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主旨: [PLG10278] Planning Application No. A/YL-KTN/981 - Further Information
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Dear Sir/Madam,

We refer to the captioned planning application submitted to the Town Planning Board on 2.1.2024. We would like to enclose a Further Information to facilitate your consideration.

Thank you for facilitating the planning application and should you have any queries, please feel free to contact us.

Best regards,
Isa Yuen Town Planner

毅勤發展顧問有限公司
Aikon Development Consultancy Limited
Estate Agent's License (Company): C-045740



GRANDMAX SURVEYORS LIMITED
俊滙測量師行有限公司

Date : 28th June, 2024
Our Ref. : ADCL/PLG-10278/L007

The Secretary
Town Planning Board
15/F., North Point Government Offices
333 Java Road, North Point, Hong Kong

By Email

Dear Sir/Madam,

Section 16 Planning Application for Proposed Temporary Open Storage of Modular Integrated Construction Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery for a Period of 3 Years at Lot Nos. 1555 S.A (Part), 1555 S.B RP (Part), 1557 RP (Part), 1558 (Part) and 1559 (Part) in D.D. 107, Sha Po, Kam Tin, Yuen Long, New Territories (Planning Application No. A/YL-KTN/981)

We refer to the latest comments from Environmental Protection Department (dated 13.5.2024) and Drainage Services Department (dated 20.5.2024), and would like to enclose herewith our Responses-to-Comments Table to address the abovementioned departmental comments for their consideration.

Thank you for your kind attention and should you have any queries, please do not hesitate to contact our Miss Isa YUEN or Mr. Thomas LUK at :

Yours faithfully,
For and on behalf of
Grandmax Surveyors Limited



Thomas Luk
Planning Consultant

c.c. Client

Further Information

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Response-to-Comments

Comments	Response
From Environmental Protection Department (EPD) (via email on 13 May 2024) on Environmental Assessment (EA) and Sewerage Review)	
EA: Air Quality	
<p>1. Section 2.3 – Exhaust emission from construction plant and equipment shall also be addressed in the report. Both NRMM and Fuel Restriction Regulations shall be followed to control the exhaust emissions from construction equipment. Please supplement.</p>	<p>The <i>Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation</i> regarding the regulatory requirements for NRMM was already mentioned in para. 2.1.4. Para. 2.3.3 has been supplemented the regulatory requirements for NRMM. Moreover, the compliance with the <i>Air Pollution Control (Fuel Restriction) Regulations</i> has also been mentioned in the revised para. 2.3.3.</p>
<p>2. Section 2.3.2 – The consultant should provide more information about the type and scale of construction activities (e.g. area of site formation/excavation and amount of excavated materials to be handled at a time, no. of construction/dump trucks and machinery to be used on-site per time, etc.) to address if adverse construction air quality impact on the nearby ASRs is not anticipated with mitigation measures in place. Please also clarify if there is any concurrent projects within 500m assessment area and address their cumulative impact with the proposed development and if close liaison with the contractors of the concurrent projects will be conducted to avoid any dusty activities to be taken place at the same time.</p>	<p>Please be clarified that:</p> <ul style="list-style-type: none"> (a) There is no concurrent project within 500m assessment area. (b) Construction works including site formation/excavation and use of construction plants such as dump trucks, excavators, etc. will be minimal for the Site is already formed. <p>Please refer to the revised para. 2.3.2 for details.</p>
<p>3. Section 2.3.5</p> <ul style="list-style-type: none"> (a) Please specify the number of truck trips to be induced per time to justify the traffic induced from the operation of the proposed facility is limited. (b) Please note that the good practice recommended in Code of Practice on 	<p>According to the Traffic Impact Assessment (“TIA”), 2 veh/hr is estimated to be induced at maximum. In the view of limited number of truck trips to be induced due to the project, therefore, adverse air quality impact arising from the operation of the Proposed Development is not anticipated. Please refer to the revised para. 2.3.5 for details.</p> <p>Noted, the recommended good practice has been added to paragraph 2.3.5.</p>

Comments	Response
<p>Handling the Environmental Aspects of Temporary Uses and Open Storage Sites should be followed to minimize any potential air quality impact from the operation of the proposed facilities, for example:</p> <ul style="list-style-type: none"> - The access road shall be properly paved or hard surfaced to avoid any fugitive dust impacts due to vehicle movements; - If storage materials would generate dust to the surrounding environment, they should be kept inside enclosures and/or apply appropriate dust suppression measures. <p>(c) Please elaborate what “final touching up works” as stated in Section 1.3.2 will be carried out in the workshops and the potential air quality impact (if any) arising from these works should be addressed in the report.</p>	<p>As mentioned in Section 1 of the EA Report and the Planning Statement, the Proposed Development will be used for temporary storage of MiC which building components will already be assembled off-site. Some touching up works including the use of hand-tools (e.g., electric grinders, electric drills, etc.) and painting will be carried out inside the workshops.</p> <p>Paragraph 1.3.2 has been amended to mention use of hand-tools and painting for reference.</p>
<p>4. Section 2.3.6</p> <p>(a) Please provide the peak traffic flow of Shui Mei Road and Mei Fung Road to justify they can be considered as a LD with low traffic and hence 5m buffer was applied or obtain TD’s agreement to confirm these 2 roads could be considered as LD.</p>	<p>As mentioned in paras. 2.1.5 and 2.1.6 of the TIA Report (Appendix I of the Planning Statement refers) received with no comment from TD, Shui Mei Road and Mei Fung Road are considered to be Single Track Access Road.</p> <p>In accordance with the following sections of Chapter 8 Internal Transport Facilities of HKPSG:</p> <ul style="list-style-type: none"> • Bullet (d) of para. 3.1.3 states “<i>local distributor roads: giving direct access from district distributor roads to buildings and land within districts</i>”.

Comments	Response
<p>(b) Please revise “east” in line 10 to “south”.</p> <p>(c) Other than openable windows and fresh air intake, please also clarify if there is no recreational use in the open space for the proposed facility within the buffer zone from all nearby roads.</p>	<ul style="list-style-type: none"> Bullet (e) of para. 3.1.4 states “single track access roads: for traffic from isolated developments to rural roads B”. <p>According to the aforementioned paragraphs of Chapter 8 of HKPSG, Single Track Access Road, i.e., Shui Mei Road and Mei Fung Road, is considered to be similar to Local Distributor. Therefore, the buffer distance of 5m for Local Distributor should be adopted for both Shui Mei Road and Mei Fung Road.</p> <p>Please refer to the revised para. 2.3.6 of the EA Report for details. Amended accordingly.</p> <p>Another bullet point “There is no recreational use in the open space for the Proposed Development within the buffer zone from all nearby roads” has been added.</p>
<p>5. Sections 2.3.7 and 2.4.2 – The consultant should demonstrate if buffer distance requirements for chimneys as stipulated in the HKPSG are met for any air sensitive uses of the proposed facility. Please conduct a site survey to confirm if there is any active chimneys within 200m of the site boundary and address if there is no odour detected around the site boundary of the Proposed Development during the site survey. We would like to remind the applicant that it should be the responsibility of the applicant and their consultants to ensure the validity of the chimney data by their own site surveys. Should the information of the industrial chimneys be subsequently found to be incorrect, the</p>	<p>During the site visit on 9 November 2023, no active chimneys were observed within 200m of the site boundary and no odour was detected. Paragraphs 2.3.7 and 2.4.2 have been amended to clarify that the buffer distance requirements for chimneys stipulated in the HKPSG are met.</p>

Comments	Response
assessment result as presented in the planning applications would be invalidated.	
6. Figure 2-1 – Please provide a remark to state that no air sensitive uses including openable window, fresh air intake and recreational uses in open space shall be located within the buffer zone.	Done
EA: Noise	
<p>1. General</p> <p>(a) The applicant shall be reminded that if so approved by TPB, the construction and operation of the Proposed Development is subject to the control of NCO and shall be further reminded the requirements to properly design and implement in accordance with the recommendations and requirements stipulated in HKPSG, ProPECC PNs and NCO. Fragmented presentations are very misleading and confusing, the consultant may consider to seek professional advice for reviewing the noise impact assessment.</p> <p>(b) Please clarify if there are any noisy activities within the proposed ancillary single-storey workshops. If affirmative, simply within the enclosed workshop may not be sufficient to demonstrate adequate noise reduction can be provided to alleviate the potential fixed noise impact from these operations, proper review and justification shall be provided to</p>	<p>Noted.</p> <p>There are no significant noisy activities within the proposed ancillary single-storey workshops which is mainly used for MiC unit assemble and finishing. Thus, limited equipment such as electrical drilling, polisher etc. will be used inside the enclosed workshop. As such the noise generated from the workshops is anticipated.</p>

Comments	Response
<p>address the potential impact from the planned fixed noise sources.</p> <p>(c) Also noted that the EA has lots of statements and clauses addressing “adjacent school”; however, the EA did not advise where the “adjacent school” is located. Please supplement.</p> <p>(d) Section 3.2.1 stated that “piling”, among the other construction activities, will be the key noise sources, however, there is no assessment in the EA addressing noise from “piling”. Please supplement.</p>	<p>There are no schools adjacent to the site. As such, “adjacent school” has been removed from the last bullet point in paragraph 3.2.4.</p> <p>No piling works will be required for construction. As such, “piling” has been removed from paragraph 3.2.1.</p>
<p>2. Section 3.2.2 – Please update the latest ProPECC accordingly.</p>	<p>This EA Report was prepared and attached with the Planning Application in December 2023 which was before the publication of the mentioned ProPECC PN 1/24. Nevertheless, paras. 3.1.4 and 3.2.2 as well as Table 3-1 have been amended accordingly.</p>
<p>3. Section 3.2.4 – Noted that there are many recommendations involving “Engineer”, please advise the role and mechanism for the effective implementation.</p>	<p>This paragraph was prepared with reference to EPD’s RPCC for Construction Contract and so “Engineer” was adopted. To avoid misunderstanding, “Engineer” has been replaced by “Applicant or their representative”.</p>
<p>4. Section 3.3.4 – Noted from S.1.3.2 that the MiC would have a dimension of up to 8x2.5m, but it is stated to be delivered via lorries and adopted the technical data accordingly; given this is not a common practice, please provide proper information to justify such assumption.</p>	<p>Generally, MiC units will be delivered by using lorries (≤ 38 tonnes). It is because lorries heavier than 38 tonnes would be with width and/or length larger than vehicles permitted by TD which such vehicles will need to apply for permission from TD. Para. 3.3.4 has been supplemented to state the lorries refer to gross vehicle weight less or equal to 38 tonnes.</p>
<p>5. Section 3.3.7 & Appendix A – Please provide details of the boundary wall, such as its materials, specifications, height etc. to justify their assessment and also for easy reference.</p>	<p>Materials of boundary wall will be decided during the detailed design stage. For mitigating noise, surface mass of boundary wall material is recommended to be at least 7kg/m² according to the recommendations for construction noise from EPD’s website (https://www.epd.gov.hk/epd/misc/construction_noise/contents/index.php/en/home2/mitigation-</p>

Comments	Response
<p>Additionally, we have reservations about the noise reduction performance of the proposed boundary wall, as the 12-15 storeys residential buildings (i.e. Park YOHO) may have a direct line of sight to majority of the site. Please provide proper justification for the claimed noise reduction performance of the proposed boundary wall.</p>	<p>measures/item/157-construction-noise-barrier.html). Examples for more than 7kg/m² including 2mm thick steel sheet.</p> <p>For better noise reduction, a surface density of 10kg/m² with reference to the <i>Guidelines on Design of Noise Barriers</i> published by EPD and HyD was already recommended in para. 3.3.7. The overall noise reduction ranges from 5-10dB(A). As a conservative approach, 5dB(A) noise reduction is adopted in the calculation.</p> <p>Please refer to the revised para. 3.3.7 and Appendix A for details.</p>
<p>6. Section 3.3.15 – Noted from S.3.1.6 that the consultant was well aware of and stated the necessity of prevailing background noise but it was not being provided or addressed in the report.</p>	<p>Prevailing background noise monitoring has been conducted. Discussion about prevailing background noise monitoring has been provided in para. 3.3.15 to 3.3.17. The noise criteria for fixed sources in Table 3-4 and the predicted noise level in Appendix B have been updated accordingly.</p>
<p>7. Appendix A – Please provide the justification of the -5 dB(A) & -10 dB(A) noise reduction for screening and speed respectively.</p>	<p>Notes have been incorporated in Appendix A to elaborate the proposed noise reduction for screening, speed, angle of view and distance.</p>
<p>EA: Water Quality</p>	
<p>1. Section 1.1.3 – OZP No. S/YL-KTN/11 has been gazetted, please check.</p>	<p>Noted. “S/YL-KTN/10” has been updated to “S/YL-KTN/11”.</p>
<p>2. Section 4.2.4</p> <p>(a) Please clarify if the grey water from toilet will be further treated for non-portable use on-site; otherwise it is suggested to claim as wastewater.</p> <p>(b) With reference to SIA, option 2 is sewage storage and tanker away arrangement, it is advised to rewrite as “... wastewater storage tanks for temporarily storing and tankered away for off-site disposal in a sewage treatment facility...”</p>	<p>Grey water from toilet will not be treated on-site. To avoid misunderstanding, “grey water” has been updated to “wastewater”.</p> <p>Amended accordingly.</p>

Comments	Response
<p>3. Section 4.3.4</p> <p>(a) Please summarise the findings from SIA, including number of staff, estimated ADWF, size of proposed ST/S for option 1, number & volume of storage tanks for option 2.</p> <p>(b) Please be reminded that the ST/S shall compile with the requirements of ProPECC PN 1/23 and duly certified by an Authorized Person, ST/S should be an acceptable means for sewage collection, treatment and disposal. The proponent should confirm and specify the above sewage disposal method in future detail design.</p> <p>(c) It should read "... For Option 2, adequate capacity and number of wastewater storage tanks will be provided onsite, and with adequate frequency for offsite disposal by a licensed collector will be provided onsite."</p>	<p>Paragraph 4.3.4 has been amended accordingly.</p> <p>Noted.</p> <p>Paragraph 4.3.4 has been amended accordingly.</p>
<p>4. Section 4.3.5</p> <p>(a) Please summarise the findings from DIA.</p> <p>(b) Best Management Practices (BMPs) for stormwater discharge to minimise stormwater pollution arising from the Project shall be incorporated.</p>	<p>Provided accordingly.</p> <p>Paragraph 4.3.5 has been amended.</p>
<p>5. Section 4.4.3 – Please clarify the consideration of either options 1 and 2 will be subject to the detailed design in the future.</p>	<p>Para. 4.4.3 has been supplemented accordingly.</p>

Comments	Response
6. The agreement of SIA & DIA are subject to the acceptability by SIG/EPD & DSD respectively.	Noted
EA: Waste Management	
1. Section 5.2.1 – Please change “non-inert C&D waste” to “non-inert C&D materials” instead of “C&D waste” for the entire submission to avoid confusing, as some non-inert C&D materials can be recycled / reused after segregation before disposal at landfill.	Noted and revised.
2. Section 5.2.3 – Please review the calculation of 194 tonnes ($9705\text{m}^2 \times 0.1\text{m} \times 20\% \times 2$) of waste paving is correct.	The calculation has been revised.
3. Section 5.2.4 & Table 5-1 – Please clarify what “negligible mean. If it is expected to generate a very small amount of inert C&D materials due to excavation, please quantify and provide the estimated figures. Please supplement the anticipated excavation extent (i.e., area and depths) of the Project for further vetting.	For the worst-case scenario, if all the surface soil will be removed with a depth 50mm, the quantity will be approx. 780 tonnes ($9750\text{m}^2 \times 0.05\text{m} \times 1.6\text{kg}/\text{m}^3$). Para. 5.2.4 & Table 5-1 have been revised accordingly.
4. Table 5-1 – Please correct the column head from “estimated non-inert C&D material generation” to “estimated inert C&D material generation”	Amended accordingly.
5. Table 5-3 – For inert C&D materials, please change “disposal of at public fill reception facilities” to “delivery to public fill reception facilities”	Amended accordingly.
6. Section 5.2.10 & Section 5.2.19 – Please elaborate on the conversion factor from weight unit to volume unit for both inert and non-inert C&D materials.	Regarding to the different characteristic of inert and non-inert C&D material, the density is slightly different. With reference to other similar study, the general density of soil and rock (bulked) is 1.8 tonnes/ m^3 . Since non-inert C&D materials mainly compose bamboo, timber, vegetation, packaging waste, that are not packed and more spacing compared with inert C&D material such

Comments	Response
	as soil and concrete, so assuming the density of non-inert C&D materials is 1.0 tonnes/m ³ . Para. 5.2.10 and 5.2.19 have been revised accordingly.
7. Section 5.2.12 – Please provide estimated quantity on inert C&D materials (i) to be reused or recycled, and (ii) to be delivered to public fill reception facilities respectively.	It is assumed approx. 70% of inert C&D waste could be reused or recycled, which is about 1,298 tonnes, while the remaining 30% (i.e. 556 tonnes) will be disposed to public fill reception facilities. Para. 5.2.12 has been revised.
8. Section 5.2.20 – Please correct the typo “non-inert”, and please delete “24”.	Amended accordingly.
9. Section 5.2.23 – It is mentioned that “10% C&D waste can be reused/recycled on-site”. For clarity, please change “C&D waste” to “non-inert C&D materials”.	Amended accordingly.
10. Section 5.2.35 – It is mentioned that “The major type of waste generated will be waste from office and the MiC component and modular construction materials storage”. Please explain whether it falls under the category of municipal solid waste as commercial & industrial waste (C&I waste). Additionally, please explain why 24 tonnes per year of C&I waste is expected.	It is classified as commercial and industrial waste (“C&I waste”). Considering the Site to be in operation from Monday to Saturday and approx. 50 people working on site with waste disposal rate of 1.53kg/person/day, the waste generated during operation will be 24 tonnes per year (i.e. 1.53kg/person/day*50 people*6 days*52 weeks/1000). Please refer to the revised para. 5.2.35 for details.
11. Section 5.2.36 – Please add the unit “7.4 tonnes / per year” for clarity.	Amended accordingly.
12. Section 5.2.37 – Please add the unit “16.6 tonnes / per year” for clarity.	Amended accordingly.
13. Section 5.3.5 – Please change “inert non-recyclable materials” to “inert materials”. Additionally, please change “treated as” to “delivered to”.	Amended accordingly.

