S16 Planning Application for Proposed Minor Relaxation of Plot Ratio (PR), Site Coverage (SC) and Building Height (BH) Restrictions for Permitted/Proposed Commercial Development, Public Transport Station and Underground Vehicle Tunnel at Kai Tak Area 4C Sites 4 and 5 and Adjoining Road Portion of Shing King Street; and Minor Relaxation of PR and BH Restrictions for Permitted Private Housing Development with Proposed Eating Place, Shop and Services and Social Welfare Facilities at Kai Tak Area 3E Sites 1 and 2 (Planning Application No. A/K22/43)
Responses to Comments

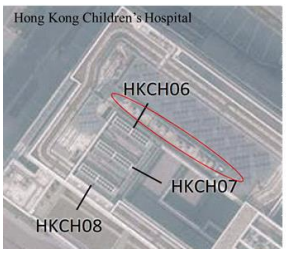
Comments from Related Departments **Page No.**

COMMENTS FROM RELATED DEPARTMENTS

No.	Comments	Responses
1.	**Environmental Protection Department, Environmental Assessment Division, Territory South Group, Kowloon, dated 14 March 2025** **EPD's comments on the environmental assessment** **General Comment** (1) To facilitate the developers/consultants preparing the Noise Impact Assessment Reports for EPD approval, good-quality submissions of papers/reports can often shorten the project's approval time. We advise you to have the Noise Impact Assessment reports checked and verified by a Certified Noise Modelling Professional of the HKIQEP or equivalent before submitting them to the EPD for vetting, to expedite your project's planning and consideration by relevant authorities. If road traffic noise is the only noise impact identified, please follow the streamlined procedure set out in Section 10(B) of the EPD's ProPECC PN 4/23. Normally, the EPD will not object on noise grounds to the application as 100% compliance of the road traffic noise standards can be achieved. (2) Practice notes were issued at times to provide guidelines and to facilitate project proponents and practitioners including environmental/acoustic professionals in planning residential developments. For instance, in 2023 and 2024, the following ProPECC Practice Notes have been issued. The project proponents and practitioners should consider the guidelines in relevant practice notes where applicable. – ProPECC PN3/23 Application of Sound Insulation in Residential Buildings to Reduce Noise Transmission Between Units – ProPECC PN4/23 Practice Note for the Planning of Residential Developments against Road Traffic Noise	Noted. It is confirmed that the traffic noise model has been prepared and checked by qualified modeler. Noted. The Practical Notes have been considered where applicable.

No.	Comments	Responses
	– ProPECC PN5/23 Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact – ProPECC PN1/24 Minimizing Noise from Construction Activities **Technical Comments** (4) Executive Summary	
	– Please also provide summary on Site B.	Summary on Application Site B has been supplemented in the conclusion. Please refer to **Appendix A**.
	(5) S.4.3.1.1	
	– It appears that there is no detailed layout design of the proposed development, please clarify if there is no separated room planned in a flat unit.	Noise Assessment Points (NAPs) have already been placed around the building facades with openable windows for assessment and the result findings have been reflected in the submitted EAS report for the planning application purpose. Detailed layout of each flat unit, such as room sizes and configuration of the acoustic windows, will be subject to detailed design in future.
	– Also, please provide the room size of the proposed development.	Please be clarified that an average flat size of $50m^2$ is adopted for the Notional Development Scheme at Application Site B as stated in paragraph 5.4.2 of the Supporting Planning Statement.
	(6) S.2.2.1.2 & S.4.5.1.1	
	– In S.2.2.1.2, the anticipated population intake year of the development is Year 2033, so the year after 15 year should be Year 2048 instead of Year 2041 stated in S.3.4.1.1. Please clarify.	Please be clarified that the maximum traffic flow within 15 years from the population intake year of the development would occur in Year 2041, in view of the decreasing of population beyond Year 2041 in the Territorial Population and Employment Data Matrix (TPEDM). Thus, it has been assumed that the traffic flows beyond Year 2041 (i.e. including Year 2048) would

No.	Comments	Responses
		remain the same as Year 2041 for the assessments in this planning application.
	– Written proof of TD's endorsement on the traffic forecast data in Year 2048 should be provided.	Please note that TD has expressed no adverse comment on the methodology for traffic forecast under the submitted TIA.
	(7) S.4.5.1.2	
	– Please clarify if PM scenario is the worst scenario.	Please be clarified that the PM peak traffic flow is considered the worst scenario compared to AM peak and it has been adopted for assessment in the submitted report.
	(8) Table 4.2	
	– Please update the traffic flow as it is Year 2041 if necessary.	Please refer to our response to comment no. (6) above.
	(9) Figure 4.6-4.9	
	– Noted there are openable windows equipped on different facades and separated openable windows on the same façade in a room that results to more than one ventilation paths into the room. Please justify the noise reduction of the acoustic windows.	The proposal under the Notional Development Scheme is for planning application purpose only. Detailed layout of each flat unit, such as room sizes and configuration of the acoustic windows, and will be subject to detailed design in future. Relative Noise Reduction (RNR) claimed by the acoustic windows will be subject to review in detailed design stage.
	(10) Figure 4.12	
	– Please review the mitigation measures for R108a and R108b as inconsistencies have been found in Table 4.3 and 4.5.	Typos in **Table 4.3** and **Table 4.5** has been rectified. Please refer to **Appendix A**.
	(11) S.5.2.3.2	
	– Please review the ASR for those NSRs not directly facing the IF.	As mentioned in **Section 5.2.3.1** of the submitted EAS report, the Application Site falls into the category of "Urban Area" according to IND-TM. For Flats R209 and R210 at Block B1 which are not directly facing the IF, as the NSR would still have a view angle to the IF, Flats R209 and R210

No.	Comments	Responses
		are considered "Indirectly Affected" by the IF and an ASR rating "C" is be adopted. For the remaining NSRs at the southwestern facades of Block A1, B1, A2 and B2, an ASR "B" is adopted. **Figure 5.2** has been supplemented to present the ASR rating adopted for the NSRs. Please refer to **Appendix A**.
	(12) Appendix 5.1	
	– Please provide diagram/drawing showing that the fixed plants on the rooftop of The Quayside (TQR01-05) are completely screened by Harbourside HQ.	It is confirmed that the fixed plants on the rooftop of the Quayside (TQR01-05) are completely screened by Harbourside HQ. Figure in **Appendix 5.1** has been supplemented in **Appendix A**.
	– Please provide diagram/drawing showing there is no line-of-sight to the fixed noise sources from Kai Tak Fire Station.	It is confirmed that there is no line-of-sight to the fixed noise sources from Kai Tak Fire Station. Figure in **Appendix 5.1** has been supplemented in of the EAS **Appendix A**.
	– Please check if those chillers marked in red should be included in the assessment.  	Please be clarified that the fixed plants are not considered as significant noise sources which would affect the assessment findings, as the identified fixed plants are completely screened by the parapet walls. Therefore, the fixed noise sources are not included in the assessment.
	(13) Appendix 5.2	
	– Please provide records on the noise measurement for the fixed noise sources	The fixed noise sources were referenced from the specifications/ catalogue from manufacturers of the chillers/ jet fans.
	– Please also confirm if there were only 2 measurements conducted for the fixed noise sources.	Please refer to our response to comment above.
	(14) Appendix 5.3	

No.	Comments	Responses
	– Please highlight the relevant information in the catalogue for easy checking.	The relevant information in Appendix 5.3 has been highlighted in **Appendix A** for your easy reference.
	(15) Figure 5.1 & Appendix 5.1	
	– Please also include the representative NSRs in the Figures.	For clarity, the representative NSRs/ NAPs have been presented separately in **Figure 5.2** (figure number updated as **Figure 5.3**). Please refer to **Appendix A**.
	(16) Figure 5.2	
	– Please review if Block A2 should have a representative NSR for fixed noise impact assessment.	Two representative NAPs (R403a and R405b) which have closer separation distance to the fixed noise sources at Hong Kong Children's Hospital have already been placed at Block B2 for fixed noise impact assessment. The assessment findings have demonstrated that there is no fixed noise sources impact at the NAPs closest to the fixed noise sources. Since Block A2 has a larger separation distance to the fixed noise sources at Hong Kong Children's Hospital, placing NAPs at Block A2 would not be necessary.
	(17) S.5.3.2.1	
	– Please provide a fixed noise impact assessment for the planned fixed noise sources.	As Application Site B would be developed for residential site, MVAC systems may be installed for the proposed development. The proposed development should be designed to comply with the requirements under the HKPSG in detailed design stage. Noise mitigation measures such as enclosing pumps and noisy plants inside a building structure, proper selection of quiet plant aiming to reduce the tonality at NSRs, installation of silencer / acoustic enclosure / acoustic louvre for the exhaust of ventilation system and locating all openings of ventilation systems facing away from NSRs shall be considered in the detailed design of the Application Site B as far as practicable. Thus, fixed noise impact assessment for the planned fixed noise sources is considered not required under this planning stage.

No.	Comments	Responses
	(18) Table 6.1	
	– Only the noise sensitive uses included in the Site A should be mentioned in the table.	Table has been updated for clarification. Please refer to **Appendix A**.
	(19) Table 6.2 and Table 6.3	
	– Figures 6.2 and 6.3 show the NSR is P01b while P01a is mentioned in the Table 6.2 and 6.3. Please clarify.	Typos in **Tables 6.2** and **6.3** have been rectified. Please refer to **Appendix A** for clarification.
	(20) S.6.2.1.2	
	– According to S.6.2.1.2, the predicted noise levels at Site A ranged from 84-86 dB(A). However, it is 80-81 dB(A) in Table 6.3. Please review.	Please be clarified that the result quoted in **Section 6.2.1.2** of the submitted EAS report presents the unmitigated noise levels from NAH EIA. The values presented in **Table 6.3** are the mitigated noise levels from NAH EIA.
	(21) S.7.1.1.3	
	– Figure 2.6 did not show the location of NAPs.	Location of NAPs has been supplemented in **Figure 7.1** in **Appendix A**.
	– There is no Figure 2.8 in the report. Please review.	Please refer to **Figure 7.1** shown in **Appendix A**.
	(22) Section 11.2.1.1 & Fig 11.1	
	– Please add the intake of south district cooling system within Kai Tak Approach Channel as one of the WSRs.	Noted. Please refer to **Appendix A** for the supplement.
	Noise Model	
	(23) Please review the road texture depth in the noise model.	According to Section 10.58 of the General Specification for Civil Engineering Works published by CEDD, the average texture depth of concrete carriageway shall not be less than 0.7mm. It is therefore considered appropriate to adopt a road texture depth of 0.8mm as in the current noise model. Besides, according to the CRTN UK, the road texture depth only affects the correction of road surface for roads which are impervious road surfaces and where the traffic speed is higher or equal to 75kph. Given that the post speed of all roads except Kwun Tong Bypass within the 300m

No.	Comments	Responses
		assessment area of the proposed site is 70km/h or below, the road texture depth would not affect the results. For pervious road surfaces, a 3.5dB(A) reduction will be applied for roads surfaced with pervious macadam according to CRTN UK. As the sections of Kwun Tong Bypass with traffic speed at 80km/h are applied with LNRS with reference to EPD-CED, the road texture depth would not affect the results. Therefore, no updates are required for the noise model.
	Textual Comment (24) Figure 2.7: Site layout plan – Typical Floor (Application Site B) should be Figure 2.8.	The Site Layout Plan – Typical Floor (Application Site B) is illustrated in Figure 2.4 in the submitted EAS.
	(25) Appendix 5.4 – Screening Effect Correction – The full stop should be deleted in "5dB(A) correction has been applied for.partial screening".	Noted. Please refer to **Appendix A** for clarification.
2.	**Environmental Protection Department, Environmental Assessment Division, Territory South Group, Kowloon, dated 19 March 2025** **EPD's comments on SIA** **General Comments** (1) Please re-visit the assessment based on the specific comments below. In the next submission, please provide the SIA report (in pdf) and calculation spreadsheet (in Excel) as well as all Response to Comments from EPD and DSD as Appendix. Please also highlight the revised/updated content of the SIA report in the next submission to facilitate review.	Noted. The supplementary information in SIA report are highlighted in yellow in **Appendix B**. The calculation spreadsheet (in Excel), which has been included in appendices of the SIA report (in pdf), is provided to EPD separately.
	(2) The proposed development will only involve sites located in the East Kowloon Sewerage Catchment. Please review the	Noted. For clarity, please refer to **Table 2-5** in **Appendix B**.

No.	Comments	Responses
	corresponding Catchment Inflow Factor presented in Table 2-5 for the avoidance of doubt. Appendix C – Site 3E1 and 3E2	
	(3) Please supplement the development information of the Hong Kong Children's Hospital and Acute Hospital for reference	Noted. Information on the sewerage flows and their discharge location of the Hong Kong Children's Hospital and Acute Hospital provided by the Hospital Authority has been provided separately to EPD for reference.
	(4) The estimated swimming pool backwash from NKIL6647 is underestimated. Please review and revise	Noted. The estimate has been supplemented with integration of the indoor swimming pool. Methodologies and findings of the submitted SIA remain valid. Please refer to **Appendix B**.
	(5) Please review and revise the residential UFF for Site 3E1 and 3E2	Please be confirmed that the UFF for Site 3E1 and 3E2 is based on corresponding UFF recommended in EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GEFS). Methodologies and findings of the submitted SIA remain valid.
	(6) Please review and revise the calculation steps. For example the accumulative ADWF and Peak Flow for sewer section (FMH4100328 to FMH4061903) and sewer section (TMH_3E2 to Exist_tapping) Appendix C – Site 4C4 and 4C5	Noted. The calculation steps, methodologies and findings of the submitted SIA remain valid. For clarity, please refer to the excel for details.
	(7) Please review and revise the residential UFF for Site 4A1, 4A2, 4B1, 4B2, 4C1 and 4C2	Please be confirmed that the UFF for the residential developments was based on corresponding UFF recommended in EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GEFS). Methodologies and findings of the submitted SIA remain valid.
3.	**Environmental Protection Department, Environmental Assessment Division, Territory South Group, Kowloon, dated 24 March 2025**	

No.	Comments	Responses
	Further to my email dated 19 March 2025, please find the third batch of comments on the s.16 Planning Application No. A/K22/43, specifically pertaining to Appendix D Environmental Assessment Study for your immediate attention and follow-up. The remaining comments regarding Waste Management and Land Contamination Appraisal are still under review and will be shared with you once available. Air Quality	
	1. R-to-C #1 & Section 8.2.1.4: Please present and discuss the PATH background of the project.	For clarity, the PATH data for the concerned PATH grids are supplemented in **Table 8.5** and **Section 8.2.1.4** in **Appendix A**.
	2. R-to-C #1 & Section 8.4.1: Please supplement and discuss if there is site formation and excavation works and discuss the amount of excavated materials to be handled each day, transportation means of construction wastes/materials in/out the project site; and supplement the relevant mitigation measures, e.g. limitation of maximum works area per time, works area phasing, planning of transportation route, etc.	There will be site formation and site excavation works for both sites. With the good practices and mitigation measures in place as described in this planning application for minor relaxation, no adverse air quality impacts are anticipated. The amount of excavated materials to be handled each day is subject to detailed design and construction sequence in future.
	3. R-to-C #1 & Section 8.4: Please review and supplement if there are any concurrent construction projects in the assessment area and evaluate the cumulative air quality impact.	The proposed construction period of this project is from 2030 to 2033. As the potential concurrent projects such as New Acute Hospital, Cullinan Harbour, The Pavilia Forest and Proposed Residential Development at Nos. 1-5 Kai Hing Road are all set to be completed before 2030, no concurrent projects are within the 500m assessment area during construction phase.
	4. R-to-C #3: Our previous comment has not been addressed. There is no information on the road type of Lam Chak Street, Kai Hing Road, Hoi Bun Road, Shing Fung Road and Shing King Street in the said Traffic Forecast. Please provide confirmation from TD on the proposed road types.	TD has confirmed the following proposed road types in the Traffic Forecast:

<table>
<tr><th>No.</th><th>Comments</th><th>Responses</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Road Name</th><th>Road Type</th></tr>
<tr><td>Lam Chak Street</td><td>Local Distributor</td></tr>
<tr><td>Kai Hing Road</td><td>Local Distributor</td></tr>
<tr><td>Hoi Bun Road</td><td>Local Distributor</td></tr>
<tr><td>Shing Fung Road</td><td>Local Distributor</td></tr>
<tr><td>Shing King Street</td><td>Local Distributor</td></tr>
</table>
</td></tr>
<tr><td></td><td>5. R-to-C #10 & Section 8.8.1.1: Please remove the information about the cumulative assessment results from Kai Tak Development EIA because it is irrelevant to the consideration of buffer distance requirement as discussed in Section 8.8.1.2 and the results have been outdated. Instead, please supplement the buffer distance requirement regarding the chimney of cruise.</td><td>For clarity, the information on Kai Tak Development EIA has been removed and discussion on the buffer distance requirement has been supplemented in Section 8.8.1.1 in Appendix A.</td></tr>
<tr><td></td><td>6. R-to-C #11 & Section 8.10: Please provide more details on the odour patrol, including the time of patrol, weather condition and patrol route. Besides, our previous comment has not been addressed. Please check with regional office of EPD to see if there are any odour complaints in the vicinity of the proposed development (e.g. Kwun Tong Typhoon Shelter, Kai Tak Approach Channel).</td><td>Further information on the odour patrol and odour complaints have been supplemented in Section 8.10.1.1 in Appendix A.</td></tr>
<tr><td></td><td>7. Section 8.1.1.1: Please supplement the following two circulars in the discussion.

- DEVB's TC No.13/2020, Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts

- DEVB's TC No.1/2015, Emissions Control of NRMM in Capital Works Contracts of Public Works</td><td>The circulars have been supplemented in Section 8.1.1.1 in Appendix A.</td></tr>
<tr><td></td><td>8. Section 8.2.1.2: SAMP v2.1 has been available. Please update accordingly.</td><td>Version number of SAMP has been supplemented in Section 8.2.1.2 in Appendix A.</td></tr>
<tr><td></td><td>9. Figure 8.1: Please revise the location points of the ASRs as the nearest point to the</td><td>Separation distances have been reviewed. The ASRs in Figure 8.1 is supplemented in Appendix A for clarity.</td></tr>
</table>

No.	Comments	Responses
	proposed development and check and revise the distance in the table accordingly.	
	10. Table 6.5:	
	a) Please check if numbering of "Table 6.5" should read "Table 8.5".	Typo has been rectified in **Table 8.6** in **Appendix A.**
	b) Please check if the name of PA1 and PA2 should be swapped.	Typo has been rectified in **Table 8.6** in **Appendix A.**
	c) Please provide the assessment heights of the ASRs.	The construction phase assessment has considered the nearest horizontal separation distance between ASRs only for qualitative assessment. Therefore, the assessment heights of ASRs would not be necessary.
	d) Please review whether the planned development at Ex-Kowloon Godown should be included as one of the ASRs.	The planned development has been supplemented in **Figure 8.1** and **Table 8.6** in **Appendix A.**
	11. Section 8.4: Please conduct weekly site audit to confirm the implementation of the mitigation measures.	Please be advised that the Notional Development Schemes are for planning application of minor relaxation only. The details of the mitigation measures and frequency of the site audit during construction will be subject to the detailed design of the developments in future.
	12. Section 8.8.1.2: Please clarify if fresh air intake locations at +5mPD for both sites 4C4 and 4C5 will be designed and there will be no fresh air sensitive uses to be located within the 100m buffer zone from the cruises. These information should also be explicitly reflected in Figure 8.6. Please revise.	**Section 8.8.1.2** has been supplemented to point out that the design of fresh air intake locations at ground floor level for both sites 4C4 and 4C5 or outside the 100m buffer zone from the cruises shall be adopted. Please refer to **Appendix A**.
	13. Section 8.9.1.1: Please specify the dates and the time of the site visit in order to justify that the observations of "no engine/motor idling or loading/ unloading activities at Kwun Tong Typhoon Shelter and no vessels were docked at the piers of the Kerry DG Warehouse based on the site visits" are reasonable.	The dates and time of the site visits have been supplemented in **Section 8.9.1.1** in **Appendix A**.

