROJECTS\60222570\Drawing\REPORT\TR19A\TR19A_714.dgn

4.8 Rail Noise Assessment

Assessment Approach and Methodology

Train Noise Source Term for Rail Noise Assessment

4.8.1 The key noise impact from the railway would be the train induced airborne noise at viaduct and at grade section of WRL and LRT respectively across the Project area. Three noise sources have been identified from train operation are listed below:

- Rolling noise from train wheel and rail interaction;
- Noise from air conditioning unit on top of the each train cars; and
- Structure re-radiated noise from the viaduct structure during train passing.

4.8.2 The WRL viaduct structure including the multi plenum system and the above noise source propagation path are further illustrated with diagram in **Appendix 4.8.1**.

WRL Source Terms Reference Review

4.8.3 The rail noise source terms of WRL were referred from the "West Rail Operation Noise Assessment Report" prepared by MTR Corporation Limited in July 2015. The report aims to assess the noise impact of WRL due to the change from 7 cars to 8 cars in accordance with the Environmental Permit (FEP-24/004/1998/J). Noise measurement has been conducted to obtain the in-situ noise source terms for trains running on typical viaduct sections with the installation of multi plenum system. The air conditioning units on top of the WRL train and the structure re-radiated noise from the viaduct were also measured during the study. All three train noise source terms are considered as the latest information and adopted in the WRL noise assessment for this Project.

LRT Source Terms Reference Review

4.8.4 The source term of LRT was adopted from the previous EIA Report No. EIA-027/1999 entitled "Light Rail Transit (LRT) works for Tin Shui Wai Reserve Zone and Grade Separation of the LRT with Pui To Road and Tsing Lun Road in Tuen Mun" under a EIA Study Brief No: ESB-027/1999. The Sound Exposure Level (SEL) of the LRT was evaluated from the Lmax referenced from the previous EIA report. Air conditioning noise and re-radiated noise are considered insignificant contribution compared with the rolling noise of a LRT in this Project.

Rail Noise Assessment Procedures

4.8.5 The rail noise assessment was carried out to assess the worst case scenario under normal, abnormal, transient and emergency operation. The rail noise from the noise source to the NSRs will be corrected by distance, angle of view, barrier, speed, frequency, façade etc. The railway track was divided into segments and the respective noise level of each segment was calculated. The assessment procedure is listed in **Table 4.34** summarised the steps and assumption of the rail noise calculation. Major assessment parameters are including train frequency and speed are provided by MTRC and summarised in **Table 4.35**.

Table 4.34 Rail Noise Assessment Procedures

Description	Assumptions / Remarks	Ref.
Locate the NAPs which would most likely be affected by air-borne noise from the rail operation	The first layer of existing/planned NSRs located in the vicinity of WRL and LRT, have been selected as representative NAPs for rail noise prediction and evaluation	Section 4.4
Identify the train noise sources origination	The rolling noise source is located from the gap between the train and the walkway on the viaduct. Part of the train wheel rail interaction noise had been absorbed by a multi-plenum system and the effect of the system has been included in the source measurement in previous study A/C noise located on the roof of each car and source level was measured in previous study Structural re-radiated noise generated from the vibration of the viaduct during event was measured in previous study	**Appendix 4.8.1**
Identify the train frequency and make appropriate frequency correction	+10 log10 (N) where N = Train frequency per 30 min per Direction	A
Identify the train speed for correction	+20 log10 (V/Vref) where V = Train speed, Vref = Reference train speed	A
Identify the distance from the NSR to the train and make distance correction	-10 log10 (d'/dref) where d' = Slant distance from track to NSR and dref = Reference distance	A

Description	Assumptions / Remarks	Ref.
Identify the train type and the source term of the train	Relevant noise level referred to previous study	B & C
Identify the angle of view and make appropriate angle of view correction	+10 log10 ($\pi\theta/180 - \cos 2\alpha \sin\theta$) -5 where θ= Angle of View and α= Acute angle between a line drawn through the NSR, parallel to the track, and the line bisecting the angle of view, θ	A
Incorporate Façade Correction	+2.5 dB(A)	A
Incorporate Track Wear Correction	+3 dB(A)	A
Incorporate Joint/Turnout Correction	With conservative assumption, +7.0dB(A) for a representative 20 m segment	A
Incorporate Barrier Correction	Shadow Zone: -21dB(A) for δ > 2.5 m where δ is the Path Difference in metre -7.75 log10 (5.2 + 203 δ) dB(A) for 0≤ δ <2.5 m Illuminated Zone: 0dB(A) for δ > 0.4 m 0.88 + 2.14 log10 (10-3 + δ) dB(A) for 0≤ δ <0.4 m	Chart 6(a) of A
Calculate the overall noise level from all rail segments including rolling noise, A/C noise and structural re-radiated noise	Standard acoustic principal	-
Calculate the Lmax	SEL = Lmax + 10log(L/V) +10.5 – 10log[(4D/(4D2+1)) + 2tan-1(1/(2D))]	Equation 15.21 of D
Calculate the Leq, 24hr	Standard acoustic principal	-
Model validation	On site measurement was carried out to record the in-situ noise level and compared against the modelled results.	**Appendix 4.8.2**

Reference:
A - Calculation of Railway Noise (1995).
B - "West Rail Operation Noise Assessment Report" prepared by MTR Corporation Limited in July 2015.
C - "Light Rail Transit (LRT) works for Tin Shui Wai Reserve Zone and Grade Separation of the LRT with Pui To Road and Tsing Lun Road in Tuen Mun" under a EIA Study Brief No: ESB-027/1999.
D - Transportation Noise Reference Book.

Table 4.35 Rail Noise Assessment Input Summary

Parameters	WRL	LRT
Train Type and No. of Car	SP1900, 9 cars total 225 m in accordance with the VEP-45/2001	LRV, 2 cars of total 40 m as conservative scenario
Rolling Noise	SEL Northbound = 81.4 dB(A) [a] SEL Southbound = 80.7 dB(A) [a] (8 cars running 130kph at 25 m)	Lmax = 65 dB(A) [b] (2 cars running 50kph at 25 m)
Air Conditioning Noise	Lmax at Viaduct = 48.8 dB(A) [a] Lmax at Station = 54.8 dB(A) [a] (8 cars at 25 m)	Not applicable as insignificant contribution
Structure Re-radiated Noise	$L_{eq\ 30mins}$ = 40.6 dB(A) Viaduct [a]	Not applicable as LRT in HSK is at grade
Train Frequency per 30 min per Direction	14 number during peak daytime; 10 number during peak night-time	Between Nai Wai LRT Station to HSK LRT Station: Southbound: 20 number during peak daytime; 13 number during peak night-time Northbound: 20 number during peak daytime; 24 number during peak night-time From Tin Shui Wai LRT Station to Hang Mei Tsuen LRT Station: Southbound: 14 number during peak daytime; 13 number during peak night-time Northbound: 14 number during peak daytime; 18 number during peak night-time
Train Frequency per 24hrs both directions	680 trains	Between Nai Wai LRT Station to HSK LRT Station: 917 trains From Tin Shui Wai LRT Station to Hang Mei Tsuen LRT Station: 717 trains
Train Speed	Refer to speed profile in Appendix 2.1 in [a] • Station speed, 50 kph • Approach and leaving Station, 80 kph • Other viaduct section, 100 kph	LRT speed was measured on site. • Section near planned NSR, 60 kph • Section approaching and leaving junctions and stations, 40 kph • Section near NAP LR-E1, 50 kph • Section near NAP LR-E2, 36 kph

Notes:
[a] "West Rail Operation Noise Assessment Report" prepared by MTR Corporation Limited in July 2015.
[b] "Light Rail Transit (LRT) works for Tin Shui Wai Reserve Zone and Grade Separation of the LRT with Pui To Road and Tsing Lun Road in Tuen Mun , 1999".

Proposed HSK Station

4.8.6 A new HSK railway station (HSK Station) is proposed within the Project area. No detail layout is available at this EIA stage. The new station should match the existing West Rail alignment such that station platforms would be constructed on both sides of the tracks (i.e. sided platform design) and enclosed by 4 m screen doors, side wall and top cover. The track section of the station is remain uncovered in the centre. The assumed layout of proposed HSK Station is shown in **Figure 4.8.1**.

4.8.7 As mentioned in **Section 2.4.44**, the proposed HSK Station is a separate DP under Item A.2 of Schedule 2 of EIAO-TM, a separate EIA study would be conducted by the rail operator to fulfil all the statutory requirements and procedures under the Ordinance.

Phasing of HSK Development

4.8.8 The site layouts for rail noise assessment have been confirmed with Planning Department. Commercial developments Site 5-18 of 125 mPD are strategically planned to protect planned residential Site 5-17 of 115 mPD. Therefore Site 5-18 should be developed prior to Site 5-17 in purpose. This phasing approach also applied to the HSK WRL Station which should be developed before or concurrent with the residential development Sites 4-25 and 4-29 nearby. A review would be conducted for the environmental noise performance of the sites if the above development phasing programme cannot meet the specific arrangement.

Prediction and Evaluation of Noise Impacts

WRL Noise

4.8.9 The predicted air-borne noise levels from WRL with respect to the representative site layouts confirmed with relevant departments are presented in **Table 4.36**. The predicted noise level with full mPD level of all NSRs are shown in **Appendix 4.8.3.** Exceedances were predicted at representative NSRs WR-P5d, P5e, P5f, P7b & P7c at night-time period. While exceedance of day time criteria was predicted at WR-P10. It is predicted that a total of about 155 planned dwellings will be exposed to WR noise impact under unmitigated scenario. Mitigation measures are therefore required to reduce the rail noise impact for above NSRs during WRL operation.

Table 4.36 WRL Noise Calculation Summary – Unmitigated

NAP	Description	Area Sensitivity Rating	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		L_{max}, dB(A)	Leq, 24 hrs, dB(A)
			0700-2300 hrs	2300-0700 hrs		0700-2300 hrs	2300-0700 hrs		
Existing WRL NSRs									
WR-E1	Premises to the southwest of Yick Yuen Tsuen	A	60	50	8.7	50	48	57	49
WR-E2	Premises to the east of Oakland Court	A	60	50	8.5	48	47	54	48
WR-E3	Premises to the southwest of Tin Sum Tsuen	A	60	50	7.7	43	41	48	43
WR-E4	Premises to the West of San Lee Uk Tsuen	A	60	50	6.5	47	46	51	47

NAP	Description	Area Sensitivity Rating	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		L_{max}, dB(A)	Leq, 24 hrs, dB(A)
			0700-2300 hrs	2300-0700 hrs		0700-2300 hrs	2300-0700 hrs		
WR-E5	Premises to the West of San Lee Uk Tsuen Block 3,Galore Garden	A	60	50	6.9-9.9	47-48	46-47	52-54	47-48
WR-E6	Shek Po Tsuen Village House Premises to the southwest of Yick Yuen Tsuen Premises to the east of Oakland Court	A	60	50	6.4-15.4	47-49	45-47	51-54	47-49
WR-E7	Premises to the southwest of Tin Sum Tsuen	A	60	50	5.2-8.2	45	44	46-47	45
Project Planned WRL NSRs									
WR-P1	Residential Development in Site 4-6	B	65	55	10.0-141.0	42-52	41-51	42-53	42-52
WR-P2	School in Site 4-8	B	65	[a]	11.0-47.0	42-47	[a]	41-48	42-48
WR-P3	Residential Development in Site 4-10	B	65	55	11.0-166.0	43-54	41-52	43-55	43-54
WR-P4	Residential Development in Site 4-20	B	65	55	11.0-19.0	50-54	48-53	56-62	49-54
WR-P5a	Residential Development in Site 4-22	B	65	55	11.0-127.0	42-53	41-52	48-62	40-53
WR-P5b	Residential Development in Site 4-22	B	65	55	11.0-127.0	41-53	40-51	49-64	40-53
WR-P5c	Residential Development in Site 4-2	B	65	55	11.0-127.0	39-49	39-48	45-60	36-49
WR-P5d	Residential Development in Site 4-22	B	65	55	11.0-127.0	45-58	44-**56**	51-67	44-58
WR-P5e	Residential Development in Site 4-22	B	65	55	11.0-127.0	46-58	45-**57**	51-65	45-58
WR-P5f	Residential Development in Site 4-22	B	65	55	11.0-127.0	47-59	46-**58**	52-66	47-59
WR-P6a	Residential Development in Site 4-25	B	65	55	12.0-178.0	39-52	38-51	40-57	37-52
WR-P6b	Residential Development in Site 4-25	B	65	55	12.0-178.0	39-52	37-51	39-57	37-52
WR-P6c	Residential Development in Site 4-25	B	65	55	12.0-178.0	38-51	37-49	37-55	37-51

NAP	Description	Area Sensitivity Rating	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		L_{max}, dB(A)	Leq, 24 hrs, dB(A)
			0700-2300 hrs	2300-0700 hrs		0700-2300 hrs	2300-0700 hrs		
WR-P7a	Residential Development in Site 4-29	B	65	55	13.0-171.0	44-56	43-55	49-63	44-56
WR-P7b	Residential Development in Site 4-29	B	65	55	13.0-171.0	47-59	45-**57**	50-64	47-59
WR-P7c	Residential Development in Site 4-29	B	65	55	13.0-171.0	45-57	44-**56**	50-64	45-57
WR-P8	School in Site 4-36	B	65	[a]	12.0-48.0	43-52	[a]	46-56	43-52
WR-P9a	Residential Development in Site 5-17	B	65	55	7.0-111.0	42-54	41-53	48-61	42-54
WR-P9b	Residential Development in Site 5-17	B	65	55	7.0-111.0	44-55	42-54	49-62	44-55
WR-P10	School in Site 5-21	B	65	[a]	6.0-43.0	49-**67**	[a]	56-74	48-**67**
WR-P11	School in Site 5-34	B	65	[a]	7.0-43.0	42-46	[a]	42-47	42-46

Notes:
[a] Educational use is not considered as a night-time NSR.
Numbers in bold denote exceedances of the noise criteria.