Comments	Response
14. Section 5.3.8 – The sixth bullet point: Please change “disposed of at Fill Bank” to “delivered to public fill reception facility”.	Amended accordingly.
15. Section 5.3.8 – The eight bullet point: Please avoid use “disposal of C&D materials”, “delivery of C&D materials”.	“Disposal” has been amended to “delivery”.
16. Section 5.3.10 – It is mentioned that “The majority of waste generated during the operation of the proposed development will mainly comprise general refuse and commercial wastes such as food waste, food packaging, paper, can, plastic bottles, etc.”. Please review the expected waste types to ensure consistency with 5.2.35.	Paras. 5.2.35 and 5.3.10 have been revised, the major type of waste generated will be general refuse, commercial wastes and the MiC component and modular construction materials storage.
<p>17. Section 5.3 – Mitigation measures Please adopt the waste management hierarchy principles for each type of waste identified during construction phase. Additionally, please consider to supplement the followings:</p> <ul style="list-style-type: none"> (a) Please supplement the control measures for waste transportation. (b) Please advise if there will be any yard waste generated. The Consultant is advised to review whether such materials will be sent to the Yard Waste Recycling Centre in Y-Park for recycling prior to disposal at the designated landfill site. (c) Food waste is the main source of generating unpleasant odour and causing environmental hygiene concerns. Please consider classifying food waste as recyclable 	<p>Use of dump trucks with mechanical covers has been included in addition to Trip Ticket System of waste transportation in para. 5.3.4.</p> <p>It is confirmed that no garden (or yard) waste will be generated. Please refer to a new para. 5.2.34 for reference.</p> <p>Para. 5.3.7 has been added to incorporate the recycle of food waste.</p>

Comments	Response
<p>and separate the food waste from other waste to facilitate the recycling of food waste on-site or off-site.</p> <p>(d) Please be advised that fly-tipping or disposal of C&D materials at locations other than the designated shall be prohibited. The Consultant shall review whether it is appropriate to incorporate the recommendations below.</p> <ul style="list-style-type: none"> - “All dump trucks engaged on-site for delivery of inert and non-inert C&D material from the site to the designated disposal locations, including PFRFs, landfills etc., should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor to prohibit illegal dumping and landfilling of materials; and - The data collected by GPS or equivalent system should be recorded properly for checking and analysis the travel routing and parking locations of dump truck engaged on-site.” 	<p>The recommendations have been included in the revised para. 5.3.9.</p>
<p>EA: Land Contamination</p>	
<p>1. It is mentioned that a warehouse/storage area is observed in the aerial photos starting from 2015. Please evaluate if there is any potential source and activities related to warehouse/storage area that may cause potential land contamination issue through desktop review and site survey,</p>	<p>As advised by the Applicant, the Site has been operated by them or their sister companies since 2014/15 for construction related usages including storage of construction materials, nursery for landscape works, etc. The Applicant advised no Dangerous Goods (“DGs”), no generation of chemical waste (e.g., waste lubricating oil, waste batteries, etc.) and no use of liquid chemicals or DGs; and no occurrence of fire incident on Site. Please refer to the revised para. 5.4.1 for details.</p>

Comments	Response
with supplements of site walkover checklist, site photos and relevant records from government authorities (e.g., (i) Dangerous Goods Storage, (ii) Registration of Chemical Waste Producers, (iii) Spillage/Leakage of Chemical or Dangerous Goods, and (iv) Fire incidents, etc.)	
2. It is mentioned that majority of site is currently paved. Please provide information on the paving condition, including any cracks or stains on the paved ground, with supplemented photos.	Paved ground is in good condition with no cracks or stains. Paragraph 5.4.2 has been amended and additional photos have been added to Figure 5-1.
3. Appendix B Figure D-1: The title is Aerial Photograph in Year 1970 but the description is "In 1960.." Please review and review Section 5.4 accordingly.	Appendix B has been relabelled to Appendix C. The Aerial Photograph was taken in 1970, the description has been amended accordingly. Additionally, all the "Figure D.." have been amended to "Figure C..".
Sewerage Review Report	
1. General (a) Please provide the operational year of the project. (b) Please choose a preferred option and seek comments from relevant Departments, WQMG/EPD for option 1, DSD for option 2.	(a) The operation of Proposed Development tentatively starts from Year 2024. Para. 1.3.1 has been revised to incorporated this information. (b) Noted, will seek comment from WQMG/ EPD and DSD. The consideration of Option 1 and Option 2 depends on the detail design stage in the future.
2. Section 3.2.4 – According to the Guidelines for Soakaway System from EPD, the minimum capacity of septic tank should be 3 days' storage of wastewater. Please check.	Para. 3.2.4 has been revised. The minimum capacity of septic tank would be 3 days' storage of wastewater, thus the septic tank capacity shall be approx. 39m ³ .

Comments	Response
From Drainage Services Department (DSD) (via email on 20 May 2024) on Drainage Proposal	
<p>3. Figure C-1: The drainage facilities presentation is incorrect. They should be shown as cross sectional view. Please revise to avoid confusion.</p>	<p>Figure C-1 has been amended to:</p> <ul style="list-style-type: none"> • show the cross sections of U-Channels on Sections Y-Y and X-X. • delete blocks not on the cut-lines X-X and Y-Y. • amend the axis of mPD. <p>As mentioned in para. 3.4.3 of the Drainage Proposal, the cross-section drawings are indicative based on the limited information which is mentioned in para. 4.1.4. An Updated Drainage Proposal including the cross-sections will be prepared based on the topographical data in the future.</p> <p>Bullet #2 of para. 4.1.4 has been amended to include update of Appendix C to avoid confusion.</p>
<p>4. According to the provided sections, external catchment areas should be considered in the assessment.</p>	<p>According to some elevations shown on topographical basemap downloaded from the Lands Department re-provided on Figure 3-1 of Drainage Proposal, the elevation the area to the north of the Site should be +3.5mPD which is lower than that of ~3.56mPD of the northern portion of the Site. Therefore, it is not likely for runoff overflowing from the areas to the north of the Site to the Proposed Development.</p> <p>For the areas to the east and south of the Site, they are separated by Mei Fung Road and Shui Mei Road. Based on the Site observations which can be verified by reviewing Street Views of Google Map, Mei Fung Road and Shui Mei Road are provided with road drains. Therefore, runoff from these areas including the roads is not likely overflowing to the Site.</p> <p>As mentioned in para. 3.2.1, drainage facilities should have been provided to the open storage to the west of the Site. Moreover, with reference to the topographic basemap from the Lands Department as shown on Figure 2-1, the catchment flow of the open storage to the west of the Site should be from East to West, which is away from the Site.</p> <p>Figure C-1 has been amended such that the area to the North of the site has a lower elevation. Please also refer to the revised para. 3.2.1 for details.</p>

Comments	Response
5. Figure C-1: Please review of the section markers are correct.	Figure C-1 has been revised.
6. Figure C-1: Please also indicate the relevant road/adjacent areas on sections for reference.	Shui Mei Road Mei Fung Road, and the Open Storage to the west of the site have been indicated on Figure C-1.
7. The 720mm cross road u-channel is considered not acceptable as the implementation and maintenance on site in future is not feasible. Please review the drainage proposal.	<p>The drainage proposal has been amended such that the 720mm cross road u-channel has been changed into a 750mm underground pipe.</p> <p>Please refer to the revised para. 3.4.2, Figure 3-2 and Appendix B for details.</p> <p>Furthermore, as recommended in para. 4.1.4, an Updated Drainage Proposal will be provided to include more detailed and updated information.</p>

Enclosure | 1

Revised Environmental Assessment Report



Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po Environmental Assessment Report

Prepared for:
Sanfield (Management) Ltd

13 June 2024

Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po Environmental Assessment Report

Prepared for
Sanfield (Management) Ltd

For and on behalf of
EnviroSolutions & Consulting

Alexi BHANJA
Country Manager – Hong Kong

ESC Project No. EPA23.1044-J.01

Deliverable No. D01

Revision No. 2

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Rev.	Description	Prepared	Reviewed	Approved	Date
1.1	Environmental Assessment Report	MW	JC	AW	15/12/23
2	Environmental Assessment Report	MW	JC	AW	13/6/24

Distribution Internal Confidential Public

This report has been prepared by EnviroSolutions & Consulting Limited with all reasonable skill, care, and diligence within the terms of the Contract with Client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with Client. We disclaim any responsibility to Client and others in respect or any matters outside the scope of the above. This report is confidential to Client and we accept no responsibility of whatsoever nature to any third parties to whom this report, or any part thereof, is made known.

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1 INTRODUCTION

1.1 Project Background

1.1.1 Aligning with Government directives to enhance the quantity, speed, efficiency, and quality of housing, the construction industry is spearheading the development of highly productive construction methods, including the widespread adoption of Modular Integrated Construction (“MiC”). MiC, an innovative construction method, involves assembling building components off-site in a controlled environment before transporting and seamlessly integrating them into the construction site.

1.1.2 In order to support in adopting MiC, a temporary open storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery for a period of three years (“the Proposed Development” or “Proposed Use”) at various lots in DD 107, Sha Po, Yuen Long, New Territories (“the Site”) is proposed.

1.1.3 The Site is zoned Comprehensive Development Area (1) (“CDA(1)”) under the Approved Kam Tin North Outline Zoning Plan (“OZP”) No. S/YL-KTN/11. In accordance with Note (11) of the OZP, temporary use of development of any land or building exceeding a period of three years will require permission from the Town Planning Board (“TPB”). Therefore, a planning application pursuant to Section 16 of the *Town Planning Ordinance* (“TPO”) is required.

1.1.4 In order to support the planning application for the Proposed Development, EnviroSolutions & Consulting Ltd (“ESC”) has been appointed to prepare this Environmental Assessment (“EA”) Report.

1.2 Site Description

1.2.1 The Site location and its environs are shown in **Figure 1-1** which the uses surrounding the Site include:

- To the North: Park Yoho
- To the East: temporary structures
- To the South: nullah and open storage
- To the West: Park Yoho

1.3 Project Description

1.3.1 The Site area will be approximately 9,705m². The indicative layout of the Proposed Development can be referred to the Planning Statement.

1.3.2 The Proposed Use aims to serve as a transshipment depot for MiC components, with the objective of meeting the growing demand for MiC applications while ensuring efficient logistics and seamless implementation of MiC in housing projects. MiC components intended for temporary storage will weigh about 10 to 20 tonnes, with maximum length and width of approx. 8m and 2.5m respectively. The Proposed Use also serves as a hub for modular construction materials being used for housing project sites in order to promote more Green Construction Methodology. The Proposed Development comprises an open storage area, providing a secure location for the temporary storage of MiC components and modular construction materials, along with ancillary facilities, including three

workshops, an office, a staff car park, a guardhouse and machinery (i.e. tower crane and hoisting crane etc.) to support its operational needs. The proposed ancillary office is a two-storey structure designed to accommodate about 50 staff members. The office is intended to provide administrative/supporting services to facilitate the seamless transshipment of MiC components. The proposed ancillary single-storey workshops, equipped with lifting machinery, will be enclosed, primarily serving for internal quality control and quality assurance checks of MiC components, as well as any necessary final touching-up works with use of hand-tools such as electric grinders, electric drills, etc. and painting before their delivery to construction sites. Additionally, solar panels will be installed on the workshop and office roofs for self-sufficiency purpose, contributing to environmental protection through renewable energy generation.

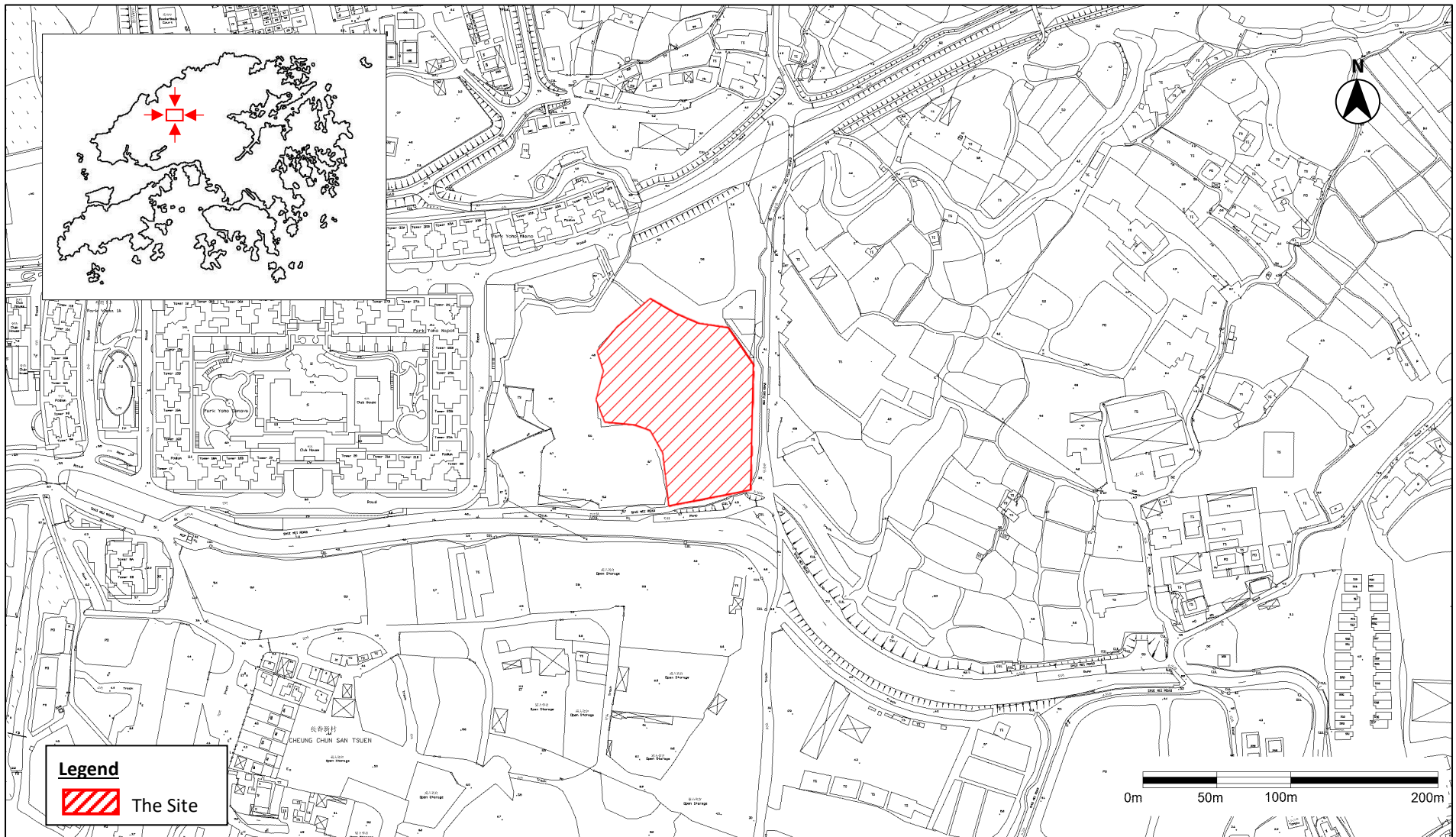
1.3.3 The operating hours of the Proposed Use will be from 8:00 a.m. to 7:00 p.m. from Monday to Saturday and without operation on Sunday and public holidays.