No.	Comments	Responses
	14. Section 12.1.1.8: Please specify the level of +5mPD for ground floor level.	Ground floor mPD level has been supplemented in **Section 12.1.1.8** in **Appendix A**.
	15. After Section 12.1.1.8: Please discuss the odour impact to the proposed development.	Discussion on odour impact has been supplemented in **Section 12.1.1.9** in **Appendix A**.
	16. Air Pollution Control (Fuel Restriction) Regulation should read Air Pollution Control (Fuel Restriction) Regulations. Please revise across the text.	Typo has been revised in **Appendix A**.
	17. Please review and check the table numbers across the report to ensure correct numbering.	Typos in table numbers have been revised in **Appendix A**.
	Non-fuel gas DG Risk	
	1. R-to-C #1: The proposed development is near Kerry Dangerous Goods Warehouse. The potential risk impacts on the proposed development should be critically reviewed and assessed against the risk guidelines in HKPSG. Please provide the confirmation for the potential decommissioning of the Kerry Dangerous Goods Warehouse. Otherwise, a quantitative risk assessment should be carried out in order to resolve potential risk implications. Besides, please note that reasonably sufficient time shall be allowed to carry out the quantitative risk assessment. The applicant should also note that the proposed building design, including its layout and maximum height, and the proposed population number for the proposed development shall be subject to the QRA findings with a view to meeting the risk guidelines. It should be mentioned in Section 2.4.2 in the Planning Statement for clarity.	Nearer the time before population intake, should the Kerry Dangerous Goods Godown have yet to be decommissioned, the associated risk would be assessed as appropriate and it is noted that the proposed building design, including its layout and maximum height, and the proposed population number for the proposed development shall be subject to the findings of associated risk assessment.
4.	**Environmental Protection Department, Environmental Assessment Division, Territory South Group, Kowloon, dated 31 March 2025**	
	(1) R-t-C (6)(a) - As indicated by the consultant, the FSD's response is still pending and will be incorporated into the subsequent	FSD's response is attached in **Appendix 9.4.** FSD has advised that no dangerous goods license was found associated with the

No.	Comments	Responses
	submission once received. Therefore, we reserve the right to provide further comments regarding the evaluation of potential land contamination at the project site.	Application Sites. While there is one incident record involving rubbish fire at a lamppost near Application Site A, no land contamination issue is anticipated as the quoted lamppost is located outside the site boundary of Application Site A.
	(2) R-t-C 6(a) and (7)(a) - Please incorporate the enquiry letter for clarity.	The enquiry letters have been provided separately for EPD for review.
	(3) R-t-C (10)(c) and Section 9.5 (a) The summary of findings is not included in Section 9.5. The consultant should: (i) Evaluate the identified findings to assess potential land contamination impacts; (ii) Specify the limitations of the assessment; and (iii) Propose recommended actions (e.g., site re-appraisal as referenced in the R-t-C (13)) (b) Whether the impact arising from land contamination is anticipated or not is subject to the review in the site re-appraisal. Please specify.	Responses for comment (3)(a)(i) to (iii) and (3)(b): Please be clarified that the Application Sites are currently under the government land allocations. Any contamination due to their current uses would be properly treated by the current occupants before handing over the sites back to the Government. Hence, the impact arising from land contamination shall not be anticipated at the Application Sites.
	(4) R-t-C (11)(a), 12(d) and Section 9.5 - If the CLP substation cannot be assessed to evaluate potential sources of land contamination, the consultant should clearly state this limitation and propose way forward action.	Please be clarified that the Lam Chak Street Substation is under the Trunk Road T2 and the Cha Kwo Ling Tunnel Project (the T2 Project) at Application Site B as stated in Section 2.3.2 of the Supporting Planning Statement, and it is within the same government land allocation of the project. Any contamination due to their current uses would be properly treated by the current occupants before handing over the sites back to the Government.
	(5) R-t-C (13) and Para 9.5.1.2 - It is unable to determine whether the previous comment has been addressed or not as the Para 9.5.1.2 is not found in the report.	Please refer to response to comment (3)(a) above.
	(6) R-t-C (14) and Para 9.6.1.1 - It is unable to determine whether the previous comment has	Please refer to response to comment (3)(a) above.

No.	Comments	Responses
	been addressed or not as the Para 9.6.1.1 is not found in the report.	
	(7) R-t-C (15)(b) and Para 10.1.2.1 - Please supplement the anticipated excavation area.	There will be site formation and site excavation works for both sites. With the good practices and mitigation measures in place as described in this planning application for minor relaxation, no adverse environmental impacts are anticipated. The amount of excavated materials is subject to detailed design and construction sequence in future.
	(8) Para 10.2.8.3 - Please clarify what EPD approval is required for the on-site reuse, or remove the phrase "subject to EPD's approval"	Please be clarified that EPD's approval is not required. The phrase "subject to EPD's approval" has been removed.

(Last Updated: 10 April 2025)

Appendix A Extracted Pages of Environmental Assessment Study

Contents

Appendices

Appendix 4.1

Traffic Forecast for Year 2041

Appendix 4.2

Predicted Road Traffic Noise Levels (Base Case)

Appendix 4.3

Predicted Road Traffic Noise Levels (Mitigated Case)

Appendix 5.1

Site Survey Record

Appendix 5.2

Sound Pressure Levels and Sound Power Levels of Fixed Noise Sources

Appendix 5.3

Stefani V-type single-row condenser and Trane Model RTAF 090 to 450 air cooled chillers specifications

Appendix 5.4

Parameters and Assumptions for Fixed Noise Impact Assessment

Appendix 5.5

Predicted Fixed Noise Levels

Appendix 8.1

Relevant Correspondence with EPD (Odour)

Appendix 9.1

Historical Aerial Photos

Appendix 9.2

Photo Record of Site Survey

Appendix 9.3

Site Walkover Checklist

Appendix 9.4

Relevant Correspondence with FSD

Appendix 9.5

Relevant Correspondence with EPD

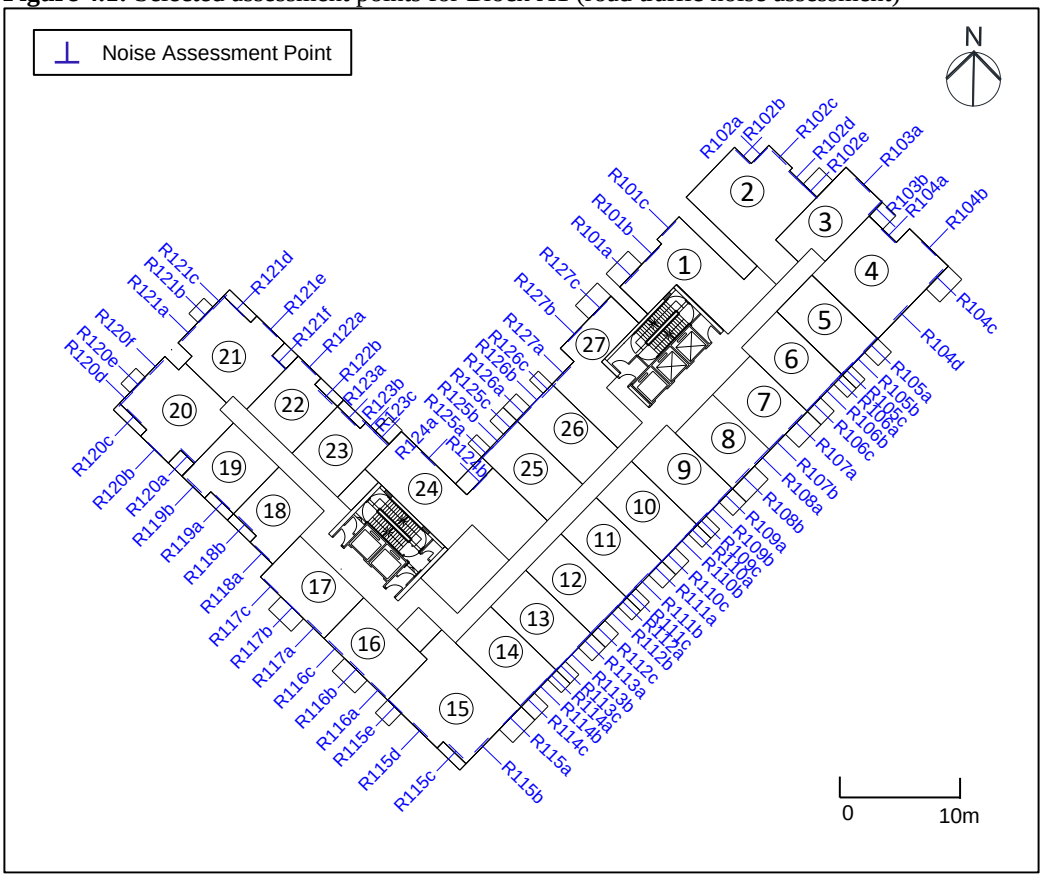
Appendix 10.1

Previous GI Record

4.3 Noise Assessment Points

4.3.1.1 Noise assessment points for the proposed residential blocks have been assigned to all openable windows of the NSRs for ventilation. An average flat size of 50m^2 is adopted for the residential flats at Application Site B. The locations of the selected assessment points are illustrated in **Figures 4.1 – 4.4**.

Figure 4.1: Selected assessment points for Block A1 (road traffic noise assessment)



4.4 Assessment Methodology

4.4.1.1 Traffic noise levels at the facades of the selected assessment points have been predicted. The prediction is based on the maximum traffic projection within 15 years upon the population intake of the development and calculation method in accordance with the UK Department of the Transport "Calculation of Road Traffic Noise" (CRTN). The traffic projection has taken into account the induced traffic due to the operation of other planned roads and committed projects.

4.5 Traffic Flow Data for Assessment

4.5.1.1 As advised by the Traffic Consultant, the maximum traffic flow within 15 years upon population intake of the residential development will occur in Year 2041. Technical note for methodology of traffic forecast for EAS based on the traffic data and impact assessment in January 2025 has been submitted to Transport Department.

4.5.1.2 The roads surrounding the Application Site and the predicted peak hourly traffic flows are presented in **Figure 4.5** and **Table 4.2** respectively. PM scenario is considered the worst scenario compared to AM peak and therefore has been adopted for assessment. The traffic flow data for all roads is given in **Appendix 4.1**.

Table 4.2: Predicted peak hourly traffic flow data on major roads (Application Site B)

Road ID [1]	Road Description	Direction	Speed Limit (km/hr)	Year 2041	
				Traffic Flow (veh/hr)	% of Heavy Vehicles
1	Cheung Yip Street	SB	50	1,134	43.8%
2	Cheung Yip Street	NB	50	1,138	46.3%
3	Cheung Yip Street	SB	50	74	40.2%
4	Cheung Yip Street	NB	50	74	40.2%
5	Cheung Yip Street	NB	50	1,134	15.5%
9	Lam Chak Street	EB	50	399	40.0%
101	Kwun Tong Bypass	WB	80	3,723	43.2%
102	Kwun Tong Bypass	WB	80	1,408	39.1%
103	Kwun Tong Bypass	WB	80	2,314	45.6%
104	Kwun Tong Bypass	EB	80	685	31.3%
105	Kwun Tong Bypass	EB	80	3,109	37.6%
106	Kwun Tong Bypass	EB	80	3,794	36.5%

Note:
[1] Only the major roads are shown in the table above. Hence, the flow ID is not in sequential order.

Table 4.3: Locations of proposed acoustic windows for mitigating road traffic noise (Application Site B)

Acoustic Window at NSR	Floors Requiring Acoustic Window [1]
R102a	3/F to 12/F
R102b	3/F to 15/F
R102c	3/F to 17/F
R102d	3/F to 11/F
R103a	3/F to 26/F
R104a	3/F to 19/F
R104b	3/F to 26/F
R104d	3/F to 26/F
R105b	3/F to 26/F
R106b	3/F to 25/F
R107b	3/F to 24/F
R108a	3/F to 22/F
R109b	3/F to 21/F
R110b	3/F to 21/F
R111b	3/F to 19/F
R112b	3/F to 18/F
R113b	3/F to 17/F
R114b	3/F to 16/F
R115b	3/F to 14/F
R115d	3/F to 7/F
R116a	3/F to 5/F
R116c	3/F to 5/F
R117a	3/F to 5/F
R117c	3/F to 6/F
R119b	3/F to 8/F
R120b	3/F to 15/F
R120d	3/F to 26/F
R120f	3/F to 26/F
R121a	3/F to 25/F
R121c	3/F to 25/F
R121e	3/F to 5/F
R208c	3/F to 23/F
R209a	3/F to 26/F
R210a	3/F to 26/F
R210c	3/F to 26/F
R302b	3/F to 7/F
R302c	3/F
R303a	3/F to 4/F
R303b	3/F to 7/F
R304b	3/F to 7/F
R304c	3/F to 8/F
R402f	3/F to 13/F
R403b	3/F to 25/F
R404b	3/F to 27/F
R405b	3/F to 27/F
R405c	3/F to 26/F
R406a	3/F to 23/F
R406b	3/F to 22/F

Conventional Acoustic Balcony at NSR	Floors Requiring Conventional Acoustic Balcony [1]
R112c	3/F to 17/F
R113a	3/F to 17/F
R113c	3/F to 16/F
R114a	3/F to 16/F
R114c	3/F to 15/F
R115a	3/F to 15/F
R115c	3/F to 8/F
R115e	3/F to 5/F
R116b	3/F to 5/F
R117b	3/F to 5/F
R119a	3/F
R121d	3/F to 19/F
R303c	3/F to 6/F
R304a	3/F to 7/F
R407b	3/F to 17/F
R408a	3/F to 15/F

Note:

[1] First domestic floor for all blocks starts at 3/F

Table 4.5: Proposed locations of enhanced acoustic balcony (baffle type) design as mitigation measure for road traffic noise (Application Site B)

Enhanced Acoustic Balcony (Baffle Type) at NSR	Floors Requiring Enhanced Acoustic Balcony (Baffle Type) [1]
R104c	3/F to 26/F
R105a	3/F to 26/F
R105c	3/F to 26/F
R106a	3/F to 26/F
R106c	3/F to 25/F
R107a	3/F to 24/F
R108b	3/F to 23/F
R109a	3/F to 22/F
R109c	3/F to 21/F
R110a	3/F to 20/F
R110c	3/F to 20/F
R111a	3/F to 19/F
R111c	3/F to 19/F
R112a	3/F to 18/F
R120c	3/F to 21/F
R120e	3/F to 26/F
R121b	3/F to 26/F
R209b	3/F to 26/F
R210b	3/F to 26/F
R403a	3/F to 25/F
R403c	3/F to 26/F
R404a	3/F to 26/F
R405a	3/F to 26/F
R406c	3/F to 20/F

Note:

[1] First domestic floor for all blocks starts at 3/F

5.2 Fixed Noise Criteria

5.2.1.1 According to Section 4.2.13 in Chapter 9 of the HKPSG, noise assessments for industrial noise source would normally be conducted in accordance with the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM) under the Noise Control Ordinance (Cap. 400). The TM-Places lays down statutory Acceptable Noise Levels (ANLs). The HKPSG also states that in order to plan for a better environment, all planned fixed noise sources should be so located and designed that when assessed in accordance with the TM, the level of the intruding noise at the facade of the nearest sensitive use should be at least 5dB(A) below the appropriate ANL shown in Table 3 of the IND-TM or, in the case of the background being 5dB(A) lower than the ANL, should not be higher than the background.

5.2.2 Application Site A

5.2.2.1 As mentioned in **Section 2**, Application Site A would be developed into office towers and hotel towers for commercial use and would not rely on openable windows for ventilation. Therefore, the noise standards do not apply to the planned development at Application Site A, and no NAPs are assigned for fixed noise sources impact assessment. The public transport station (potential KTGTS's station and depot) at podium (3/F) will be designed and appropriated measures will be implemented according to the EIA study under the KTGTS project.

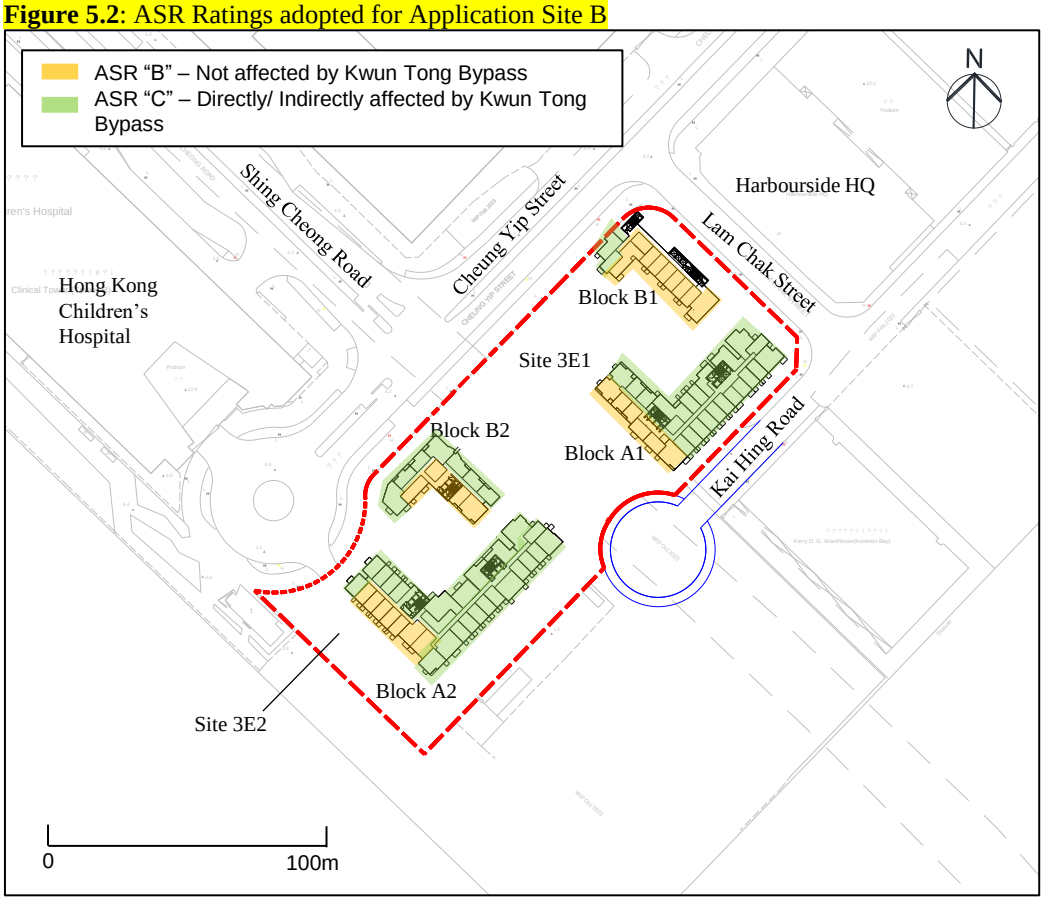
5.2.3 Application Site B

5.2.3.1 For Application Site B, the site is planned for high-rise residential development. It is next to Hong Kong Children's Hospital, high-rise commercial buildings, residential buildings and industrial buildings. According to IND-TM, an "Urban Area" is defined as an area of high density, diverse development including a mixture of elements such as industrial activities, major trade or commercial activities and residential premises. Thus, the whole site shall fall into type (iii) "Urban Area" according to IND-TM.

5.2.3.2 There is an Influencing Factor (IF) under the IND-TM that affects Application Site B. According to the Annual Traffic Census 2023, Kwun Tong Bypass has an annual average daily traffic flow of 112,420 vehicles which is in excess of 30,000 vehicles. As the NSRs within Application Site 3E1 and 3E2 are located within 300m from the above IFs, the NSRs that are directly facing the IF are considered to be affected by the IFs and hence an Area Sensitivity Rating of "C" should be adopted. The ANL for ASR of "C" should be 70dB(A) and 60dB(A) for daytime and evening time period, and night-time period respectively.

5.2.3.3 For Flats R209 and R210 at the northwestern end of Block B1, Flats R209 and R210 are considered "Indirectly Affected" by the IF and an ASR rating "C" is be adopted. For the remaining NSRs at the southwestern facades of Block A1, B1, A2 and B2, an ASR "B" is adopted. The ANL for ASR of "B" should be 65dB(A) and 55dB(A) for daytime and evening time period, and night-time period respectively. The ASR ratings adopted for the NSRs at Application Site B are shown in **Figure 5.2**.