LRT Noise

4.8.10 The predicted air-borne noise levels from LRT with respect to the representative site layouts confirmed with relevant departments are presented in **Table 4.37**. The full list of predicted levels with respect to mPD is shown in **Appendix 4.8.4.** It is noticed that low level of the NSRs LR-P5a & P6 would exceed the night-time criteria. It is predicted that a total of about 30 planned dwellings will be exposed to LRT noise impact under unmitigated scenario. Mitigation measures are required to reduce the rail noise impact during LRT operation.

Table 4.37 LRT Noise Calculation Summary – Unmitigated

NAP	Site No.	Area Sensitivity Rating	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		Lmax, dB(A)	Leq, 24 hrs, dB(A)
			0700-2300 Hrs	2300-0700 hrs		0700-2300 hrs	2300-0700 hrs		
Existing LRT NSRs									
LR-E1	Parkview Garden Block 24 - 27	C	70	60	12.5-21.5	60-61	60	71-72	59
LR-E2	Tak Cheung Building	C	70	60	11.6-29.6	57-60	57-60	66-70	56-59
LR-E3	Beauty Court Block 1	C	70	60	10.4-46.4	54-57	54-57	61-66	53-56
LR-E4	Coronet Court	C	70	60	10.1-46.1	55-58	55-58	62-67	54-57
LR-E5	Park Nara Tower 1	C	70	60	10.6-46.6	55-58	54-58	62-68	53-57
LR-E6	Village House in Hung Uk Tsuen facing Kiu Hung Road	C	70	60	5.5-14.5	58	58	64	57
LR-E7	Ling Liang Church	C	70	[a]	13.5-16.5	58	[a]	66	56-57
Project Planned LRT NSRs									
LR-P1	Residential Development in Site 4-22	C	70	60	11.0-127.0	48-51	48-51	49-55	46-50
LR-P2	Residential Development in Site 4-26	C	70	60	12.0-152.0	49-54	48-54	48-58	47-52
LR-P3a	Residential Development in Site 4-28	C	70	60	13.0-144.0	51-57	51-57	55-66	50-55
LR-P3b	Residential Development in Site 4-28	C	70	60	13.0-144.0	50-58	50-57	55-68	49-56
LR-P4	School in Site 4-33	C	70	[a]	12.0-48.0	59-64	[a]	69-78	58-63
LR-P5a	Residential Development in Site 5-7b	B	65	55	5.0-142.0	50-55	50-**56**	49-61	50-55
LR-P5b	Residential Development in Site 5-7b	B	65	55	5.0-142.0	49-55	49-55	49-60	49-55
LR-P5c	Residential Development in Site 5-7b	B	65	55	5.0-142.0	48-54	49-55	50-62	49-54
LR-P6	Residential Development in Site 5-9	B	65	55	5.0-152.0	50-56	51-**56**	52-63	50-56

Notes:
[a] Educational use and church is not considered as a night-time NSR.
Numbers in bold denote exceedances of the noise criteria.

Rail Noise Mitigation Measures Options

4.8.11 Based on the assessment results, those rail noise level of exceeding the criteria are less than 3 dB(A), the acoustic fins, non-sensitive use or fixed glazing and layout set back at the NSR are considered effective to reduce the noise impact. Moreover, planning strategy including commercial buildings screening and residential buildings orientation are considered against rail noise during the development of the revised RODP. Predicted noise levels of mitigated NSRs are enclosed in **Appendix 4.8.5**. None of the dwellings will exceed the noise criteria due to rail noise under mitigated scenario.

Architectural Fins

4.8.12 Architectural fins are typical noise mitigation measure for buildings units impacted by traffic or rail noise. For NSR WR-P5d and LR-P5a, 2 m fins has been proposed for the dwellings to narrow the angle of view to the railway track. The noise level of the NSR screened by architectural fins were assessed and the mitigated noise level satisfy the noise criteria as shown in **Table 4.38** and **Figure 4.8.2 – 4.8.4**.

Non-Sensitive Use or Fixed Glazing

4.8.13 For those façade NAP with exceedance, the NAP would be relocated to another positions with smaller angle of view facing the railway and the façade NAP with exceeded the criteria are designed as non-sensitive use or fixed glazing. The noise level of relocated NAPs at WR-P5e, P5f and LR-P6a are satisfied the noise criteria and shown in **Table 4.38** and **Figure 4.8.2 & 4.8.4**.

Layout Setback

4.8.14 Some of the proposed development sites has a potential of shifting the layout as well as set-back away from the existing railway line. The setback provides a sufficient buffer distance and attenuation in terms of noise propagation. It was proposed to setback the layout of Site 4-29 and Site 5-21 from the WRL to a distance of 70 m and 25 m as shown in **Figure 4.8.5 and Figure 4.8.6 respectively**, the assessed noise level at NAP WR-7b, WR-P7c and WR-P10 would satisfy the noise criteria as shown in **Table 4.38**.

Table 4.38 Rail Noise Calculation Summary – Mitigated

NAP	Proposed Mitigation Measures	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		Lmax, dB(A)	Leq, 24 hrs, dB(A)
		Daytime /evening	Night-time		0700-2300 hrs	2300-0700 hrs		
WR-P5d	2 m Architectural fin	65	55	11.0-127.0	42-51	41-50	45-60	37-51
WR-P5e.1	1.5 m Architectural fin + Relocation to non-sensitive use or fixed glazing	65	55	11.0-127.0	43-55	42-54	49-63	43-55
WR-P5f.1	Relocation to non-sensitive use or fixed glazing	65	55	11.0-127.0	45-57	43-55	51-65	44-57
WR-P7b	Layout Set Back to 70 m from WRL	65	55	13.0-171.0	45-57	44-55	48-61	45-57
WR-P7c	Layout Set Back to 70 m from WRL	65	55	13.0-171.0	44-56	43-54	48-61	44-56
WR-P10	Layout Set Back to 25 m from WRL	65	[a]	6.0-43.0	48-63	[a]	54-70	47-63
LR-P5a	2 m Architectural fin	65	55	5.0-142.0	49-54	49-55	49-61	49-54
LR-P6.1	Relocation to non-sensitive use or fixed glazing	65	55	5.0-152.0	48-53	49-54	53-63	48-53

NAP	Proposed Mitigation Measures	Noise Criteria, dB(A)		mPD	Leq, 30min, dB(A)		Lmax, dB(A)	Leq, 24 hrs, dB(A)
		Daytime /evening	Night-time		0700-2300 hrs	2300-0700 hrs		
LR-P6.2	1.3 m Architectural fin + Relocation to non-sensitive use or fixed glazing	65	55	5.0-152.0	47-53	48-54	51-62	47-53
LR-P6.3	Relocation to non-sensitive use or fixed glazing	65	55	5.0-152.0	49-55	49-55	52-63	49-55

Notes:
[a] Educational use is not considered as a night-time NSR.

Rail Noise Impact Assessment for Development Sites

4.8.15 For the new developments in the OZP, the future development proponents should conduct a stand-alone Railway Noise Impact Assessment (RNIA) to assess the potential noise impacts from rail operations on future occupants, and implement the aforesaid or other specific designed noise mitigation measures at their respective development sites to the satisfaction of EPD, to ensure full compliance with the statutory noise limits. The above development requirements would be imposed through relevant Planning Briefs or Land Lease conditions to be fulfilled by the future development proponents. Sites require RNIA include: 4-6, 4-8, 4-10, 4-22, 4-25c, 4-26, 4-28, 4-29, 4-31, 4-32, 4-33, 4-36, 5-7b, 5-9, 5-17, 5-21, 5-32 and 5-34.

Environmentally Friendly Transport Services

4.8.16 An EFTS is proposed to be introduced to operate within the Project. The alignment of EFTS is shown in **Figure 4.8.7.**

4.8.17 Several modes of EFTS, including LRT, trolley bus, automatic people mover (APM), monorails, modern tramway and electric / LPG bus, will be investigated in later stage. No updated information was available at the time of preparing this report. For conservative noise assessment, the rail based EFTS was assumed for rail noise impact assessment. As shown in **Figure 4.8.7**, all of the NSRs are planned with at least 10 m buffer distance from the proposed alignment for EFTS. A reference scheme was developed with the assumptions and assessed level shown in **Table 4.39**.

Table 4.39 Rail based EFTS Reference Scheme

Items	Description
Type of source	Automated guideway transit, steel wheel, welded rail
Noise source level	SEL 80 dB(A) at 50 feet and 50 mph Ref: Table 5-1 Transit Noise and Vibration Impact Assessment FTA-VA-90-1003-06 May 2006 by Office of Planning and Environment Federal Transit Administration
NSR Distance from track	10 m
Operating speed	Assumed 40 kph
Frequency	Assumed 5 trains per headway
Calculated Noise level at NSR boundary	57.2 dB(A) > night-time noise criteria of 55 dB(A)
Track enhancement	• Embedded rail of 3 dB(A) reduction • Green track with vegetation 2 dB(A) reduction Reference material as shown in **Appendix 4.8.6**
Noise level at NSR after track enhancement	< 55 dB(A) complied with night-time noise criteria of HSKNDA

4.8.18 In case a rail cross or joint is designed for the EFTS, such cross joint location should be located at the section with largest distance between the track and the NSR. Alternatively, erect a noise barrier or enclosure at the cross joint section to control the noise impact to the nearby NSRs.

4.8.19 There is no design and operation detail of the EFTS during this Schedule 3 EIA. In any case there are changes to the assumption in **Table 4.39** and causing an exceed of the noise level compared with the criteria, the EFTS project proponent should implement further noise mitigation measures such as noise barrier and enclosure to control the noise impact by the EFTS to satisfy the noise criteria. Noise barrier and enclosure are effective and traditional mitigation measures to reduce rail noise by 10 dB(A) and 15 dB(A) respectively.

4.8.20 As discussed in **Chapter 2** of this report, the proposed EFTS is a Schedule 2 DP under the EIAO. The proposed EFTS will be designed, constructed and operated by the others. The associated environmental impacts will be adequately addressed in a further detailed EIA study to be prepared and submitted under the EIAO by the respective project proponent. Adverse noise impacts from EFTS are therefore not expected.

Cumulative Impact

4.8.21 The existing WRL is running at the centre of the Project area and the LRT is running along Castle Peak Road close to the southern Project area. The cumulative impact is not anticipated by both existing rail to the planned and existing NSRs. However, the proposed EFTS would run from the southern Project area near Nai Wai LRT station to the northern of the Project area and end at TSW Station. As shown in the EFTS alignment, there is potential cumulative rail noise impact to those NSRs by both EFTS, LRT and WRL for Site 4-22 at the southern Project area. If the cumulative noise level to Site 4-22 evaluated by the EFTS project proponent exceeds the noise criteria, the noise level of the EFTS should be further mitigated by means of measure mentioned in **Section 4.8.17** to a level of ANL-10 dB(A) at the Site 4-22 NSR.

Evaluation of Residual Environmental Impacts

4.8.22 WRL would be the major mass transit railway for the Project area. A new HSK Station would be built to serve the community to and from urban area. The operation of WRL will generate noise impact to some of the planned development. Noise control measure should be considered during the planning of the land use and the design of building. Different noise mitigation measures such as layout set back, relocation of noise sensitive uses or implementation of fixed glazing and architectural fins are considered effective mitigation measures. With the mitigation measures in place, the predicted noise level of all dwellings would satisfy the noise criteria in the TM.

4.8.23 LRT will continue running in Castle Peak Road along the southern Project area. Planned developments may expose to the LRT noise without any screening obstacles and result in noise impact. Mitigation measures such as architectural fin and relocation of habitable windows are suggested to abate the rail noise impact.

4.8.24 In conclusion, the future development proponents should conduct a stand-alone Noise Impact Assessment (NIA) to assess the potential noise impacts from rail operations on future occupants, and implement the aforesaid or other specific designed noise mitigation measures at their respective development sites to the satisfaction of EPD, to ensure full compliance with the statutory noise limits. The above development requirements would be imposed through relevant Planning Briefs or Land Lease conditions to be fulfilled by the future development proponents.