1.4 Objectives of the Report

1.4.1 The objectives of this EA Report are to:

- Assess the potential environmental impacts arising from the operation of the Proposed Development, in terms of air quality, noise, water quality and waste management.
- Recommend appropriate measures to mitigate any impacts if necessary.

Figure 1-1 Site Location and its Environs



2 AIR QUALITY

2.1 Environmental Legislation and Standards

Air Quality Objectives

2.1.1 The Air Quality Objectives (“AQOs”) established under the *Air Pollution Control Ordinance* (“APCO”) (Cap. 311) are given in **Table 2-1**.

Table 2-1 Hong Kong Air Quality Objectives

POLLUTANT	AVERAGING TIME	CONCENTRATION LIMIT [Note 1] ($\mu\text{g}/\text{m}^3$)	NUMBER OF EXCEEDANCES ALLOWED
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	50	3
Respirable Suspended Particulates (“RSP” or “ PM_{10} ”) [Note 2]	24-hour	100	9
	Annual	50	Not applicable
Fine Suspended Particulates (“FSP” or “ $\text{PM}_{2.5}$ ”) [Note 3]	24-hour	50	35
	Annual	25	Not applicable
Nitrogen Oxide	1-hour	200	18
	Annual	40	Not applicable
Ozone	8-hour	160	9
Carbon Monoxide	1-hour	30,000	0
	8-hour	10,000	0
Lead	Annual	0.5	Not applicable

Notes:

1. All measurements of the concentration of gaseous air pollutants, i.e. SO_2 , NO_2 , O_3 and CO , are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
2. RSP means suspended particles in air with a nominal aerodynamic diameter of $10\mu\text{m}$ or less.
3. FSP means suspended particles in air with a nominal aerodynamic diameter of $2.5\mu\text{m}$ or less.

Air Pollution Control (Construction Dust) Regulation

2.1.2 Enacted under Section 43 of the APCO, the *Air Pollution Control (Construction Dust) Regulation* defines notifiable and regulatory works to ensure effective dust abatement measures have been properly implemented to reduce dust emissions for a number of construction activities.

2.1.3 The Regulation requires that advance notice is given to EPD for any notifiable work^[Ref.#1] and the contractor shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation, which also includes dust control and suppression measures.

¹ Notifiable works include site formation, reclamation, demolition of a building, work carried out in any part of a tunnel that is within 100m of any exit to the open air, construction of the foundation of a building, construction of the superstructure of a building and road construction work.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

- 2.1.4 This Regulation takes effect on June 2015 and required Non-road Mobile Machinery (“NRMM”), except those exempted, to comply with the prescribed emission standards. From 1 September 2015, all regulated machines sold or leased for use in Hong Kong must be approved or exempted with a proper label in a prescribed format issued by EPD. Starting from 1 December 2015, only approved or exempted NRMMs with a proper label are allowed to be 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.

Hong Kong Planning Standards and Guidelines (“HKPSG”)

- 2.1.5 The minimum buffer distances required between different types of roads and active open spaces are recommended in Chapter 9 Environment of HKPSG and are summarised in **Table 2-2** for ease of reference.

Table 2-2 HKPSG Minimum Setback Distances

POLLUTION SOURCE	TYPE OF ROAD	BUFFER DISTANCE	PERMITTED USES
Road and Highways	Trunk Road and Primary Distributor	>20m	Active and passive recreational use
		3 – 20m	Passive recreational use
		<3m	Amenity areas
	District Distributor	>10m	Active and passive recreational use
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreational use
		<5m	Passive recreational use
	Under Flyovers	-	Passive recreational use

Source: Adapted from Table 3.1 of Chapter 9 Environment of HKPSG

2.2 Identification of Air Sensitive Receiver (“ASRs”)

- 2.2.1 The first layer ASRs within 500m from the boundary of the Site have been identified. All identified ASRs are existing ASRs and no planned ASR has been identified within the assessment area. The locations of these ASRs are shown in **Figure 2-1** and summarised in **Table 2-3**.

Table 2-3 Identified Representative ASRs

ASR ID	DESCRIPTION	LANDUSE	NO. OF STOREY	APPROXIMATE DISTANCE TO SITE BOUNDARY
ASR1	PARK YOHO T36	Residential	12	64m
ASR2	PARK YOHO T25	Residential	15	90m

2.3 Identification of Air Pollution Sources

Construction Phase

2.3.1 Fugitive dust is the major impact that will be generated during construction activities, such as excavation, stockpiling, earth moving, transferring or handling of dusty materials.

2.3.2 No major concurrent project within in 500m assessment area is anticipated. As advised by the Applicant, the site is already formed. Therefore, construction works including site formation/excavation and use of construction plants such as dump trucks, excavators, etc. will be minimal. With the implementation of dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, dust generation can be controlled and significant fugitive dust impact is therefore not anticipated. More detailed descriptions for control measures are provided in **paragraphs 2.3.3 and 2.3.4**.

2.3.3 To avoid adverse dust impact on the air sensitive uses nearby, good practice and dust control measures to be implemented during the construction phase are as follows:

- Provide hard paving on open area, regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.
- The working area of any excavation or earth moving operation shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- Frequent watering for particularly dusty areas and areas close to ASRs.
- Any stockpile of dusty materials shall be either covered entirely by impervious sheeting, placed in an area sheltered on the top and three sides, or sprayed with water so as to maintain the entire surface wet.
- Where possible, dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from the site clearance) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides within a day of demolition.
- Tarpaulin covering of all dusty vehicles loads transported to, from and between site locations.
- Vehicle washing facilities including a high-pressure water jet shall be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcore.
- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.
- Spray water on the surface of façade grinding work as far as practicable.

- Equip vacuum cleaner on grinder for façade grinding work as far as practicable.
- Main haul road shall be sprayed with water so as to maintain the entire surface wet. Imposition of speed controls for vehicles on site haul roads and confine haulage and delivery vehicles to designated roadways inside the site.
- A portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit shall be kept clear of dusty materials.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from the ASRs.
- 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 three sides.
- Emission from Non-Road Mobile Machinery (“NRMM”) is governed under the *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation*, as mentioned in **paragraph 2.1.4**. Each NRMM to be used in construction site shall be obtained with valid label in a prescribed format issued by EPD.
- The *Air Pollution Control (Fuel Restriction) Regulations*, in particular not using restricted liquid fuel ^[note 2], shall be fully complied with.

2.3.4 In addition, the EPD’s *Recommended Pollution Control Clause (“RPCC”) for Construction Contract* in COP should be incorporated in the relevant works contract. The RPCC are generally good engineering practice to minimize inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements are summarised below:

- The Contractor shall observe and comply with the APCO and its subsidiary regulations, particularly the Air Pollution Control (Open Burning) Regulation and Air Pollution Control (Construction Dust) Regulation and Air Pollution Control (Smoke) Regulation.
- The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of his activities.
- 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 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.
- Before 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.

² Restricted liquid fuel means any liquid fuel that has –

- (a) a sulphur content of more than 0.005% by weight; or
- (b) a viscosity of more than 6 centistokes at 40°C.

Operation Phase

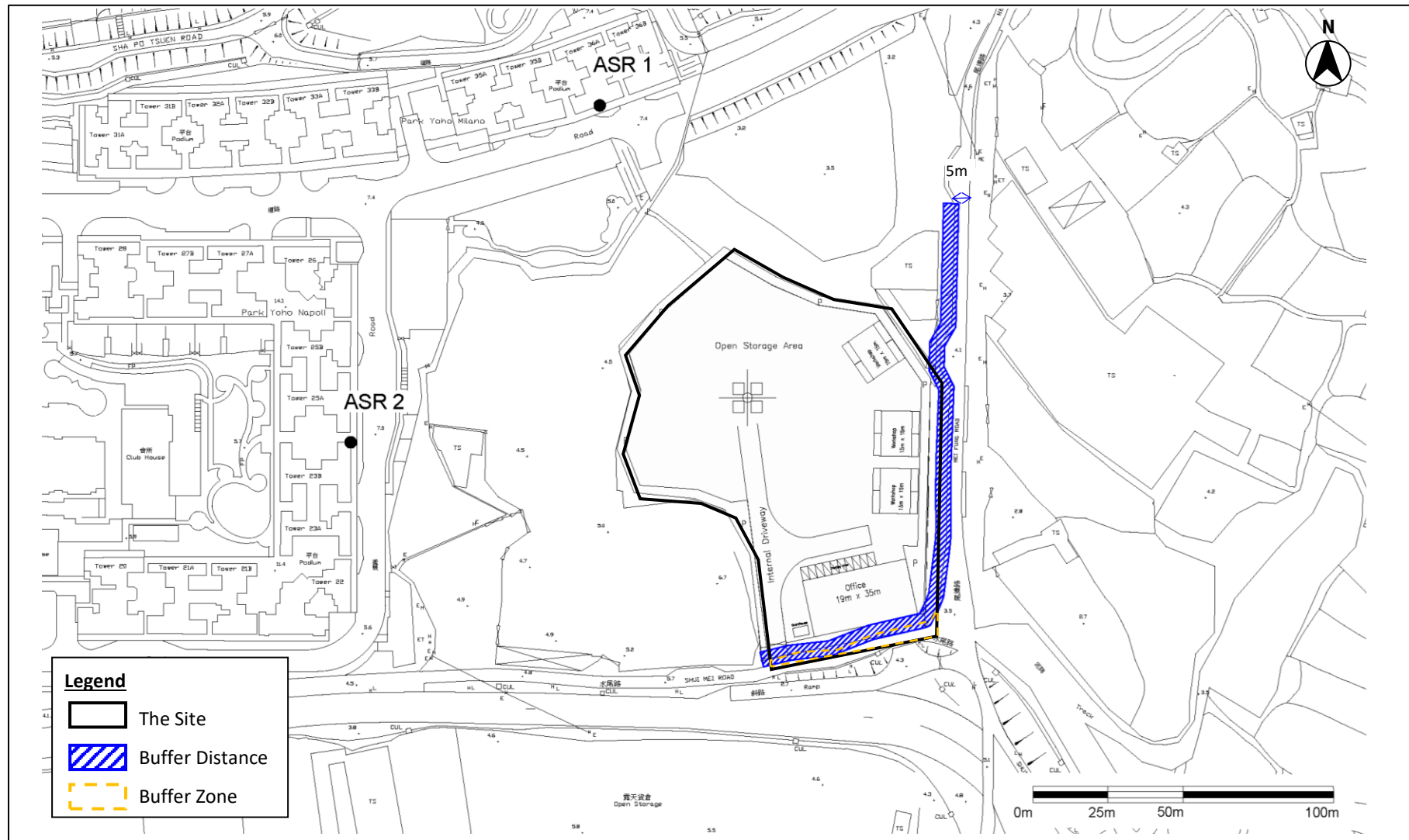
- 2.3.5 The Proposed Development will be used as a temporary workshop and storage yard for MiC component and modular construction materials which transported to the Site by lorries. According to Table 4.3 of the Traffic Impact Assessment (“TIA”), 2 veh/hr is estimated to be induced at maximum. Thus, adverse air quality impact arising from the operation of the Proposed Development is not anticipated. The Good Practice recommended in *Code of Practice on Handling the Environmental Aspects of Temporary Uses and Open Storage Sites* should be followed to minimise any potential air quality impact from the operation of the Proposed Development, such as:
- The access road shall be properly paved or hard surfaced to avoid any fugitive dust impacts due to vehicle movements.
 - If storage materials would generate dust to the surrounding environment, they should be kept inside enclosures and/or apply appropriate dust suppression measures.
- 2.3.6 Shui Mei Road and Mei Fung Road are the roads near the Site as shown in **Figure 2-1**. With reference to the *Annual Traffic Census 2022* published by the Transport Department (“TD”), no relevant information regarding the road types of Shui Mei Road and Mei Fung Road is provided. Nevertheless, as mentioned in paragraphs 2.1.5 and 2.1.6, as well as Table 2.3 of the Traffic Impact Assessment (“TIA”) Report which received no comment from TD, they are single track access roads. No specific buffer distance requirement is recommended for single track access road in Table 3.1 of Chapter 9 of HKPSG. According to the bullet (d) of para. 3.1.3 and bullet (e) of para. 3.1.4 of Chapter 8 of HKPSG, Single Track Access Road, i.e., Shui Mei Road and Mei Fung Road, is considered to be similar to Local Distributor. Therefore, the buffer distance of 5m for Local Distributor should be adopted for both Shui Mei Road and Mei Fung Road. Therefore, the minimum buffer distance of 5m between air sensitive uses and these two roads is adopted for the Site. As illustrated in **Figure 2-1**, all the site area can satisfy the buffer distance of 5m between the roads and Site, except the south part. There is no air sensitive use within the 5m buffer distance between Shui Mei Road and the eastern part of the Site. In order to avoid adverse air quality impact from traffic emission, a buffer zone is recommended for the Proposed Development with the following requirements:
- No fresh air intake/openable window of air sensitive uses shall be located within the buffer zone.
 - Any air sensitive uses within the buffer zone shall rely on fresh air intake/openable window located out of the buffer zone for ventilation.
 - There is no recreational use in the open space for the Proposed Development within the buffer zone from all nearby roads.
- 2.3.7 During the site visit on 9 November 2023, no active chimneys were observed within 200m of the site boundary, and no odour was detected around the site boundary of the Proposed Development. Therefore, with the provision of the buffer zone, the buffer distances recommended in HKPSG will be satisfied. Therefore, no adverse air quality impact on the Site from traffic emission is anticipated.
- 2.3.8 The engines of the vehicles will be switched off during loading/unloading within the Site. Besides, Shui Mei Road and Mei Fung Road will still operate with ample capacity with the Proposed Development as per Section 5 of the TIA Report. As indicated in the TIA Report,

only a few traffic will be generated by operating the Proposed Development. The additional traffic trips related to the Proposed Development are considered insignificant and can be absorbed by the road networks. Therefore, it is anticipated that the induced traffic would not cause adverse traffic congestion problem and queuing on the public road leading worsening of vehicular emission impact. Moreover, Swept Path analysis has been conducted as mentioned in the TIA and all the reverse movement of vehicles will be confined within the Site only. Hence, no reverse movement of vehicles on the public road due to the Proposed Development is expected. Due to the low traffic flow generated and no idling emission from the vehicles during loading/unloading activities, adverse air quality impact from the Proposed Development on the surrounding air sensitive uses is not anticipated.

2.4 Conclusion

- 2.4.1 With the implementation of the recommended mitigation measures and good site practice, adverse impacts during the construction phases are not anticipated.
- 2.4.2 As there are no active chimneys within 200m of the site boundary of the Proposed Development, the buffer distance recommended in HKPSG will be satisfied. Thus, no adverse air quality impact on the Site from vehicular emissions is anticipated with the implementation of the proposed mitigation measures during the operation phase. At the same time, the operation of the Proposed Development will not cause adverse air quality impacts on the surrounding air sensitive uses.
- 2.4.3 Overall, no adverse air quality impacts are anticipated during the construction and operation phases of the Proposed Development.

Figure 2-1 Buffer Distance Requirement from the Surrounding Roads



Remark: There shall be no air sensitive uses including openable window, fresh air intake and recreational uses in open space within the buffer zone.

3 NOISE

3.1 Environmental Legislation and Standards

Noise Control Ordinance (“NCO”, Cap. 400)

3.1.1 The principal legislation controlling environmental noise impact is the *Noise Control Ordinance* (“NCO”). The NCO enables regulations and Technical Memoranda (“TMs”) to be enacted, which introduces detailed control criteria, measurement procedures and other technical matters. The TMs of NCO include:

- TM on Noise from Percussive Piling (“PP-TM”)
- TM on Noise from Construction Work other than Percussive Piling (“GW-TM”)
- TM on Noise from Construction Work in Designated Area (“DA-TM”)
- TM for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (“IND-TM”)

3.1.2 The Site falls within a Designated Area (“DA”) in accordance with EPD’s Plan No. EPD/AN/NT-01 for Yuen Long, Tin Shui Wai, Mai Po, Shek Kong and Kwu Tung. Therefore, DA-TM is applicable.