Figure 5.2: ASR Ratings adopted for Application Site B



5.3 Review of Fixed Noise Impact for Application Site A

5.3.1.1 Fixed plants (e.g. ventilation shaft, exhaust, etc.) will be installed to facilitate the operation of the Development, which may have potential fixed noise impact on the nearby NSRs such as the adjacent Cullinan Harbour to the northwest and the Pavilia Forest to the northeast of the proposed development.

5.3.1.2 The exact location of the proposed fixed plants was not available during the planning stage. As advised by the Project Engineer, all mechanical plants for the Development will be located on the rooftop or enclosed in the plant rooms with the exhausts located on the building façades. According to "Good Practices on Ventilation System Noise Control" issued by EPD, noisy equipment should be placed, wherever practicable, at a greater distance from receivers and behind some large enough obstruction (e.g. a building or a barrier) to avoid any direct line of sight between the receivers and noisy equipment. It is

recommended that all exhausts shall be located on the southwestern facades of the proposed buildings such that there is no direct line of sight from the residential developments nearby (i.e. Cullinan Harbour and the Pavilia Forest). With the above measures, adverse noise impact from the planned fixed plant noise sources due to the operation of the development at Site 4C4 & 4C5 is not anticipated.

5.3.1.3 Nonetheless, if exhausts are required to be located on façades with direct line of sight from the nearby noise sensitive uses, the Contractor shall select fixed plants that can achieve the compliance of the NCO criteria, as well as adopting the proposed mitigation strategies and measures when necessary. Installation of silencers/ acoustic louvers at the exhaust shall be considered to minimise the noise impact. The Contractor should also carry out a noise commissioning test for all fixed noise sources before operation of the Project, in order to ensure compliance of the operation airborne noise levels with the planning fixed source noise criteria under NCO.

5.4 Predicted Fixed Noise Impact for Residential Blocks at Application Site B

5.4.1 Assessment Methodology

5.4.1.1 For the identified fixed noise sources, noise measurement shall be taken at locations where access was allowed and influences from other noisy activities were as minimal as possible. However, site access to the Hong Kong Children's Hospital and Kai Tak Fire Station was not allowed. Therefore, reference has been made to other plant of similar mode, nature and scale for this assessment. Aerial photos have been reviewed to ensure the noise data references adopted for noise assessment are fixed plants of similar type, nature and scale. For the planned fixed noise sources at New Acute Hospital, reference has been made from the Preliminary Environmental Review Report (PER) for the New Acute Hospital (NAH). Since the location of the planned fixed noise sources has not been confirmed, the NAH PER has assumed one planned fixed noise source at each building block façade and on the rooftop. The maximum allowable sound power levels of the planned fixed noise sources have been extracted from the PER report and adopted for assessment.

5.4.1.2 **Appendix 5.2** presents the adopted sound pressure levels and sound power levels for the fixed noise sources. **Appendix 5.3** presents the referenced sound pressure levels and sound power levels. The sound power levels for the planned fixed noise sources at New Acute Hospital are extracted from the NAH PER.

5.4.1.3 Tonality correction of 3dB(A) has been added for conservative assessment. Impulsive and intermittent characteristics of the identified noise sources were investigated and considered in accordance with TM-Places. No impulsive or intermittent character was identified at the site and therefore no correction has been applied.

5.5 Review of Fixed Noise Impact from Application Site B

5.5.1.1 As Application Site B would be developed for residential site, MVAC systems may be installed for the proposed development. The proposed development should be designed to comply with the requirements under the HKPSG in detailed design stage. Noise mitigation measures such as enclosing pumps and noisy plants inside a building structure, proper selection of quiet plant aiming to reduce the tonality at NSRs, installation of silencer / acoustic enclosure / acoustic louvre for the exhaust of ventilation system and locating all openings of ventilation systems facing away from NSRs shall be considered in the design of the Application Site B as far as practicable.

6 Review of Potential Helicopter Noise Impact

6.1 Helicopter Noise Criteria

6.1.1.1 In accordance with the HKPSG, exposure to helicopter noise is a type of mobile noise source. The helicopter noise standard is given in **Table 6.1**.

Table 6.1: Noise Standards for Helicopter Noise

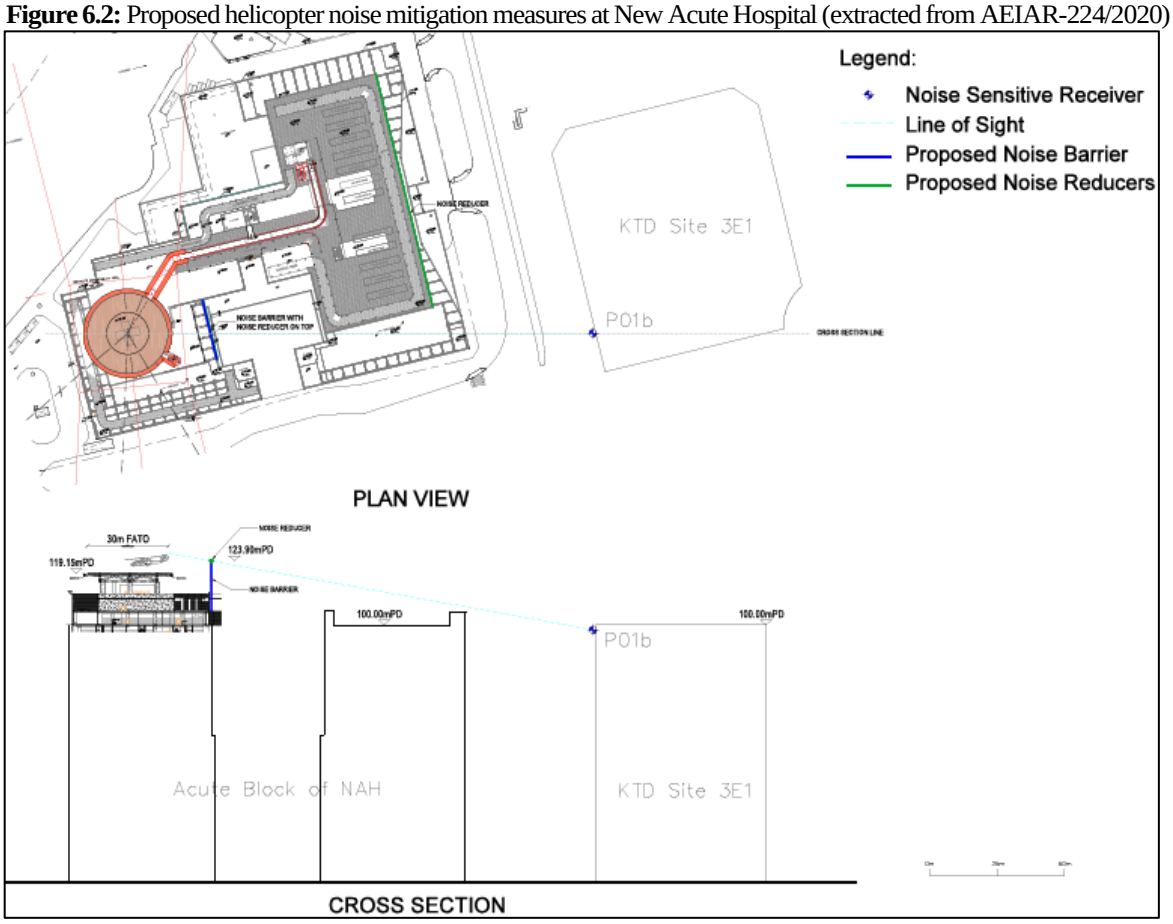
Parameters	Noise Standard [1][2]
	Helicopter Noise Lmax dB(A)
All domestic premises including temporary housing accommodation	85

Notes:
[1] The above standards apply to uses which rely on opened windows for ventilation.
[2] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external facade

6.2 Review of Helicopter Noise Impacts from the Rooftop Helipad at New Acute Hospital at Kai Tak Development Area

6.2.1.1 The planned helipad at the New Acute Hospital is located at about 150m from Site 3E1 and about 160m from Site 3E2 (**Figure 6.1**). With reference to the approved EIA for A Rooftop Helipad at New Acute Hospital at Kai Tak Development Area (AIEAR-224/2020) (NAH EIA), helicopter noise impact assessment has been carried out for the planned NSRs at both Application Site B.

Figure 6.2: Proposed helicopter noise mitigation measures at New Acute Hospital (extracted from AEIAR-224/2020)



6.2.1.3

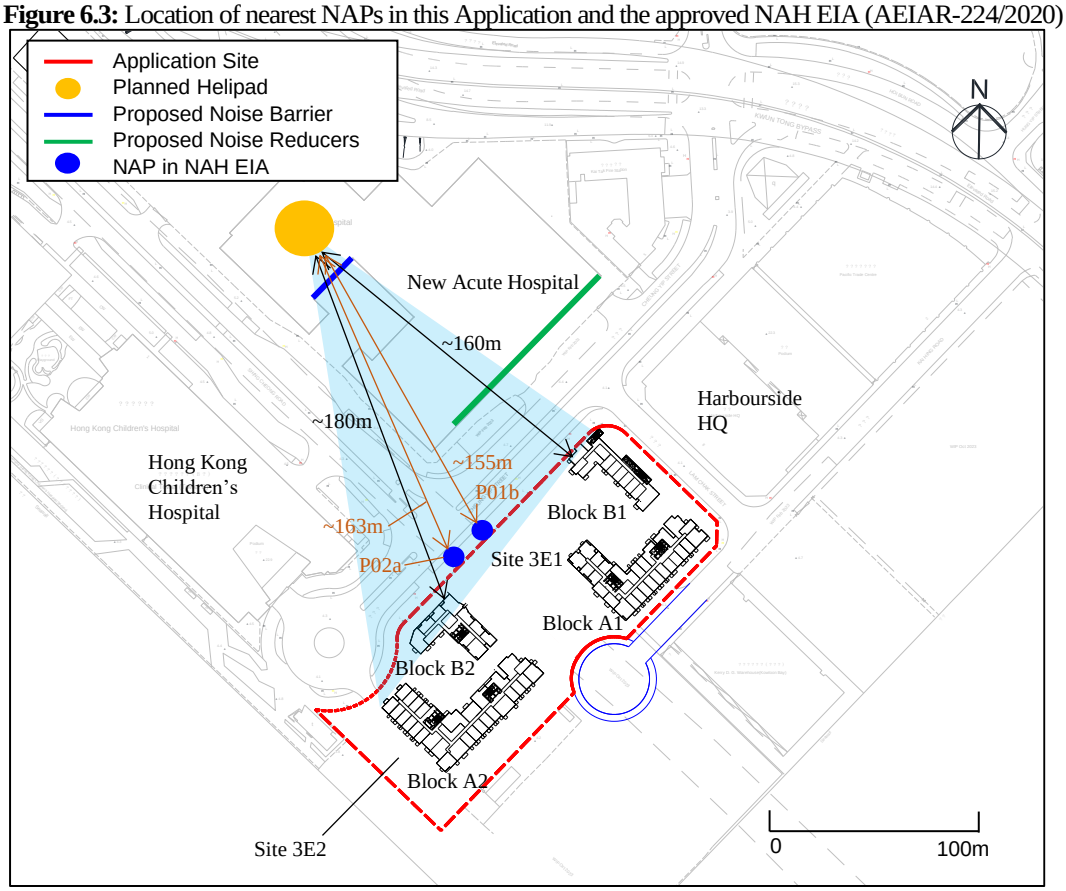
With the provision of the noise barrier and noise reducer, the predicted helicopter noise level could comply with the noise criteria. However, since the building heights of Application Site B are proposed to be increased, the separation distance between the nearest NSRs and helipad have been changed. A comparison between the approved NAH EIA and this application is provided in **Table 6.2** and geographically illustrated in **Figure 6.3**.

Table 6.2: Separation distance between the nearest NSRs and noise source of helipad

Nearest NSR ID in NAH EIA[1]	Approved NAH EIA			This Application		
	Horizontal Distance, m	Assessment Level, mPD	Slant Distance, m	Horizontal Distance, m	Assessment Level, mPD	Slant Distance, m
Site 3E1: P01b	155.9	98.2	158.5	160	94.7	163.1
Site 3E2: P02a	163.3	78.2	170.3	180	100.95	181.8

Notes:
[1] The worst NSR is determined to be the top floor.
[2] Assumed vertical level of noise source in the approved NAH EIA is 126.7 mPD.

Figure 6.3: Location of nearest NAPs in this Application and the approved NAH EIA (AEIAR-224/2020)



6.2.1.4 Based on the measurements in **Table 6.2** above, the changes in slant distance for the nearest NSRs at Application Site B are +4.6m and +11.5m respectively that the NSRs are now located further to the helipad of NAH as compared with the approved NAH EIA. Due to increase in noise level of distance attenuation, the predicted SPLs (L_{max}) at the nearest NSRs at Application Site B are expected to decrease by 0.2 d(B) and 0.6 dB(A) respectively. Considering the predicted SPLs (L_{max}) under the mitigated scenario are well below the noise criteria of 85 dB(A), the increases in noise level due to the changes in separation would not affect the findings. Therefore, adverse helicopter noise impact on the proposed development at Application Site B is not anticipated. The changes in slant distance and noise level as well as the predicted SPL (L_{max}) at NSR under mitigation scenario of the approved NAH EIA are summarized in **Table 6.3** below.

Table 6.3: Changes in slant distance and noise level

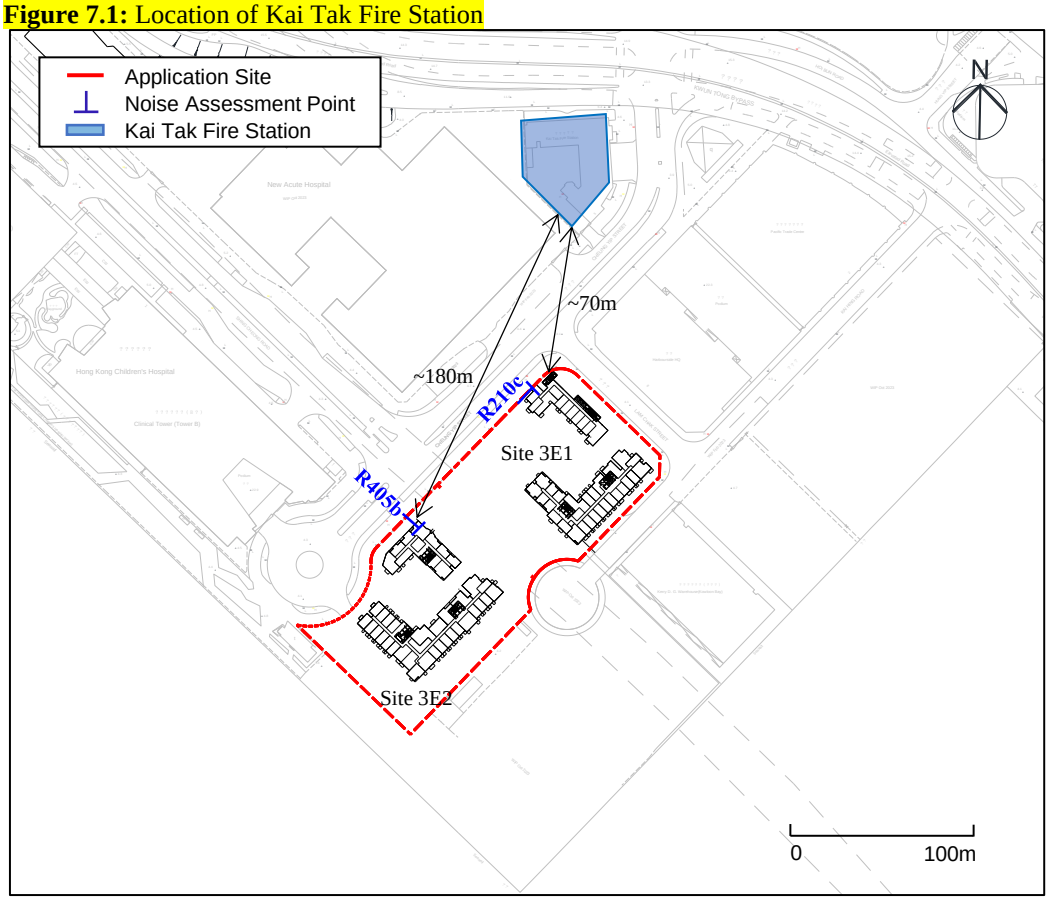
Nearest NSR ID in NAH EIA	Change in Slant Distance, m	Change in Noise Level of Distance Attenuation, dB(A)	Predicted SPL (L_{max}) at NSR under Mitigation Scenario of the approved NAH EIA [1], dB(A)	Noise Criterion (L_{max}), dB(A)
Site 3E1: P01b	+ 4.6	+ 0.2	81	85
Site 3E2: P02a	+ 11.5	+ 0.6	80	

Notes:

7 Review of Noise Nuisance Arising from Existing Kai Tak Fire Station

7.1.1.1 The Kai Tak Fire Station is located at about 70m to the north of Application Site B. The potential noise nuisance arising from Kai Tak Fire Station has been reviewed. Location of the fire station is shown in **Figure 7.1**.

Figure 7.1: Location of Kai Tak Fire Station



7.1.1.2 As advised by FSD, equipment testing to check the alarm, siren, fire engine, public address (PA) system and training activities etc are conducted during daytime as a daily scheduled activity within the fire station. It is anticipated that noise would be generated during this period. Nevertheless, FSD has advised that the equipment/ appliances testing is only conducted within the covered area of the main building located in the eastern part of the fire station. The alarm systems would only be used during daily alarm tests and in emergency situations for calling fire station members. The PA system would only be used for emergency responses round-the-clock and there is no operation pattern. Besides, training activities would be carried out at the open area and tower in the central part of the fire station from 9:30 a.m. to 11:30 a.m. daily. In other period including nighttime, the PA system and other equipment will be used for emergency events only and there is no regular pattern or frequency of its uses. Besides, operation noise from the fire station were barely noticeable at the subject site due to the high background road traffic noise.

7.1.1.3 During the process of designing the development layout of Application Site B, due consideration has been given to avoiding noise impacts from the Kai Tak Fire Station. Self-protecting building block design with blank façade facing north has been adopted for residential blocks B1 (**Figure 7.1**) which would avoid line of sight to these noise sources. Under the current scheme, all NSRs at Site 3E1 have no direct line of sight to the fixed noise sources, such as equipment testing and PA system which will be carried out or activated within the main building and hence are screened. Only few NSRs further at northwestern wing of Block B2 of Site 3E2 (**Figure 7.1**) would have line of sight to the fire station However, majority of view angle view would be screened by the building structures of New Acute Hospital and Site 3E1. Furthermore, the NSRs of Site 3E2 and the fire station would maintain a minimum separation distance of more than 180 m and would be separated by Cheung Yip Street in between. Therefore, noise nuisance from the Kai Tak Fire Station on the site is considered insignificant.

8 Review of Potential Air Quality Impact

8.1 Legislation, Standards and Guidelines

8.1.1.1 The relevant legislations, standards and guidelines applicable to the present study for the assessment of air quality impacts include:

- Air Pollution Control Ordinance (APCO) (Cap. 311);
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulations;
- Recommended Pollution Control Clauses for Construction Contracts;
- Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts (DEVB TC(W) No. 13/2020);
- Emissions Control of NRMM in Capital Works Contracts of Public Works (DEVB TC(W) No. 1/2015); and
- Hong Kong Planning Standards and Guidelines (HKPSG)

8.1.2 Air Pollution Control Ordinance

8.1.2.1 The principal legislation for controlling air pollutants is the APCO (Cap. 311) and its subsidiary regulations, which defines statutory Air Quality Objectives (AQOs).

8.1.2.2 The APCO (Cap. 311) provides the power for controlling air pollutants from a variety of stationary and mobile sources and encompasses a number of AQOs. In addition to the APCO, the following overall policy objectives are laid down in Chapter 9 of the HKPSG as follows:

- Limit the contamination of the air in Hong Kong, through land use planning and through the enforcement of the APCO to safeguard the health and well-being of the community; and
- Ensure that the AQOs for 7 common air pollutants are met as soon as possible.