Attachment B1

Revised SIA Report (Textual Revisions)

Section 16 Planning Application for Proposed Mixed-Use Development (Proposed Flat with Permitted Commercial Uses) in Planning Area 32B, Hung Shui Kiu, New Territories
(Application No.: A/HSK/619)

Sewerage Impact Assessment

August 2026

Delivering a better world

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AREA 32B/SIA/Figure 2 Master Layout Plan

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Annexes

Annex 1 Proposed Development Sewage Estimation

Annex 2 Swimming Pool Backwash Calculation

Annex 3 Hydraulic Checking

Annex 4 Baseline Sewage Estimation

1. Introduction

1.1 Background

1.1.1 AECOM Asia Company Limited (AECOM) has been commissioned by the project proponent to act as the engineering consultant to conduct a Sewerage Impact Assessment (SIA) for a private mixed-use development in Hung Shui Kiu, New Territories.

1.1.2 The S16 Planning Application involves Area 32B with total area of 13,601 m^2; referred as the "Application Site". The Site is located next to the Kong Sham Western Highway. Location plan of the Application Site refers to figure no. **AREA 32B/SIA/Figure 1**.

1.1.3 The Application Site falls within “C(1)” zone on the Draft Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/3. and lies within Hung Shui Kiu / Ha Tsuen (HSK/HT) New Development Area (NDA). According to the OZP, commercial uses including ‘Hotel’, ‘Office’, ‘Eating Place’, ‘Shop and Services’, etc. are always permitted in “C(1)” zone; while ‘Flat’ use is under Column 2, planning permission is therefore required for the proposed residential use in Site A of the Application Site.

1.1.4 This SIA report reviews the sewerage impact of the proposed development and serves as a supporting document for the S16 Planning Application.

1.2 Objective of this Submission

1.2.1 This report outlines the assessment results of the potential sewerage impacts caused by the Proposed Development at the Application Site. The main objectives of this assessment include the followings:

(i) Identify any increase in sewage flow due to the Proposed Development.

(ii) Review the existing sewerage condition of the Application Site based on available information.

(iii) Outline the methodology adopted in this assessment.

(iv) Assess any potential impact on the existing or planned sewerage facilities nearby due to the Proposed Development.

(v) Propose mitigation measures and/or improvement works to minimize any potential sewerage impact from the Proposed Development.

(vi) Discuss the responsibility of the construction and maintenance aspects of the proposed sewerage system.

1.3 Nomenclature

1.3.1 The following abbreviations and shortened expressions in **Table 1** are adopted in this report.

ADWF	Average Dry Weather Flow
AECOM	AECOM Asia Company Limited
CIF	Catchment Inflow Factor
CIFSUS	Commercial and Industrial Floor Space Utilization Survey (PlanD)
DSD	Drainage Services Department
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
F&B	Food and Beverage
GESF	Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0 (EPD)
GFA	Gross Floor Area
mPD	Metres above Principal Datum
PlanD	Planning Department
SWSTW	San Wai Sewage Treatment Works
HSKEPP	Hung Shui Kiu Effluent Polishing Plant
SIA	Sewerage Impact Assessment
UFF	Unit Flow Factor

Table 1 – Nomenclature

2. Development Proposal

2.1 The Indicative Development Proposal

2.1.1 The Application Site area is approximately 13,601m^2. Under the Proposed Development, the total plot ratio is not more than 9.5. (i.e. the total GFA is not more than 129,210m^2) The Applicant proposed 71,066m^2 as non-domestic GFA for the permitted commercial use as of right, whereas the remaining 58,144m^2 GFA would be used for the proposed residential development.

2.1.2 The Proposed Development consists of Site A and Site B. Site A will be developed with 1,240 residential units, recreational facilities, and some permitted commercial use (e.g. retail). Site B will be developed with retail and office development, as well as a hotel which provides 924 rooms. The anticipated completion year of the Application Site (except for the remaining non-domestic GFA to be implemented at a later stage under the arrangement of "Pay for What You Build" Pilot Scheme) is 2033. Details refers to **Remark (3)** of **Table 2**.

2.2 Base Case for Area 32B

2.2.1 With reference to the draft Hung Shui Kiu and Ha Tsuen Outline Zoning Plan (HSK/HT OZP) No. S/HSK/3, the allowed maximum plot ratio is PR 9.5 and the total GFA is not more than 129,210m^2. As specified in the Outline Development Plan (ODP) No. D/HSK/1, the development mix for Area 32B is: 45% GFA for office use, 20% GFA for hotel use and 35% for retail use. Based on this mix, a hypothetical base case scenario is formed for sewage generation estimation.

2.2.2 The comparison table of development parameters between the base case and proposed development is summarized in **Table 2** below.

	Base Case	Proposed Development (Site A)	Proposed Development (Site B)
Site Area	13,601m^2	8,967m^2	4,634m^2
Total PR (not more than)	9.5	7.1	14.2
		9.5 (Site A + Site B)	
Total GFA (not more than)	129,210m^2	63,365m^2	65,845m^2
		129,210m^2 (Site A + Site B)	
Domestic Portion			
Total Domestic GFA (not more than)	-	58,144m^2	-
No. of Units	-	1,240	-
Population (1)	-	3,348	-
Domestic Portion – Resident's Recreational Facilities (2)	-	2,325m^2	-
Non-Domestic Portion – Retail			
Total Non-Domestic GFA	45,223.5m^2	5,221m^2 (3)	354m^2 (3)
Non-Domestic Portion – Hotel			
Total Non-Domestic GFA	25,842m^2	-	27,871m^2 (3)
No. of Hotel Rooms	-	-	924
Non-Domestic Portion – Office			
Total Non-Domestic GFA	58,144.5m^2	-	37,620m^2
Non-Domestic Portion – Office (Completed in 2033)			
Total Non-Domestic GFA	-	-	9,290m^2 (3)
Non-Domestic Portion – Office (Remaining)			
Total Non-Domestic GFA	-	-	28,330m^2

Table 2 – Key Development Parameters

Remarks:
(1) A person per flat of 2.7 is assumed.
(2) Or such other areas of clubhouse as may be approved by the Buildings Department based on the total permissible domestic GFA for individual land parcel (site under the Buildings Ordinance) at the future General Building Plans.
(3) Drawing upon the spirit of the "Pay for What You Build" Pilot Scheme, about 60% of the non-domestic GFA in Area 32B (i.e. about 42,736m^2) will be implemented first by the target completion year 2033. The GFA to be distributed in both Site A and Site B are 5,221m^2 and 37,515m^2 respectively.

3. Assessment Methodology

3.1 Overview of Methodology

3.1.1 This assessment is carried out to assess the sewerage impact arising from the Proposed Development on the sewerage system.

3.1.2 The sewage generated from the Proposed Development is estimated according to "Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning" (GESF) published by Environmental Protection Department (EPD). The sewage calculation is in accordance with the Sewerage Manual published by Drainage Services Department (DSD).

3.2 Methodology and Assumptions

3.2.1 The adopted sewage unit flow factors for sewage estimation and calculation are summarized in **Table 3**.

Development Type	Flow Type	Unit Flow Factor (UFF) (m^3/head/day)
Residential	R2	0.27
Retail Trade	J4	0.28
Finance, Insurance, Real Estate & Business Services	J6	0.08
Restaurants & Hotels	J10	1.58
Community, Social & Personal Services (Clubhouse)	J11	0.28

Table 3 – Unit Flow Factors

3.2.2 For the non-domestic population, the worker density adopted for business use is referred to Commercial and Industrial Floor Space Utilization Survey (CIFSUS). The adopted worker density is summarised in **Table 4**.

Commercial Activities	Workers per GFA (in 100 m^2)
Restaurants & Hotels	5.1
Retail Trade	3.5
Financial, Insurance, Real Estate & Business Services	5.5
Community, Social & Personal Services (Clubhouse)	3.3

Table 4 – Worker Density

3.2.3 The peaking factor is referred to Table T-5 of GESF. The adopted worker density are summarized in **Table 5**.

Population Range	Peaking Factor (including stormwater allowance) for facility with existing upstream sewerage)	Peaking Factor (excluding stormwater allowance) for facility with new upstream sewerage
5,000 – 10,000	5	4

Table 5 – Peaking Factor

4. Review on Existing and Planned Sewerage System

4.1 Existing and Planned Sewerage System

4.1.1 The Application Site is currently unsewered and it is within the sewerage catchments for Hong Shui Kiu/ Ha Tsuen New Development Area (HSK/HT NDA). It is noted new sewerage network (including pumping stations) is proposed under CEDD consultancy Agreement No. CE 1/2020(CE) HSK/HT NDA Package A Works for Second Phase Development – Design and Construction to cater for sewage flows due to population intensification of HSK/HT NDA. The Proposed Development will rely on the proposed sewerage infrastructure proposed by CEDD.

4.1.2 With reference to Planning Application No.: A/HSK/452, the design capacity of the Sewage Pumping Station No.1 (SPS1) and the Sewage Pumping Station No.2 (SPS2) is 28,874m^3/day and 42,255m^3/day respectively. The sewage would be ultimately conveyed to the planned Hung Shui Kiu Effluent Polishing Plant (HSKEPP). With reference to HSKEPP website, the treatment capacity (i.e. ADWF) of HSKEPP is 90,000m^3/day. It is noted CEDD is currently reviewing the design capacities of the sewage pumping stations. At subsequent stages, the Applicant will submit an updated SIA upon receipt of updated information on the sewerage system via discharge of relevant planning approval condition.

4.1.3 Under DSD project PWP No. 4463DS, the HSKEPP is currently under Phase 1 construction to provide a sewage treatment capacity of 60,000m^3/day and is anticipated to be completed in mid-2031. Under DSD project PWP No. 4428DS, the HSKEPP will increase the sewage treatment capacity from 60 000m^3/day to 90 000 m^3/day. It is currently under planning and design stage.

4.2 Base Case Sewage Estimation

4.2.1 A base case scenario of sewage estimation for Area 32B is calculated based on ODP development mix aforementioned in Para 2.2.1 to predict the sewage estimation under HSK/HT NDA. The total estimated ADWF of Area 32B is approximately 2,389.4m^3/day. Detailed calculation refers to **Annex 4**. **Table 6** below presents the summary of sewage flow estimation of the base case scenario.

Flow Type	Average Dry Weather Flow (ADWF) (m^3/day)
Base Case	
Hotel	730.0
Office	255.8
Retail – Retail Trade	310.2
Retail – Restaurant	1,093.4
Total ADWF	**2,389.4**

Table 6 – Sewage Estimation for the Base Case Scenario

4.3 Impact on Sewerage System

4.3.1 With reference to approved EIA for HSK/HT NDA, the Proposed Development is within the sewerage catchment of proposed SPS1 under HSK/HT NDA.

4.3.2 The estimated ADWF generated from the Proposed Development is about 2088.6m^3/d. The peak flow generated from the Proposed Development including the backwash for swimming pool is 0.135m^3/s. Detailed calculation refers to **Annex 1**. The swimming pool backwash calculation refers to **Annex 2**. **Table 7** below presents the summary of sewage flow estimation of the Proposed Development.

Flow Type	Average Dry Weather Flow (ADWF) (m^3/day)
Site A	
Residential	903.96
Clubhouse	21.56
F&B	211.72
Retail	25.76
Site B	
Hotel	729.96
Office (completed in 2033)	40.88
Office (Remaining)	124.72
F&B	30.02
Total ADWF (excl. Backwash)	**2,088.58**
Outdoor Swimming Pool Backwash	0.046m^3/s
Indoor Swimming Pool Backwash	0.031m^3/s

Table 7 – Sewage Estimation for the Proposed Development

Note:
(1) Swimming pool backwash will last 3 minutes per day

4.4 Sewage Discharge Comparison between Base Case and Proposed Development

4.4.1 Sewage estimation results show that the sewage discharge (i.e. ADWF) from Proposed Development is less than the base case scenario. (i.e. 2088.6m^3/d < 2389.4m^3/d) It is anticipated the planned sewerage infrastructure under HSK/HT NDA is sufficient to cater for the Proposed Development for Area 32B. According to CEDD information provided, the sewage estimation for Area 32B is 1,517m^3/day. In addition, refer to recently published in 2026 Policy Address, the Government will develop 3 University Towns. One of each will be situated in the core area of Hung Shui Kiu New Development Area (i.e. changes in land use and planning information of the commercial sites located in the same sewage catchment of the Subject Site, discharge to HSK sewage pumping station No.1). Furthermore, sewage flow from other planned developments is necessary to be considered within the HSK/HT NDA. It is noted CEDD is currently reviewing the entire sewerage system of HSK/HT NDA. It is noted CEDD is currently reviewing the entire sewerage system of HSK/HT NDA. At subsequent stages, the Applicant will submit an updated

SIA upon receipt of updated information on the sewage flow and sewerage system via discharge of relevant planning approval condition.