3.1.3 In addition, the following requirements are given under the NCO:

- Hand-held breakers having a mass of above 10kg and any air compressor capable of supplying compressed air at 500kPa or above must be fitted with Noise Emission Label issued under the *Noise Control (Hand Held Percussive Breakers) Regulation and Noise Control (Air Compressors) Regulation* of NCO.
- Construction Noise Permit (“CNP”) must be applied by the Contractor from EPD for any percussive piling at any time or any other construction activities conducted within restricted hours (for all days 7pm to 7am the next day and at all times on Public Holidays or Sundays) as defined in NCO.

3.1.4 For noise arising from construction activities (other than percussive piling) during normal working hours (7am to 7pm from Monday to Saturday, not including general holidays), the noise criteria as shown in **Table 3-1** and control measures for construction noise impact during normal working hours can be referred to *Professional Persons Environmental Consultative Committee Practice Note PN 1/24 Minimizing Noise from Construction Activities* (“ProPECC PN1/24”).

Table 3-1 Construction Noise Criteria for Non-Restricted Hours

NOISE SENSITIVE USE	L _{eq} (30min) NOISE CRITERIA BETWEEN 0700 AND 1900 ON ANY DAY NOT BEING A SUNDAY OR GENERAL HOLIDAY
All domestic premises Temporary housing accommodation Hostels Convalescences homes Homes for the aged	75 dB(A)

NOISE SENSITIVE USE	$L_{eq(30min)}$ NOISE CRITERIA BETWEEN 0700 AND 1900 ON ANY DAY NOT BEING A SUNDAY OR GENERAL HOLIDAY
Places of public worship Courts of law Hospitals and medical clinics	70 dB(A)
Educational institutions (including kindergartens and nurseries)	70 dB(A) (or 65 dB(A) during examination)

3.1.5 For fixed plant noise during operation phase, the requirements of IND-TM shall be complied with. Table 2 of IND-TM stipulates the day, evening and night time Acceptable Noise Levels (“ANLs”) for Noise Sensitive Receivers (“NSRs”) according to the corresponding Area Sensitive Rating (“ASR”), which is determined by Influencing Factors (“IFs”) in accordance with the IND-TM. These are summarised in **Table 3-2**.

Table 3-2 Acceptable Noise Levels for Fixed Noise Source

TIME PERIOD	ANL, dB(A)		
	ASR “A”	ASR “B”	ASR “C”
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

Hong Kong Planning Standards & Guidelines (“HKPSG”)

3.1.6 The noise criteria for planned fixed source shall follow the requirements of Table 4.1 of Chapter 9 of HKPSG:

- a. 5 dB(A) below the appropriate ANLs shown in Table 2 of IND-TM, and
- b. The prevailing background noise levels

3.2 Noise Impact of Construction Phase

3.2.1 Various construction activities such as excavation will be the key noise sources generated during the construction phase. In particular, the use of Powered Mechanical Equipment (“PME”) and the vehicle movement within the Site are the major noise sources.

3.2.2 Construction should be carried out during non-restricted hours as far as practicable. The mitigation measures recommended in ProPECC PN1/24 should be implemented where applicable. In addition, the following measures and on-site practice are recommended in order to minimise the potential construction noise impacts during daytime:

- Quiet PME and construction method should be adopted as far as practicable
- The Contractor should devise and execute working methods to minimise the noise impacts on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented
- Switch off idling equipment
- Regular maintenance of equipment

- Use of muffler/silencer for equipment when necessary
 - Noisy equipment and noisy activities should be located as far away from the NSRs as far as practicable
 - Use quiet construction method, e.g. use of saw-cut or hydraulic crusher instead of excavator-mounted percussive breaker as far as practicable
 - PME should be kept to a minimum and the parallel use of noisy equipment / machineries should be avoided
 - Erect noise barriers or noise enclosure for the PME if appropriate
 - Implement good house-keeping and provide regular maintenance to the PME
 - Spot check resultant noise levels at nearby NSRs
- 3.2.3 If construction work involving the use of PME will be required during restricted hours, a CNP shall be applied for under the NCO. The noise criteria and assessment procedures for obtaining a CNP are specified in GW-TM.
- 3.2.4 In addition, the EPD's RPCC for Construction Contract should be incorporated in the relevant works contract. The RPCC are generally good engineering practice to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements as summarised as follows:
- The Contractor shall observe and comply with the NCO and its subsidiary regulation.
 - The Contractor shall ensure that all plant and equipment to be used on the Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings and shields, acoustic sheds or screen or other means, to avoid disturbance to nearby noise sensitive receivers.
 - For carrying out any construction work other than percussive piling during the time period from 0700 to 1900 hours on any day not being a general holiday (including Sundays), the Contractor shall comply with the following requirements.
 - The noise level measured at 1m from most affected external façade of the nearby noise sensitive receivers from the construction works alone during any 30-minute period shall not exceed an equivalent sound level ("L_{eq}") of 75dB(A).
 - The noise level measured at 1m from most affected external façade of the nearby schools from the construction works alone during any 30-minute period shall not exceed L_{eq} of 70dB(A) [65dB(A) during school examination period]. The Contractor shall liaise with the schools and/or the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract.
 - Should the limits stated in the above be exceeded, the construction shall stop and shall not recommence until appropriate measures acceptable to the Applicant or their representative that are necessary for compliance have been implemented.
 - The Contractor shall adopt, where necessary, the use of Quiet Construction Equipment ("QCE") and/or shall employ the quietist practicable working methods when carrying out demolition works, and /or road opening works during restricted hours.
 - Before commencement of any work, the Applicant or their representative who engaged by the Contractor for construction phase may require the methods of working, plant

equipment and sound-reducing measures to be used on the Site to be made available for trial demonstration inspection and approval to ensure that they are suitable for the project.

- The Contractor shall devise, arrange methods of working and carry out the Works in such a manner so as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.
- Notwithstanding the requirements and limitations set out in the bullet above and subject to compliance with the second and fifth bullet above, the Applicant or their representative may upon application in writing by the Contractor, allow the use of equipment and the carrying out of any construction activities for any duration provided that the Applicant or their representative is satisfied with the application which, in Applicant or their representative's opinion, is considered to be of absolute necessity and adequate noise insulation has been provided to the schools to be affected, or of emergency nature, and not in contravention with the NCO in any respect.
- The Contractor shall, when necessary, apply for a construction noise permit in accordance with the *Noise Control (General) Regulations* prior to the commencement of the relevant part(s) of the works, display the permit as required and provide a copy to the Applicant or their representative.
- Measures that are to be taken to protect adjacent noise sensitive receivers, if necessary, shall include, but not be limited to, adequate noise barriers. The barriers shall be of substantial construction and designed to reduce transmission of noise. The barriers shall be surmounted with baffle boxes designed to reduce transmission of noise. The location and details of the barriers shall be submitted to the Applicant or their representative for approval before works commence adjacent to schools and other NSRs.

3.2.5 With the implementation of the abovementioned mitigation measures, adverse construction noise impact is not anticipated.

3.3 Noise Impact of Operation Phase

General

- 3.3.1 The Proposed Development will be used as a temporary workshop and storage yard for MiC materials and modular construction materials. Lorries will deliver MiC components to the site and tower crane as well as forklift will be adopted to transport the Mic component to each workshop. The MiC components will undergo quality control and quality assurance checks as well as final touch-up works if necessary, before being delivered to construction sites.
- 3.3.2 As mentioned in **paragraph 1.3.3**, the operation hours of the Proposed Development will be from 08:00 to 19:00 from Monday to Saturday except general holidays. Thus, potential noise impacts during day time should be assessed.
- 3.3.3 The potential major noise sources during the operation of the Proposed Development were identified as follows:
- On-site movements of vehicles

- Mechanical and Electrical (“M&E”) equipment

Assessment Assumptions and Methodology

On-site movement of vehicles

- 3.3.4 Since the MiC components will be delivered via lorries (gross vehicle weight ≤ 38 tonne), on-site movement of vehicles are considered to be the major noise source.
- 3.3.5 For the noise generated from on-site movement of vehicles, the *Method for Mobile Plant Using a Regular Well-Defined Route* stipulated in Annex F of BS 5228-1:2009+A1:2014 has been adopted for the assessment. Calculation is based on the following standard formula:

$$SPL = SWL - 33 + 10\log Q - 10\log V - 10\log d + AC + FC$$

- where
- SPL = Sound Pressure Levels at receiver, in dB(A)
 - SWL = Sound Power Levels of PME, in dB(A)
 - Q = Number of vehicles per hour
 - V = Average vehicle speed, in km/h
 - d = Distance of receiving position from the centre of haul road, in metres
 - AC = Angle of view Correction = $10\log(\Theta/180)$ where Θ is the angle of view (in degree) of a particular haul road segment
 - FC = Façade Correction of +3 dB(A)

- 3.3.6 SWLs of the manoeuvring vehicles were reference to Table 3 of the GW-TM and the *Sound Power Levels of Other Commonly Used PME* available from EPD’s website ^{Note 3}.
- 3.3.7 Boundary wall (made of metal) with a surface density of equal to or more than 10kg/m^2 will be erected. With regard to the screening effect, a 5 dB(A) noise reduction was adopted for the NSRs without direct line-of-sight to the noisy part of particular haul road segment. A 10 dB(A) noise reduction was adopted for the NSRs without direct line-of-sight to the PME.

M&E Equipment

- 3.3.8 During the operation, tower crane (electricity) and forklift will be used on site for the MiC component transportation within the Site to workshops and are considered as the major fixed plant noise source.
- 3.3.9 Some M&E equipment, such as handheld drill, welding machines, circular cutter, etc., will be used only inside the workshops. The three workshops will be enclosed by the claddings with a surface density of at least 10kg/m^2 . The two opening of the workshops will be either sliding door or acoustic strips. Thus, no significant noise impact arising from enclosed M&E equipment is anticipated.
- 3.3.10 The noise levels were assessed based on the standard acoustics formula as follows:

$$SPL = SWL - DC + FC$$

- where
- SPL = Sound Pressure Levels at receiver, in dB(A)
 - SWL = Sound Power Levels of PME, in dB(A)

³http://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

DC = Distance Correction, in dB(A) by $DC = 20\log_{10}(D) + 8$
 D = Horizontal distance between the NSR and the source in metres
 FC = Façade Correction of +3 dB(A)

3.3.11 With regard to the screening effect due to the boundary wall, a 5 dB(A) noise reduction was adopted for NSRs without direct line-of-sight to the noisy part of the PME.

NSRs

3.3.12 For operation noise, the first layer NSRs within 300m from the boundary of the Site have been identified. All identified NSRs are existing NSRs and no planned NSR has been identified within the assessment area. The location of these NSRs are shown in **Figure 3-1** and details are summarised in **Table 3-3**.

Table 3-3 Identified Representative NSRs of Noise from Fixed Sources

NSR ID	DESCRIPTION	LANDUSE	NO. OF STOREY	APPROXIMATE DISTANCE TO SITE BOUNDARY
IN1	PARK YOHO T36	Residential	12	64m
IN2	PARK YOHO T25	Residential	15	90m

3.3.13 The identified NSRs is located in a low density residential area consisting of low-rise or isolated high-rise developments and is considered not directly affected by the IF. No major roads with annual average daily traffic flow in excess of 30,000 and industrial areas are found in the vicinity of the identified NSRs. Therefore, the ASRs of the identified NSR is determined as Type A in accordance with IND-TM.

3.3.14 The ASR and ANLs adopted in this EA report are used for assessment purpose only. They should not bind the Noise Control Authority’s decision in determining the noise criteria based on the legislation and practices being in force, and contemporary conditions / situations of adjoining land uses.

Prevailing Background Noise

3.3.15 Background noise monitoring at the sensitive façade where is representative to the identified NSRs is the most preferable location. The Site is mainly surrounded by private lots (i.e. located between the Site and the identified NSRs). However, the landowner/ occupants refused to allow for background noise measurement. As such alternative background noise monitoring locations were adopted. The location of the most preferable location and the alternative background noise monitoring locations are shown in **Figure 3-2**.

3.3.16 Alternative locations BG1 and BG2 have been selected to conduct the background noise monitoring throughout the entire proposed operation hours (i.e. 0700 to 1900) during the weekday under free-field condition. BG1 is located near to the bridge in the east direction of IN1. The major noise affecting BG1 is the unnamed Single Track Access Road which is considered to be comparable to that at IN1. Since there is only a car park available to access and is located near the IN2, however, the location within car park is not preferable due to the safety issue. BG2 is located near the roadside and opposite the car park as well as the IN2. The major noise sources of BG2 is the Shui Mei Road and the car park, which is similar to that of IN2.

3.3.17 A set of $L_{90(1hour)}$ has been adopted as prevailing background noise level. The monitoring data is presented in **Appendix A**.

Noise Criteria

3.3.18 As discussed in **paragraph 3.3.13**, the ASR of all identified NSRs is “A”. The noise criteria for the planned fixed noise source were determined with reference to ANL-5 and the noise level is shown in **Table 3-4**.

Table 3-4 Noise Criteria of Noise from Fixed Sources of Identified Representative NSRs

NSR ID	DESCRIPTION	TIME PERIOD	MEASURED BACKGROUND NOISE LEVEL AVERAGE $L_{90(1hour)}$, dB(A)	NOISE CRITERIA (ANL-5, dB(A))	NOISE CRITERIA, dB(A)
IN1	PARK YOHO T36	Day	52	55	52
IN2	PARK YOHO T25	Day	57	55	55

Note: The background noise level was measured at free-field condition. Thus, a façade correction of +3 dB(A) was applied.

Assessment Results

3.3.19 The predicted noise impact results are summarised in **Table 3-5** and detailed in **Appendix B**.

Table 3-5 Predicted Noise Impact Level During Operation Phase

NSR ID	DESCRIPTION	TIME PERIOD	NOISE CRITERIA, dB(A)	PREDICTED NOISE LEVEL, dB(A)	EXCEEDANCE
IN1	PARK YOHO T36	Day	52	52	No
IN2	PARK YOHO T25	Day	55	51	No

3.4 Conclusion

3.4.1 During the construction phase of the Proposed Development, with the implementation of the noise mitigation measures recommended in **paragraph 3.2.4**, no adverse noise impact is anticipated.

3.4.2 PME and on-site vehicle movement are the major potential noise sources during the operational phase. Since the workshops will be enclosed, no significant noise impact arising from enclosed M&E equipment is anticipated. Quantitative assessment for the fixed noise sources was conducted. The predicted noise level during operation ranges from 54 dB(A) to 55 dB(A) which indicated that all the noise levels at NSRs would comply with the relevant noise criterion.

3.4.3 Overall, therefore, there will be no adverse noise impact during the construction and operation phases of the Proposed Development.