8.1.3 Air Pollution Control (Construction Dust) Regulation

8.1.3.1 The Air Pollution Control (Construction Dust) Regulation specifies processes that require special dust control. The Contractors are required to inform the Environmental Protection Department (EPD) and adopt proper dust suppression measures while carrying out "Notifiable Works" (which requires prior notification by the regulation) and "Regulatory Works" to meet the requirements as defined under the regulation.

8.1.4 Air Pollution Control (Non-road mobile Machinery) (Emission) Regulation

8.1.4.1 Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation specifies that all Non-road Mobile Machinery (NRMMs), except those exempted, used in specified activities and locations including construction sites, container terminals and back up facilities, restricted areas of the airport, designated waste disposal facilities and specified processes are required to comply with the prescribed emission standards.

8.1.5 Air Pollution Control (Fuel Restriction) Regulations

8.1.5.1 Air Pollution Control (Fuel Restriction) Regulations control the types of fuel allowed for use and their sulphur contents in commercial and industrial processes to reduce SO_2 emissions.

8.1.6 Recommended Pollution Control Clauses for Construction Contracts

8.1.6.1 The recommended pollution control clauses are generally good engineering practice to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The Contractors shall design, construct, operate and maintain pollution control measures to ensure compliance with the contract provisions as well as the environmental ordinances and their regulations.

8.1.7 Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts

8.1.7.1 The circular promulgates the policy on timely application of temporary electricity and water supply for public works contracts as well as wider use of electric vehicles (EVs) in public works contracts. All temporary electricity and water supply shall be timely applied and completed before the commencement of the works contract and the electricity load and water supply shall be assessed to meet at least the initial operation of the site. The minimum number of EV(s) to be used and the installation of a designated medium-speed charger for

each EV as a standard provision at the site accommodation shall be specified by the project team in each public works contract.

8.1.8 Emissions Control of NRMM in Capital Works Contracts of Public Works

8.1.8.1 The circular sets out an implementation plan to phase out the use of exempted NRMM for four types of NRMM, namely generators, air compressors, excavators and crawler cranes. Exempted non-road mobile machinery (NRMM) for these four types of NRMM shall be phased out progressively in new capital works contracts of public works (including design and build contracts).

8.1.9 Hong Kong Planning Standards and Guidelines

8.1.9.1 Chapter 9 of HKPSG outlines the environmental requirements that need to be considered in land use planning. The recommended guidelines, standards and guidance cover the selection of suitable locations for the developments and sensitive uses, provision of environmental facilities, and design, layout, phasing and operation controls to minimise adverse environmental impacts. It also lists out environmental factors influencing land use planning and recommends buffer distances for land uses. The HKPSG also recommends minimum setback distance from different categories of air pollution sources, as summarised in **Table 8.2**

Table 8.2: Guidelines on buffer distance between air pollution sources and different land uses

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Road and Highways	*Type of Road*		
	Trunk Road and Primary Distributor	> 20m	Active and passive recreational uses
		3 – 20m	Passive recreational uses
		< 3m	Amenity areas
	District Distributor	> 10m	Active and passive recreational uses
		< 10m	Passive recreational uses
	Local Distributor	> 5m	Active and passive recreational uses
		< 5m	Passive recreational uses
Industrial Areas	*Difference in Height between Industrial Chimney Exit and the Site*		
	< 20m	> 200m	Active and passive recreational uses
		5 – 200m	Passive recreational uses
	20 – 30m (*)	> 100m	Active and passive recreational uses
		5 – 100m	Passive recreational uses
	30m – 40m	> 50m	Active and passive recreational uses
		5 – 50m	Passive recreational uses
	> 40m	> 10m	Active and passive recreational uses

Construction and Earth Moving Activities	-	< 50m	Passive recreational uses
		> 50m	Active and passive recreational uses
Odour Sources	-	200m	Sensitive uses

Notes:

[1] In situations where the height of chimneys is not known, use the set of guidelines marked with an asterisk for preliminary planning purpose and refine as and when more information is available.

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

[3] The guidelines are generally applicable to major industrial areas but NOT individual large industrial establishments which are likely to be significant air pollution sources. EPD shall be consulted when planning open space sites close to such establishments.

[4] Amenity areas are permitted in any situation.

8.2 Description of the Environment

Existing Ambient Air Quality

8.2.1.1 Application Site A and Application Site B are located at the Kai Tak Development area.

8.2.1.2 The nearest Air Quality Monitoring Station (AQMS) operated by EPD is the Kwun Tong AQMS. The latest 5-years monitoring data extracted from EPD's Smart Air Modelling Platform v2.1 (SAMP) are summarised in **Table 8.3**.

Table 8.3 Average Concentrations of Pollutants at Kwun Tong AQMS (Year 2019-2023)

Pollutant	**Parameter**	**Concentrations (µg/m^3)**						**AQOs (µg/m^3)**
		2019	**2020**	**2021**	**2022**	**2023**	**5-year mean**	
NO2	19th highest 1-hour	184	153	164	145	147	158.6	200 (18)
	Annual	**45**	**43**	**49**	**45**	**41**	**44.6**	40
RSP	10th highest 24-hour	73	67	72	49	57	63.6	100 (9)
	Annual	38	32	31	24	26	30.2	50
FSP	19th highest 24-hour	40	32	32	31	28	32.6	50 (18)
	Annual	21	16	17	14	15	16.6	25

SO2	4th highest 10-minute	41	24	24	19	29	27.4	500 (3)
	4th highest 24-hour	11	8	7	11	10	9.4	50 (3)
O3	10th highest 8-hour	150	126	136	148	136	139.2	160 (9)
CO	Max. 1-hour	-	-	-	-	-	-	30,000
	Max. 8-hour	-	-	-	-	-	-	10,000

Notes:
[1] Monitoring results exceeding the AQO are in **bold**.
[2] "-" means not measured.
[3] The 5-year mean is the average of the five yearly concentrations. Number of exceedance allowed under the AQOs is shown in ( ).

8.2.1.3 As seen from **Table 8.3** above, the annual NO_2 concentration fluctuated, peaked at 49 μg/m³ in 2021 and decreased to 41 μg/m³ in 2023, exceeding AQO criterion for the past five years; the annual RSP concentration decreased from 38 μg/m³ in 2019 to 26 μg/m³ in 2023; the annual FSP concentration decreased from 21 μg/m³ in 2019 to 15 μg/m³ in 2023; the 4th highest 10-min SO_2 concentration remained relatively low, with a slight increase to 29 μg/m³ in 2023; and the 10th highest 8-hour O_3 concentration remained fairly stable, averaging around 139.2 μg/m³ over the years.

Future Ambient Air Quality

8.2.1.4 The future ambient air quality in Year 2030 is predicted by a regional air quality model named "Pollutants in the Atmosphere and their Transport over Hong Kong" (i.e. PATH v3.0). NO_2, RSP and FSP are generally considered as the key concerned pollutants for development. The committed and planned control measures to be implemented by the Hong Kong Government and Pearl River Delta Economic Zone (PRDEZ) are accounted for in PATH. The future ambient air quality within the concerned PATH grids (i.e. 43_32, 44_32, 43_33 and 44_33) are available in EPD's SAMP. The pollutant concentrations predicted by PATH v3.0 for Year 2030 for the concerned PATH grids are summarised in **Table 8.5**. It is predicted all AQO parameters would be below the AQOs, except for O3 which is a regional air pollutant not directly emitted from any pollution source.

Table 8.5: Summary of Year 2030 background from PATH v3.0

Pollutant	Parameter	Concentrations in various PATH grids (μg/m^3)				AQOs[1] (μg/m^3)
		43_32	44_32	43_33	44_33	
SO_2	4th highest 10-minute [2]	22	22	20	21	500 (3)
	4th highest 24-hour	7	7	7	7	50 (3)
NO_2	19th highest 1-hour	93	91	89	88	200 (18)
	Annual	20	18	17	17	40 (N/A)
CO	Max. 1-hour	525	523	527	527	30,000 (0)
	Max. 8-hour	491	490	499	503	10,000 (0)
O_3	10th highest 8-hour	**169**	**171**	**172**	**170**	160 (9)
RSP	10th highest 24-hour	50	51	51	52	100 (9)
	Annual	19	19	19	20	50 (N/A)
FSP	19th highest 24-hour	29	29	29	30	50 (35)
	36th highest 24-hour	24	24	25	26	
	Annual	12	12	12	12	25 (N/A)

Note:
[1] Values in ( ) indicate numbers of exceedances allowed under the AQOs
[2] Values are given as highest 10-minute SO_2 concentrations, which are estimated based on EPD's "Guidelines on the Estimation of 10-minute Average SO_2 Concentration for Air Quality Assessment in Hong Kong".
[3] Concentration in PATH grid exceeding the AQO are bolded and underlined.

8.3 Representative Air Sensitive Receivers

8.3.1.1 Existing ASRs are identified by means of reviewing topographic maps, aerial photos, land status plans and supplemented by site inspections, whilst planned/ committed ASRs are reviewed by making reference to relevant Outline Zoning Plans (OZP), Outline Development Plans, Layout Plans and other published plans in the vicinity of the site.

8.3.1.2 Representative existing and planned ASRs have been reviewed. Details of the identified ASRs are summarised in **Table 8.6**. and its corresponding location is illustrated in **Figure 8.1**.

Figure 8.1: Location of representative ASRs nearby

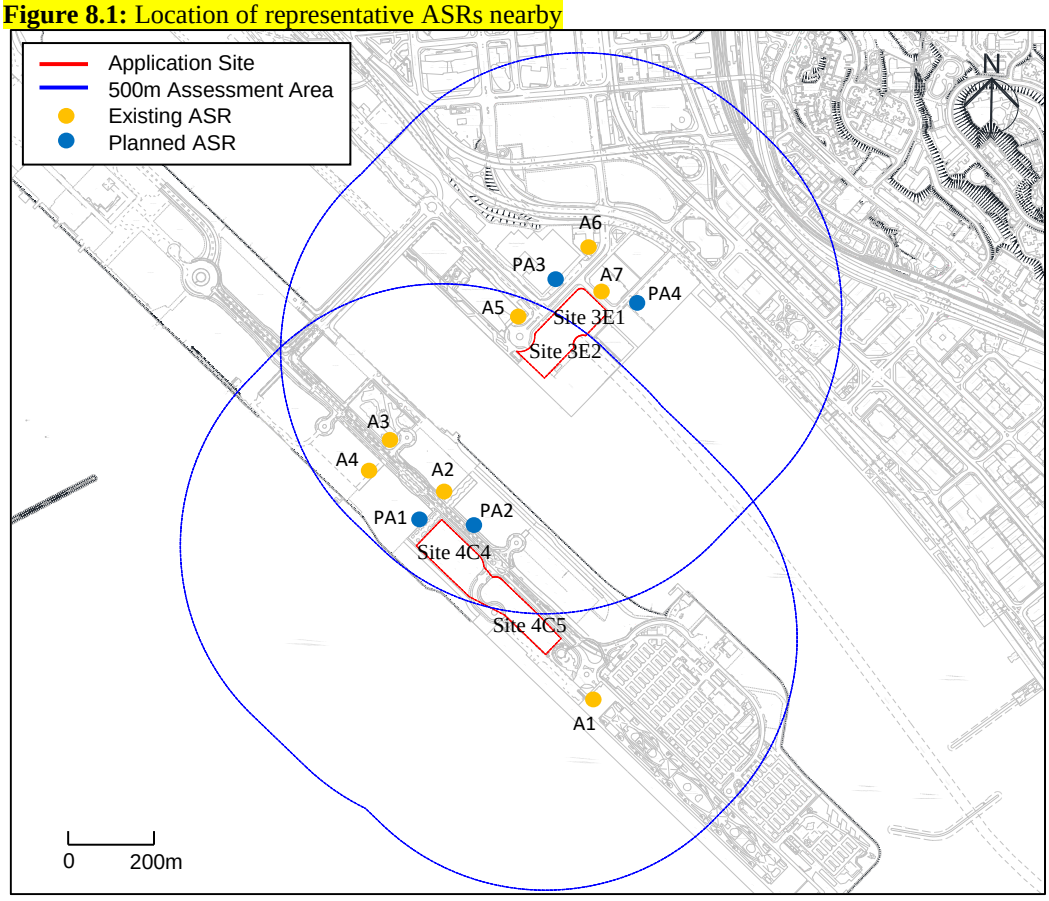


Table 8.6: Representative ASR within 500m study area

ASR ID	Location	Land Use	Approx. Distance from Site (m)
Existing ASR			
A1	Kai Tak Cruise Terminal	Other Specific Uses	~120m
A2	Miami Quay	Residential	~40m

ASR ID	Location	Land Use	Approx. Distance from Site (m)
A3	One Victoria	Residential	~195m
A4	The Knightsbridge	Residential	~175m
A5	Hong Kong Children's Hospital	Government, Institution or Community	~39m
A6	Kai Tak Fire Station	Government, Institution or Community	~75m
A7	Harbourside HQ	Commercial	~17m
Planned ASR			
PA1	Cullinan Harbour	Residential	~25m
PA2	The Pavilia Forest	Residential	~36m
PA3	New Acute Hospital	Government, Institution or Community	~50m
PA4	Proposed Residential Development at Nos. 1-5 Kai Hing Road	Residential	~50m

8.4 Evaluation of Construction Phase Impact

8.4.1 Identification and Evaluation of Impact

8.4.1.1 The key sources of potential air quality impact during construction phase would be the dust emission generated from the construction activities associated with the Project, including site clearance, demolition, piling works, soil excavation for basement and superstructure, loading and unloading dusty material, and wind erosion of open sites. For Application Site A, the horizontal separation distance from the nearest ASR identified (i.e. Cullinan Harbour (PA1)) is around 25m. For Application Site B, the horizontal separation distance from the nearest ASR identified (i.e. Harbourside HQ (A7)) is around 17m. Nevertheless, given the proper implementation of recommended good site practices as stipulated in Air Pollution Control (Construction Dust) Regulation in place, any potential construction dust impact is expected to be minimized.

- Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation take place should be sprayed with water or a dust suppression chemical continuously;
- Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the 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 1 m higher than the highest level of the structure being demolished;
- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;
- Any skip hoist for material transport should be totally enclosed by impervious sheeting;
- Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the three sides;
- Immediately before leaving a construction site, all vehicles shall be washed to remove any dusty materials from its body and wheels;
- Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; and
- Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.
- Connecting construction plant and equipment to mains electricity supply should be considered and use of diesel generators and diesel-powered equipment should be avoided as far as possible.

8.4.2.2 In order to further minimise the potential air quality impacts from the site formation and excavation works, limitation of maximum number of works area per time and phasing of works area within the construction site shall be considered as far as practicable during construction phase. All excavated construction waste/ materials shall be properly covered during transportation with the transportation route and time to be properly planned beforehand by the future Contractor.

8.4.2.3 Fuel combustion from the use of PME during construction works would be a source of air emission. Ultra-low sulphur diesel (ULSD) with a sulphur content of not more than 0.005% by weight and a viscosity of not more than 6 centistokes at 40^{o}C will be used to minimise

Vehicles in Public Works Contracts) and DEVB's TC No. 1/2015 (Emissions Control of NRMM in Capital Works Contracts of Public Works);

- The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of his activities, and minimise the emission of air pollutants from construction plant and equipment;
- The Contractor shall ensure that there will be adequate water supply/storage for dust suppression;
- The Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented;
- For better smoke control, the Contractor shall not use diesel hammer for percussive piling; and
- Before the commencement of any work, the Engineer may require the methods of working, plant, equipment and air pollution control system to be used on the site to be made available for inspection and approval to ensure that they are suitable for the project.

8.4.2.6 With the implementation of these good practice and measures, adverse construction dust impacts on the ASRs are not anticipated. Construction dust impacts are therefore not insurmountable. It is recommended that regular site audits shall be carried curing construction phase to ensure all good practices and measures are implemented properly.

8.5 Vehicular Emissions

8.5.1.1 Hong Kong Planning Standards and Guidelines (HKPSG) provides environmental guidance for residential developments on air quality. The guidelines recommend the minimum buffer distance required for active and passive recreational uses.

8.5.2 Application Site A

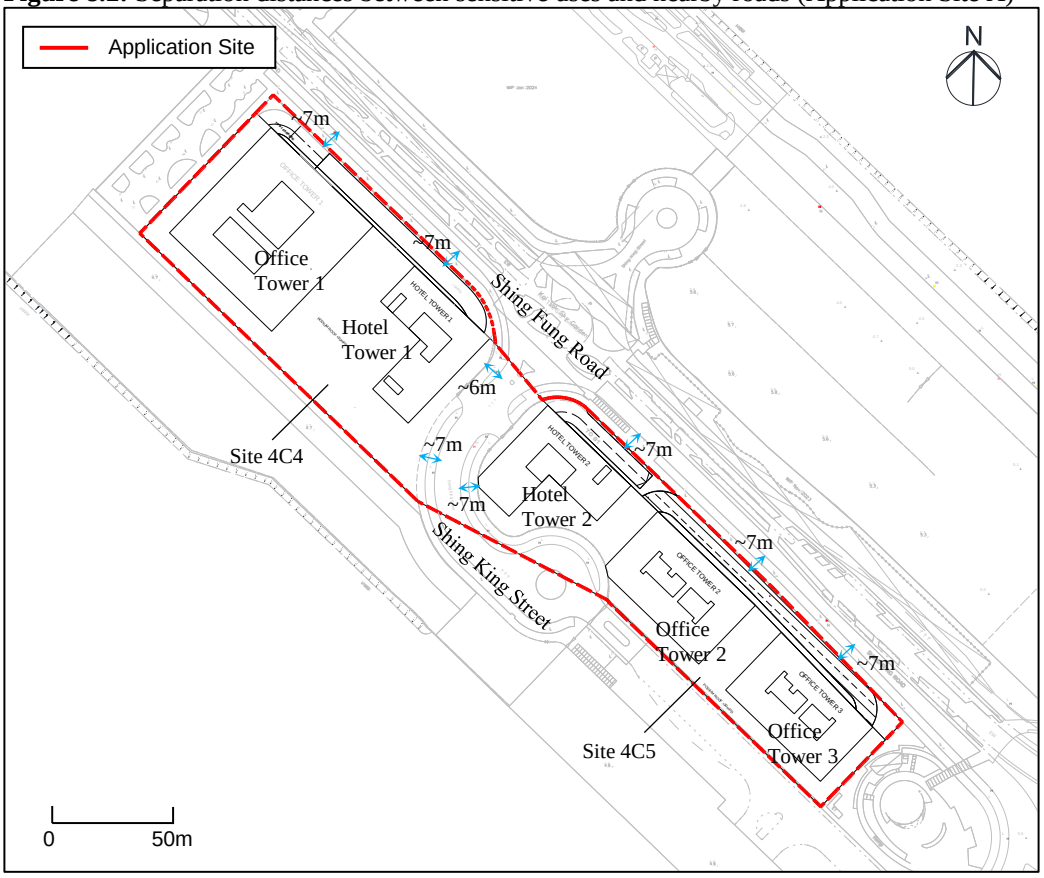
8.5.2.1 The buffer distances between the sensitive uses of the current development scheme and the surrounding major roads are summarized in **Table 8.7** and illustrated in **Figures 8.2** below.

Table 8.7: Separation distances between sensitive uses and nearby major roads

Name of Road	Type of Road[1]	HKPSG Recommended Setback Distance	Shortest Horizontal Setback Distance from the Nearest Air Sensitive Uses to Road Kerb
Shing Fung Road	LD	>5m	~17m
Shing King Street	LD	>5m	~7m

Note:
[1] LD – Local Distributor.

Figure 8.2: Separation distances between sensitive uses and nearby roads (Application Site A)



8.5.2.2 The current scheme can satisfy the setback distance requirements as stipulated in the HKPSG. No sensitive active and passive uses have been planned within the recommended buffer zone of 5m setback from road kerbs of nearby roads. Besides, no pedestrian area (i.e. seating place) have been planned within the recommended buffer zone. Adverse vehicular emission impact on the proposed residential development is therefore not anticipated.

8.5.3 Application Site B

8.5.3.1 The buffer distances between the sensitive uses of the current development scheme and the surrounding major roads are summarized in **Table 8.8** and illustrated in **Figures 8.3a** to **8.3b** below.