5. Proposed Sewerage System

5.1 Proposed Sewerage Connection

5.1.1 The sewage generated from the Application Site would be discharged via internal sewerage network leading to the proposed terminal manhole no. FTMH01 located close to the site boundary and connected to proposed sewer manhole no. FMH01 to be constructed by CEDD under HSK/HT NDA project via CEDD reserved NS500 PE100 sewer. The proposed sewerage layout refers to figure no. **Area 32B/SIA/Figure 3**.

5.1.2 The sewage will be conveyed to the proposed SPS1 through planned gravity sewers, and then to the proposed SPS2 through planned rising mains and gravity sewers constructed by CEDD under HSK/HT NDA. The sewage will subsequently be discharged to the CEDD planned HSKEPP. The location of the proposed sewerage facilities and indicative sewerage alignment constructed by CEDD refers to figure no. **Area 32B/SIA/Figure 4.**

5.1.3 Hydraulic calculation as shown in **Annex 3** shows that sewage discharged from the Proposed Development utilises about 76% of the capacity of the CEDD reserved NS500 PE100 sewer connected from FTMH01 to CEDD proposed sewer manhole FMH01.

5.1.4 Sewage discharged from the Application Site contribute to about 7.2% of the capacity of the SPS1. Hence, the sewerage impact is considered insignificant.

5.1.5 It is understood that the entire sewerage system (including the pumping stations and sewage treatment facilities) for the HSK / NT NDA will be subject to further reviewed and upgrading where necessary by the Government in light of the latest developments. At subsequent stages, the Applicant will submit an updated SIA via discharge of relevant planning approval condition. The sewerage impact would be further assessed based on the final sewage disposal scheme and subject to any updates on the design parameters (e.g. the projected population, sewage estimates, sewer connection arrangements) of the proposed development in the planning or lease stage. Any necessary upgrading works for connecting sewers and associated manholes for the Subject Site will be carried out accordingly. The Applicant will keep close liaison with respective Government department(s) and seek confirmation from all relevant Government authorities on this submission and implementation approach at subsequent detailed design stages.

6. Maintenance Responsibility

6.1.1 The development will be responsible for construction of the internal sewer and sewerage manholes within the Application Site. The development will be responsible for the maintenance of the internal sewer and manholes within the Application Site.

6.1.2 The Proposed Development will be responsible for construction of all necessary sewerage connection works to the public sewerage system. The sewerage systems outside the site boundary are proposed to be handed over to relevant government department for future maintenance.

7. Conclusion

7.1.1 This SIA report serves as a supporting document for proposing a mixed-use development with residential and commercial uses. The SIA has been carried out to assess the potential sewerage impact due to the Proposed Development.

7.1.2 The ADWF generated from the Application Site is about 2088.6m^3/d (excluding the backwash for swimming pool). The peak flow generated from the Proposed Development including the backwash for swimming pool is 0.174 m^3/s.

7.1.3 The sewage will be conveyed to the proposed SPS1 and then to the proposed SPS2. The sewage will subsequently be discharged to the planned HSKEPP. With the implementation of the proposed sewerage arrangement, no adverse impact from sewerage aspect is anticipated.

7.1.4 The entire sewerage system (including the pumping stations and sewage treatment facilities) for the HSK / NT NDA will be subject to further reviewed and upgrading where necessary by the Government in light of the latest developments. At subsequent stages, the Applicant will submit an updated SIA via discharge of relevant planning approval condition. The sewerage impact would be further assessed based on the final sewage disposal scheme and subject to any updates on the design parameters (e.g. the projected population, sewage estimates, sewer connection arrangements) of the proposed development in the planning or lease stage. Any necessary upgrading works for connecting sewers and associated manholes for the Subject Site will be carried out accordingly.

End of Report

Figure

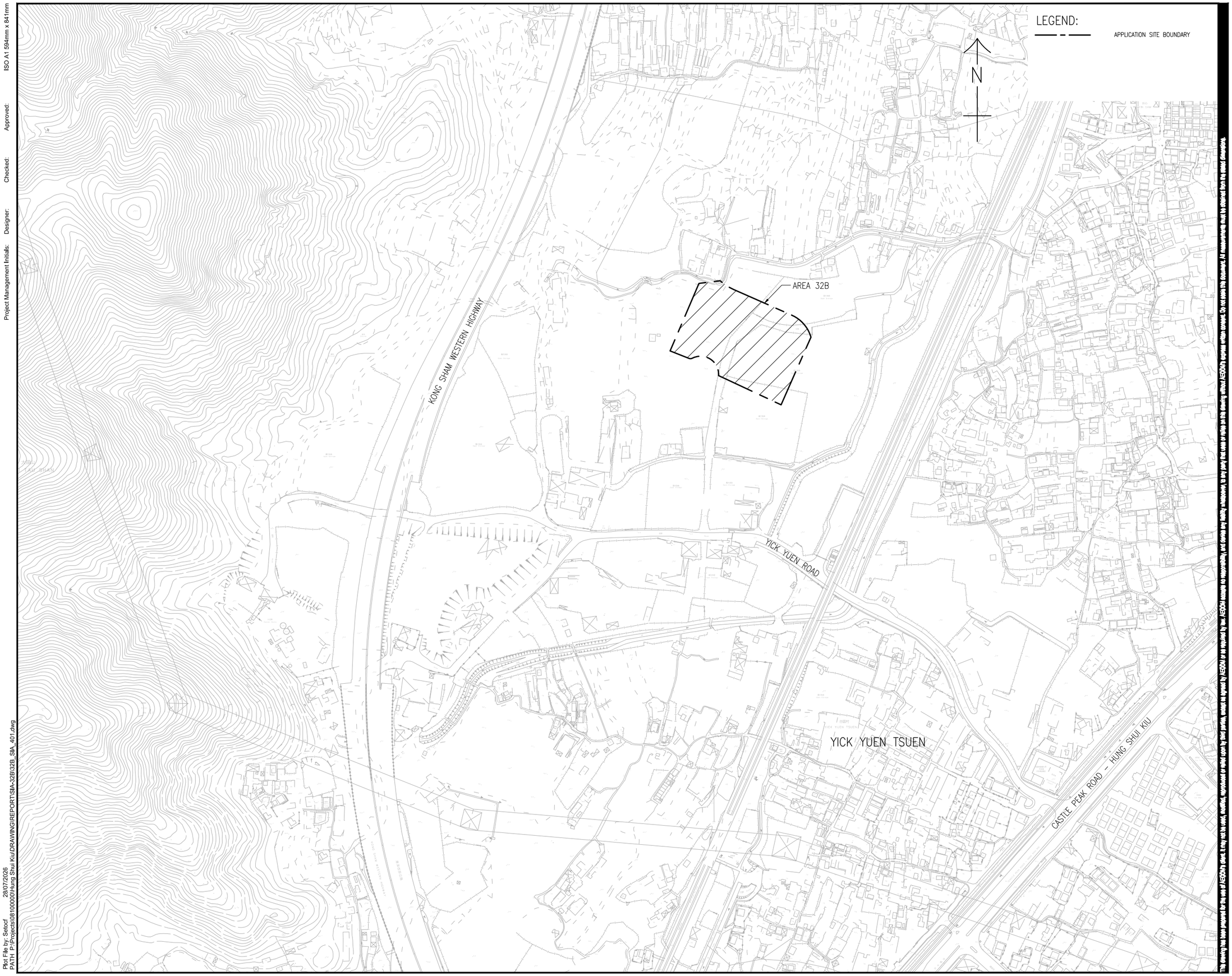
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SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH PERMITTED COMMERCIAL USES IN PLANNING AREA 32B, HUNG SHUI KIU, NEW TERRITORIES

CLIENT

SUN HUNG KAI REAL ESTATE AGENCY LTD.

CONSULTANT

AECOM Asia Company Ltd.
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HUNG SHUI KIU

SHEET TITLE

LOCATION PLAN

SHEET NUMBER

AREA 32B/SIA/FIGURE 1

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816500 E

816750 E

832700 N

832500 N

LEGEND:

APPLICATION SITE BOUNDARY

DEVELOPMENT SITE DEMARCATION LINE

RUN-IN / OUT

RESIDENTIAL

HOTEL / OFFICE

LANDSCAPE AREA / PODIUM DECK

CLUBHOUSE

SWIMMING POOL

HOTEL / OFFICE
T1
+152.0

SITE B

SHUTTLE LIFT

RESIDENTIAL
T3
+181.5

HOTEL / OFFICE
T2
+190.0

SITE A

RESIDENTIAL
T2
+185.0

VEHICULAR ACCESS / EVA

RESIDENTIAL
T1
+192.0

Nullah

Track

露天貨倉
Open Storage

貨倉
Storage

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11/08/2026

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SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH PERMITTED COMMERCIAL USES IN PLANNING AREA 32B, HUNG SHUI KIU, NEW TERRITORIES

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HUNG SHUI KIU

SHEET TITLE

MASTER LAYOUT PLAN

SHEET NUMBER

AREA 32B/SIA/FIGURE 2

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816500 E

816750 E

832700 N

832500 N

LEGEND:

APPLICATION SITE BOUNDARY

DEVELOPMENT SITE DEMARCATION LINE

RUN-IN / OUT

RESIDENTIAL

HOTEL / OFFICE

LANDSCAPE AREA / PODIUM DECK

CLUBHOUSE

SWIMMING POOL

HOTEL / OFFICE
T1
+152.0

SITE B

HOTEL / OFFICE
T2
+190.0

SHUTTLE LIFT

RESIDENTIAL
T3
+181.5

SITE A

RESIDENTIAL
T2
+185.0

RESIDENTIAL
T1
+192.0

VEHICULAR ACCESS / EVA

FTMH01

FMH01

REFER TO FIGURE "AREA 32B/SIA/FIGURE 4" FOR INDICATIVE SEWERAGE ALIGNMENT CONNECTED TO SPS1

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Open Storage

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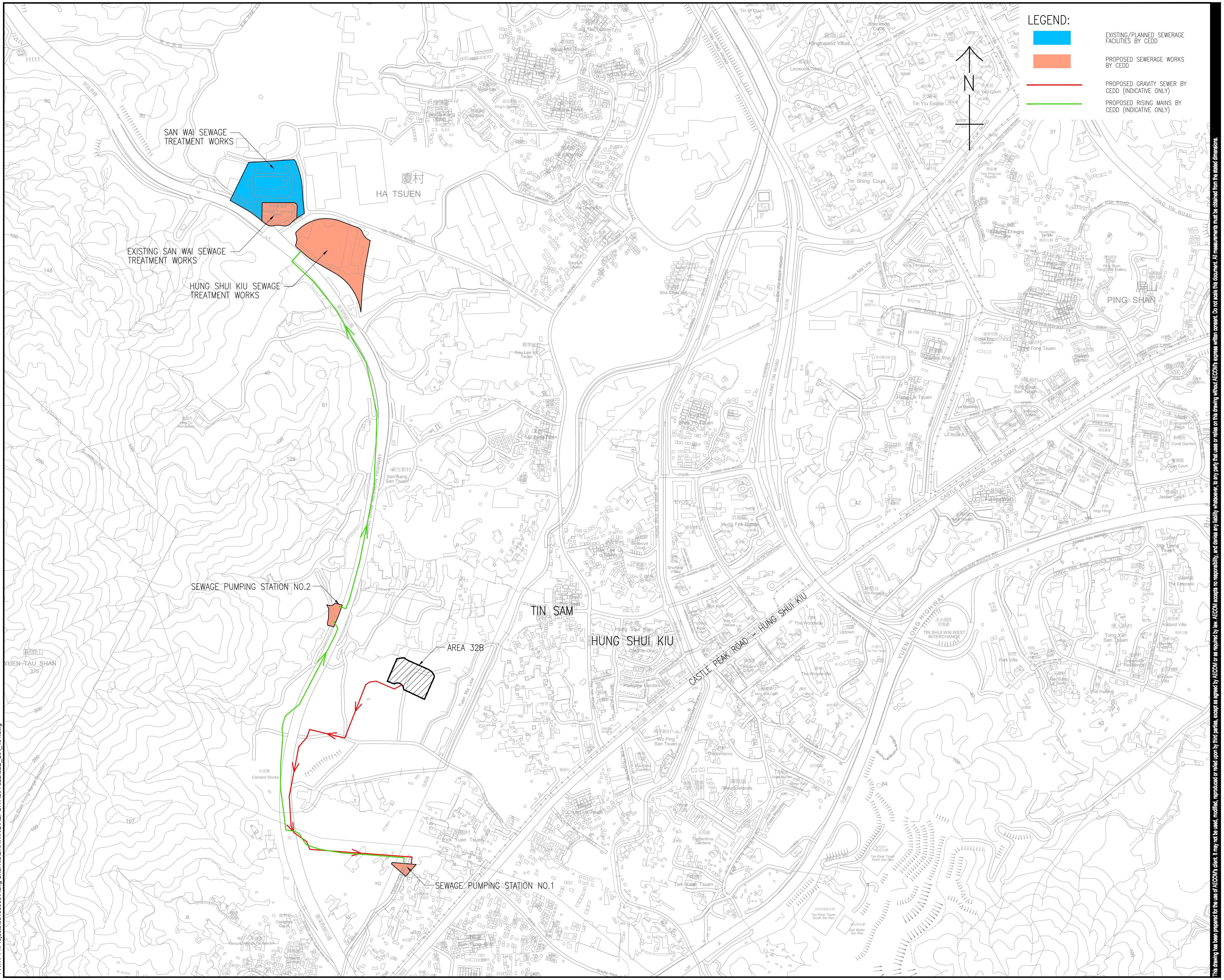
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PROPOSED SEWERAGE LAYOUT