Figure 3-1 Location of Identified Representative NSRs

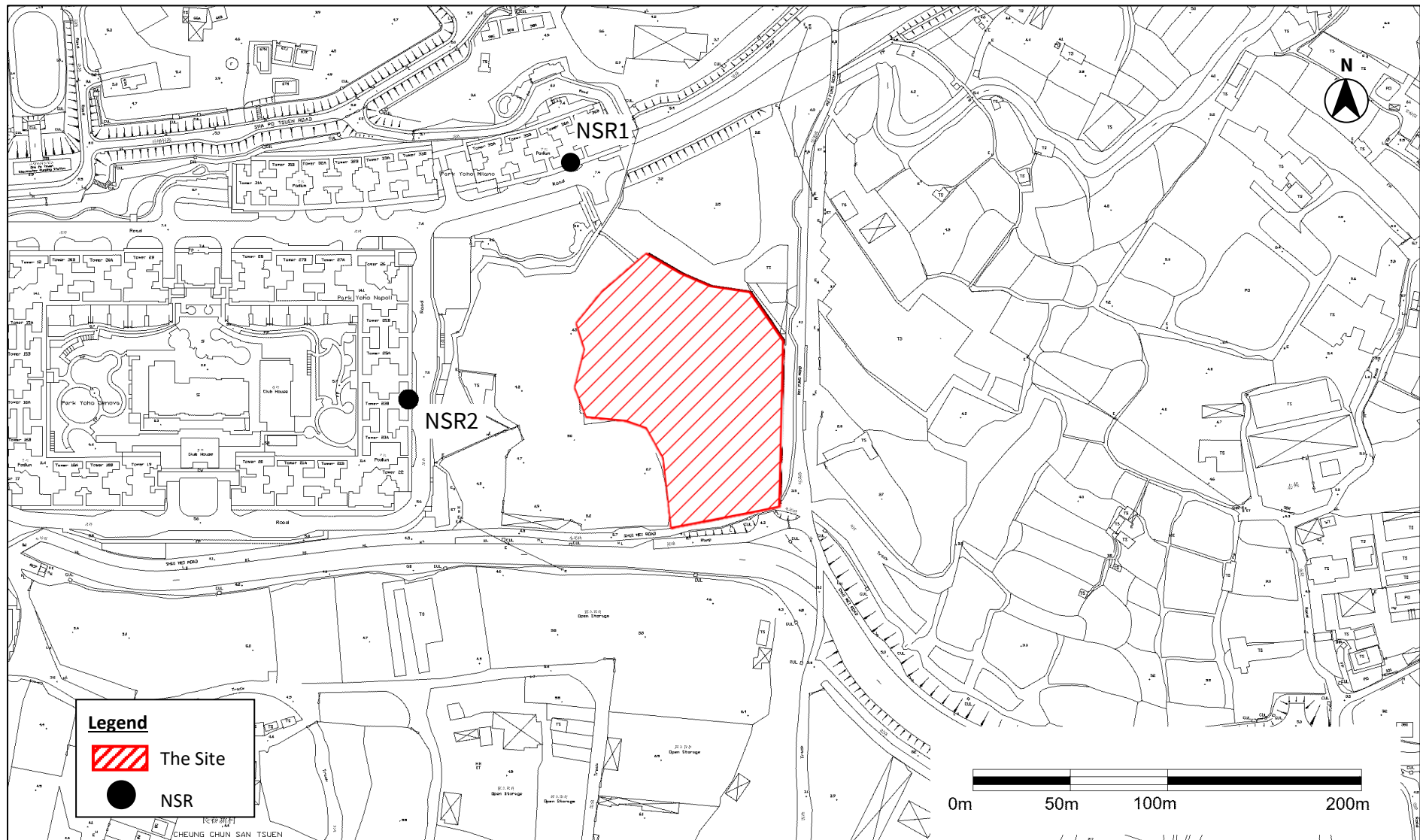


Figure 3-2 Location of Background Noise Monitoring

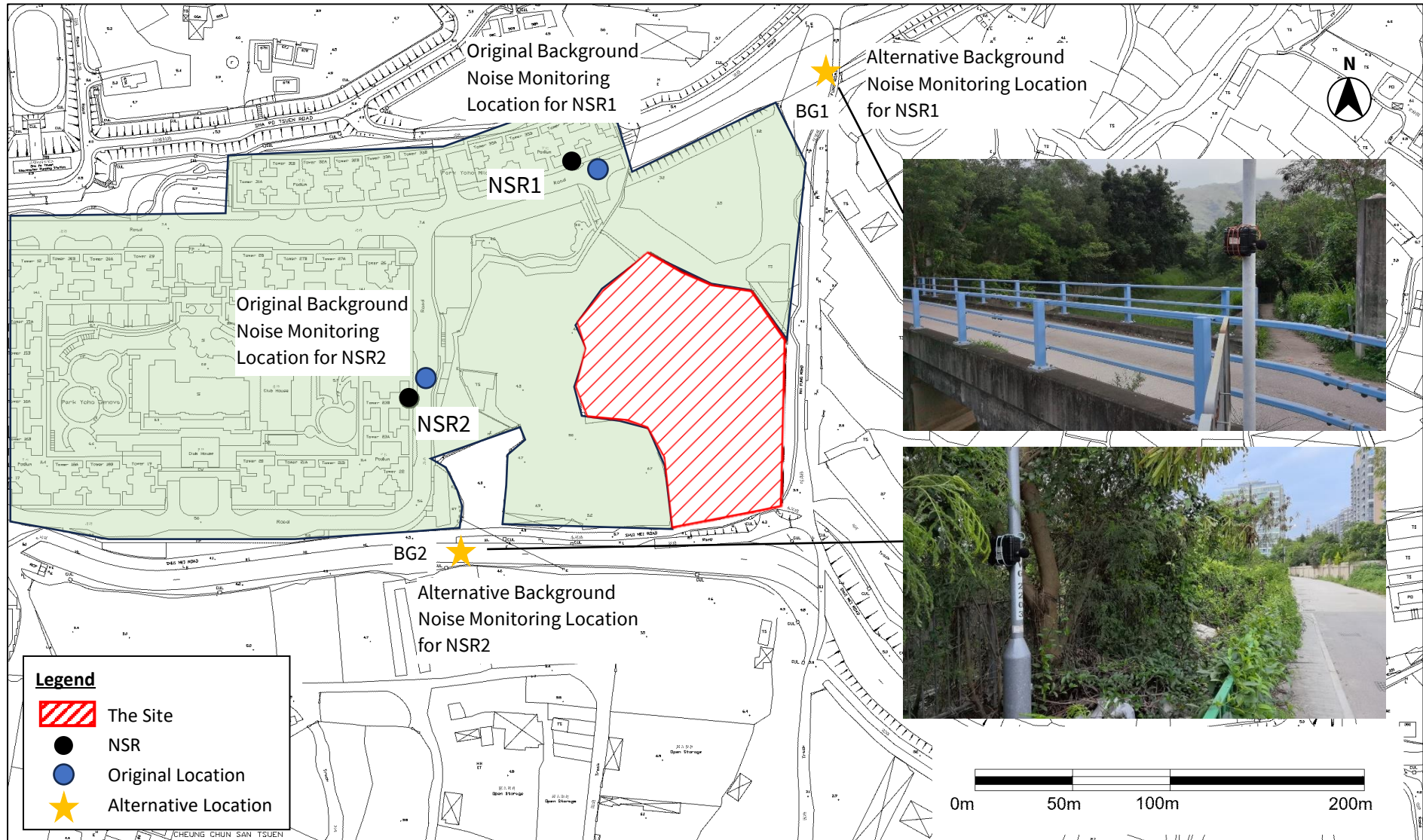
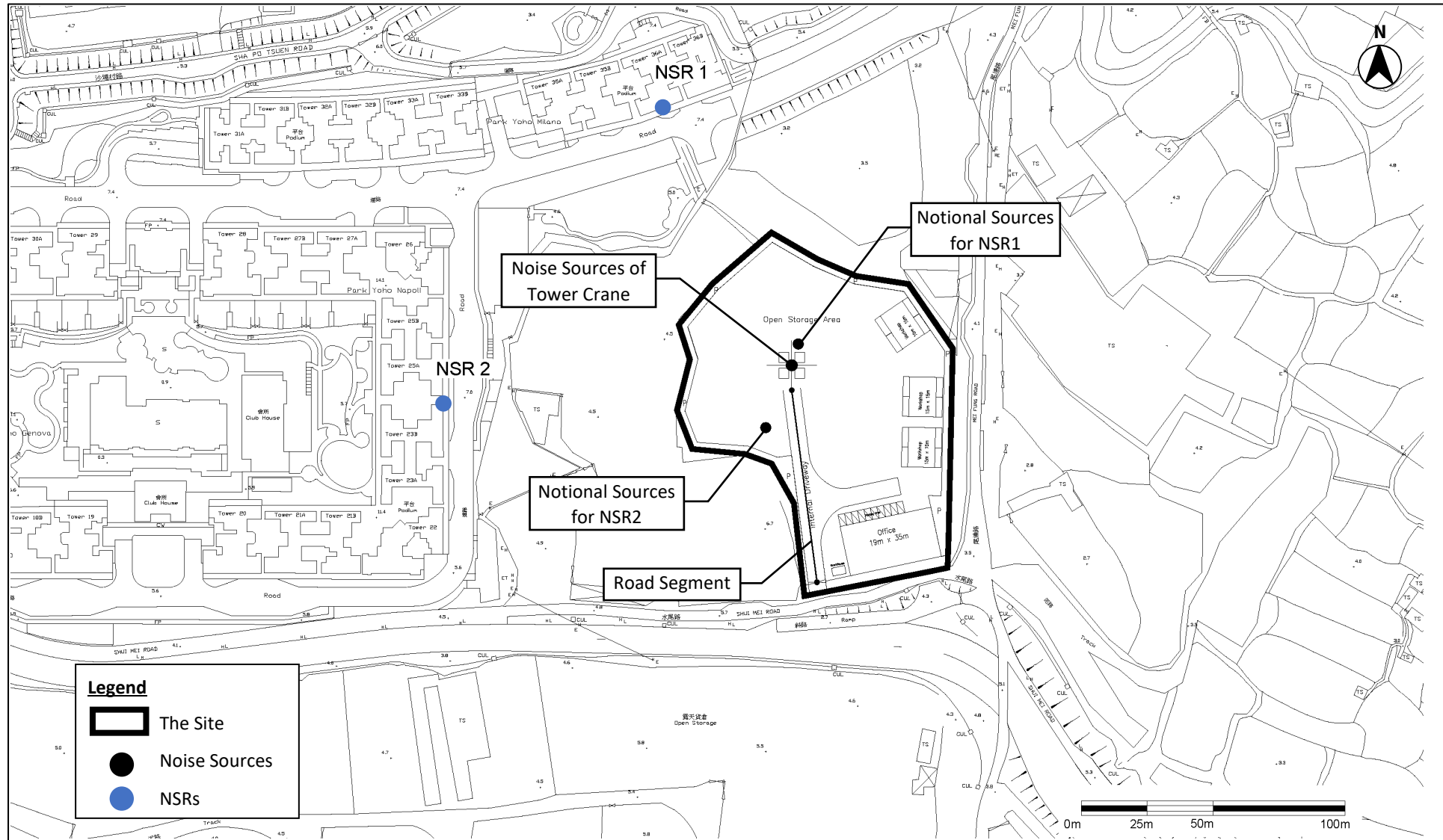


Figure 3-3 Location of Potential Noise Sources



4 WATER QUALITY

4.1 Environmental Legislation and Standards

Water Pollution Control Ordinance (Cap. 358)

- 4.1.1 The *Technical Memorandum – Standards for Effluent Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* (“WPCO-TM”) is issued under Section 21 of the *Water Pollution Control Ordinance* (“WPCO”). All discharges into government sewerage systems, marine and inland waters are required to comply with the standards stipulated in the WPCO-TM.

Construction Site Drainage, ProPECC PN2/23

- 4.1.2 With reference to *Professional Persons Environmental Consultative Committee* (“ProPECC”) *Practice Note Construction Site Drainage* (“ProPECC PN2/23”), various guidelines for the handling and disposal of construction site discharges are included. The guidelines include the use of sediment traps, wheel washing facilities for vehicles leaving the Site, adequate maintenance of drainage systems to prevent flooding, overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, and disposal) procedures.

Drainage Plan subject to Comment by the Environmental Protection Department, ProPECC PN1/23

- 4.1.3 With reference to *ProPECC Practice Note Drainage Plan subject to Comment by the Environmental Protection Department – Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations* (“ProPECC PN1/23”), various guidelines for the pollution control for discharge to storm drains and foul sewers, such as the use of grease trap for wastewater from the restaurant kitchen, the use of silt removal facilities for open surface channel led to stormwater drains, etc., are included. The guidelines also include the requirements for submission of drainage plans.

4.2 Potential Impacts

Construction and Reinstatement Phase

- 4.2.1 Muddy runoff from the Site may be generated during the construction/reinstatement phase, including filling activities and reinstatement works, especially during the rainy season.
- 4.2.2 Wash water from vehicles and equipment; silt from any on-site stockpiles of soil, cement and grouting materials; and spillage of fuels, oil and lubricants from construction/reinstatement vehicles and plant may generate water quality impacts. If these pollution sources are not properly controlled, it would lead to increased amounts of suspended solids, grease and oil, pH, Biochemical Oxygen Demand (“BOD”), etc. in the drainage system.
- 4.2.3 There is also the issue of sewage generated by construction/reinstatement workers on-site.

Operation Phase

- 4.2.4 The major source of sewage/wastewater during operation phase would be sewage and wastewater from toilets. Adequate capacity and number of wastewater storage tanks for temporarily storing and tankered away for off-site disposal in a sewage treatment facility, or septic tank/soakaway pit system will be provided as recommended in the Sewerage Review Report.
- 4.2.5 Non-point/diffuse source pollution, such as dust, tyre scraps, oil etc. might be washed from road surface, proposed footpath and/or open areas into watercourse during regular cleaning or during rainstorms. In order to minimise this pollution loading, silt/sand traps should be provided for the drainage systems of open areas in accordance with the relevant government guidelines. Paved perimeter u-channel would be provided to prevent discharge of spillage of wastewater beyond the site boundary, and accumulation of deposits on nearby public roads. Good practices stated in ProPECC PN 1/23 should be also referenced when designing on-site drainage. With the provision and implementation of the aforementioned mitigation measures for non-point source pollution, adverse water quality impact is not anticipated.
- 4.2.6 A Drainage Proposal for the Proposed Development has been carried out. As mentioned in the Drainage Proposal, runoff will be proposed diverted to the open channel to the south of the Site. No adverse drainage impact from the Site with the provision of the proposed internal drainage system is anticipated.

4.3 Mitigation Measures

Construction Phase

- 4.3.1 During construction phase, adequate capacity and number of portable toilets with adequate frequency for offsite disposal to be supplied, maintained and emptied by a licensed collector should be provided for construction workers.
- 4.3.2 The construction contractor shall follow good site practice and be responsible for providing, implementing and maintaining the mitigation measures as specified in ProPECC PN 2/23 for construction site drainage. The key requirements are as follows:
- Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Temporary construction drainage or earth bunds or sand bag barriers should be provided on site to properly direct storm water to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept storm run-off from outside the Site so that it will not wash across the Site. Catchpits and perimeter channels should be construction in advance of site formation works and earthworks.
 - Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
 - Construction works should be programmed to minimise soil excavation works in rainy reasons (generally from April to September). If soil excavation works could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporarily exposed slope surfaces should be

covered (e.g. by tarpaulin), and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.

- Earthworks final surfaces should be well compacted and the subsequent permanent works or surface protection works should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided when necessary.
- Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches should be discharged into storm drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.
- All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm water drains. The section of construction road between the wheel washing bay and the public road should be paved to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.

4.3.3 In addition, the EPD's RPCC for Construction Contract should be incorporated in the relevant works contract. The RPCC are generally good engineering practice to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements are summarised below:

- The Contractor shall observe and comply with WPCO and its subsidiary regulation.
- The Contractor shall carry out the Works in such a manner as to minimise adverse impacts on the water quality during execution of the works. In particular the Contractor shall arrange his method of working to minimise the effects on the water quality within and outside the Site, on the transport routes and at the loading, dredging and dumping areas.
- The Contractor shall follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in the ProPECC PN 2/23 "Construction Site Drainage" issued by the Director of Environmental Protection. The design of the mitigation measures shall be submitted by the Contractor to the Engineer for approval.

- The Contractor shall not discharge directly or indirectly or cause or permit or suffer to be discharged into any public sewer, stormwater drain, channel, stream-course or sea any trade effluent or foul or contaminated water or cooling or hot water without the prior written consent of the Engineer in consultation with the Director of Environmental Protection and Director of Water Supplies, who may as a condition of granting his consent require to the Contractor to provide, operate and maintain at the Contractor's own expense to the satisfaction of the Engineer suitable works for the treatment and disposal of such trade effluent or foul or contaminated or cooling or hot water. The design of such treatment works shall be submitted to the Engineer for approval not less than one month before commencement of the relevant works.
- If any office, site canteen or site toilet facilities is/are erected, foul water effluent shall be directed to a foul sewer or to a sewage treatment and disposal facilities either directly or indirectly by means of pumping or other means approved by the Engineer.

Operation Phase

- 4.3.4 During operation phase, there is expected to be 50 staff with 8 having showering on-site. As concluded in the Sewerage Review Report, the total estimated Average Dry Weather Flow ("ADWF") from operation of the Proposed Development is calculated to be 12.460m³/day. The sewage generated from the staff will be either treated by Septic Tank/Soakaway Pit System (Option 1) or collected by sewage storage tanks and tankered away with adequate frequency for Off-Site Disposal by a licensed collector (Option 2) as detailed in the Sewerage Review Report. For Option 1, a septic tank with capacity of approximately 13m³ shall be provided. For Option 2, at least five sewage holding tanks with capacity of approximately 3,000L will be provided onsite, and daily offsite disposal by a licensed collector will be provided. With the provision of either Option 1 or Option 2, no adverse water quality impact arising from the Proposed Development is anticipated.
- 4.3.5 With reference to the Drainage Proposal, after development, the estimated peak runoff generated from the Site is 0.596m³/s under a 50 year return period, which will be properly diverted to an open channel/nullah to the south of the Site. Best Management Practices for stormwater discharge shall be incorporated to minimise stormwater pollution arising from the Proposed Development. In order to reduce pollution due to runoff, silt/sand traps should be provided for the drainage systems of open areas in accordance with ProPECC PN1/23. In addition, runoff should be controlled by best management practice.