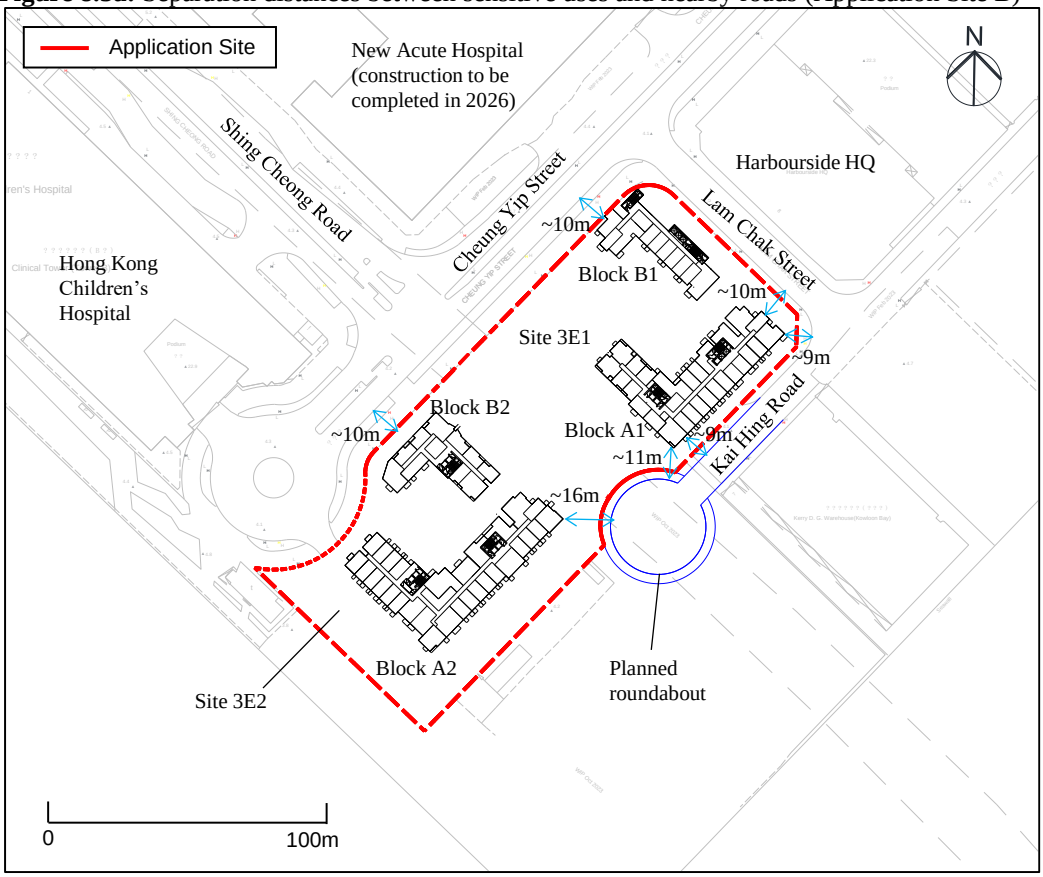
Table 8.8: Separation distances between sensitive uses and nearby major roads

Name of Road	Type of Road[1]	HKPSG Recommended Setback Distance	Shortest Horizontal Setback Distance from the Nearest Air Sensitive Uses to Road Kerb
Cheung Yip Street	LD	>5m	~10m
Lam Chak Street	LD	>5m	~10m
Kai Hing Road	LD	>5m	~9m

Name of Road	Type of Road[1]	HKPSG Recommended Setback Distance	Shortest Horizontal Setback Distance from the Nearest Air Sensitive Uses to Road Kerb
Wang Chui Road	DD	>10m	~145m
Hoi Bun Road	LD	>5m	~155m
Kwun Tong Bypass	EX	>20m	~135m
Planned Roundabout	LD	>5m	~11m

Note:
[1] EX – Expressway; DD – District Distributor; LD – Local Distributor.

Figure 8.3a: Separation distances between sensitive uses and nearby roads (Application Site B)

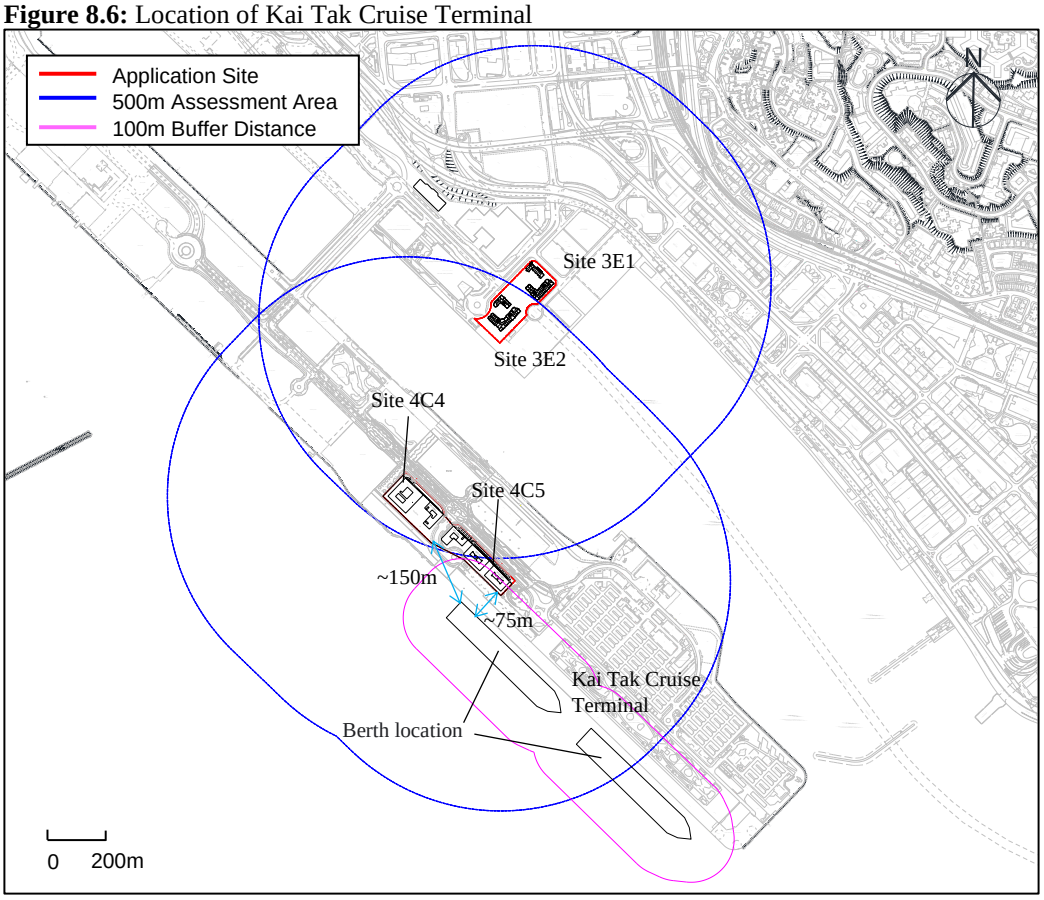


8.8 Review of Emission from the Existing Kai Tak Cruise Terminal

8.8.1.1 Marine emissions may arise from the cruise ships at the existing Kai Tak Cruise Terminal. The berthing locations of the cruise terminal are located at about 150m to Site 4C4 and around 75m to Site 4C5 as shown in **Figure 8.6**. According to the HKPSG, the recommended minimum buffer distance required for active and passive recreational uses depends on the difference in height between industrial chimney exit and the site as indicated in **Table 8.2**.

8.8.1.2 In order to minimise air quality impacts from marine emissions from Kai Tak Cruise Terminal, the future fresh air intakes of the proposed developments shall satisfy the setback requirements as stipulated in the HKPSG. With reference to the approved Kai Tak Multi-purpose Sports Complex EIA (AEIAR-204/2017), the stack height of cruise ships at Kai Tak Cruise Terminal are situated at around +48mPD. For the design of the proposed development at Application Site A, the future fresh air intakes of the proposed developments shall be located at ground floor level (+5mPD) to allow a vertical separation of at least 40m between the chimney exit and fresh air intake locations or outside the 100m buffer zone as indicated in **Figure 8.6** from the cruise vessels to avoid any potential adverse air quality impact. Given that the setback distance as stipulated in HKPSG could be well satisfied, adverse air quality impact from the existing Kai Tak Cruise Terminal is not anticipated.

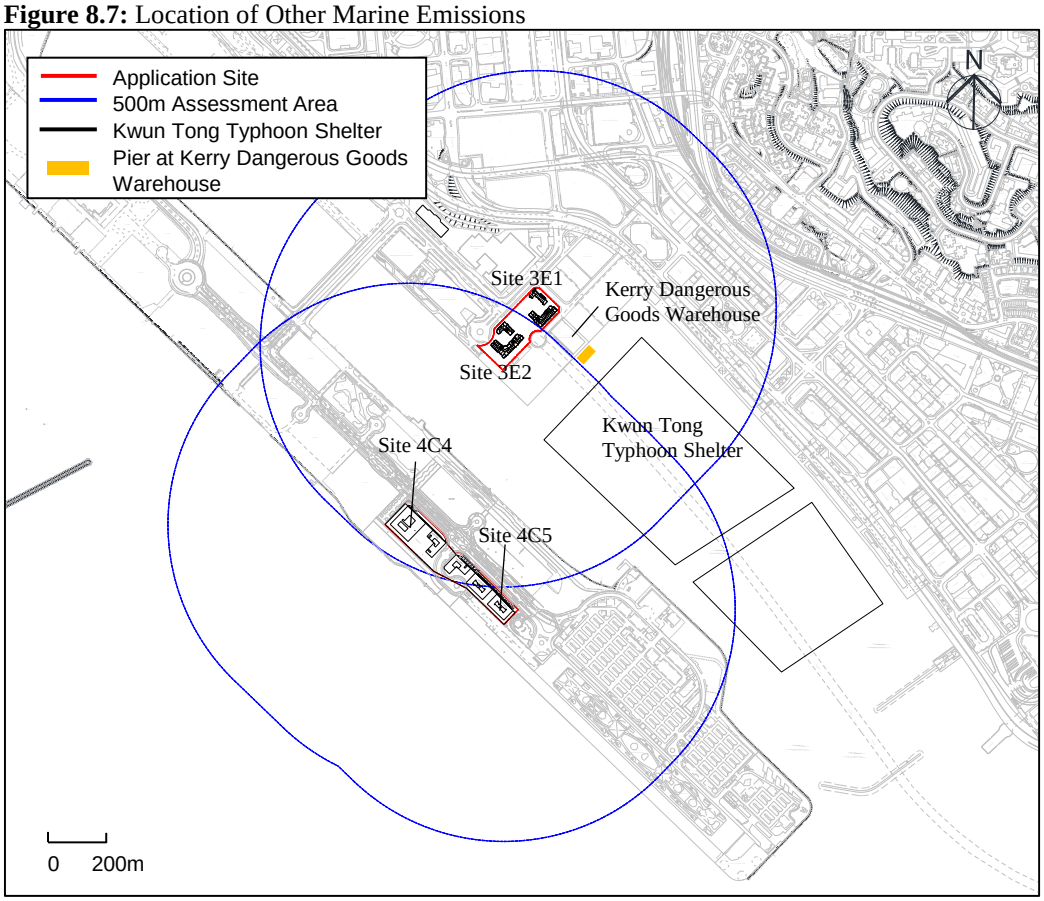
Figure 8.6: Location of Kai Tak Cruise Terminal



8.9 Review of Other Marine Emission Sources

8.9.1.1 Other marine emissions may arise from the yacht boats or ships at the existing Kwun Tong Typhoon Shelter and Kerry Dangerous Goods Warehouse (**Figure 8.7**). Based on site survey in the afternoon of 23 August 2024 and 19 February 2025, and morning and afternoon of 26 March 2025, it was observed that the Kwun Tong Typhoon Shelter was mainly for mooring of yachts only. Furthermore, no engine/motor idling or loading/ unloading activities were observed at Kwun Tong Typhoon Shelter. For the Kerry Dangerous Goods Warehouse, no vessels were docked at the piers of the warehouse based on the site visits. Nevertheless, it is anticipated that vessels would only utilise the pier in short period of time for loading/ unloading. Hence, marine emissions from the pier at Kerry Dangerous Goods Warehouse are considered insignificant. Given the reasons above, adverse air quality impacts from the Kwun Tong Typhoon Shelter and pier of Kerry Dangerous Goods Warehouse are not anticipated.

Figure 8.7: Location of Other Marine Emissions



8.10 Review of Odour Impacts

8.10.1.1 Odour patrol has been carried out in the afternoon of 23 August 2024 and 19 February 2025, and morning and afternoon of 26 March 2025. The weather conditions during the visits were sunny/ overcast. The odour patrol was carried out along the coast of Kwun Tong Promenade,

Hong Kong Children's Hospital and the former Kai Tak runway. Based on the morning and afternoon odour patrols, odour impacts are not noticeable at Kwun Tong Typhoon Shelter and Kai Tak Approach Channel. Besides, EPD has advised that there is no odour complaint records in the vicinity of the Application Sites. Correspondence with EPD is supplemented in **Appendix 8.1**. Given that there are no odour complaints and no odour sources identified within 200m from the site boundary of both Application Sites A and B, odour impacts are not anticipated.

9.3 Site Survey Findings

9.3.1.1 Site survey was conducted in August 2024 to identify any existing land uses within Application Site A, Application Site B and the adjoining sites which may have potential for causing land contamination. As Application Site A and Application Site B were not accessible at the time of site visit, only peripheral inspection could be conducted. Photo record of the peripheral site survey is given in **Appendix 9.2** and the site walkover checklist is given in **Appendix 9.3**. For Application Site A, open storage with construction materials (**Photo 1**), trucks (**Photo 2**), containers (**Photo 3**), and vehicles (**Photo 4**) were observed. Application Site A was mostly concrete paved with no crack and oil stain observed. No fuel-driven machinery/equipment and potential vehicle maintenance workshop were observed during peripheral site survey. For Application Site B, the Public Works Central Laboratory Building (**Photo 5**), facilities in construction site of Trunk Road T2 and Cha Kwo Ling Tunnel Project (T2 Project) (**Photo 6**), a community liaison centre (**Photo 7**) and a CLP substation (**Photo 8**) were observed. The northern portion of Application Site B was occupied by construction site for T2 Project (**Photo 9**). For the areas of Application Site B occupied by the Public Works Central Laboratory Building, construction site for the T2 Project and CLP substation, it could be observed that the outdoor areas are mainly concrete paved and has no cracks or oil stains. The northern portion of Application Site B is currently occupied by construction site of Trunk Road T2 and Cha Kwo Ling Tunnel and is enclosed by barriers. Hence, the internal paving and storage conditions could not be studied.

9.4 Relevant Information Request

9.4.1 Fire Services Department

9.4.1.1 Information request on any Dangerous Goods (DGs) license registered, and any record of DGs spillage/leakage incidents within the Application Sites have been sent to FSD on 16 August 2024. FSD advised that no DGs record was found associated with the Application Sites. One incident record involving a rubbish fire at lamppost (No. DF4753) near Shing King Street adjacent to Application Site A was found. As the lamppost is located outside the site boundary of Application Site A, potential land contamination issue is therefore not anticipated. The correspondence with FSD is enclosed in **Appendix 9.4**.

9.4.2 Environmental Protection Department

9.4.2.1 Information request on any Chemical Waste Producer (CWP) registered, and any record of chemical spillage/leakage incidents within the Application Sites were made to EPD. Based on information provided by EPD, EPD advised that no record of accidents of spillage/leakage of chemicals were found associated with both Application Site A and Application Site B. Besides, inspection of registry of chemical waste producers was conducted on 31 October 2024 and 2 valid and 1 invalid CWP records were found. The

summary of CWP records is summarised in **Table 9.2**. The correspondence with EPD is enclosed in **Appendix 9.5**.

Table 9.2: Summary of Chemical Waste Producer Records

No.	Licenses Name	Premises Address	Nature of business	Site ID	Validity
1	Government Laboratory - Product Testing &Dutiable Commodities Section	Laboratory Building Cheung Yip Street Kowloon Bay, KL	Laboratory Testing	B	Valid
2	Civil Engineering and Development Department	G/F and 1/F Public Works Central Lab BLDG Cheung Yip St Kowloon Bay KL	Civil Engineering: Construction Materials Testing Laboratory	B	Valid
3	Techtrend Engineering Ltd	Public Works Central Lab BLDG, Cheung Yip Street, Kowloon Bay, KLN	Engineering	B	Invalid

9.5 Review of Land Contamination Potential

9.5.1.1 The Application Sites are currently under the government land allocations. Any contamination due to their current uses would be properly treated by the current occupants before handing over the sites to the Government. Hence, the impact arising from land contamination shall not be anticipated.

11 Water Quality Impact

11.1 Description of the Environment

11.1.1.1 The Application Site A and Application Site B would fall within the Victoria Harbour (Phase 1 and 2) WCZ. As the Project Site is located adjacent to coastal areas of Kai Tak and Kwun Tong, water quality impact to coastal water shall be anticipated. This section presents the assessment of potential water quality impact associated with the construction and operation phases of the proposed development. Recommendations for mitigation measures have been made, where necessary, to minimize the potential water quality impacts.

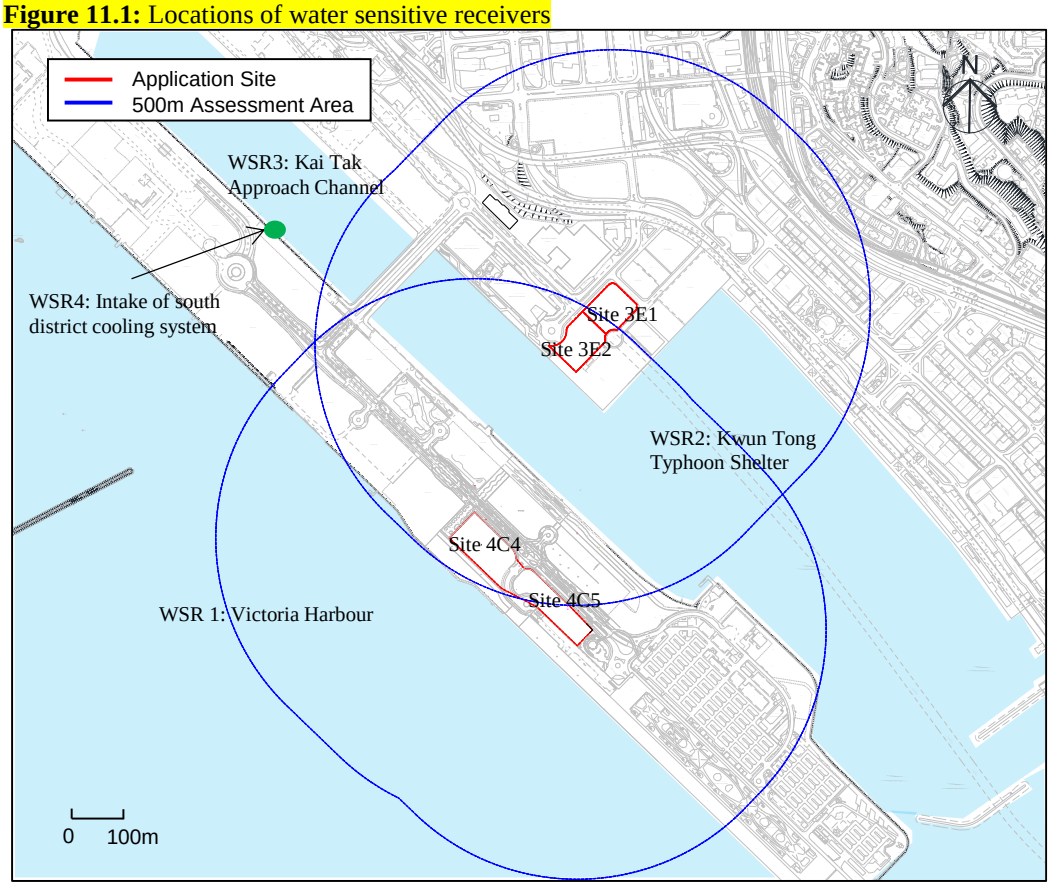
11.2 Water Sensitive Receivers

11.2.1.1 Water Sensitive Receivers (WSRs) within 500m from the Application Site A and B are identified and presented in **Figure 11.1**. Major WSRs are listed in **Table 11.1**.