SHEET NUMBER

AREA 32B/SIA/FIGURE 3

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SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH PERMITTED COMMERCIAL USES IN PLANNING AREA 32B, HUNG SHUI KIU, NEW TERRITORIES

CLIENT
業主

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尺寸單位

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索引圖

PROJECT NO.
項目編號

HUNG SHUI KIU

AGREEMENT NO.
協議編號

SHEET TITLE
圖紙名稱

PROPOSED SEWERAGE LAYOUT BY CEDD

SHEET NUMBER
圖紙編號

AREA 32B/SIA/FIGURE 4

Annex 1

Proposed Development Sewage Estimation

AECOM **Annex 1 - Proposed Development Sewage Estimation**

Proposed Development

Site A						
Residential						
No. of Units	1,240					
PPoF [1]		**Development Type**		**Population**	**Unit Flow Factor**	**ADWF (m^3/d)**
2.7		Private R2		3,348	0.27	903.96
Workers	**GFA (m^2)**	**Worker's Type**	**Workers per GFA (in 100m^2)** [3]	**Employee**	**Unit Flow Factor**	**ADWF (m^3/d)**
GFA for Clubhouse (m^2)	2,325	J11 Community, Social & Personal Services	3.3	77	0.28	21.56
					Sub-total	925.52
Retail						
Workers	**GFA (m^2)**	**Worker's Type**	**Workers per GFA (in 100m^2)** [3]	**Employee**	**Unit Flow Factor**	**ADWF (m^3/d)**
GFA for Restaurant (m^2) [2]	2,611	Restaurants J10 Restaurants & Hotels	5.1	134	1.58	211.72
GFA for Retail Trade (m^2) [3]	2,611	Retail Trade J4 Wholesale & Retail	3.5	92	0.28	25.76
					Sub-total	237.48

.

Site B							
Hotel							
No. of Rooms	**No. of Rooms** 924						
Workers		**Worker's Type**		**Employee**		**Unit Flow Factor**	**ADWF (m^3/d)**
1 employee serves 2 rooms		J10 Restaurants & Hotels		462		1.58	729.96
Office							
GFA for Office (m^2)	**Completed in 2033** 9,290	J6 Finance, Insurance, Real Estate & Business Services	**Workers per GFA (in 100m^2)** [4]	**Completed in 2033**	511	0.08	40.88
	Remaining[10] 28,330		5.5	**Remaining**[10]	1559		124.72
GFA for Restaurant (m^2)(5)	354	Restaurants J10 Restaurants & Hotels	5.1	19		1.58	30.02
						Sub-total	925.58

Total ADWF from the Proposed Development (Site A + Site B) (m^3/day)	2,088.58
Contributing Population [7]	7,735.48
Peaking Factor[9]	4.00
Total Peak Flow from the Proposed Development (m^3/s)	0.097
Total Peak Flow from the Proposed Development including swimming pools(m^3/s)[8]	0.174

Remarks:

[1] A person per flat of 2.7 is assumed.

[2] Assume 50% of the Retail GFA at Site A is for restaurant use

[3] Assume 50% of the Retail GFA at Site A is for retail use

[4] Worker Density is in GFA per worker according to T-8 CIFSUS are assumed.

[5] Assume all Retail GFA at Site B is for restaurant use

[6] Catchment Inflow Factor P_{CIF} = 1 is based on the catchment area in Yuen Long.

[7] Contributing population = Projected Flow (ADWF in m^3/day) / 0.27 (m^3/person/day)

[8] Worst case scenario (all swimming pools will undergo backwash at the same time) is assumed.

[9] Peaking factor excluding stormwater allowance is adopted for hydraulic checking for proposed new constructed sewer.

[10] Remaining indicates the non-domestic GFA to be implemented at a later stage under the arrangement of "Pay for What You Build"Pilot Scheme.

Annex 2

Swimming Pool Backwash Calculation

AECOM

Annex 2 - Swimming Pool Backwash Calculation

Estimation of Outdoor Pool Backwash

Pool area	=	438	m^2
Pool depth	=	1.5	m
Pool volume	=	657	m^3
Turnover rate	=	6	hrs
Flow rate	=	109.50	m^3/hr
Surface loading rate of filter	=	20	$m^3/m^2/hr$
Filter Areas Required	=	5.48	m^2
Assume backwash duration	=	3	min/day
Assume backwash flow rate	=	30	$m^3/m^2/hr$
Volume of backwash	=	8.21	m^3/day
Peak flow	=	0.046	m^3/s

Note
(1)Swimming pool backwash will last for 3 minutes per day.

AECOM

Annex 2 - Swimming Pool Backwash Calculation

Estimation of Indoor Pool Backwash

Pool area	=	200	m^2
Pool depth	=	1.5	m
Pool volume	=	300	m^3
Turnover rate	=	4	hrs
Flow rate	=	75.00	m^3/hr
Surface loading rate of filter	=	20	$m^3/m^2/hr$
Filter Areas Required	=	3.75	m^2
Assume backwash duration	=	3	min/day
Assume backwash flow rate	=	30	$m^3/m^2/hr$
Volume of backwash	=	5.63	m^3/day
Peak flow	=	0.031	m^3/s

Note
(1)Swimming pool backwash will last for 3 minutes per day.

Annex 3

Hydraulic Checking

Annex 3 - Hydraulic Check of Proposed Sewer

V of water = 0.000001

Manhle No.		Pipe													
U/S	D/S	Size (NS internal)	Size (NS)	Hydraulic Radius	Flow Area	Pipe Gradient	Pipe Velocity	Capacity	Roughness	Accumulated ADWF	Contributing Population	Peaking Factor	Estimated Peak Discharge	Capacity Check	Remark
		mm	mm	m	m^2	(1 in)	m/s	m^3/s	mm	m^3/d			m^3/s	%	
FTMH01	FMH01	439.2	500	0.096	0.15	196	1.52	0.23	0.15 (2)	2,088.58	7,736	4.00	0.174	76	

Note
(1) Assume the pipe flows under full-bore capacity.
(2) Assumed proposed PE100 sewer by CEDD is at normal condition with 0.15mm roughness.
(3) Peaking factor excluding stormwater allowance is adopted for hydraulic checking for proposed sewer.
(4) FMH01 indicates CEDD proposed sewer manhole

Annex 4

Baseline Sewage Estimation

Appendix 4 Baseline for Area 32B

Estimated Sewage Flow from 32B Baseline Commercial Development			
Site Area	=	13,601.00	
Plot Ratio	=	9.50	
Non-domestic GFA(m2)	=	129,210	
Retail Ratio	=	35%	
Hotel Ratio	=	20%	
Office Ratio	=	45%	
Retail GFA (m^2)	=	45,223.5	(1)
Retail GFA (m^2)	=	31,656	(7)
Occupation Density (person/100m2 or person/room)	=	3.5	(2)
Retail staff (no.)	=	1,108	
Unit Flow Factor (m^3/d/head)	=	0.28	
DWF (m^3/day)	=	**310.2**	
Retail GFA (m^2)	=	13,567	(7)
Occupation Density (person/100m2 or person/room)	=	5.1	(4)
Restaurant staff (no.)	=	692	
Unit Flow Factor (m^3/d/head)	=	1.58	
DWF (m^3/day)	=	**1093.4**	
Hotel GFA (m^2)	=	25,842	(1)
Occupation Density (no. of rooms)	=	924	
Hotel staff (no.)	=	462	(5)
Unit Flow Factor (m^3/d/head)	=	1.58	
DWF (m^3/day)	=	**730.0**	
Office GFA (m^2)	=	58,144.5	(1)
Occupation Density (person/100m2 or person/room)	=	5.5	(3)
Office Staff (no.)	=	3,198	
Unit Flow Factor (m3/d/head)	=	0.08	
DWF (m^3/day)	=	**255.8**	
Total ADWF (m3/day)	=	**2389.4**	

Notes:

1. Adopt retail = 35% of non-domestic GFA, hotel = 20% of non-domestic GFA, office = 45% of non-domestic GFA
2. According to CIFSUS, the worker density for retail trade is assumed as 3.5 workers per GFA (in 100 m^2)
3. According to CIFSUS, the worker density for office is assumed as 5.5 workers per GFA (in 100 m^2)
4. According to CIFSUS, the worker density for restaurants is assumed as 5.1 workers per GFA (in 100 m^2)
5. Assumed 1 hotel staff serves 2 rooms
6. Catchment Inflow Factors (PCIF): Yuen Long = 1.00 is adopted.
7. For retail GFA, it is assumed 30% for F&B and 70% for retail trade usage.

Attachment B2

Pipe Information

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N

816600 E | 816700 E | 816800 E | 816900 E

832700 N | 832600 N | 832500 N

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/DRA/1105

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/DRA/1106

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/DRA/1107

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/DRA/1110

SITE 4-9
(RESIDENTIAL)

SITE 4-13b
(COMMERCIAL)

APPLICATION SITE

SITE 4-13a
(COMMERCIAL)

SITE 4-14
(REGIONAL PLAZA)

Lead-in location for Area 32B
(site 4-13b)

ROAD L22

ROAD D6 (BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT)

RESERVE FOR CTS (BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT)

PROPOSED TUEN MA LINE HUNG SHUI KIU STATION (BY OTHERS)

PROPOSED WORKS
(BY OTHER HSK/HT NDA
SECOND PHASE DEVELOPMENT
CONTRACT)

BOX CULVERT CONSTRUCTED BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT

OUTFALL OF-TSC14 TYPE D6 FOR OUTFALL. DETAILS REFER TO 278463/C4/DRA/1310

OUTFALL OF-TSC17 TYPE D7 (WITH FLAP VALVE) FOR OUTFALL DETAILS REFER TO 278463/C4/DRA/1311

PROPOSED DOUBLE 300ø PIPE
US I.L. +8.600
DS I.L. + 8.523

OUTFALL OF-TSC16 TYPE D6 FOR OUTFALL DETAILS REFER TO 278463/C4/DRA/1310

PROPOSED DOUBLE 300ø PIPE
US I.L. +8.344mPD
DS I.L. + 8.300mPD

OUTFALL OF-TSC15 TYPE D7 (WITH FLAP FALVE) FOR OUTFALL. DETAILS REFER TO 278463/C4/DRA/1311

TEMPORARY PLUG BY THE CONTRACTOR FOR CONNECTION TO DRAINAGE SYSTEM CONSTRUCTED BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT

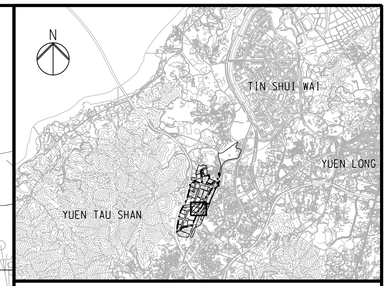
4 NOS. GULLY WITH OVERFLOW WEIR TYPE K1-450V

SEE NOTE 2

CP-S4.5-1 | LI-SITE4.5-2 | CP003TSC | SMH002TSC | SMH002aTSC | OF-TSC02a | OF-TSC03a | OF-TSC02 | OF-TSC03 | SMH003aTSC | SMH003TSC | SMH008TSC | CP12.16 | CP005TSC | CP-S4.12c | UC_12.34 | UC_13.21 | LI-S4.13b | UC_13.24 | CP13.01 | CP002TSC | UC_5.3 | UC_9.8 | UC_9.1 | CP9.06 | CP9.05 | UC_9.4 | CP-S4.9-3 | UC_10.05 | UC_10.1 | CP-007aTSC | CP-008aTSC | OF-TSC10 | OF-TSC13 | CP010TSC | SMH010TSC | SMH011TSC | OF-TSC12 | OF-TSC9 | CP009TSC | CP007TSC | CP007aTSC | CP10.04 | OF-TSC05 | CP008TSC | OF-TSC08 | CP007GTS | CP13.02 | CP13.03 | CP13.04 | CP13.05 | CP13.06 | CP13.07 | CP13.10 | UC_13.26 | UC_13.1 | UC13.5 | SMH018aL22 | SMH018bL22 | SMH018cL22 | SMH019aL22 | SMH019bL22 | SMH019cL22 | CP013L22 | CP015L22 | SMH020D7 | SMH021D7 | CP016L22 | CP017L22 | TEP-L22 | CP-S4.13a | CP-4.13b | LI-S4.13a-1 | LI-S4.13a-2 | CP-S4.13C | CP12.17 | CP-S4.12c | CP13.26 | CP13.07 | CP013L22 | CPC2 | CPE6 | CATCHPIT 525 RCP