4.4 Conclusion

- 4.4.1 During construction, water quality impacts can be properly controlled with the implementation of good site practice, as stated in **paragraph 4.3.2**. Adequate capacity and number of portable toilets will be provided for construction workers on-site. With the provision, implementation and maintenance of the recommended measures, no adverse water quality impacts from the Site during construction phase is anticipated.
- 4.4.2 The contractor shall apply for a Discharge Licence from EPD under the WPCO. All site discharged shall be treated in accordance with the terms and conditions of the Discharge Licence.
- 4.4.3 During operation, no adverse water quality impact is anticipated from wastewater/sewage from employees. The wastewater arising from the Proposed Development will be either treated by Septic Tank/Soakaway Pit System (Option 1) or collected by wastewater storage

tanks and tankered away with adequate frequency for Off-Site Disposal by a licensed collector (Option 2). The consideration of either options 1 or 2 will be subject to the detailed design in the future. With the provision of either Option 1 or Option 2, no adverse water quality impact from the Proposed Development is anticipated.

5 WASTE MANAGEMENT AND LAND CONTAMINATION

5.1 Environmental Legislation and Standards

Waste Management

5.1.1 The key environmental legislation and standards are as follows:

- Waste Disposal Ordinance (Cap. 354) (“WDO”)
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)
- Waste Disposal (Charges for Disposal of Chemical Waste) Regulation (Cap. 354J)
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)
- Land (Miscellaneous Provisions) Ordinance (Cap. 28)
- Public Health and Municipal Services Ordinance (Cap.132BK) – Public Cleansing and Prevention of Nuisances Regulation
- Environmental, Transport and Works Bureau (“ETWB”) Technical Circular (Works) No. 19/2005, Environmental Management on Construction Sites
- ETWB Technical Circular (Works) No. 22/2003A, Additional Measures to improve Site Cleanliness and Control Mosquito Breeding on Construction Sites
- Development Bureau (“DevB”) Technical Circular (Works) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
- Civil Engineering and Development Department (“CEDD”) Technical Circulars (CEDD TC No. 11/2019), Management of Construction and Demolition Materials
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Construction and Demolition Waste (“ADV-19”)
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Provision of Fitments and Fittings in New Buildings (“APP-114”)
- Building Department Practice Note for Registered Contractors (“PNRC 17”), Control of Environmental Nuisance from Construction Sites
- CEDD Project Administration Handbook for Civil Engineering Works (“PAH”)
- EPD Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
- EPD Recommended Pollution Control Clauses (“RPCC”) for Construction Contracts

Land Contamination

5.1.2 The references of contaminated land management include the following documents published by EPD:

- Guidance Note for Contaminated Land Assessment and Remediation
- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management

- Practice Guide for Investigation and Remediation of Contaminated Land

5.2 Potential Impacts

Construction Phase

5.2.1 The key potential waste sources during the construction phase are:

- Inert Construction and Demolition (“C&D”) materials (e.g. waste concrete, surplus soil, waste asphalt etc.)
- Non-inert C&D Materials (e.g. wood and plastics)
- Chemical wastes such as waste battery and waste lubricating oil from vehicles/plant maintenance
- General refuse generated by site workers

Inert C&D Materials

5.2.2 Inert C&D materials are those which do not decompose, such as debris, rubble, earth and concrete, and which are suitable for land reclamation and site formation.

5.2.3 The major source of inert C&D materials during construction includes excavation for removal of paving. The Site area is approx. 9,705m² and approx. 20% of the Site area with concrete paving will be removed, i.e., 1,941m². Assuming the paving density is 2 tonnes/m³ and the thickness of paving is 100mm, approx. 388 tonnes waste paving will be generated from the removal of paving.

5.2.4 As advised by the Applicant, excavation will be minimal and the amount of C&D material due to excavation is therefore assumed to be negligible. However, considering as a conservative approach, all the surface soil will be removed with a depth 50mm, approx. 780 tonnes topsoil will be excavated (based on a soil density of 1,600kg/m³).

5.2.5 Construction waste will also be generated during construction of the Proposed Development. This will comprise inert C&D materials, such as concrete waste, waste from blockwork and brickwork; and non-inert C&D materials from timber formwork, packaging waste and other non-inert wastes.

5.2.6 In accordance with Section 3.2 of *A Guide for Managing and Minimizing Building and Demolition Waste* published by the Hong Kong Polytechnic University in May 2001 (“the Guide”), it provides a “waste index” for building waste generation in Hong Kong based on the Gross Floor Area (“GFA”) of three different building types as follows:

- Private Housing Projects 0.250m³/m² GFA
- Government Housing Projects 0.174m³/m² GFA
- Commercial Office Projects 0.200m³/m² GFA

5.2.7 In order to properly estimate building waste from the Proposed Development, the “waste index” also include non-inert C&D materials such as timber formwork, packaging waste and other wastes. On the other hand, the Guide does not identify what proportion of building waste is inert C&D materials and what proportion is non-inert C&D materials.

5.2.8 With reference to Plate 2.12 of EPD's *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2021*, in 2021 94% of construction wastes was either reused on-site or sent to the public fill reception facilities, implying that such construction wastes should be inert C&D materials. The proportion of inert C&D materials in the “waste index” can therefore be estimated by applying the Hong Kong-wide proportion of inert C&D materials in construction waste, i.e. 94%, to the “waste index” as follows:

$$\begin{aligned} \text{Waste Index}_{\text{Inert C\&D materials (Commercial Office Projects)}} &= 0.94 \times 0.200\text{m}^3/\text{m}^2 \text{ GFA} \\ &= 0.188\text{m}^3/\text{m}^2 \text{ GFA} \end{aligned}$$

5.2.9 The inert C&D materials component of building waste from the Proposed Development with a total floor area of approx. 2,025m² has therefore been estimated below:

$$\begin{aligned} \text{Building Waste} &= \text{Waste Index}_{\text{Inert C\&D materials (Commercial Office Projects)}} \times \text{GFA} \\ &= 0.188 \times 2,025 \\ &= 381\text{m}^3 \end{aligned}$$

5.2.10 Inert C&D material mainly composes of concrete, soil and building materials, with reference to other pervious study⁴, assuming the density of inert C&D materials is 1.8 tonnes/m³, approx. 686 tonnes of building waste would be generated by the Proposed Development.

Table 5-1 Total Estimated Inert C&D Materials Generated During Construction

INERT C&D MATERIAL TYPE	ESTIMATED INERT C&D MATERIAL GENERATION (TONNES)
STAGE: SITE CLEARANCE AND FORMATION	
Paving	388
Excavated Material	780
STAGE: INFRASTRUCTURE CONSTRUCTION	
Building Waste	686
Total	1,854

5.2.11 In total, approx. 1,074 tonnes of inert C&D materials may be generated throughout the construction period. Assuming the construction period to be nine months with six working days a week and four weeks a month, the daily inert C&D material generation rate will be approx. 5 tonnes/day (i.e. 1,074 tonnes/(6 x 4) x 9 months)).

5.2.12 Inert C&D materials should be reused on-site as far as practicable. Good site practice and mitigation measures recommended in **Section 5.3** should be provided and implemented. Surplus inert C&D materials, if any, should be reused or recycled off-site as far as practicable (assuming approx. 70% of inert C&D material could be reused, i.e. 1,298 tonnes). If there will still be any remaining materials (assuming 30%, i.e. 556 tonnes), they should be delivered to public fill reception facilities such as Fill Bank at Tuen Mun Area 38.

⁴ Appendix P, EIA of Tseung Kwan O - Lam Tin Tunnel and Associated Works, 2013, CEDD

5.2.13 With the provision and implementation of the recommended mitigation measures, no adverse waste impact from the handling, transportation or disposal of inert C&D materials during construction of the Proposed Development is anticipated.

Non-Inert C&D Materials

5.2.14 Non-inert C&D materials, are those which can decompose such as bamboo, timber, vegetation, packaging waste and other organic material, and which are therefore unsuitable for land reclamation.

5.2.15 The major source of non-inert C&D materials during construction will be building waste including non-inert C&D materials such as timber formwork, packaging waste.

5.2.16 The building waste are included in the “waste index” provided in the Guide, discussed above, however, this also includes inert C&D materials.

5.2.17 As shown in Plate 2.12 of Waste Statistics for 2021, in 2021 6% of non-inert C&D materials was disposed of at landfills. The proportion of non-inert C&D materials in the “waste index” can therefore be estimated by applying the Hong Kong-wide proportion of non-inert C&D materials in construction waste, i.e. 6%, to the “waste index” as follows:

$$\begin{aligned} \text{Waste Index}_{\text{Non-Inert C\&D materials (Commercial Office Projects)}} &= 0.06 \times 0.200\text{m}^3/\text{m}^2 \text{ GFA} \\ &= 0.012\text{m}^3/\text{m}^2 \text{ GFA} \end{aligned}$$

5.2.18 Hence, the non-inert C&D materials components in building waste can therefore be estimated as follows:

$$\begin{aligned} \text{Building Waste} &= \text{Waste Index}_{\text{Non-Inert C\&D materials (Commercial Office Projects)}} \times \text{GFA} \\ &= 0.012 \times 2,025 \\ &= 24.3\text{m}^3 \end{aligned}$$

5.2.19 Since non-inert C&D materials mainly compose bamboo, timber, vegetation, packaging waste, that are not packed and more spacing compared with inert C&D material such as soil and concrete, so assuming the density of non-inert C&D materials is 1.0 tonnes/m³, approx. 24.3 tonnes of non-inert C&D materials will be arising from the Proposed Development. Assuming the construction period to be nine months with six working days a week and four weeks a month, the daily non-inert C&D materials generation rate will be approx. 0.11 tonnes/day (i.e. 24.3 tonnes/(6 x 4) x 9 months)).

5.2.20 The non-inert C&D materials is summarised in **Table 5-2**.

Table 5-2 Total Estimated Non-Inert C&D Materials Generated During Construction

NON-INERT C&D MATERIAL TYPE	ESTIMATED NON-INERT C&D MATERIAL GENERATION (TONNES)
STAGE: INFRASTRUCTURE CONSTRUCTION	
Building Waste	24.3
Total	24.3

- 5.2.21 On-site sorting should be carried out for non-inert C&D materials generated from the works. Recyclable materials, such as metal, paper product, timber and plastics, should be collected by local recyclers for recycling. All non-inert C&D materials should be recycled as far as possible and landfill disposal should be adopted as the last resort.
- 5.2.22 The quantity of the generated non-inert building waste could be recycled/reused is expected to be no more than 10% of the generated amount in view of the scale of the Proposed Development. Therefore, no more than 2 tonnes non-inert C&D materials may be reused or recycled on-site.
- 5.2.23 If 10% non-inert C&D materials can be reused/recycled on-site, the surplus non-inert C&D materials mainly comprising building waste will be approx. 22 tonnes in total. Assuming the construction period to be nine months with six working days a week and four weeks a month, the total daily non-inert C&D materials for disposal of at WENT Landfill would be approx. 0.1 tonnes/day (i.e. 22 tonnes/(6 x 4) x 9 months)).
- 5.2.24 With the above estimation, no adverse waste impact from the handling, transportation or disposal of non-inert C&D materials during construction of the Proposed Development is anticipated.

General Refuse

- 5.2.25 General refuse from workers is similar to domestic waste and includes packaging and organic material.
- 5.2.26 The number of workers will depend on the construction methods employed and on which contractor carries out the work. According to the Applicant's experience, the number of construction workers for the Proposed Development should be no more than 20 per day.
- 5.2.27 Each construction worker will generate general refuse, which is similar to domestic waste. According to Plate 2.7 of Waste Statistics for 2021, the per capita domestic waste disposal rate in 2021 was 0.94kg/person/day, although the per worker generation rate of general refuse will likely be less than this. For a conservative approach, the per capita domestic waste disposal rate in 2021 has been adopted for general refuse generation by construction workers. On this basis:

$$\begin{aligned} \text{General Refuse/Day} &= \text{No. of workers/day} \times \text{per capita generation rate} \\ &= 20 \text{ workers} \times 0.94\text{kg/workers/day} \\ &= 18.8\text{kg/day} \\ \text{Total General Refuse} &= \text{General Refuse/Day} \times \text{Construction Duration} \\ &= 18.8\text{kg/day} \times [6 \text{ days/week} \times 4 \text{ weeks/month} \times 9 \text{ months}] \\ &= 4,060.8\text{kg or } 4.1 \text{ tonnes} \end{aligned}$$

- 5.2.28 On-site sorting should be carried out for general refuse generated from the works. Recyclable materials, such as metal, paper and plastic, should be collected by local recyclers for recycling. All general refuse should be recycled as far as possible and landfill disposal should be adopted as the last resort.

- 5.2.29 According to Plate 3.2 of Waste Statistics for 2021, in 2021 the recovery rate of domestic waste is approx. 20%. It is therefore assumed that 20% of general refuse, i.e., ~812kg of general refuse, would be reused and recycled by the recyclers. The surplus general refuse of 3,249 kg or 15kg/day in average would be disposed of at landfill.
- 5.2.30 Given the above, no adverse waste impact from the handling, transportation or disposal of general refuse from workforce during construction of the Proposed Development is anticipated.

Chemical Waste

- 5.2.31 No hazardous materials or hazardous wastes are expected to be generated during the construction phase. Only limited amount which is expected to be less than 1 tonne of chemical waste including waste batteries, lubricating oil and waste paints may be generated given the small scale of the works. Other chemical wastes include waste lamp will be generated and the amount will be insignificant.
- 5.2.32 The Contractor shall register as a Chemical Waste Producer under the WDO. All chemical waste shall be stores at a properly designed chemical waste storage area located within the construction site in accordance with EPD's *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. A licensed collector shall be employed to handle and dispose of all chemical wastes, e.g. at the Chemical Waste Treatment Centre ("CWTC") at Tsing Yi, or other facility approved by EPD.
- 5.2.33 Given the above, no adverse waste impact from the handling, transportation or disposal of chemical waste during the construction of the Proposed Development is anticipated.

Garden (or Yard) Waste

- 5.2.34 No garden waste will be generated.

Summary

- 5.2.35 The type and estimated quantities of different types of wastes generated during the construction phase are summarised in **Table 5-3**.

Table 5-3 Estimated Amount of Different Types of Wastes to be Generated During Construction Phase

WASTE TYPE	ESTIMATED QUANTITY (TONNES)	KEY SOURCES OF WASTE GENERATION	TREATMENT
INERT C&D MATERIAL			
Paving	388	Removal of paving	1. On-site reuse/recycle 2. Off-site reuse/recycle 3. Delivery to public fill reception facilities
Excavated material	Negligible	Excavation	
Building Waste	686	Building works	
NON-INERT C&D MATERIAL			
Building Waste	24.3	Building works	1. On-site sorting for reuse/recycle 2. Disposal of at landfill

WASTE TYPE	ESTIMATED QUANTITY (TONNES)	KEY SOURCES OF WASTE GENERATION	TREATMENT
OTHERS			
General Refuse	4.1	Construction staff	1. On-site sorting for reuse/recycle 2. Disposal of at landfill
Chemical Waste	<1	Waste batteries, lubricating oil and waste paints, etc.	All to be collected by the licensed chemical waste collector and treated in the CWTC.

Operation Phase

- 5.2.36 During the operation phase, the major type of waste generated will be general refuse, commercial and industrial wastes, such as the MiC component and modular construction materials storage. According to the Waste Statistic for 2021, the most recent per municipal solid waste disposal rate is 1.53kg/person/day. The estimated total staff of the Proposed Development would be around 50 people. With six working days per week, the quantity of commercial waste disposed of is expected to be less than 24 tonnes per year ^(Note 5).
- 5.2.37 Plate 3.2 of Waste Statistics for 2021 shows that in 2021, the recovery rate of municipal solid waste is 31%. It is therefore estimated that 31% of commercial waste (i.e. 7.4 tonnes/year) could be reused and recycled by the recyclers.
- 5.2.38 The surplus commercial waste of 16.6 tonnes/year (i.e. 0.05 tonnes/day on average assuming seven working days per week) would be disposed of at the NWNTTS.
- 5.2.39 Since commercial waste will be collected on a regular basis by registered waste collectors, and since commercial waste will be disposed at the landfill managed by EPD, no adverse waste impacts from handling transportation or disposal are anticipated. Nevertheless, to minimise domestic waste generation mitigation measures proposed in **Section 5.3** should be implemented.
- 5.2.40 Overall, there should be no adverse waste impact from the handling, transportation or disposal of domestic waste during the operation of the Proposed Development.