Table 11.1: Water sensitive receivers

ID	WSRs
WSR 1	Victoria Harbour
WSR 2	Kwun Tong Typhoon Shelter
WSR3	Kai Tak Approach Channel
WSR4	Intake of south district cooling system

Figure 11.1: Locations of water sensitive receivers



11.3 Construction Phase Impact Evaluation

11.3.1 Construction Site Runoff

11.3.1.1 During rainstorm events, construction site runoff would come from all over the works site. The surface runoff might be polluted by:

- Runoff and erosion from site surfaces, earth working areas and stockpiles;
- Wash water from dust suppression sprays and wheel washing facilities; and
- Chemicals spillage such as fuel, oil, solvents and lubricants from maintenance of construction machinery and equipment.

11.3.1.2 Construction runoff may cause physical, biological and chemical effects. The physical effects include potential blockage of drainage channels and increase of suspended solid levels in the receiving water bodies. Runoff containing significant amounts of concrete and cement–derived material may cause primary chemical effects such as increasing turbidity and discoloration, elevation in pH, and accretion of solids. A number of secondary effects may also result in toxic effects to water biota due to elevated pH values, and reduced decay rates of faecal microorganisms and photosynthetic rate due to the decreased light penetration.

12 Conclusion

12.1.1.1 An Environmental Assessment Study has been conducted to support the S16 Planning Application for Proposed Minor Relaxation of Plot Ratio (PR), Site Coverage (SC) and Building Height (BH) Restrictions for Permitted/ Proposed Commercial Development, Public Transport Station and Underground Vehicle Tunnel at Kai Tak Area 4C Sites 4 and 5 and Adjoining Road Portion of Shing King Street; and Minor Relaxation of PR and BH Restrictions for Permitted Private Housing Development with Proposed Eating Place, Shop and Services and Social Welfare Facilities at Kai Tak Area 3E Sites 1 and 2.

12.1.1.2 Application Site A would be developed into office towers and hotel. As central air-conditioning and fixed windows will be provided, the noise criterion of HKPSG does not apply to the aforementioned uses and no NAPs are assigned to Application Site A. For Application Site B, with the implementation of the recommended acoustic window (baffle type), conventional acoustic balcony and enhanced acoustic balcony (baffle type) at the affected residential flats, all residential units at Application Site B will not be exposed to road traffic noise levels in excess of 70dB(A), as stipulated in the HKPSG. Adverse road traffic noise impact on the proposed development is not anticipated.

12.1.1.3 A number of existing fixed plants are identified at the Hong Kong Children's Hospital and Kai Tak Fire Station and planned noise sources are identified at the New Acute Hospital. Assessments indicated that the predicted noise level at all representative NSRs within Application Site B would comply with the respective noise criteria and hence no mitigation measures are required. For the planned fixed noise sources at Application Site A and B, mitigation measures such as enclosing pumps and noisy plants inside a building structure, proper selection of quiet plant aiming to reduce the tonality at NSRs, installation of silencer / acoustic enclosure / acoustic louvre for the exhaust of ventilation system and locating all openings of ventilation systems facing away from NSRs have been recommended to avoid adverse fixed noise impacts.

12.1.1.4 Review of helicopter noise impacts from the rooftop helipad at the proposed New Acute Hospital showed that no helicopter noise impacts were anticipated as noise mitigation measures such as noise reducers and noise barriers had been proposed in the design of the proposed helipad to protect the NSRs at Application Site B.

12.1.1.5 Potential noise nuisance from the Kai Tak Fire Station may arise from the alarm, siren, fire engine, public address (PA) system and training activities during operation of the fire station. Self-protecting building block design with blank façade facing north has been adopted for residential blocks to avoid line of sight to these noise sources.

12.1.1.6 The current design scheme has allowed sufficient setback from the surrounding roads to meet the minimum requirement as stipulated in the HKPSG. Hence potential vehicular emission impact is not anticipated.

12.1.1.7 Based on the site surveys, only 6 chimneys are identified within 500m of Application Site B. The identified chimneys are located at more than 200m away from the site boundary of which could well satisfy the setback distance requirements as stipulated in the HKPSG. No chimneys are identified within 500m of Application Site A. Hence, adverse air quality impact due to chimney emission is not anticipated.

12.1.1.8 The air quality impacts arising from the existing Kai Tak Cruise Terminal has been reviewed. It is recommended that all fresh air intakes of the proposed development shall be located at ground floor level (+5mPD) or outside the 100m buffer zone from the berth of the cruise vessels to avoid any potential adverse air quality impact.

12.1.1.9 Based on odour patrols carried out in vicinity of the Application Sites, odour impacts are not noticeable at Kwun Tong Typhoon Shelter and Kai Tak Approach Channel. Correspondence with EPD also shows that there are no odour complaints in the vicinity of the Application Sites. As there are no odour complaint records and no odour sources identified within 200m from the site boundary of both Application Sites A and B, odour impacts are not anticipated.

12.1.1.10 A preliminary land contamination site appraisal through desktop review and site survey has been conducted to review any past and existing land uses within and adjoining the Application Site. The Application Sites are currently under government land allocations. Both sites will be vacated according to the conditions of the allocations before the commencement of the Proposed Developments. Hence, the impact arising from land contamination shall not be anticipated.

12.1.1.11 For waste management, implications due to construction and operation phases are not anticipated provided good practices are in place.

12.1.1.12 Potential water pollution sources have been identified and mitigation measures have been recommended to mitigate any potential water quality impacts during the construction phase. With the implementation of good site practices and mitigation measures, adverse water quality impacts are not anticipated. Operation impacts associated with runoff and sewage from the development would be insignificant with proper management practices in place. As mentioned in the separated SIA report, the proposed development will be properly sewered and then discharged to Shing Fung Road Sewage Pumping Station and to Kwun Tong Preliminary Treatment Works. Therefore, adverse water quality impact is not anticipated.

12.1.1.13 It is concluded that there are no insurmountable environmental impacts on the proposed developments at Kai Tak Development Area.

Floor	R106a	R106b	R106c	R107a	R107b	R108a	R108b	R109a	R109b	R109c	R110a	R110b	R110c	R111a	R111b	R111c	R112a
28																	
27																	
26	61.0	70.4	70.4	70.4	70.3	70.3	70.3	70.3	70.3	70.2	70.2	70.2	70.1	70.1	70.1	70.1	70.1
25	61.0	63.0	61.0	70.4	70.4	70.4	70.3	70.3	70.3	70.3	70.2	70.2	70.2	70.2	70.1	70.1	70.1
24	61.1	63.0	61.0	61.0	63.0	70.4	70.4	70.4	70.3	70.3	70.3	70.3	70.2	70.2	70.2	70.2	70.2
23	61.1	63.1	61.1	61.0	63.0	63.0	70.4	70.4	70.4	70.3	70.3	70.3	70.3	70.2	70.2	70.2	70.2
22	61.2	63.1	61.1	61.1	63.0	63.0	61.0	61.0	70.4	70.4	70.4	70.4	70.3	70.3	70.3	70.3	70.3
21	61.2	63.2	61.2	61.1	63.1	63.1	61.0	61.0	63.0	61.0	70.4	63.0	70.4	70.4	70.3	70.3	70.3
20	61.3	63.3	61.2	61.2	63.2	63.1	61.1	61.1	63.1	61.0	61.0	63.0	61.0	70.4	70.4	70.4	70.4
19	61.3	63.3	61.3	61.3	63.2	63.2	61.2	61.1	63.1	61.1	61.1	63.1	61.0	61.0	63.0	61.0	70.4
18	61.4	63.4	61.4	61.3	63.3	63.3	61.2	61.2	63.2	61.1	61.1	63.1	61.1	61.1	63.0	61.0	61.0
17	61.5	63.4	61.4	61.4	63.3	63.3	61.3	61.3	63.2	61.2	61.2	63.2	61.2	61.1	63.1	61.1	61.1
16	61.5	63.5	61.5	61.4	63.4	63.4	61.3	61.3	63.3	61.3	61.2	63.3	61.2	61.2	63.2	61.1	61.1
15	61.6	63.6	61.5	61.5	63.5	63.4	61.4	61.4	63.4	61.3	61.3	63.3	61.3	61.2	63.2	61.2	61.2
14	61.7	63.7	61.6	61.6	63.6	63.5	61.5	61.5	63.4	61.4	61.4	63.4	61.4	61.4	63.3	61.3	61.3
13	61.7	63.7	61.7	61.7	63.6	63.6	61.6	61.5	63.5	61.5	61.5	63.5	61.4	61.4	63.4	61.4	61.4
12	61.8	63.8	61.8	61.8	63.7	63.7	61.7	61.7	63.6	61.6	61.6	63.6	61.6	61.5	63.5	61.5	61.5
11	61.9	63.9	61.9	61.9	63.8	63.8	61.8	61.8	63.7	61.7	61.7	63.7	61.7	61.6	63.6	61.6	61.6
10	62.1	64.1	62.0	62.0	64.0	63.9	61.9	61.9	63.9	61.9	61.8	63.9	61.8	61.8	63.8	61.8	61.7
9	62.2	64.2	62.2	62.1	64.1	64.1	62.0	62.0	64.0	62.0	62.0	64.0	62.0	61.9	63.9	61.9	61.9
8	62.3	64.3	62.3	62.3	64.2	64.2	62.2	62.2	64.2	62.2	62.1	64.2	62.1	62.1	64.1	62.1	62.1
7	62.5	64.5	62.5	62.5	64.5	64.4	62.4	62.4	64.4	62.4	62.3	64.4	62.3	62.3	64.3	62.3	62.3
6	62.8	64.8	62.8	62.7	64.7	64.7	62.7	62.7	64.6	62.6	62.6	64.6	62.6	62.6	64.5	62.6	62.5
5	63.0	65.0	63.0	63.0	64.9	64.9	62.9	62.9	64.9	62.9	62.8	64.9	62.8	62.8	64.8	62.8	62.8
4	63.4	65.4	63.3	63.3	65.3	65.3	63.2	63.2	65.2	63.2	63.2	65.2	63.2	63.1	65.1	63.1	63.1
3	63.7	65.7	63.7	63.6	65.6	65.6	63.6	63.6	65.5	63.5	63.5	65.5	63.5	63.5	65.5	63.5	63.5
2																	
1																	
Max	63.7	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
Min	61.0	63.0	61.0	61.0	63.0	63.0	61.0	61.0	63.0	61.0	61.0	63.0	61.0	61.0	63.0	61.0	61.0

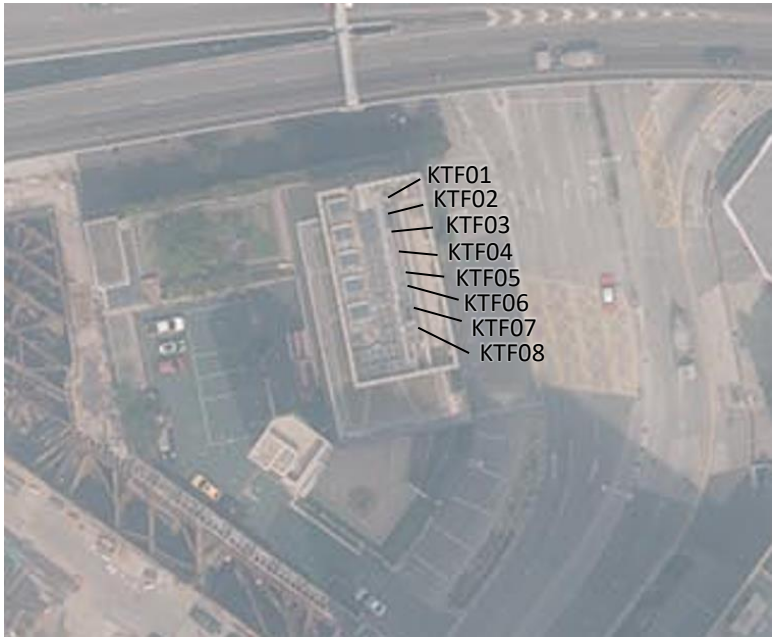
Noise sensitive receivers applied with acoustic window (baffle type)
Noise sensitive receivers applied with acoustic balcony
Noise sensitive receivers applied with enhanced acoustic balcony (baffle type)

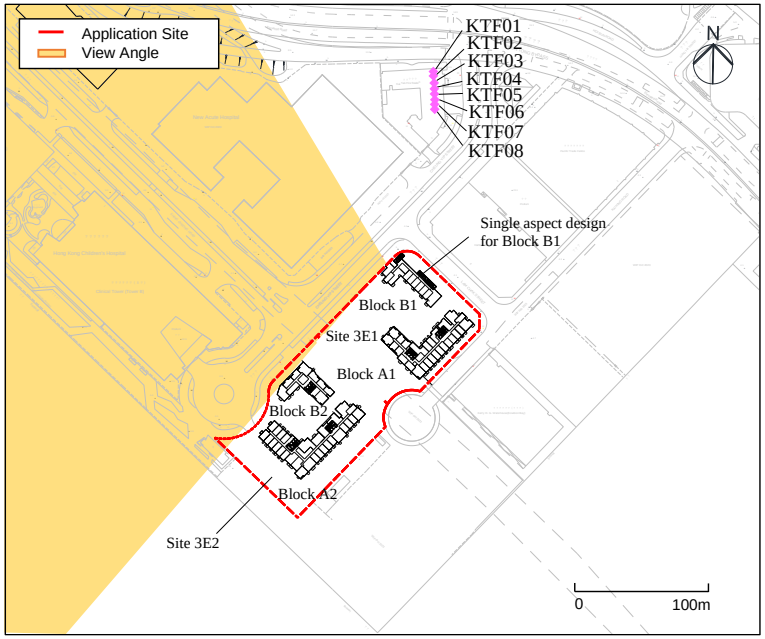
Appendix 5.1

Site Survey Record

Identified Fixed Noise Source for Assessment
Fixed Noise Source ID: KTF01 – KTF08

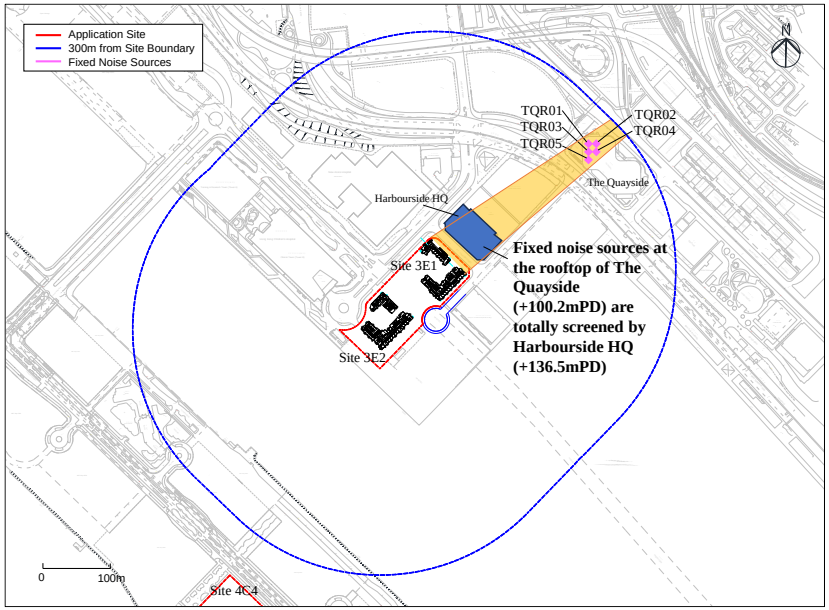
Name	Date of observation	Type of landuse	Noisy activities /sources based on site observation and/or employees information	Site record and/or information provided by operators / employees
Kai Tak Fire Station	23 August 2024	Government, Institution or Community	• Chillers/ condensers on rooftop	• Some planned NSRs may have direct line of sight to the fixed plants on the rooftop. • Single aspect has been adopted for Block B1 and therefore no planned NSRs at Block B1 would have line of sight to the fixed plants. • This fixed noise source is included for assessment.





Identified Fixed Noise Source for Assessment
Fixed Noise Source ID: TQR01 - 05

Name	Date of observation	Type of landuse	Noisy activities /sources based on site observation and/or employees information	Site record and/or information provided by operators / employees
The Quayside	23 August 2024	Government, Institution or Community	• Chillers/ condensers on rooftop	• Based on the latest aerial photo, the fixed plants on the rooftop of The Quayside (100.2 mPD) are completely screened by Harbourside HQ (136.5 mPD). Hence, it is not included in the assessment.



Appendix 5.3

Stefani V-type single-row condenser and Trane Model RTAF 090 to 450 air cooled chillers specifications

ZONDA-S H 80

V-type single-row condenser

3 PH 6 poles	CAPACITY	SURFACE	AIR FLOW	SOUND PRESSURE	N° FANS x DIAMETER	FANS DIAMETER	FAN SPEED	POWER	CURRENT	VOLUME	WEIGHT	Ø IN	Ø OUT
	kW	m²	m³/h	dB(A) @ 5m	Nr. x Ø mm	mm	Rpm	W	A	lt	kg	mm	mm
ZONDA-S H 80-1 A 2,1 V AC 06D	70,8	104,7	20300	46	1x1	800	880	1720	3,9	12,1	142	2x28	2x22
ZONDA-S H 80-1 B 2,1 V AC 06D	84,1	157,1	19250	46	1x1	800	880	1720	3,9	18,1	159	2x28	2x22
ZONDA-S H 80-1 C 2,1 V AC 06D	87,9	209,5	18350	46	1x1	800	880	1720	3,9	23,1	176	2x28	2x22
ZONDA-S H 80-2 A 2,1 V AC 06D	141,2	209,5	40550	49	1x2	800	880	3440	7,8	23,1	251	2x35	2x28
ZONDA-S H 80-2 B 2,1 V AC 06D	167,1	314,2	38500	49	1x2	800	880	3440	7,8	34,1	284	2x35	2x28
ZONDA-S H 80-2 C 2,1 V AC 06D	176,4	419	36700	49	1x2	800	880	3440	7,8	45,7	318	2x35	2x28
ZONDA-S H 80-3 A 2,1 V AC 06D	212,3	314,2	60850	51	1x3	800	880	5160	11,7	34,1	361	2x35	2x28
ZONDA-S H 80-3 B 2,1 V AC 06D	250,5	470,9	57750	51	1x3	800	880	5160	11,7	51,7	411	2x42	2x35
ZONDA-S H 80-3 C 2,1 V AC 06D	265	628,5	55100	51	1x3	800	880	5160	11,7	68,5	462	2x42	2x35
ZONDA-S H 80-4 A 2,1 V AC 06D	282,6	419	81150	52	1x4	800	880	6880	15,6	46,5	470	2x42	2x35
ZONDA-S H 80-4 B 2,1 V AC 06D	338,2	628,5	77000	52	1x4	800	880	6880	15,6	69,9	537	2x54	2x42
ZONDA-S H 80-4 C 2,1 V AC 06D	359	837,9	73450	52	1x4	800	880	6880	15,6	93,8	605	2x54	2x42
ZONDA-S H 80-5 A 2,1 V AC 06D	356,3	523,7	101400	53	1x5	800	880	8600	19,5	57,5	580	2x54	2x42
ZONDA-S H 80-5 B 2,1 V AC 06D	422,4	785,6	96250	53	1x5	800	880	8600	19,5	84,5	664	2x54	2x42
ZONDA-S H 80-5 C 2,1 V AC 06D	446,3	1047,4	91800	53	1x5	800	880	8600	19,5	115,8	749	2x54	2x42
ZONDA-S H 80-6 A 2,1 V AC 06D	425,4	628,5	121700	54	1x6	800	880	10320	23,4	68,5	688	2x54	2x42
ZONDA-S H 80-6 B 2,1 V AC 06D	502,8	942,7	115500	54	1x6	800	880	10320	23,4	101,5	790	2x64	2x54
ZONDA-S H 80-6 C 2,1 V AC 06D	530,5	1256,9	110150	54	1x6	800	880	10320	23,4	137,8	892	2x64	2x54