3000 Channel | 4000 Channel | 5000 Channel | CH00-700 | 300 UPVC

0 5 10 15 20 25
METRES
1 : 500



KEY PLAN

NOTES

1. FOR GENERAL NOTES ADN LEGEND, REFER TO DRAWING NO.278463/C4/DRA/1001.
2. PROPOSED U-CHANNELS AT RUN-INS SHALL BE PROVIDED WITH HEAVY DUTY CAST IRON COVERS AS SHOWN ON THE DRAWINGS.
3. SPACING OF ROAD GULLIES THUS SHOWN:

G_s=9m — GULLY SPACING. 9m MAXIMUM

Rev	Description	By	Date
00	TENDER ISSUE	EF	02/24

Consultant
ARUP

Project Title
Contract No. YL/2023/04
Hung Shui Kiu/Ha Tsuen
New Development Area
Second Phase Development - Contract 4 -
Site Formation and Engineering
Infrastructure Works

Drawing title
DRAINAGE LAYOUT PLAN
(SHEET 8)

Drawing no.	Rev.
278463/C4/DRA/1108	00

Drawn	Date	Checked	Approved
DT	02/24	EF	DL

Scale	Status
1:500 @ A1	TENDER

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Civil Engineering and Development Department

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DRAINAGE D7 MANHOLE SCHEDULE

UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE LENGTH (m)	UPSTREAM MH/CP TYPE	DOWNSTREAM MH/CP TYPE	PIPE DIAMETER (mm)	UPSTREAM MH/CP COVER LEVEL (mPD)	DOWNSTREAM MH/CP COVER LEVEL (mPD)	UPSTREAM INVERT LEVEL (mPD)	DOWNSTREAM INVERT LEVEL (mPD)	PIPE GRADIENT (1 in X)
TEP-D7b	SMH010aD7	8.32	TP	E1	300	22.00	22.21	20.46	20.40	150
SMH010aD7	SMH010bD7	36.75	E1	E1	375	22.21	21.98	20.36	20.10	149
SMH010bD7	SMH010cD7	54.88	E1	E1	375	21.98	19.16	20.10	17.28	20
SMH010cD7	SMH010L22	17.60	E1	J	450	19.16	18.46	17.28	16.49	24
CP003D7	SMH010cD7	6.70	CP-A	E1	225	19.45	19.16	17.51	17.43	98
TEP-D7a	SMH001D7	2.41	TP	E1	300	22.00	22.76	20.91	20.90	191
SMH001D7	SMH002D7-SM	32.89	E1	E1	300	22.76	22.55	20.90	20.64	137
SMH002D7-SM	SMH003D7	34.46	E1	E1	375	22.55	20.74	19.00	18.82	205
SMH003D7	SMH001L21	15.94	E1	E1	375	20.74	19.73	17.98	17.90	213
CP001D7	SMH002D7-SM	5.12	CP-A	E1	225	22.60	22.55	20.99	20.92	99
CP002D7	SMH003D7	5.43	CP-A	E1	225	21.00	20.74	19.21	19.14	100
LI-S4.16-2	SMH006D7	14.08	TP	H	450	18.00	17.66	15.85	15.80	330
SMH006D7	SMH007D7	11.77	H	H	750	17.66	17.90	15.41	15.28	102
SMH007D7	SMH008D7	16.08	H	I	900	17.90	17.86	15.00	14.81	94
SMH008D7	SMH009D7	31.53	I	I	1050	17.86	18.39	14.81	14.45	94
SMH009D7	SMH010L22	23.76	I	J	1200	18.39	18.46	14.45	14.40	514
LI-S4.12d-2	SMH007D7	23.59	TP	H	450	18.00	17.90	15.10	15.00	245
LI-S4.12d-1	SMH009D7	16.80	TP	I	450	19.10	18.39	15.05	15.00	345
CP004D7	SMH008bD7	6.84	CP-A	E1	225	17.86	17.75	16.10	16.03	99
SMH008bD7	SMH008D7	3.48	E1	I	450	17.75	17.86	15.61	15.55	95
SMH008cD7	SMH008dD7	8.90	E1	E1	300	17.59	17.59	15.80	15.73	149
SMH008dD7	SMH008bD7	15.42	E1	E1	300	17.59	17.75	15.73	15.61	149
SMH08aD7	SMH008bD7	45.33	E1	E1	300	18.83	17.75	17.04	15.95	43
SMH004D7	SMH005D7	10.05	E1	E1	300	17.73	17.75	15.93	15.85	150
SMH005D7	SMH006D7	13.37	E1	H	450	17.75	17.66	15.80	15.71	162
LI-S4.16-1	SMH005D7	12.76	TP	E1	450	18.00	17.75	15.85	15.80	298
CP005D7	SMH006D7	10.68	CP-A	H	225	17.91	17.66	16.08	15.96	102
SMH008eD7	SMH008fD7	11.26	E1	E1	300	17.71	17.60	15.91	15.80	117
SMH008fD7	SMH008gD7	13.26	E1	E1	300	17.60	17.63	15.80	15.71	149
SMH008gD7	SMH008hD7	8.48	E1	E1	375	17.63	17.87	15.71	15.64	148
SMH008hD7	SMH008D7	4.43	E1	I	375	17.87	17.86	15.64	15.60	161
SMH008iD7	SMH008jD7	6.38	E1	E1	300	17.98	17.93	16.18	16.13	147
SMH008jD7	SMH008hD7	17.54	E1	E1	300	17.93	17.87	16.13	16.04	208
CP006D7	SMH008gD7	5.15	CP-A	E1	225	17.79	17.63	15.96	15.90	102
SMH008kD7	SMH008lD7	18.56	E1	E1	300	18.15	17.79	16.35	15.99	55
SMH008lD7	SMH008hD7	8.77	E1	E1	300	17.79	17.87	15.99	15.89	106
CP-S4.13a-2	D-D7-3	4.79	CP-D	TP	375	12.46	12.46	9.86	9.81	100
SP-S4.13a-1	D-D7-2	4.35	CP-D	TP	375	11.46	11.46	9.71	9.66	100
CP-4.16	D-D7-1	4.53	CP-D	TP	375	11.79	11.50	10.00	9.95	100
CP-S4.15-3	SMH001D7	9.83	CP-D	E1	300	21.41	22.76	19.00	18.89	96
SMH001aL21	SMH001L21	9.67	E1	E1	300	19.48	19.73	17.69	17.64	199
SMH001L21	SMH002L21	41.69	E1	G1	375	19.73	18.48	16.84	16.63	200
SMH002L21	SMH003L21	34.81	G1	G1	825	18.48	17.76	16.33	15.41	40
SMH003L21	SMH004L21	25.12	G1	H	825	17.76	17.83	15.41	15.28	200
SMH004L21	SMH005L21	12.86	H	I	825	17.83	17.79	15.28	15.13	95
SMH005L21	SMH006L21	12.65	I	H	825	17.79	17.66	15.13	15.08	331
SMH006L21	OF-ExNullah	21.77	H	OF-D7	1200	17.66	17.22	15.08	15.00	264
CP001L21	SMH002L21	5.71	CP-A	G1	225	18.74	18.48	17.01	16.94	99
CP002L21	SMH002L21	7.66	CP-A	G1	225	18.75	18.48	17.02	16.92	89
LI-S4.15-1	SMH002L21	16.01	TP	G1	675	18.50	18.48	16.72	16.33	44
CPL21b_2	SMH003L21	5.46	CP-A	G1	225	17.89	17.76	16.17	16.10	93
CPL21b_3	SMH004L21	6.00	CP-A	H	225	17.91	17.83	16.19	16.12	99
LI-S4.15-2	SMH006aL21	12.80	TP	E1	675	18.00	17.80	15.76	15.62	100
SMH006aL21	SMH006bL21	12.75	E1	H	675	17.80	17.75	15.62	15.29	42
CP-S4.15-1	CP003L21	4.97	CP-D	CP-A	375	18.00	17.97	16.83	16.78	100
CP003L21	SMH006aL21	4.78	CP-A	E1	375	17.97	17.80	16.10	16.03	83
LI-S4.17	SMH006bL21	15.17	TP	H	900	16.63	17.75	15.49	15.34	101
SMH006bL21	SMH006L21	16.73	H	H	900	17.75	17.66	15.29	15.11	100
CP-S4.17-1	SMH006bL21	11.56	TP	H	375	18.28	17.75	16.83	16.71	100
CP-S4.17-2	CP002TSCS	3.76	TP	CP-A	375	18.03	18.08	16.63	16.59	100
CP002TSCS	OF-002TSCS	3.24	CP-A	OF-D7	375	18.08	17.22	16.16	16.11	78
CP-S4.15-2	SMH006bL21	13.11	TP	H	375	18.00	17.75	16.83	16.69	100
SMH010L22	SMH011L22	52.98	J	J	1350	18.46	17.12	14.40	14.27	407
SMH011L22	SMH012L22	17.14	J	J	1350	17.12	16.80	14.27	13.95	57
SMH012L22	SMH013L22	27.34	J	J	1350	16.80	16.38	13.95	13.56	73
SMH013L22	SMH014L22	27.51	J	J	1350	16.38	15.93	13.56	13.08	59
SMH014L22	SMH015L22	52.10	J	J	1350	15.93	15.33	13.08	12.02	50
SMH015L22	SMH016L22	23.62	J	J	1500	15.33	14.27	12.02	11.52	48
SMH016L22	SMH017L22	21.17	J	L	1500	14.27	13.41	11.52	11.05	48
SMH017L22	SMH018aL22	25.10	L	L	1500	13.41	12.77	11.05	10.53	49
SMH018aL22	SMH018L22	14.54	L	L	1350	12.77	12.80	10.53	10.20	49
SMH018L22	SMH019L22	29.77	L	K/D	1650	12.80	12.78	10.20	9.56	48
SMH019L22	SMH020D7	52.58	K/D	J	1800	12.78	12.50	9.56	9.49	790
SMH020D7	SMH021D7	27.89	J	J	1800	12.50	11.73	9.49	8.70	36
SMH021D7	TEP-L22	3.33	J	TP	1800	11.73	11.64	8.70	8.61	46
CP007L22	SMH011L22	7.88	CP-A	J	225	17.33	17.12	15.49	15.39	94
LI-S4.12a-2	SMH011L22	15.06	TP	J	525	17.52	17.12	14.58	14.42	100
LI-S4.12a-1	SMH012L22	17.60	TP	J	525	18.00	16.80	13.98	13.80	100
CP-S4.12a	SMH012L22	12.92	CP-D	J	450	17.13	16.80	15.89	15.76	100