5.3 Mitigation Measures

Construction Phase

- 5.3.1 Waste management shall be controlled through contractual requirements as well as through statutory requirements.
- 5.3.2 A Waste Management Plan (“WMP”) should be developed by the contractor and submitted to the Project Engineer/Architect for approval in accordance with ADV-19 before the commencement of any construction works. The objectives of the WMP will be to identify any potential environmental impacts from the generation of waste at the Site; to recommend appropriate waste handling, collection, sorting, disposal and recycling measures in accordance with requirements of the current regulations; and to categorise

⁵ Waste generation = 1.53kg/person/day x 50 people x 6 working days/week x 52 weeks/year = 52 tonnes/year

and permit segregation of C&D materials where practicable (i.e. inert material/non-inert material) for disposal considerations i.e. public fill/landfill.

- 5.3.3 The contractors should adopt good housekeeping practices with reference to the WMP such as waste segregation prior to disposal. Besides the provision of stockpiling and segregating areas at site, effective collection of site wastes is required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating odour nuisance pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.
- 5.3.4 A trip-ticket system should be established in accordance with DevB TC(W) No. 6/2010 and the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* to monitor the disposal of public fill and solid wastes at public filling facilities and landfills, and to control fly-tipping. A trip-ticket system should be included as one of the contractual requirements for the contractor to strictly implement. Dump trucks with mechanical cover shall be used to minimise windblown litter and dust during transportation of waste.
- 5.3.5 Whenever there are excess recyclable construction materials, including bricks, plastics and metals, reuse and recycling should be carried out as far as practicable to minimise the amount of waste disposal. Other inert materials such as concrete, asphalt, etc. should be delivered to public fill. Non-inert and non-recyclable wastes should be disposed at designated landfill site.
- 5.3.6 General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the construction contractor to remove general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of “wind-blown” materials.
- 5.3.7 Food waste generated during construction and operation would be separated from other waste and recycled as far as practicable, in order to minimise unpleasant odour and potential environmental hygiene issues.
- 5.3.8 For chemical waste, the Contractor should follow the ‘trip-ticket’ system of which the arrangement of production, collection and disposal in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.
- 5.3.9 In addition, the EPD’s RPCC for Construction Contract should be incorporated in the relevant works contract. The RPCC are generally good engineering practice to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements are as follows:
- The Contractor shall observe and comply with the WDO and its subsidiary.
 - The Contractor shall submit to the Engineer for approval a waste management plan with appropriate mitigation measures including allocation of an area for waste segregation and shall ensure that the day-to-day site operations comply with the approved waste management plan.
 - The Contractor shall minimise the generation of waste from his work. Avoidance and minimisation of waste generation can be achieved through changing or improving design and practices, careful planning and good site management.

- The Contractor shall ensure that different types of wastes are segregated on-site and stored in different containers, skips or stockpiles to facilitate reuse / recycling of waste and, as the last resort, disposal at different outlets as appropriate.
- The reuse and recycling of waste shall be practised as far as possible. The recycled materials shall include paper / cardboard, timber and metal etc.
- The Contractor shall ensure that C&D materials are sorted into public fill (inert portion) and non-inert C&D materials (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused such as earth filling, reclamation, site formation works, etc. as far as practicable, and delivered to public fill reception facility as the last resort. The non-inert C&D materials which comprises metal, timber, paper, glass, etc. shall be reused and recycled as far as practicable, and, as the last resort, disposal of at landfills.
- The Contractor shall record the amount of waste generated, recycled and disposed of (including the disposal sites).
- The Contractor shall use a trip ticket system for the delivery of C&D materials to any designated public filling facility and/or landfill.
- Training shall be provided for workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.
- The Contractor shall not permit sewage and untreated effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the Site onto any adjoining land, or allow any solid waste including refuse which is not part of the final product from waste processing plants to be deposited anywhere within the Site and the adjoining land. He shall arrange removal of such matter from the Site in a proper manner to the satisfaction of the Engineer in consultation with the EPD.
- The Contractor shall observe and comply with the *Waste Disposal (Chemical Waste) (General) Regulation*.
- The Contractor shall apply for registration as chemical waste producer under the *Waste Disposal (Chemical Waste) (General) Regulation* when chemical waste is produced. All chemical waste shall be properly stored, labelled, packaged and collected in accordance with the Regulation.
- Fly-tipping or disposal of C&D materials at locations other than the designated locations shall be prohibited. In order to review the trip-ticket record as mentioned in **paragraph 5.3.4** above, the following measures may be considered when necessary:
 - All dump trucks engaged on-site for delivery of inert and non-inert C&D material from the site to the designated disposal locations, including PFRFs, landfills etc., should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor to prohibit illegal dumping and landfilling of materials.
 - The data collected by GPS or equivalent system should be recorded properly for checking and analysis the travel routing and parking locations of dump truck engaged on-site.

Operation Phase

- 5.3.10 The operator shall encourage reuse and recycling of commercial wastes in line with government policy. The waste management hierarchy shall be adopted by the building management to manage commercial wastes in a suitable manner. The waste management hierarchy is a concept which shows the desirability of various waste management methods and comprises the following in order of preference:
- Avoidance
 - Minimisation
 - Recycling/reuse
- 5.3.11 The majority of waste generated during the operation of the Proposed Development will mainly comprise the MiC component and modular construction materials storage, general refuse and commercial wastes such as food waste, food packaging, paper, can, plastic bottles, etc., which shall be collected and stores in appropriate waste receptacles with a secure lid to minimise the potential adverse impact due to wind blowing away any waste and to improve hygiene. Recyclable and non-recyclable waste shall be regularly collected by licensed waste collectors and taken off-site for recycling or disposal, respectively.

5.4 Land Contamination

- 5.4.1 Historical aerial photographs provided in **Appendix C** shows that the Site was an agriculture land in Year 1970 to 1990s, which the historical agricultural activities unlikely caused land contamination. In Year 2003, the Site was observed to be abandoned and covered in vegetation. The trend of abandoning agriculture uses within the Site was continued in 2000s. In 2015, a warehouse/storage area with car park is observed. There is no evidence of any past land use, either agriculture land, vacant land or industrial use, within the Site that could have resulted in contamination. As advised by the Applicant, the Site has been operated by them or their sister companies since 2014/15 for construction related usages including storage of construction materials, nursery for landscape works, etc. without Dangerous Goods (“DGs”), chemical waste (e.g., waste lubricating oil, waste batteries, etc.) and/or any liquid chemicals. The Applicant also advised no occurrence of fire incident on site. As such, there is no reason to suspect that contaminated land was present within the Site.
- 5.4.2 The Site is currently a plant nursery with an open storage area. Majority of the Site is currently paved and in good condition with no cracks or stains on the paved ground. No land contamination activities on the Site were observed. Photographs taken in November 2023 are provided in **Figure 5-1** for reference.
- 5.4.3 No existing and previous development with potential land contamination activities on the Site is identified. Hence, no land contamination issue is anticipated.

5.5 Conclusion

- 5.5.1 With the development of WMP and to implement the good site practices recommended therein, the waste generation during construction phase can be greatly reduced. Provided that good site practices as recommended in **Section 5.3** will be followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.

-
- 5.5.2 During the operation phase, the major type of waste generated will be commercial wastes. Since commercial wastes will be collected on a regular basis by registered waste collectors and will be disposed at a landfill managed by EPD, no adverse waste impacts from handling, transportation, or disposal are anticipated during operation.
- 5.5.3 With the implementation of the recommended mitigation measures, adverse waste impacts generated during the construction and operational phases of the Proposed Development are not anticipated.
- 5.5.4 There was no previous development with potential land contamination activities on the Site. Hence, no land contamination issue is anticipated.

Figure 5-1 Site Inspection Photos of the Project Site and Surrounding Environment



6 CONCLUSIONS AND RECOMMENDATIONS

6.1.1 This EA has indicated that the Proposed Development will not generate any unacceptable environmental impacts during construction and operation phases, provided that all the recommended mitigation measures and good site practice are strictly implemented.

6.1.2 Specific conclusions for air quality, noise, water quality and waste management are as follows:

Air Quality

6.1.3 With the implementation of the recommended mitigation measures and good site practice, adverse impacts during construction phases are not anticipated.

6.1.4 No adverse air quality impact on the Proposed Development is anticipated with the implementation of the proposed mitigation measures during operation phase.

6.1.5 Overall, no adverse air quality impact is anticipated during the construction or operation phases of the Proposed Development.

Noise

6.1.6 During the construction phase of the Proposed Development, with the implementation of the noise mitigation measures recommended in **Section 3.2**, no adverse impact is anticipated.

6.1.7 Quantitative assessment for the fixed noise sources during operation phase was conducted. The results show that the noise from the fixed sources of the Proposed Development is expected to comply with the relevant noise criterion after implementing proper mitigation measure.

6.1.8 Overall, there will be no adverse impact during the construction and operation phases of the Proposed Development.

Water Quality

6.1.9 During construction phase, water quality impacts will be properly controlled with the implementation of good site practice. Portable toilets, when necessary will be provided for construction workers on-site. Provided these measures are implemented, adverse water quality impact is not anticipated during the construction phase. The Contractor shall apply for a Discharge Licence under the WPCO and the effluent discharged from the construction site shall comply with the terms and conditions of the Discharge Licence.

6.1.10 During operation, no adverse water quality impact is anticipated from the Proposed Development since sewage generated from staff will be either treated by Septic Tank/Soakaway Pit System (Option 1) or collected by wastewater storage tanks and tankered away with adequate frequency for Off-Site Disposal by a licensed collector (Option 2).

Waste Management

- 6.1.11 With the provision and implementation of the good site practices recommended therein, the waste generation during construction phase will be reduced. Provided that good site practices are followed, there should be no adverse impacts related to the management, handling and transportation of waste during construction phase.
- 6.1.12 During operation phase, the major type of waste generated will be commercial waste. Since commercial waste will be collected on a regular basis by registered collectors and will be disposed of at landfill, no adverse waste impacts from handling, transportation or disposal are anticipated during the operation phase.
- 6.1.13 Based on the preliminary land contamination review, no existing and/or previous uses with potential land contamination activities on the Site were identified.

Appendix A Background Noise Monitoring Data

BG1

Start Time	Leq30min	Lmax	Lmin	L10	L90	L90-1hr
31/05/2024 07:00	64.2	83.8	44.4	67.2	46.6	46.8
31/05/2024 07:30	62.5	89.4	44.8	63.6	47.0	
31/05/2024 08:00	59.2	75.4	45.0	62.5	47.7	47.4
31/05/2024 08:30	57.9	88.6	45.3	59.4	47.3	
31/05/2024 09:00	60.4	82.0	45.2	61.8	47.3	47.2
31/05/2024 09:30	57.3	80.2	45.3	60.6	47.1	
31/05/2024 10:00	59.6	82.5	46.1	59.7	47.7	47.7
31/05/2024 10:30	60.4	87.5	46.1	61.8	47.7	
31/05/2024 11:00	57.2	78.7	46.2	57.6	48.0	47.7
31/05/2024 11:30	56.4	79.3	45.3	56.4	47.5	
31/05/2024 12:00	54.5	78.7	43.8	54.2	46.4	46.5
31/05/2024 12:30	61.6	79.2	43.8	64.6	46.8	
31/05/2024 13:00	61.2	83.1	45.7	63.8	47.7	47.6
31/05/2024 13:30	54.0	73.7	45.2	56.1	47.6	
31/05/2024 14:00	57.8	84.1	45.4	56.4	47.3	46.6
31/05/2024 14:30	55.8	79.1	43.9	55.3	45.9	
31/05/2024 15:00	60.7	76.6	45.1	64.7	49.2	51.4
31/05/2024 15:30	65.5	81.0	50.1	68.5	55.8	
31/05/2024 16:00	65.1	84.2	54.7	67.7	57.0	53.9
31/05/2024 16:30	60.0	81.4	50.8	60.2	53.1	
31/05/2024 17:00	58.3	80.7	50.6	57.5	52.8	53.2
31/05/2024 17:30	58.4	82.7	51.7	58.5	53.7	
31/05/2024 18:00	59.9	77.5	52.5	62.6	54.0	53.7
31/05/2024 18:30	64.4	90.8	33.5	67.5	48.8	
Average	59.7	81.7	46.3	61.2	49.2	49.1

BG2

Start Time	Leq30min	Lmax	Lmin	L10	L90	L90-1hr
31/05/2024 07:00	66.8	88.3	40.3	65.9	42.6	42.7
31/05/2024 07:30	64.3	88.5	40.2	63.8	42.9	
31/05/2024 08:00	63.6	89.9	40.6	63.4	45.0	49.4
31/05/2024 08:30	63.8	91.0	51.4	65.0	57.4	
31/05/2024 09:00	63.7	90.9	51.2	62.2	53.7	53.9
31/05/2024 09:30	64.8	92.3	51.0	63.4	54.0	
31/05/2024 10:00	65.5	87.4	51.9	64.1	55.3	55.1
31/05/2024 10:30	64.4	87.3	52.1	64.1	54.9	
31/05/2024 11:00	64.7	89.0	51.8	63.6	54.0	54.3
31/05/2024 11:30	63.6	90.0	51.5	62.7	54.6	
31/05/2024 12:00	65.5	92.5	51.1	61.6	53.8	54.2
31/05/2024 12:30	66.2	84.7	51.7	66.7	55.0	
31/05/2024 13:00	67.3	89.0	53.6	68.2	56.6	55.2
31/05/2024 13:30	63.9	88.1	52.0	63.1	54.7	
31/05/2024 14:00	63.4	87.0	51.7	61.3	54.9	54.8
31/05/2024 14:30	64.1	85.9	52.1	63.2	54.7	
31/05/2024 15:00	65.3	85.2	52.3	66.6	57.4	58.1
31/05/2024 15:30	69.4	92.0	56.6	70.6	59.0	
31/05/2024 16:00	68.9	88.6	56.3	69.7	58.6	56.4
31/05/2024 16:30	67.6	88.7	51.9	68.8	55.6	
31/05/2024 17:00	66.6	90.1	51.2	66.3	54.1	54.5
31/05/2024 17:30	64.2	87.7	50.9	63.2	54.8	
31/05/2024 18:00	62.9	85.9	51.3	63.3	54.7	54.2
31/05/2024 18:30	64.4	93.3	33.1	67.7	53.6	
Average	65.2	88.9	49.9	64.9	53.8	53.6

Appendix B Noise Calculation of Fixed Source

Predicted Noise Level at NSR1

Fixed-noise Sources	Source Type	Ref. Code	SWL/unit, dB(A)	Quantity	At-source Noise Mitigation Measures	Noise Reduction from Mitigation Measures, dB(A)	Corrected SWL, dB(A)	Distance, m	Speed, km/h	Angle of view, degree	Operation (30mins)	% on time	Correction						CNL, dB(A)	Total CNL, dB(A)	Criterion, dB(A)
													Time	Distance	Angle of view	Speed	Screening Effect, dB(A) ⁽¹⁾	Facade			
Tower Crane	Stationary	CNP 049	95	1	NA	0	95.0	109.0	NA	NA	30	80.0%	-1.0	-48.7	NA	NA	0	3	48.3	52.2	52
Forklift (speeds10km/hr)	Stationary	Other PME	104	2	NA	0	107.0	103.1	NA	NA	15	20.0%	-7.0	-48.2	NA	NA	-5	3	49.8		
Rd1 Lorry (5.5-gross veh weights≤38)	Haul Road	Other PME	105	4	NA	0	NA	152.9	10	6.6	NA	N/A	NA	-21.8	-14.4	-10	-5	3	29.8		

Notes:

- 1 A 5 dB(A) noise reduction if there is no direct line of sight to the noisy part of the source(s) within the Site.

Predicted Noise Level at NSR2

Fixed-noise Sources	Source Type	Ref. Code	SWL/unit, dB(A)	Quantity	At-source Noise Mitigation Measures	Noise Reduction from Mitigation Measures, dB(A)	Corrected SWL, dB(A)	Distance, m	Speed, km/h	Angle of view, degree	Operation (30mins)	% on time	Correction						CNL, dB(A)	Total CNL, dB(A)	Criterion, dB(A)
													Time	Distance	Angle of view	Speed	Screening Effect, dB(A) ⁽²⁾	Facade			
Tower Crane	Stationary	CNP 049	95	1	NA	0	95.0	132.8	NA	NA	30	80.0%	-1.0	-50.4	NA	NA	0	3	46.6	51	55
Forklift (speeds10km/hr)	Stationary	Other PME	104	2	NA	0	107.0	122.5	NA	NA	15	20.0%	-7.0	-49.7	NA	NA	-5	3	48.3		
Rd1 Lorry (5.5-gross veh weights≤38)	Haul Road	Other PME	105	4	NA	0	NA	140.2	10	6.6	NA	N/A	NA	-21.5	-14.4	-10	-5	3	30.1		

Notes:

- 1 A 5 dB(A) noise reduction if there is no direct line of sight to the noisy part of the source(s) within the Site due to the noise barrier.
- 2 A noise reduction of speed, angle of view, distance and time is applied via $-10\log(\text{variable})$.