3 PH 8 poles	CAPACITY	SURFACE	AIR FLOW	SOUND PRESSURE	N° FANS x DIAMETER	FANS DIAMETER	FAN SPEED	POWER	CURRENT	VOLUME	WEIGHT	Ø IN	Ø OUT
	kW	m²	m³/h	dB(A) @ 5m	Nr. x Ø mm	mm	Rpm	W	A	lt	kg	mm	mm
ZONDA-S H 80-1 A 2,1 V AC 08D	60	104,7	14700	39	1x1	800	680	770	2,22	12,1	142	2x28	2x22
ZONDA-S H 80-1 B 2,1 V AC 08D	67	157,1	14000	39	1x1	800	680	770	2,22	18,1	159	2x28	2x22
ZONDA-S H 80-1 C 2,1 V AC 08D	67,3	209,5	13400	39	1x1	800	680	770	2,22	23,1	176	2x28	2x22
ZONDA-S H 80-2 A 2,1 V AC 08D	119,8	209,5	29450	42	1x2	800	680	1540	4,44	23,1	251	2x35	2x28
ZONDA-S H 80-2 B 2,1 V AC 08D	133,2	314,2	28000	42	1x2	800	680	1540	4,44	34,1	284	2x35	2x28
ZONDA-S H 80-2 C 2,1 V AC 08D	134,9	419	26750	42	1x2	800	680	1540	4,44	45,7	318	2x35	2x28
ZONDA-S H 80-3 A 2,1 V AC 08D	180	314,2	44150	44	1x3	800	680	2310	6,66	34,1	361	2x35	2x28
ZONDA-S H 80-3 B 2,1 V AC 08D	199,7	470,9	42050	44	1x3	800	680	2310	6,66	51,7	411	2x42	2x35
ZONDA-S H 80-3 C 2,1 V AC 08D	202,5	628,5	40150	44	1x3	800	680	2310	6,66	68,5	462	2x42	2x35
ZONDA-S H 80-4 A 2,1 V AC 08D	239,3	419	58850	45	1x4	800	680	3080	8,88	46,5	470	2x42	2x35
ZONDA-S H 80-4 B 2,1 V AC 08D	269,1	628,5	56050	45	1x4	800	680	3080	8,88	69,9	537	2x54	2x42
ZONDA-S H 80-4 C 2,1 V AC 08D	273,5	837,9	53500	45	1x4	800	680	3080	8,88	93,8	605	2x54	2x42
ZONDA-S H 80-5 A 2,1 V AC 08D	301,6	523,7	73550	46	1x5	800	680	3850	11,1	57,5	580	2x54	2x42
ZONDA-S H 80-5 B 2,1 V AC 08D	336	785,6	70050	46	1x5	800	680	3850	11,1	84,5	664	2x54	2x42
ZONDA-S H 80-5 C 2,1 V AC 08D	340,4	1047,4	66900	46	1x5	800	680	3850	11,1	115,8	749	2x54	2x42
ZONDA-S H 80-6 A 2,1 V AC 08D	360,6	628,5	88300	47	1x6	800	680	4620	13,32	68,5	688	2x54	2x42
ZONDA-S H 80-6 B 2,1 V AC 08D	400,6	942,7	84050	47	1x6	800	680	4620	13,32	101,5	790	2x64	2x54
ZONDA-S H 80-6 C 2,1 V AC 08D	405,4	1256,9	80250	47	1x6	800	680	4620	13,32	137,8	892	2x64	2x54

Capacity: R404A Tc=40°C Ts=65°C Ta=25°C

stefani® SMART THINKING

Sound Power Levels

Table 19 – Sound power levels in accordance with ISO 9614 - 1996.

Unit RTAF	SE					HE		XE					HSE				
dB(A)(1)	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB
090	95	92	89	88	85	95	93	94	91	90	88	86	94	91	90	88	86
105	95	92	89	89	86	95	93	94	91	89	88	86	94	91	89	88	86
125	95	92	89	89	86	96	93	95	92	90	88	85	95	92	90	88	85
145	96	93	90	89	86	96	93	96	93	90	89	86	96	93	90	89	86
155	96	93	90	90	87	97	94	97	94	91	90	87	97	94	91	90	87
175	97	94	91	90	87	97	94	97	94	91	90	87	97	94	91	90	87
190	97	94	91	91	88	98	95	98	95	92	91	88	98	95	92	91	88
205	97	94	91	91	88	98	95	98	95	92	91	88	98	95	92	91	88

Table 20 – Sound pressure levels at 10m

Unit RTAF	SE					HE		XE					HSE				
dB(A)(2)	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB
090	62	59	56	55	52	62	60	61	58	57	55	53	61	58	57	55	53
105	62	59	56	56	53	62	60	61	58	56	55	53	61	58	56	55	53
125	62	59	56	56	53	63	60	62	59	57	55	52	62	59	57	55	52
145	63	60	57	56	53	63	60	63	60	57	56	53	63	60	57	56	53
155	63	60	57	57	54	64	61	64	61	58	57	54	64	61	58	57	54
175	64	61	58	57	54	64	61	64	61	58	57	54	64	61	58	57	54
190	64	61	58	58	55	65	62	65	62	59	58	55	65	62	59	58	55
205	64	61	58	58	55	65	62	65	62	59	58	55	65	62	59	58	55

Notes:

At Eurovent conditions: 12/7°C entering/leaving water temperature and 35°C ambient temperature

(1) Value at full load with 1pW Reference Sound Power, according to ISO9614

(2) Average at 10 meters in a free field. This is a non-contractual data, calculated from the above certified sound power level according to the formula Lp=Lw-10logS. This is an averaged value considering the unit as a paralelopedic box with five exposed face areas.

Table 21 – Sound Power Levels in accordance with ISO 9614-1996

Unit RTAF	SE					HE		XE					HSS					HSE				
dB(A)	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB
250	99	96	94	93	91	99	96	99	96	94	93	91	99	97	95	93	91	99	97	95	93	91
280	100	97	95	94	92	100	97	100	97	95	94	92	100	98	96	94	92	100	98	96	94	92
310	101	98	96	94	92	101	98	101	98	96	95	93	101	99	97	95	93	101	99	97	95	93
350	101	98	96	94	92	101	98	101	98	96	95	93	101	99	97	95	93	101	99	97	95	93
380	101	98	96	95	93	102	98	102	98	96	95	93	102	99	97	95	93	102	99	97	95	93
410	102	99	97	95	93	102	99	102	99	97	95	93	102	100	98	95	93	102	100	98	95	93
450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	105	103	103	101

Table 22 – Sound Pressure Levels at 10 m

Unit RTAF	SE					HE		XE					HSS					HSE				
dB(A)	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB	SN	LN	LN+NNSB	XLN	XLN+NNSB
250	66	63	61	60	58	66	63	66	63	61	60	58	66	64	62	60	58	66	64	62	60	58
280	67	64	62	61	59	67	64	67	64	62	61	59	67	65	63	61	59	67	65	63	61	59
310	68	65	63	61	59	68	65	68	65	63	62	60	68	66	64	62	60	68	66	64	62	60
350	68	65	63	61	59	68	65	68	65	63	62	60	68	66	64	62	60	68	66	64	62	60
380	68	65	63	62	60	69	65	69	65	63	62	60	69	66	64	62	60	69	66	64	62	60
410	69	66	64	62	60	69	66	69	66	64	62	60	69	67	65	62	60	69	67	65	62	60
450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	72	70	70	68

Notes:

At Eurovent conditions: 12/7°C entering/leaving water temperature and 35°C ambient temperature

(1) Value at full load with 1pW Reference Sound Power, according to ISO9614

(2) Average at 10 meters in a free field. This is a non-contractual data, calculated from the above certified sound power level according to the formula Lp=Lw-10logS. This is an averaged value considering the unit as a paralelopedic box with five exposed face areas.

Appendix 5.4

Parameters and Assumptions for Fixed Noise Impact Assessment

Sound Pressure Level (SPL) and Sound Power Level (SWL) for Identified Fixed Noise Sources

1. Sound Pressure Level (SPL) from identified fixed noise sources was reference to other plant of similar mode, nature and scale and Sound Power Level (SWL) for the planned fixed noise sources at New Acute Hospital were referenced from the PER report for the New Acute Hospital. The assumptions and details of identified noise sources are summarized as follow:

Identified Noise Sources	Assumptions / Details
Hong Kong Children's Hospital	• Operation: Chillers/ Condensers on rooftop
Kai Tak Fire Station	• Operation: Chillers/ Condensers on rooftop
Harbourside HQ	• Operation: Chillers/ Condensers on rooftop
The Quayside	• Operation: Chillers/ Condensers on rooftop
New Acute Hospital	• Operation: Planned fixed noise sources on façade/ rooftop

Calculation of Predicted SPL and SWLs at NSRs

2. Predicted daytime and night-time SPLs at NSRs are corrected from the measured SPL and referenced SWL with the following parameters:

Correction	Calculation / Assumption (dB(A))
Distance Correction	Measured SPL: -[20 log (d / $d_{measure}$)] *where* d = shortest slant distance from NSR to center of noise source; and $d_{measure}$ = horizontal distance from measurement location to center of noise source Referenced SWL: -[20 log (d) + 8] *where* d = shortest slant distance from NSR to center of noise source
Screening Effect Correction	• -5dB(A) correction has been applied for partial screening • For noise sources which are largely separated from the development and are completely screened by front buildings, noise contribution is considered insignificant and hence -10dB(A) correction has been applied.
Tonality Correction	+3dB(A)
Directivity Correction	A directivity correction of -10dB(A) would be applied if NSR is facing 180° away from the fixed noise sources. A directivity correction of -5dB(A) would be applied if NSR is facing less than 180° away from the fixed noise sources.
Intermittency Correction	No intermittent character has been identified at the subject site and therefore no correction has been applied.
Impulsiveness Correction	No impulsiveness character has been identified at the subject site and therefore no correction has been applied.
Facade Correction	+3dB(A)

From: Joyce HM CHOW/EPD
To: Angus Liu
Cc: Tommy TC TANG/EPD

Date: Tuesday, April 8, 2025 10:09:08 AM

Dear Angus,

According to our record, no odour complaint was received regarding the concerned sites in the past 3 years.

Thanks.

Best,
Joyce CHOW / EPD
2117 7527

Appendix 9.4

Relevant Correspondence with FSD

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防處總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 **OUR REF.** : (114) in FSD GR 6-5/4 R Pt. 57
來函檔號 **YOUR REF.** : 295876/00/MT/AC/WLL/ML/CZZL/00019
電子郵件 **E-mail** : [redacted]
圖文傳真 **FAX NO.** : [redacted]
電　　話 **TEL NO.** : [redacted]

21 March 2025

ARUP
Level 5, Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
(Attn: Mr. Zephyr LIU, Assistant Designer)

Dear Mr. LIU,

Request for Information of Dangerous Goods & Incident Records

I refer to your email of 16.8.2024 regarding the captioned request and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.

2. A total of **1** incident record was found at the subject location. Please refer to **Appendix A** for details.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(CHOW Yin-hei)
for Director of Fire Services

Appendix A

Request for Information of Dangerous Goods & Incident Records

No.	Date	Type of Incident	Address
1.	30/5/2024	Rubbish Fire	Near Lamp Post No. DF4753 of Shing King Street

Appendix B Extracted Pages of Sewerage Impact Assessment

Unit Flow Factor – Commercial Flows

2.5.2 The sewerage flows from commercial units are the are composed of flows due to employees and the associated commercial activities. The Unit Flow Factors (UFFs) for commercial sewage flows due to employed population of the proposed development and the existing sewerage catchment are shown in **Table 2-4** based on the Table T-2 of GESF.

Table 2-4 Adopted Unit Flow Factor for Commercial Flows

Commercial Type	UFF (m^3/employee/day)
Commercial Employee	0.080
Industrial Employee	0.080
Commercial Activities	
J11 – Community, Social & Personal Services	0.200
J6 – Business Services	-
J4 – Wholesale & Retail	0.200
J10 – Restaurant and Hotels	1.500
Industrial Activities	
J1 – Manufacturing – East Kowloon	0.450

Catchment Inflow Factor

2.5.3 The Catchment Inflow Factor (PCIF) indicate the net overall ingress of water or wastewater to the sewerage system. The values defined in GESF Table T-4 have been adopted, as summarised in **Table 2-5**.

Table 2-5 Adopted Catchment Inflow Factor

Catchment	Catchment Inflow Factor
East Kowloon	1.10

Peaking Factor

2.5.4 Combination of flow variation due to diurnal and seasonal characteristics have been incorporated through the adoption of a peaking factor; the adopted peaking factor depend on the assessed equivalent population and have been adopted as per GESF Table T-5 inclusive of stormwater allowance.

Table 4-3 Proposed Sewage Discharge Locations

Sites	Upstream Manhole	Downstream Manhole	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Capacity (L/s)
3E1	FMH4036432	FMH4043143	225	2.00	1.80	80.83
3E2	FMH4096818	FMH4100328	300	2.54	1.11	236.15
4C4	FTH4011157	FMH4098424	300	2.48	2.13	190.66
4C5	FTH4011160	FMH4098431	300	1.74	1.35	212.82

4.3.2 The existing sewer at the discharge location has sufficient capacity to convey the proposed flows as detailed in **Appendix C**.

4.3.3 The development terminal manhole will be located close to the lot boundary, exact location will be determined in detailed design.

4.3.4 The proposed development utilizes the existing sewer networks; no existing sewer pipe is proposed to be abandoned. In case future detailed design will require the abandoning of existing sewers, these should comply with DSD Technical Circular No. 1/2022 - Handling of Abandoned Pipes under DSD's Purview.

5. Potential Sewerage Impacts and Mitigation Measures

5.1 Overview

5.1.1 In this chapter the identified sewerage impacts and associated mitigation measures are discussed.

5.2 Impacts on Existing Sewerage Network

5.2.1 The proposed development will discharge to the existing network; the additional flows from the development may affect the existing network performance. The impacts for each site are detailed below and calculations are provided in **Appendix C**.

Sites 3E1 and 3E2

5.2.2 The proposed development will discharge to two discharge points: one at the existing sewer along Kai Hing Road (at manhole FMH4036432), and one the existing sewer along Cheung Yip Street (at manhole FMH4096818). The proposed flow split will alleviate the sewer along Kai Hing Road, increasing spare capacity. The existing utilisation rate of the first sewage pipe at Kai Hing Road downstream of Site 3E1 proposed discharge point, has utilisation rate close to 90%. The existing sewer is proposed to be upgraded to allow development flexibility, as shown in **Table 5-1**.

Table 5-1 Proposed Sewerage Upgrades at Sites 3E1

Sites	Upstream Manhole	Downstream Manhole	Existing			Proposed		
			US IL (mPD)	DS IL (mPD)	Capacity (L/s)	US IL (mPD)	DS IL (mPD)	Capacity (L/s)
3E1	FMH4036432	FMH4043143	2.00	1.84	39.75	2.05	1.80	80.83

5.2.3 The existing sewer along Cheung Yip Street will need to be upgraded due to existing insufficient capacity, as shown in **Table 5-2**.

Table 5-2 Proposed Sewerage Upgrades at Site 3E2

Sites	Upstream Manhole	Downstream Manhole	Existing		Proposed	
			Sewer size (mm)	Capacity (L/s)	Sewer size (mm)	Capacity (L/s)
3E2	FMH4100328	FMH4061903	300	56.26	525	328.65
	FMH4061903	FMH4061905	300	33.66	525	165.60

5.2.4 The existing sewer along Kai Hing Road will need to be upgraded due to existing insufficient capacity, as shown in **Table 5-3**. The adjacent redevelopment of Lot KNIL5813 approved under application no. A/422/27 *"... has proposed to upgrade sewer size as mitigation measure."*[2]. During detailed design, close coordination between the development under this application and at Lot KNIL5813 is recommended to ensure sewerage upgrading works will suit both developments and minimise disruption.

Table 5-3 Proposed Sewerage Upgrades at Site 3E1

Sites	Upstream Manhole	Downstream Manhole	Existing		Proposed	
			Sewer size (mm)	Capacity (L/s)	Sewer size (mm)	Capacity (L/s)
3E1	FMH4043143	FMH4043144	225	51.89	300	120.30
	FMH4043144	FMH4043145	225	51.04	300	118.31

Sites 4C4 and 4C5

5.2.5 The proposed developments will discharge to the dedicated tapping points. The downstream network has sufficient capacity to convey the design flows.

5.2.6 The existing utilisation rate of the sewage pipe downstream of Site 4C4 proposed discharge point, has utilisation rate exceeding 80%. The existing sewer is proposed to be upgraded to allow development flexibility, as shown in **Table 5-4**; no sewerage upgrading work is required for Site 4C5.

Table 5-4 Proposed Sewerage Upgrades at Site 4C4

Site	Upstream Manhole	Downstream Manhole	Existing		Proposed	
			Sewer size (mm)	Capacity (L/s)	Sewer size (mm)	Capacity (L/s)
4C4	FMH4098424	FMH4098421	375	93.81	450	197.94

5.2.7 The existing sewers downstream of the proposed discharge points of Sites 4C4 and 4C5, range from 750mm diameter to 900mm diameter. Their utilisation rate after the proposed developments is less than 80% as detailed in **Table 5-5**, the impacts are deemed acceptable.