DRAINAGE D7 MANHOLE SCHEDULE

UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE LENGTH (m)	UPSTREAM MH/CP TYPE	DOWNSTREAM MH/CP TYPE	PIPE DIAMETER (mm)	UPSTREAM MH/CP COVER LEVEL (mPD)	DOWNSTREAM MH/CP COVER LEVEL (mPD)	UPSTREAM INVERT LEVEL (mPD)	DOWNSTREAM INVERT LEVEL (mPD)	PIPE GRADIENT (1 in X)
CP009L22	SMH012L22	4.72	CP-A	J	225	16.94	16.80	15.15	15.08	94
LI-S4.12b-2	SMH013L22	13.14	TP	J	525	17.00	16.38	13.70	13.56	101
CP008L22	SMH013L22	7.01	CP-A	J	225	16.51	16.38	14.70	14.62	103
LI-S4.12b-1	SMH014L22	13.34	TP	J	525	16.63	15.93	13.15	13.08	200
CP010L22	SMH014L22	4.61	CP-A	J	225	16.09	15.93	14.27	14.21	100
SMH015aL22	SMH015bL22	13.31	E1	E1	225	15.80	15.50	12.30	12.15	100
SMH015bL22	SMH015cL22	11.76	E1	E1	450	15.50	15.40	12.15	12.09	200
SMH015cL22	SMH015L22	12.42	E1	J	450	15.40	15.33	12.09	12.02	200
CP-S4.12b	SMH015bL22	14.17	CP-D	E1	450	16.05	15.50	12.23	12.15	200
CP011L22	SMH015L22	15.84	CP-A	J	225	15.73	15.33	13.73	13.67	277
SMH016aL22	SMH016bL22	13.87	E1	E1	225	14.76	14.20	13.05	12.91	100
SMH016bL22	SMH016L22	2.13	E1	J	225	14.20	14.27	12.91	12.88	100
CP012L22	SMH016L22	6.67	CP-A	J	225	14.66	14.27	12.66	12.60	122
CP013L22	SMH017L22	6.84	CP-A	L	225	13.77	13.41	11.74	11.66	98
SMH018cL22	SMH018bL22	14.48	E1	E1	225	13.22	12.93	11.46	11.31	100
SMH018bL22	SMH018aL22	3.00	E1	L	225	12.93	12.80	11.31	10.53	100
CP-4.12c	CP013L22a	5.20	CP-D	CP-D	450	13.26	13.08	11.37	11.34	200
CP013L22a	SMH018bL22	5.95	CP-D	E1	450	13.08	12.93	11.34	11.31	200
LI-S4.13a-2	SMH018L22	14.15	TP	L	900	11.69	12.80	10.55	10.40	105
CP-S4.13C	CP015L22	4.96	CP-D	CP-A	450	13.41	12.89	11.13	11.07	118
CP015L22	SMH018L22	4.30	CP-A	L	450	12.89	12.80	11.14	11.07	97
CP014L22	SMH018L22	7.23	CP-A	L	225	12.90	12.80	11.50	11.48	357
SMH019bL22	SMH019cL22	12.25	E1	E1	300	12.70	12.71	10.90	10.81	149
SMH019cL22	SMH019L22	12.76	E1	K/D	300	12.71	12.78	10.81	10.71	154
SMH019aL22	SMH019L22	11.25	E1	K/D	300	12.73	12.78	10.93	10.85	167
LI-S4.13a-1	SMH020D7	12.86	TP	J	900	11.14	12.50	10.00	9.85	96
CP-S4.13a	CP017L22	1.62	CP-D	CP-A	450	12.00	11.59	10.13	10.11	100
CP017L22	SMH021D7	9.45	CP-A	J	450	11.59	11.73	10.11	10.06	200
CP-4.13b	CP016L22	1.90	CP-D	CP-A	450	11.66	11.67	10.22	10.20	100
CP016L22	SMH021D7	1.56	CP-A	J	450	11.67	11.73	10.20	10.18	200
TP2303A	SMH2303	6.50	OF-D7	SP-K/D	1500	23.90	23.98	17.90	17.89	836
SMH2303	D-BCTSC-1b	13.05	SP-K/D	OF-D1a	1500	23.98	22.53	17.89	17.82	201
CP001TSCS	CP001aTSCS	3.52	CP-A	CP-A	375	19.98	19.50	18.12	18.09	106
CP001aTSCS	OF-001TSCS	3.21	CP-A	OF-D7	375	19.50	20.00	18.09	18.05	94
CP003TSCS	CP003aTSCS	7.17	CP-A	CP-A	300	16.68	16.88	15.17	15.09	100
CP003aTSCS	OF-003TSCS	3.33	CP-A	OF-D7	375	16.88	16.80	15.09	15.05	90
CP004TSCS	OF-004TSCS	1.65	CP-A	OF-D7	300	15.21	15.20	13.78	13.76	96
CP-S4.12b-1	CP005TSCS	9.98	CP-D	CP-A	450	15.50	15.00	14.15	14.04	100
CP005TSCS	OF-005TSCS	3.24	CP-A	OF-D7	450	14.38	14.50	12.61	12.57	97
CP006TSCS	CP006aTSCS	6.80	CP-A	CP-A	300	12.63	12.68	10.82	10.74	97
CP006aTSCS	OF-006TSCS	3.32	CP-A	OF-D7	375	12.68	12.72	10.74	10.70	89
CP-S4.16-1	CP008TSCS	5.94	CP-D	CP-A	375	12.41	12.58	11.62	11.56	100
CP008TSCS	OF-008TSCS	4.76	CP-A	OF-D7	375	12.58	12.40	10.53	10.48	98
CP007TSCS	CP007aTSCS	5.71	CP-A	CP-A	300	12.28	12.38	10.48	10.42	96
CP007aTSCS	OF-007TSCS	2.84	CP-A	OF-D7	375	12.38	12.40	10.42	10.39	103
LI-S4.13b	SMH003TSC	5.50	TP	H	1200	12.80	13.99	11.32	11.31	556
SMH003TSC	OF-TSC03	14.09	TP	OF-D7	1200	13.99	14.11	11.31	11.25	200

DRAINAGE L23 MANHOLE SCHEDULE

UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE LENGTH (m)	UPSTREAM MH/CP TYPE	DOWNSTREAM MH/CP TYPE	PIPE DIAMETER (mm)	UPSTREAM MH/CP COVER LEVEL (mPD)	DOWNSTREAM MH/CP COVER LEVEL (mPD)	UPSTREAM INVERT LEVEL (mPD)	DOWNSTREAM INVERT LEVEL (mPD)	PIPE GRADIENT (1 in X)
SMH001L23	SMH002L23	8.00	E1	E1	225	15.87	15.90	14.01	13.92	100
SMH002L23	SMH003L23	6.12	E1	E1	225	15.90	15.82	13.92	13.84	100
SMH003L23	SMH004L23	25.90	E1	E1	300	15.82	15.80	13.84	13.70	207
SMH004L23	SMH005L23	40.05	E1	E1	375	15.80	16.56	13.70	13.49	200
SMH005L23	TEP-L23	2.49	E1	TP	450	16.56	16.64	13.49	13.48	366
CP001L23	SMH003L23	3.35	CP-B	E1	225	16.00	15.82	14.20	14.16	100
CP002L23	SMH004L23	3.86	CP-B	E1	225	15.92	15.80	14.11	14.06	100
SMH004aL23	SMH004L23	18.47	E1	E1	225	15.74	15.80	13.98	13.78	100
CP003L23	SMH005aL23	3.85	CP-B	E1	225	15.93	15.81	14.12	14.07	100
SMH005aL23	SMH005bL23	32.02	E1	E1	225	15.81	16.39	13.96	13.68	119
SMH005bL23	SMH005L23	7.00	E1	E1	300	16.39	16.56	13.68	13.63	200

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING TO 278463/C4/DRA/1151.

Rev	Description	By	Date
00	TENDER ISSUE	EF	02/24

Consultant

ARUP

Project Title

Contract No. YL/2023/04
Hung Shui Kiu/Ha Tsuen
New Development Area
Second Phase Development - Contract 4 -
Site Formation and Engineering
Infrastructure Works

Drawing title

DRAINAGE
MANHOLE SCHEDULE
(SHEET 2)

Drawing no.	Rev.
278463/C4/DRA/1152	00

Drawn	Date	Checked	Approved
CN	02/24	EF	DL

Scale	Status
N.T.S.	TENDER

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N

816600 E

816700 E

816800 E

816900 E

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/SEW/1105

MATCH LINE
FOR CONTINUATION
SEE DRG 278463/C4/SEW/1106

SITE 4-9
(RESIDENTIAL)

832700 N

832600 N

832500 N

APPLICATION SITE

SITE 4-13b
(COMMERCIAL)

Lead-in location for Area 32B
(site 4-13b) Site B

Lead-in location for Area 32B
(site 4-13b) Site A

MH106b

LI-S4.13b-1

LI-S4.13b-2

NS500

FMH105a

FMH106a

ROAD L2

SITE 4-13a
(COMMERCIAL)

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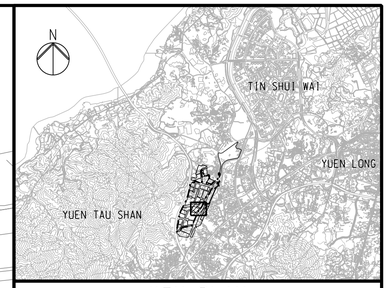
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RESERVE FOR GTS (BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT)

ROAD D6 (BY OTHER HSK/HT NDA SECOND PHASE DEVELOPMENT CONTRACT)

PROPOSED TUEN MA LINE HUNG SHUI KIU STATION (BY OTHERS)

0 5 10 15 20 25
METRES
1 : 500



KEY PLAN

NOTES

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO. 278463/C4/SEW/1101.

Rev	Description	By	Date
00	TENDER ISSUE	EF	02/24

Consultant

ARUP

Project Title

Contract No. YL/2023/04
Hung Shui Kiu/Ha Tsuen
New Development Area
Second Phase Development - Contract 4 -
Site Formation and Engineering
Infrastructure Works

Drawing title

SEWERAGE LAYOUT PLAN
(SHEET 8)

Drawing no.	Rev.
278463/C4/SEW/1108	00

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SEWERAGE D6 MANHOLE SCHEDULE

UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE LENGTH (m)	UPSTREAM MH/CP TYPE	DOWNSTREAM MH/CP TYPE	PIPE OUTSIDE DIAMETER (mm)	UPSTREAM FINISHED GROUND LEVEL (mPD)	DOWNSTREAM FINISHED GROUND LEVEL (mPD)	UPSTREAM INVERT LEVEL (mPD)	DOWNSTREAM INVERT LEVEL (mPD)	PIPE GRADIENT (1 in X)	PIPE MATERIAL	STANDARD DIMENSIONAL RATIO
FMHSPS3-BP0	FMHSPS3-BP1	7.85	TP	H	900	8.59	11.00	7.70	7.68	515	HDPE	SDR17
FMHSPS3-BP1	FMHSPS3-BP2	34.73	H	H	900	11.00	10.98	7.68	7.37	116	HDPE	SDR17
FMHSPS3-BP2	FMHSPS3-BP3	24.71	H	H	900	10.98	9.83	7.37	7.29	304	HDPE	SDR17
FMHSPS3-BP3	FMHSPS3-BP4	31.07	H	G1	900	9.83	8.67	7.29	7.21	420	HDPE	SDR17
FMHSPS3-BP4	FMHSPS3-BP5	13.55	G1	G1	900	8.67	8.13	7.21	7.17	416	HDPE	SDR17
FMHSPS3-BP5	FMHSPS3-BP6	13.66	G1	G1	900	8.13	7.93	7.17	7.14	418	HDPE	SDR17
FMHSPS3-BP6	FMHSPS3-BP7	15.27	G1	G1	900	7.93	9.09	7.14	7.10	417	HDPE	SDR17
FMHSPS3-BP7	FMHSPS3-BP8	22.02	G1	H	900	9.09	9.81	7.10	7.05	500	HDPE	SDR17
FMHSPS3-BP8	FMHSPS3-BP9	19.30	H	H	900	9.81	9.03	7.05	6.40	31	HDPE	SDR17
FMHSPS3-BP9	FMHSPS3-BP10	24.71	H	H	900	9.03	8.03	6.40	5.58	31	HDPE	SDR17
FMHSPS3-BP10	SMH009L18	17.72	H	H	900	8.03	5.89	5.58	5.00	31	HDPE	SDR17
FMH210b	FMH211a	60.01	SP-F/D	F1	500	13.88	12.92	9.47	9.24	263	HDPE	SDR17
FMH211a	FMH217a	60.92	F1	F1	560	12.92	11.97	9.24	9.02	268	HDPE	SDR17
FMH217a	FMH218a	59.07	L	L	800	11.97	11.06	6.37	6.16	293	HDPE	SDR17
FMH218a	FMH219	57.10	L	L	1000	11.06	10.51	6.09	5.91	327	HDPE	SDR17
FMH219	FMH219a	60.40	L	L	1000	10.51	12.08	5.91	5.75	391	HDPE	SDR11
FMH219a	FMH219a.1	10.21	L	SP-1	1000	12.08	12.51	5.73	5.71	710	HDPE	SDR11
FMH219a.1	FMH219a.2	16.04	SP-1	L	1000	12.51	11.25	5.75	5.68	247	HDPE	SDR11
FMH219a.2	D-SPS3-1	6.35	L	TP	1000	11.25	6.68	5.68	5.67	500	HDPE	SDR17
FMH219a.1	FMH219a.3	17.50	SP-1	L	1000	12.51	11.25	5.75	5.68	275	HDPE	SDR11
FMH219a.3	D-SPS3-2	7.79	L	TP	1000	11.25	6.68	5.69	5.68	500	HDPE	SDR17
LI-S3.39-1	FMH210b	17.96	TP	L	355	14.19	13.88	11.40	11.28	153	HDPE	SDR17
LI-S3.39-2	FMH211a	14.08	TP	L	355	13.87	12.92	11.14	11.05	158	HDPE	SDR17
LI-S3.40-2	FMH218a	14.73	TP	L	355	13.00	11.06	6.19	6.09	150	HDPE	SDR17
LI-S4.23	FMH423a	4.74	TP	E1	315	11.10	9.30	8.20	8.18	339	HDPE	SDR17
FMH423a	FMH423b	43.21	E1	E1	315	9.30	10.88	8.18	8.06	354	HDPE	SDR17
LI-S4.6-1	FMH423b	9.80	TP	E1	315	11.50	10.88	8.71	8.61	100	HDPE	SDR17
FMH423b	FMH423c	10.96	E1	F1	315	10.88	10.53	8.06	7.99	173	HDPE	SDR17
FMH423c	FMH219	10.43	F1	L	630	10.53	10.51	7.64	7.61	409	HDPE	SDR17
FMH224a	FMH223a	29.42	E1	E1	450	10.14	10.45	8.70	8.64	487	HDPE	SDR17
FMH223a	FMH209_a	29.14	E1	F1	500	10.45	10.81	8.64	8.58	501	HDPE	SDR17
FMH209_a	FMH210_a	14.21	F1	F1	560	10.81	10.92	8.58	8.55	495	HDPE	SDR17
FMH210_a	FMH211_a	80.24	F1	L	560	10.92	12.57	8.55	8.39	504	HDPE	SDR17
LI-S4.8-1	FMH224a	16.70	TP	E1	355	11.50	10.14	8.64	8.50	118	HDPE	SDR17
LI-S4.10-2	FMH224a	15.66	TP	E1	355	11.50	10.14	8.64	8.50	114	HDPE	SDR17
LI-S4.8-2	FMH223a	15.24	TP	E1	355	11.70	10.45	8.64	8.50	107	HDPE	SDR17
LI-S4.10-1	FMH223a	16.54	TP	E1	355	11.70	10.45	8.64	8.50	121	HDPE	SDR17
LI-S4.9-2	FMH209_a	18.13	TP	F1	450	11.40	10.81	8.55	8.43	155	HDPE	SDR17
LI-S4.9-1	FMH210_a	5.15	TP	F1	450	11.40	10.92	8.55	8.50	125	HDPE	SDR17
FMH206a	FMH207a	37.56	E1	F1	450	14.85	14.53	11.79	11.53	150	HDPE	SDR17
FMH207a	FMH208b	37.04	F1	L	450	14.53	13.85	11.53	11.28	150	HDPE	SDR17
FMH208b	FMH209b	51.70	L	L	450	13.85	13.18	11.28	10.92	149	HDPE	SDR17
FMH209b	FMH210b	65.74	L	SP-F/D	500	13.18	13.88	10.92	10.47	151	HDPE	SDR17
LI-S4.1-1	FMH208b	17.77	TP	L	355	14.50	13.85	12.14	12.05	223	HDPE	SDR17
LI-S4.1-2	FMH209b	16.25	TP	L	355	14.50	13.18	12.14	12.05	206	HDPE	SDR17
LI-S4.2-1	FMH206a	23.74	TP	E1	280	15.00	14.85	12.14	12.07	380	HDPE	SDR17
LI-S4.2-2	FMH207a	14.98	TP	F1	280	15.00	14.53	12.14	12.05	181	HDPE	SDR17
LI-S4.4-2	FMH206a	31.42	TP	E1	400	15.00	14.85	12.00	11.79	150	HDPE	SDR17
LI-S4.4-3	FMH207a	13.53	TP	F1	355	15.00	14.53	11.80	11.53	51	HDPE	SDR17
FMH260a	FMH261B	9.59	L	F1	400	14.11	13.67	10.21	10.17	292	HDPE	SDR17
FMH261B	FMH261a	18.13	F1	F1	400	13.67	12.88	10.17	10.11	305	HDPE	SDR17
FMH261a	FMH262a	58.21	F1	F1	400	12.88	12.40	10.11	8.90	49	HDPE	SDR17
FMH262a	FMH263a	26.62	F1	F1	400	12.40	12.45	8.90	8.86	699	HDPE	SDR17
FMH263a	FMH217a	29.86	F1	L	400	12.45	11.97	8.86	8.49	84	HDPE	SDR17
LI-S3.36-1	FMH260a	6.05	TP	L	400	14.00	14.11	10.25	10.22	217	HDPE	SDR17
LI-S3.40-1	FMH261a	5.62	TP	F1	400	13.00	12.88	10.50	10.48	331	HDPE	SDR17
LI-S4.4-1	FMH195.1	7.44	TP	L	400	13.50	12.52	11.50	10.86	12	HDPE	SDR17
FMH195.1	FMH196.1	14.77	L	E1	560	12.52	12.45	8.70	8.54	100	HDPE	SDR17
FMH196.1	FMH211_a	12.06	E1	L	560	12.45	12.57	8.54	8.39	100	HDPE	SDR17
FMH211_a	FMH213	32.85	L	L	630	12.57	12.87	8.39	8.33	601	HDPE	SDR17
FMH213	FMH212a	29.84	L	L	630	12.87	13.09	8.33	8.28	615	HDPE	SDR17
FMH212a	FMH215	53.60	L	E1	630	13.09	12.87	8.28	8.19	605	HDPE	SDR17
FMH215	FMH213a	24.63	E1	E1	630	12.87	12.60	8.14	8.06	298	HDPE	SDR17
FMH213a	FMH216	24.80	E1	L	630	12.60	12.43	8.06	8.00	453	HDPE	SDR17
FMH216	FMH215a	60.25	L	L	630	12.43	12.28	8.00	7.95	500	HDPE	SDR17
FMH215a	FMH216a	31.12	L	L	630	12.28	12.50	7.95	7.90	706	HDPE	SDR17
FMH216a	FMH423d	19.20	L	L	630	12.50	12.03	7.90	7.77	146	HDPE	SDR17
FMH423d	FMH423c	119.12	L	F1	630	12.03	10.53	7.77	7.64	500	HDPE	SDR17
LI-S4.3-1	FMH216	22.56	TP	L	400	12.50	12.43	9.50	9.26	100	HDPE	SDR17
LI-S4.3-2	FMH216a	22.04	TP	L	400	12.50	12.50	9.00	8.78	100	HDPE	SDR17
LI-S4.6-2	FMH216a	11.05	TP	L	400	12.20	12.50	8.50	8.43	179	HDPE	SDR17
LI-S4.7-1	FMH212a	9.63	TP	L	400	14.00	13.09	7.44	7.40	299	HDPE	SDR17
LI-S4.7-2	FMH215	9.71	TP	E1	400	14.00	12.87	11.68	11.64	296	HDPE	SDR17
FMH193.1	FMH194.1	35.80	L	L	400	12.94	12.72	9.50	9.12	100	HDPE	SDR17
FMH194.1	FMH195.1	39.23	L	L	400	12.72	12.52	9.12	8.70	100	HDPE	SDR17
LI-S4.5-1	FMH193.1	5.25	TP	L	400	14.50	12.94	10.60	10.54	100	HDPE	SDR17
LI-S4.5-2	FMH194.1	4.74	TP	L	400	14.50	12.72	11.50	11.48	303	HDPE	SDR17

SEWERAGE D7 MANHOLE SCHEDULE

UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	PIPE LENGTH (m)	UPSTREAM MH TYPE	DOWNSTREAM MH TYPE	PIPE OUTSIDE DIAMETER (mm)	UPSTREAM FINISHED GROUND LEVEL (mPD)	DOWNSTREAM FINISHED GROUND LEVEL (mPD)	UPSTREAM INVERT LEVEL (mPD)	DOWNSTREAM INVERT LEVEL (mPD)	PIPE GRADIENT (1 in X)	PIPE MATERIAL	STANDARD DIMENSIONAL RATIO
LI-S4.13b-2	FMH105a	18.90	TP	E1	500	13.50	12.71	11.05	10.95	196	HDPE	SDR17
FMH115	FMH116a	27.07	SP-L	SP-L	710	18.25	18.86	9.52	9.38	206	HDPE	SDR11
FMH116a	FMH122a	29.11	SP-L	SP-L	710	18.86	19.00	9.38	9.23	197	HDPE	SDR11
FMH122a	TEP-D7	81.94	SP-L	TP	900	19.00	9.59	9.23	8.81	201	HDPE	SDR11
LI-S4.13b-1	FMH106a	14.66	TP	E1	500	14.00	12.78	11.50	11.45	315	HDPE	SDR17
LI-S4.13a-2	FMH106a	23.11	TP	E1	500	14.00	12.78	11.62	11.58	586	HDPE	SDR17
LI-S4.12c-2	FMH107a	12.64	TP	L	500	15.20	14.54	12.14	12.08	211	HDPE	SDR17
LI-S4.12c-1	FMH108a	12.69	TP	L	500	16.00	15.42	14.40	13.72	20	HDPE	SDR17
LI-S4.12b-2	FMH109a	14.07	TP	L	450	16.40	15.68	12.18	12.13	250	HDPE	SDR17
LI-S4.12b-1	FMH109b	12.74	TP	L	450	17.00	16.30	14.55	14.45	132	HDPE	SDR17
LI-S4.12a-2	FMH110a	13.88	TP	L	450	18.10	17.21	12.18	12.13	251	HDPE	SDR17
FMH105a	FMH106a	13.95	E1	E1	500	12.71	12.78	10.95	10.88	203	HDPE	SDR17
LI-S4.12a-1	FMH115	20.37	TP	SP-L	450	19.00	18.25	12.18	12.10	244	HDPE	SDR11
LI-S4.13a-1	FMH114a	22.09	TP	L	500	18.00	17.71	12.18	12.03	145	HDPE	SDR17
FMH114a	FMH115a	26.57	L	L	450	17.71	17.88	11.82	11.63	147	HDPE	SDR17
FMH115a	FMH116a	38.63	L	L	450	17.88	18.86	11.63	11.36	152	HDPE	SDR11
LI-S4.16-2	FMH112a	22.71	TP	L	400	18.00	17.82	12.18	12.03	149	HDPE	SDR11
FMH112a	FMH114a	16.63	L	L	400	17.82	17.71	11.95	11.82	151	HDPE	SDR17
LI-S4.16-1	FMH111a	12.02	TP	L	400	18.00	12.93	12.18	12.10	149	HDPE	SDR17
FMH111a	FMH112a	20.61	L	L	400	12.93	17.82	12.10	11.95	149	HDPE	SDR11
LI-S4.17	FMH117a	14.89	TP	SP-L	355	18.60	17.69	10.18	10.13	274	HDPE	SDR11
FMH117a	FMH118a	10.78	SP-L	SP-L	355	17.69	17.87	10.13	10.08	268	HDPE	SDR11
FMH106a	FMH106b	46.34	E1	E1	560	12.78	13.39	10.88	10.64	199	HDPE	SDR17
FMH118a	FMH120a	11.34	SP-L	SP-L	355	17.87	17.76	10.08	10.03	274	HDPE	SDR11
FMH120a	FMH121a	48.35	SP-L	SP-L	450	17.76	18.15	10.03	9.85	270	HDPE	SDR11
FMH121a	FMH122a	63.04	SP-L	SP-L	500	18.15	19.00	9.85	9.61	272	HDPE	SDR11
LI-S4.2d-1	FMH119a	17.44	TP	F1	450	18.00	17.86	14.53	14.41	149	HDPE	SDR17
FMH119a	FMH120a	17.48	F1	L	450	17.86	17.76	14.41	14.28	146	HDPE	SDR17
LI-S4.15-1	FMH120a	13.56	TP	L	355	18.00	17.76	14.83	14.75	184	HDPE	SDR17
LI-S4.15-2	FMH121a	12.98	TP	L	355	20.00	18.15	13.52	13.43	149	HDPE	SDR17
LI-S4.12d-2	FMH121a	16.74	TP	L	450	19.00	18.15	13.52	13.40	149	HDPE	SDR17
FMH106b	FMH107a	26.99	E1	L	560	13.39	14.54	10.64	10.49	206	HDPE	SDR17
FMH107a	FMH108a	30.35	L	L	560	14.54	15.42	10.49	10.33	200	HDPE	SDR17
FMH108a	FMH109a	23.86	L	L	710	15.42	15.68	10.33	10.20	201	HDPE	SDR17
FMH109a	FMH109b	43.30	L	SP-L	710	15.68	16.30	10.20	9.98	200	HDPE	SDR17
FMH109b	FMH110a	51.73	SP-L	SP-L	710	16.30	17.21	9.98	9.71	200	HDPE	SDR17
FMH110a	FMH115	35.57	SP-L	SP-L	710	17.21	18.25	9.71	9.52	196	HDPE	SDR17

NOTES

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING NO. 278463/C4/SEW/1001.
2. FOR DETAILS OF STANDARD MANHOLES TYPES E1, F1, G1, L AND H REFER TO LATEST DSD STANDARD DRAWINGS. 01
3. FOR DETAIL OF SPECIAL MANHOLE TYPE SP-L AND SP-1 REFER TO DRAWING NO. 278463/C4/SEW/1302 -1303.
4. THE COVER LEVELS SHOWN FOR MANHOLES ARE APPROXIMATE ONLY. THE FINAL COVER LEVELS SHALL BE VERIFIED ON SITE TO MATCH WITH THE FINISHED ROAD/GROUND LEVELS.
5. THE ANNOTATION TP INDICATED IN THE MANHOLE SCHEDULE REFERS TO TAPPING PIPE.
6. FOR DETAIL OF SPECIAL MANHOLE TYPE SP-F/D REFER TO DRAWING NO. 278463/C4/DRA/1306. 01

Rev	Description	By	Date
01	TENDER ADDENDUM NO. 1	EF	03/24
00	TENDER ISSUE	EF	02/24

Consultant
ARUP

Project Title
Contract No. YL/2023/04
Hung Shui Kiu/Ha Tsuen
New Development Area
Second Phase Development - Contract 4 -
Site Formation and Engineering
Infrastructure Works

Drawing title
SEWERAGE
MANHOLE SCHEDULE

Drawing no.	Rev.
278463/C4/SEW/1151	01

Drawn	Date	Checked	Approved
CN	02/24	EF	DL

Scale	Status
N.T.S.	TENDER

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