Table 5-5 Additional Sewerage Utilisation Rate Downstream of Site 4C4 and 4C5

Site	Upstream Manhole	Downstream Manhole	Sewer size (mm)	Capacity (L/s)	Baseline Inflow (L/s)	Proposed Inflow (L/s)	Proposed Usage
4C4	FMH4098421	FMH4098427	750	729.22	555	560	77%
	FMH4098427	FMH4098429	750	707.51	555	560	79%
	FMH4098429	FSH4007922	750	888.82	616	621	70%

[2] A_K22_27_MainPaper(revised).pdf

Estimation of Sewage Flows Estimation from Catchments Not Affected by the Proposed Development

Design Code

1. Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning.
2. Planning Department CIFSUS.
3. BS EN 12056-2:2000 Gravity drainage systems inside buildings

External Discharge - Near Sites 3E1 and 3E2

ADWF Sewage Flow Estimates	Estimation	Unit	Remark
FMH4100328	36.24	l/s	information provided by development
EL_2 **Acute Hospital**			New Acute Hospital at Kai Tak (under construction)
Design sewerage flows	100.00	l/s	information provided by development
Total building Localised Flow	100.00	l/s	information provided by development
Dischages to:			
FMH4096819	50.00		50% flow split between the two discharge locations (information provided by development)
FMH4100328	50.00		50% flow split between the two discharge locations (information provided by development)
EL_2 **NKIL 6647 Swimming pool**			
Pool Area	225	m^2	assumed
Pool Depth	1.20	m	assumed
Pool Water Volume	270.00	m^3	
Turnover Period	6.00	hours	Assumed outdoor pool (6 hours for open air pools, 4 hours for indoor pools). Source Cap. 132CA Swimming Pool Regulation, Section 6 paragraph j
Recirculation Flow	45.00	m^3/h	
Filter flow rate	30.00	$m^3/m^2/h$	Source: Medium Rate Sand Filter, from Table 5.1, WHO, Guidelines for Safe Recreational Water Environments, Volume 2, Swimming Pools and Similar Environment
filter area	1.50	m^2	
backwash unit flow	37.00	$m^3/m^2/h$	Source: Medium Rate Sand Filter, from Table 5.1, WHO, Guidelines for Safe Recreational Water Environments, Volume 2, Swimming Pools and Similar Environment
backwash flow	55.50	m^3/h	
	15.42	l/s	
Design sewerage flows	15.42	l/s	
Pool Area	225	m^2	assumed indoor pool
Pool Depth	1.50	m	assumed indoor pool
Pool Water Volume	337.50	m^3	
Turnover Period	4.00	hours	Assumed indoor pool (6 hours for open air pools, 4 hours for indoor pools). Source Cap. 132CA Swimming Pool Regulation, Section 6 paragraph j
Recirculation Flow	84.38	m^3/h	
Filter flow rate	30.00	$m^3/m^2/h$	Source: Medium Rate Sand Filter, from Table 5.1, WHO, Guidelines for Safe Recreational Water Environments, Volume 2, Swimming Pools and Similar Environment
filter area	2.81	m^2	
backwash unit flow	37.00	$m^3/m^2/h$	Source: Medium Rate Sand Filter, from Table 5.1, WHO, Guidelines for Safe Recreational Water Environments, Volume 2, Swimming Pools and Similar Environment
backwash flow	104.06	m^3/h	
	28.91	l/s	
Design sewerage flows	28.91	l/s	
Total building Localised Flow	44.32	l/s	
Dischages to:			
FMH4043145	44.32		assumed at the most upstream manhole

Table - Capacity Performance of Existing Sewer

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.
Assumed data

	Roughness ks (mm)		
Pipe Materal	V 0.75m/s	V 1.2m/s	0.75 < V < 1.2
VC	3.0	0.6	interpolated
PC	6.0	3.0	interpolated
PE	1.5	0.3	interpolated

Existing Network - Sites 3E1 and 3E2

Manhole							Existing Pipe Parameter												New Sewer
UP_MAN No.	DN_MAN No.	Catchment inflow	CON_POP	PEAKING FACTOR	ACC_ADWF (m^3/d)	Peak Flow (L/s)	DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	Pipe Materal ks (mm)	VEL (m/s)	CAP (L/s)	F/C (%)	Sufficient Capacity?	Adequate Velocity?
FMH4100328	FMH4061903	EL_1, EL_2	0	8	0.00	86.24	300	38.0	4.36	4.17	0.52	0.37	250	VC, interpolated, ks=2.8 mm	0.80	56.26	153.3%	NO	Existing
FMH4061903	FMH4061905		0	8	0.00	86.24	300	47.3	4.17	4.15	0.37	0.30	676	VC, V<=0.75, ks=3 mm	0.48	33.66	256.2%	NO	Existing
FMH4061905	FMH4096819		0	8	0.00	86.24	600	13.90	4.15	4.43	0.00	-0.05	278	VC, V>=1.2, ks=0.6 mm	1.45	410.85	21.0%	YES	Existing
FMH4096819	FMH4096820	EL_2	0	8	0.00	136.24	600	40.4	4.43	4.21	-0.07	-0.22	267	VC, V>=1.2, ks=0.6 mm	1.48	419.14	32.5%	YES	Existing
FMH4096820	FMH4096823		0	8	0.00	136.24	600	30.6	4.21	4.27	-0.23	-0.36	235	VC, V>=1.2, ks=0.6 mm	1.58	447.06	30.5%	YES	Existing
FMH4096823	FMH4061908	E_1	243	8	65.60	142.31	600	42.9	4.27	4.59	-0.60	-0.93	130	PC, V>=1.2, ks=3 mm	1.72	487.14	29.2%	YES	Existing
FMH4061908	Box Culvert		243	8	65.60	142.31	600	3.90	4.59	4.59	-1.02	-1.03	390	PC, interpolated, ks=4.8 mm	0.92	260.74	54.6%	YES	Existing
FMH4096818	FMH4100328		0	8	0.00	0.00	300	31.9	4.1	4.36	2.54	1.11	22	VC, V>=1.2, ks=0.6 mm	3.34	236.15	0.0%	YES	Existing
FMH4043141	FMH4043142	B_2	878	8	237.12	21.96	225	29.1	4.34	3.83	2.43	2.15	104	VC, V>=1.2, ks=0.6 mm	1.28	50.89	43.1%	YES	Existing
FMH4043142	FMH4043143		878	8	237.12	21.96	225	39.8	3.83	4.05	2.15	1.76	102	VC, V>=1.2, ks=0.6 mm	1.29	51.36	42.7%	YES	Existing
FMH4043143	FMH4043144	E_4	4,462	6	1204.87	83.67	225	29.0	4.05	4.24	1.76	1.47	100	VC, V>=1.2, ks=0.6 mm	1.31	51.89	161.3%	NO	Existing
FMH4043144	FMH4043145		4,462	6	1204.87	83.67	225	27.9	4.24	4.53	1.47	1.20	103	VC, V>=1.2, ks=0.6 mm	1.28	51.04	163.9%	NO	Existing
FMH4043145	FMH4043146	E_5 EL_2 BL_5	6,129	5	1654.93	140.09	450	36.4	4.53	4.39	0.97	0.83	260	VC, V>=1.2, ks=0.6 mm	1.25	199.40	70.3%	YES	Existing
FMH4043146	FMH4043203	E_3	6,288	5	1697.75	142.57	525	11.5	4.39	4.31	0.73	0.69	288	VC, V>=1.2, ks=0.6 mm	1.31	284.35	50.1%	YES	Existing
FMH4043203	FMH4043147		6,288	5	1697.75	142.57	525	21.6	4.91	4.23	0.69	0.63	360	VC, interpolated, ks=1.3 mm	1.06	230.36	61.9%	YES	Existing
FMH4043147	FMH4043148		7,955	5	2147.81	168.62	525	42.6	4.23	4.20	0.63	0.49	304	VC, V>=1.2, ks=0.6 mm	1.28	276.31	61.0%	YES	Existing
FMH4043148	FMH4043149	E_2	9,715	5	2622.96	196.11	525	28.8	4.20	4.25	0.49	0.40	320	VC, V>=1.2, ks=0.6 mm	1.24	269.36	72.8%	YES	Existing
FMH4043149	FMH4043150	E_2	13,141	4	3548.17	208.59	525	22.7	4.25	3.96	0.40	0.32	284	VC, V>=1.2, ks=0.6 mm	1.32	286.24	72.9%	YES	Existing
FMH4043150	Box Culvert		13,141	4	3548.17	208.59	525	1.4	3.96	3.96	0.32	0.00	4	VC, V>=1.2, ks=0.6 mm	10.76	2327.43	9.0%	YES	Existing
FMH4036432	FMH4043143	B_1	808	8	218.12	20.20	225	20.6	4.05	4.05	2.00	1.84	127	VC, interpolated, ks=1.7 mm	1.00	39.75	50.8%	YES	Existing

Abbreviation:

UP_MAN	Upstream Manhole
DN_MAN	Downstream Manhole
ADWF	Average Dry Weather Flow
ACC_ADWF	Accumulated Average Dry
CON_POP	Contributing Population
DIA	Diameter
LEN	Length
UP_GL	Upstream Ground Level
DN_GL	Downstream Ground Level
UP_INV	Upstream Invert Level
DN_INV	Downstream Invert Level
VEL	Peak Pipe Velocity
PE	Polyethylene PE100 Pipe or Concrete UPVC/HDPE lined Pipe
CAP	Peak Pipe Capacity
F/C	Peak Flow/Capacity
VC	Vitrified Clay Pipe
PC	Precast Concrete Pipe

Table - Capacity Performance of Existing and Proposed Sewer under Development Scenario

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.
Assumed data

	Roughness ks (mm)		
Pipe Materal	V 0.75m/s	V 1.2m/s	0.75 < V < 1.2
VC	3.0	0.6	interpolated
PC	6.0	3.0	interpolated
PE	1.5	0.3	interpolated

Existing and Proposed Network - Sites 3E1 and 3E2

Manhole							Existing Pipe Parameter												New Sewer
UP_MAN No.	DN_MAN No.	Catchment inflow	CON_POP	PEAKING FACTOR	ACC_ADWF (m^3/d)	Peak Flow (L/s)	DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	Pipe Materal ks (mm)	VEL (m/s)	CAP (L/s)	F/C (%)	Sufficient Capacity?	Adequate Velocity?
FMH4100328	FMH4061903	EL_1, EL_2	2,188	6	590.64	127.26	300	38.0	4.36	4.17	0.52	0.37	250	VC, interpolated, ks=2.8 mm	0.80	56.26	226.2%	NO	Existing
FMH4061903	FMH4061905		2,188	6	590.64	127.26	300	47.3	4.17	4.15	0.37	0.30	676	VC, V<=0.75, ks=3 mm	0.48	33.66	378.1%	NO	Existing
FMH4061905	FMH4096819		2,188	6	590.64	127.26	600	13.90	4.15	4.43	0.00	-0.05	278	VC, V>=1.2, ks=0.6 mm	1.45	410.85	31.0%	YES	Existing
FMH4096819	FMH4096820	EL_2	2,188	6	590.64	177.26	600	40.4	4.43	4.21	-0.07	-0.22	267	VC, V>=1.2, ks=0.6 mm	1.48	419.14	42.3%	YES	Existing
FMH4096820	FMH4096823		2,188	6	590.64	177.26	600	30.6	4.21	4.27	-0.23	-0.36	235	VC, V>=1.2, ks=0.6 mm	1.58	447.06	39.6%	YES	Existing
FMH4096823	FMH4061908	E_1	2,431	6	656.24	181.81	600	42.9	4.27	4.59	-0.60	-0.93	130	PC, V>=1.2, ks=3 mm	1.72	487.14	37.3%	YES	Existing
FMH4061908	Box Culvert		2,431	6	656.24	181.81	600	3.90	4.59	4.59	-1.02	-1.03	390	PC, interpolated, ks=4.8 mm	0.92	260.74	69.7%	YES	Existing
TMH_3E2	Exist_tapping	P_2	2,188	6	590.64	41.02	300	7.7	4.35	4.35	3.21	3.17	208	PE, interpolated, ks=0.6 mm	1.08	76.30	53.8%	YES	YES
Exist_tapping	FMH4096818		2,188	6	590.64	41.02	300	6.0	4.4	4.11	3.17	3.15	272	VC, interpolated, ks=3 mm	0.75	53.19	77.1%	YES	Existing
FMH4096818	FMH4100328		2,188	6	590.64	41.02	300	31.9	4.1	4.36	2.54	1.11	22	VC, V>=1.2, ks=0.6 mm	3.34	236.15	17.4%	YES	Existing
FMH4043141	FMH4043142		0	8	0.00	0.00	225	29.1	4.34	3.83	2.43	2.15	104	VC, V>=1.2, ks=0.6 mm	1.28	50.89	0.0%	YES	Existing
FMH4043142	FMH4043143		0	8	0.00	0.00	225	39.8	3.83	4.05	2.15	1.76	102	VC, V>=1.2, ks=0.6 mm	1.29	51.36	0.0%	YES	Existing
FMH4043143	FMH4043144	E_4	4,658	6	1257.61	87.33	225	29.0	4.05	4.24	1.76	1.47	100	VC, V>=1.2, ks=0.6 mm	1.31	51.89	168.3%	NO	Existing
FMH4043144	FMH4043145		4,658	6	1257.61	87.33	225	27.9	4.24	4.53	1.47	1.20	103	VC, V>=1.2, ks=0.6 mm	1.28	51.04	171.1%	NO	Existing
FMH4043145	FMH4043146	E_5 EL_2	6,325	5	1707.67	143.15	450	36.4	4.53	4.39	0.97	0.83	260	VC, V>=1.2, ks=0.6 mm	1.25	199.40	71.8%	YES	Existing
FMH4043146	FMH4043203	E_3	6,483	5	1750.49	145.62	525	11.5	4.39	4.31	0.73	0.69	288	VC, V>=1.2, ks=0.6 mm	1.31	284.35	51.2%	YES	Existing
FMH4043203	FMH4043147		6,483	5	1750.49	145.62	525	21.6	4.91	4.23	0.69	0.63	360	VC, interpolated, ks=1.3 mm	1.06	230.36	63.2%	YES	Existing
FMH4043147	FMH4043148		8,150	5	2200.55	171.67	525	42.6	4.23	4.20	0.63	0.49	304	VC, V>=1.2, ks=0.6 mm	1.28	276.31	62.1%	YES	Existing
FMH4043148	FMH4043149	E_2	9,910	5	2675.70	199.17	525	28.8	4.20	4.25	0.49	0.40	320	VC, V>=1.2, ks=0.6 mm	1.24	269.36	73.9%	YES	Existing
FMH4043149	FMH4043150	E_2	13,337	4	3600.91	211.03	525	22.7	4.25	3.96	0.40	0.32	284	VC, V>=1.2, ks=0.6 mm	1.32	286.24	73.7%	YES	Existing
FMH4043150	Box Culvert		13,337	4	3600.91	211.03	525	1.4	3.96	3.96	0.32	0.00	4	VC, V>=1.2, ks=0.6 mm	10.76	2327.43	9.1%	YES	Existing
TMH_3E1	FMH4043143	P_1	1,881	6	507.98	35.28	225	12.3	4.05	4.05	1.93	1.84	127	VC, interpolated, ks=1.7 mm	1.00	39.80	88.6%	YES	Existing

Abbreviation:

UP_MAN	Upstream Manhole
DN_MAN	Downstream Manhole
ADWF	Average Dry Weather Flow
ACC_ADWF	Accumulated Average Dry
CON_POP	Contributing Population
DIA	Diameter
LEN	Length
UP_GL	Upstream Ground Level
DN_GL	Downstream Ground Level
UP_INV	Upstream Invert Level
DN_INV	Downstream Invert Level
VEL	Peak Pipe Velocity
PE	Polyethylene PE100 Pipe or Concrete UPVC/HDPE lined Pipe
CAP	Peak Pipe Capacity
F/C	Peak Flow/Capacity
VC	Vitrified Clay Pipe
PC	Precast Concrete Pipe

Table - Capacity Performance of Existing and Proposed Sewer under Development Scenario - Mitigated

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Assumed data
Proposed Improvememnts

	Roughness ks (mm)		
Pipe Materal	V 0.75m/s	V 1.2m/s	0.75 < V < 1.2
PE	1.5	0.3	interpolated
VC	3.0	0.6	interpolated
PC	6.0	3.0	interpolated

Existing and Proposed Network - Sites 3E1 and 3E2

Manhole							Existing Pipe Parameter											New Sewer	Utilisation Rate Comparison	
UP_MAN No.	DN_MAN No.	Catchment inflow	CON_POP	PEAKING FACTOR	ACC_ADWF (m^3/d)	Peak Flow (L/s)	DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	Pipe Materal ks (mm)	VEL (m/s)	CAP (L/s)	F/C (%)	Sufficient Capacity?	Adequate Velocity?	Existing F/C (%)	Proposed F/C (%)
FMH4100328	FMH4061903	EL_1, EL_2	2,188	6	590.64	127.26	525	38.0	4.36	4.17	0.52	0.37	250	PE, V>=1.2, ks=0.3 mm	1.52	328.65	38.7%	YES	Existing	153%	39%
FMH4061903	FMH4061905		2,188	6	590.64	127.26	525	47.3	4.17	4.15	0.37	0.30	676	PE, interpolated, ks=1.5 mm	0.77	165.60	76.8%	YES	Existing	256%	77%
FMH4061905	FMH4096819		2,188	6	590.64	127.26	600	13.90	4.15	4.43	0.00	-0.05	278	VC, V>=1.2, ks=0.6 mm	1.45	410.85	31.0%	YES	Existing	21%	**31%**
FMH4096819	FMH4096820	EL_2	2,188	6	590.64	177.26	600	40.4	4.43	4.21	-0.07	-0.22	267	VC, V>=1.2, ks=0.6 mm	1.48	419.14	42.3%	YES	Existing	33%	**42%**
FMH4096820	FMH4096823		2,188	6	590.64	177.26	600	30.6	4.21	4.27	-0.23	-0.36	235	VC, V>=1.2, ks=0.6 mm	1.58	447.06	39.6%	YES	Existing	30%	**40%**
FMH4096823	FMH4061908	E_1	2,431	6	656.24	181.81	600	42.9	4.27	4.59	-0.60	-0.93	130	PC, V>=1.2, ks=3 mm	1.72	487.14	37.3%	YES	Existing	29%	**37%**
FMH4061908	Box Culvert		2,431	6	656.24	181.81	600	3.90	4.59	4.59	-1.02	-1.03	390	PC, interpolated, ks=4.8 mm	0.92	260.74	69.7%	YES	Existing	55%	**70%**
TMH_3E2	Exist_tapping	P_2	2,188	6	590.64	41.02	300	7.7	4.35	4.35	3.21	3.17	208	PE, interpolated, ks=0.6 mm	1.08	76.30	53.8%	YES	Existing	0%	**54%**
Exist_tapping	FMH4096818		2,188	6	590.64	41.02	300	6.0	4.4	4.11	3.17	3.15	272	VC, interpolated, ks=3 mm	0.75	53.19	77.1%	YES	Existing	0%	**77%**
FMH4096818	FMH4100328		2,188	6	590.64	41.02	300	31.9	4.1	4.36	2.54	1.11	22	VC, V>=1.2, ks=0.6 mm	3.34	236.15	17.4%	YES	Existing	0%	**17%**
FMH4043141	FMH4043142		0	8	0.00	0.00	225	29.1	4.34	3.83	2.43	2.15	104	VC, V>=1.2, ks=0.6 mm	1.28	50.89	0.0%	YES	Existing	43%	0%
FMH4043142	FMH4043143		0	8	0.00	0.00	225	39.8	3.83	4.05	2.15	1.76	102	VC, V>=1.2, ks=0.6 mm	1.29	51.36	0.0%	YES	Existing	43%	0%
FMH4043143	FMH4043144	E_4	4,658	6	1257.61	87.33	300	29.0	4.05	4.24	1.76	1.47	100	PE, V>=1.2, ks=0.3 mm	1.70	120.30	72.6%	YES	Existing	161%	73%
FMH4043144	FMH4043145		4,658	6	1257.61	87.33	300	27.9	4.24	4.53	1.47	1.20	103	PE, V>=1.2, ks=0.3 mm	1.67	118.31	73.8%	YES	Existing	164%	74%
FMH4043145	FMH4043146	E_5 EL_2	6,325	5	1707.67	143.15	450	36.4	4.53	4.39	0.97	0.83	260	VC, V>=1.2, ks=0.6 mm	1.25	199.40	71.8%	YES	Existing	70%	**72%**
FMH4043146	FMH4043203	E_3	6,483	5	1750.49	145.62	525	11.5	4.39	4.31	0.73	0.69	288	VC, V>=1.2, ks=0.6 mm	1.31	284.35	51.2%	YES	Existing	50%	**51%**
FMH4043203	FMH4043147		6,483	5	1750.49	145.62	525	21.6	4.91	4.23	0.69	0.63	360	VC, interpolated, ks=1.3 mm	1.06	230.36	63.2%	YES	Existing	62%	**63%**
FMH4043147	FMH4043148		8,150	5	2200.55	171.67	525	42.6	4.23	4.20	0.63	0.49	304	VC, V>=1.2, ks=0.6 mm	1.28	276.31	62.1%	YES	Existing	61%	**62%**
FMH4043148	FMH4043149	E_2	9,910	5	2675.70	199.17	525	28.8	4.20	4.25	0.49	0.40	320	VC, V>=1.2, ks=0.6 mm	1.24	269.36	73.9%	YES	Existing	73%	**74%**
FMH4043149	FMH4043150	E_2	13,337	4	3600.91	211.03	525	22.7	4.25	3.96	0.40	0.32	284	VC, V>=1.2, ks=0.6 mm	1.32	286.24	73.7%	YES	Existing	73%	**74%**
FMH4043150	Box Culvert		13,337	4	3600.91	211.03	525	1.4	3.96	3.96	0.32	0.00	4	VC, V>=1.2, ks=0.6 mm	10.76	2327.43	9.1%	YES	Existing	9%	**9%**
TMH_3E1	FMH4043143	P_1	1,881	6	507.98	35.28	225	12.3	4.05	4.05	2.05	1.80	49	PE, V>=1.2, ks=0.3 mm	2.03	80.83	43.6%	YES	Existing	51%	44%
			0	8	0.00	0.00															

Abbreviation:

UP_MAN	Upstream Manhole
DN_MAN	Downstream Manhole
ADWF	Average Dry Weather Flow
ACC_ADWF	Accumulated Average Dry
CON_POP	Contributing Population
DIA	Diameter
LEN	Length
UP_GL	Upstream Ground Level
DN_GL	Downstream Ground Level
UP_INV	Upstream Invert Level
DN_INV	Downstream Invert Level
VEL	Peak Pipe Velocity
PE	Polyethylene PE100 Pipe or Concrete UPVC/HDPE lined Pipe
CAP	Peak Pipe Capacity
F/C	Peak Flow/Capacity
VC	Vitrified Clay Pipe
PC	Precast Concrete Pipe