Appendix C Aerial Photographs

Figure C-1 Aerial Photograph in Year 1970



Source: Lands Department

In 1970, the Site was an agriculture land. No activities likely to result in land contamination were observed.

Figure C-2 Aerial Photograph in Year 1988



Source: Lands Department

In 1988, the Site was an agriculture land. No activities likely to result in land contamination were observed.

Figure C-3 Aerial Photograph in Year 1995



Source: Lands Department

In 1995, the Site was an agriculture land. No activities likely to result in land contamination were observed.

Figure C-4 Aerial Photograph in Year 2003



Source: Lands Department

In 2003, the Site appears to be abandoned and covered with sparse vegetation.

Figure C-5 Aerial Photograph in Year 2009



Source: Lands Department

In 2009, the Site appears to be abandoned and covered with sparse vegetation.

Figure C-6 Aerial Photograph in Year 2015



Source: Lands Department

In 2015, the Site appears to be used as a storage area/warehouse with a car park.

Figure C-7 Aerial Photograph in Year 2022



Source: Lands Department

In 2022, the Site appears to be used as a plant nursey and open storage of building materials.



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We behave with respect and honesty toward each other, our clients and our stakeholders.

Enclosure | 2

Revised Sewerage Assessment Report



Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po Sewerage Review Report

Prepared for:
Sanfield (Management) Ltd

13 June 2024

Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po Sewerage Review Report

Prepared for
Sanfield (Management) Ltd

For and on behalf of EnviroSolutions & Consulting Alexi BHANJA Country Manager – Hong Kong					
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Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Confidential <input type="checkbox"/> Public					
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APPENDICES

Appendix A Calculation of Sewage Generation

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1 INTRODUCTION

1.1 Background

- 1.1.1 Aligning with Government directives to enhance the quantity, speed, efficiency, and quality of housing, the construction industry is spearheading the development of highly productive construction methods, including the widespread adoption of Modular Integrated Construction (“MiC”). MiC, an innovative construction method, involves assembling building components off-site in a controlled environment before transporting and seamlessly integrating them into the construction site.
- 1.1.2 In order to support in adopting MiC, a temporary storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery for a period of three years (“the Proposed Development” or “Proposed Use”) at various lots in DD 107, Sha Po, Yuen Long, New Territories (“the Site”) is proposed.
- 1.1.3 The Site is zoned Comprehensive Development Area (1) (“CDA(1)”) under the Approved Kam Tin North Outline Zoning Plan (“OZP”) No. S/YL-KTN/11. In accordance with Note (11) of the OZP, temporary use of development of any land or building exceeding a period of three years will require permission from the Town Planning Board (“TPB”). Therefore, a planning application pursuant to Section 16 of the *Town Planning Ordinance* (“TPO”) is required.
- 1.1.4 In order to support the planning application for the Proposed Development, EnviroSolutions & Consulting Ltd (“ESC”) has been appointed to prepare this Sewerage Review Report.

1.2 Site Description

- 1.2.1 The Site location and its environs are shown in **Figure 1-1** which the uses surrounding the Site include:
- To the North: Park Yoho
 - To the East: temporary structures
 - To the South: nullah and open storage
 - To the West: Park Yoho

1.3 Project Description

- 1.3.1 The Site area will be approx. 9,705m². The indicative layout of the Proposed Development can be referred to the Planning Statement. The operation of the Proposed Development tentatively starts from Year 2024.
- 1.3.2 The Proposed Use aims to serve as a transshipment depot for MiC components, with the objective of meeting the growing demand for MiC applications while ensuring efficient logistics and seamless implementation of MiC in housing projects. MiC components intended for temporary storage will weigh about 10 to 20 tonnes, with maximum length and width of approx. 8m and 2.5m respectively. The Proposed Use also serves as a hub for modular construction materials being used for housing project sites in order to promote more Green Construction Methodology. The Proposed Development comprises an open

storage area, providing a secure location for the temporary storage of MiC components and modular construction materials, along with ancillary facilities, including three workshops, an office, a staff car park, a guardhouse and machinery (i.e. tower crane and hoisting crane etc.) to support its operation needs. The proposed ancillary office is a two-storey structure designed to accommodate about 50 staff members. The office is intended to provide administrative/supporting services to facilitate the seamless transshipment of MiC components. The proposed ancillary single-storey workshops, equipped with lifting machinery, will be enclosed, primarily serving for internal quality control and quality assurance checks of MiC components, as well as any necessary final touching-up works before their delivery to construction sites. Additionally, solar panels will be installed on the workshop and office roofs for self-sufficiency purpose, contributing to environmental protection through renewable energy generation.

- 1.3.3 The operating hours of the Proposed Use will be from 8:00 a.m. to 7:00 p.m. from Monday to Saturday and without operation on Sunday and public holidays.

1.4 Objectives of this Report

- 1.4.1 The objectives of this Sewerage Review Report are to:

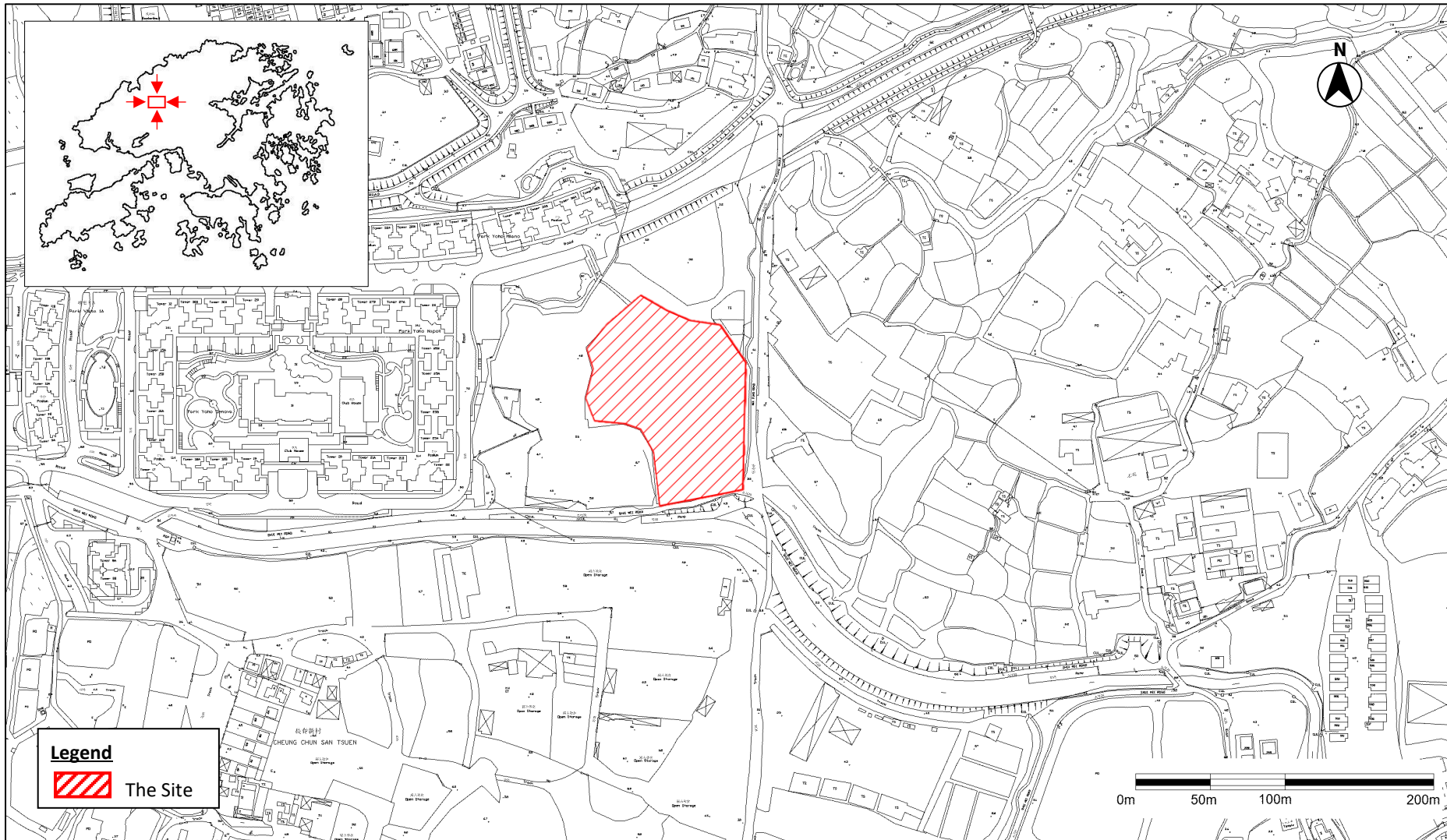
- Estimate the quantity of wastewater arising from the Proposed Development and the nearby uses
- Recommend the necessary mitigation measures to handle the associated wastewater.

1.5 Reference Materials

- 1.5.1 In evaluating the sewerage impacts arising from the Proposed Development, the following sources have been specifically referred to:

- Drainage Services Department (“DSD”) publication *Sewerage Manual (with Eurocodes incorporated) (Part 1) Key Planning Issues and Gravity Collection System, 3rd Edition, May 2013*
- Environmental Protection Department (“EPD”) publication *Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0, March 2005 (“GESF”)*
- Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations (Cap.123I)
- Practice Note for Professional Persons Drainage Plans subject to Comment by the Environmental Protection Department -Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations (ProPECC PN1/23)
- Sewerage data of GeoInfo Map checked on 16 November 2023

Figure 1-1 Site Location and its Environs



2 EVALUATION OF SEWERAGE IMPACT

2.1 Existing Baseline Conditions

2.1.1 According to the sewerage data of GeoInfo Map checked on 16 November 2023, there is no municipal sewerage system near the Site.

2.2 Sewage Impact During the Operation Phase

2.2.1 During the operation of the Proposed Development, the major source of wastewater will be sewage from the toilets and bathrooms used by on-site staff.

2.2.2 Since there is no existing municipal sewerage system near the Site, disposal of sewage by connection to municipal sewerage system is not practicable. Thus, two options are commended for handling the wastewater from the Proposed Development:

- Option 1 On-Site Treatment – treated by on-site Septic Tank/Soakaway Pit System
- Option 2 Off-Site Disposal – temporarily stored in sewage storage tanks and then tankered-away for off-site disposal in a Sewage Treatment Facility.

2.2.3 The estimated total daily sewage generation from the Proposed Development and recommendations regarding Option 1 and Option 2 are discussed in the subsequent sections. The consideration of Option 1 and Option 2 depends on the detailed design stage in the future.

3 SEWERAGE CALCULATIONS

3.1 Assumptions

3.1.1 In order to review whether Option 1 or Option 2 mentioned in **paragraph 2.2.2** is practicable to handle the sewage arising from the Proposed Development, the maximum sewage generated has been estimated based on the assumptions listed in **Table 3-1**, below. The Average Dry Weather Flows (“ADWFs”) of the Proposed Development have been estimated based on the Unit Flow Factors (“UFFs”) recommended in GESF.

Table 3-1 Parameters for Estimating Wastewater Generation from the Proposed Development

PARAMETER	VALUE	UNIT	REMARK
GENERATION FROM STAFF			
Max. No. of Site Staff	50	staff	Information provided by the applicant
Max. No. of Site Staff not having showering	42	staff	Information provided by the applicant
Max. No. of Site Staff having showering	8	Staff	Max. No. of Site Staff not using bathroom
UFF of staff without showering	0.230	m ³ /day-staff	Unit flow factor for “Commercial Employee + J9 Construction” given in Table T-2 of GESF
UFF of staff with showering	0.350	m ³ /day-staff	<p>a) With reference to Section (4) of Appendix III of GESF, average non-flushing fresh water consumption of R1 Residents and Public Housing Residents is 0.120m³/person/day. While non-flushing fresh water consumption of R1 is not described in detail in GESF, it should comprise having bath, other uses of non-flushing fresh water such as plate washing. Therefore, the UFF of showering is assumed to be 0.120m³/day-staff for the worst-case scenario</p> <p>b) The UFF of staff with showering = UFF of staff without showering + UFF of staff without showering = 0.230 + 0.120 = 0.350 m³/day-staff</p>

3.2 Result and Discussion

3.2.1 Detailed sewage generation calculations are provided in **Appendix A**. As can be seen, the total estimated ADWF from the Proposed Development is calculated to be 12.460m³/day during operation.

3.2.2 As mentioned in **paragraph 2.2.2**, sewage arising from the Proposed Development is recommended to either be treated by Option 1 Septic Tank/Soakaway Pit System or Option 2 Offsite Disposal. The options are discussed below.

Option 1 Septic Tank/Soakaway Pit System

3.2.3 For Option 1, the design and construction of the Septic Tank/Soakaway Pit System should fulfil the requirements of the *Building (Standards of Sanitary Fitments, Plumbing, Drainage*

Works and Latrines) Regulations (Cap.123I), ProPECC PN1/23, other relevant regulations and other relevant government guidelines.

- 3.2.4 In accordance with Cap. 123I, the septic tank capacity shall be of such capacity to be capable of storing quantity of soil and waste discharged thereto during any one day provided that no septic tank shall have a capacity of less than 2.3m³ or more than 41m³. As mentioned in **paragraph 3.2.1**, the estimated overall sewage generated during operation of the Proposed Development will be 12.460m³/day. According to the Guidelines for Soakaway System, the minimum capacity of septic tank should be three days' storage of wastewater. Thus, the septic tank capacity shall be approx. 39m³.
- 3.2.5 Sufficient separation distance should be provided between the Septic Tank/Soakaway Pit System as well as the waterbodies and structures. The minimum clearance requirements are specified in Appendix D of ProPECC PN1/23 as summarised in **Table 3-2**.

Table 3-2 Minimum Clearance Requirements for Soakaway Systems

WATERBODIES / STRUCTURES	DISTANCE FROM SOAKAWAY SYSTEM, m	REMARK
Wells	50	-
Stream (where the bed is lower than Invert of soakaway system)	15 (30)*	* These distances should be increased to distances shown in brackets if the water from the stream or pool is used or likely to be used for drinking or domestic purposes
Pools	7.5 (30)*	
Beaches	100	From boundaries of gazetted beaches or bathing beach subzones of Water Control Zones
	30	From High Water Mark ("H.W.M.") and from nearest watercourses for other cases
Groundwater Table	0.6	Below Invert
Building	3	-
Retaining Walls	6	-
Cuts or Embankments	30	-
Paths	1.5	-

- 3.2.6 The details of the Septic Tank/Soakaway Pit System will be subject to the detailed design in the future.

Option 2 Offsite Disposal

- 3.2.7 For Option 2, sewage will be temporarily stored in Sewage Storage Tanks within the Site. The stored sewage will be delivered off the Site by tankers, which will deliver them to a Sewage Treatment Plant. The sewage generated from the Proposed Development operation will be approx. 12.460m³/day as discussed in **paragraph 3.2.1**. As advised by a supplier, the typical size of a sewage holding tank for container toilet is approx. 3,000L. Therefore, at least five sewage holding tanks should be provided to temporarily stored sewage for tankering away every day. The details of sewage holding tanks will be subject to the detailed design in the future.
- 3.2.8 With the provision of either Option 1 or Option 2, no adverse impact due to sewage generation from the Proposed Development is anticipated.

4 CONCLUSION AND RECOMMENDATIONS

- 4.1.1 It is proposed to develop a temporary storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery for a period of three years at various lots in D.D. 107 in Sha Po, Yuen Long, New Territories. The Site is zoned Comprehensive Development Area (1) (“CDA(1)”) under the Approved Kam Tin North Outline Zoning Plan (“OZP”) No. S/YL-KTN/10. This Sewerage Review is carried out in order to support the Section 16 planning application for the Proposed Development.
- 4.1.2 During operation, detailed sewage generation calculations demonstrate that total estimated ADWF from the Proposed Development will be approx. 12.460m³/day. The sewage is proposed to be either treated by Septic Tank/Soakaway Pit System (Option 1) or Off-Site Disposal by temporarily stored in sewage storage tanks and then tankered-away to a Sewage Treatment Plant (Option 2).
- 4.1.3 For Option 1, the septic tank capacity shall be approx. 13m³. For Option 2, at least five sewage holding tanks with a size of approx. 3,000L each should be provided to temporarily stored sewage for tankering away every day. The details of either Option 1 or Option 2 will be subject to the detailed design in the future.
- 4.1.4 Overall, with the provision of Option 1 or Option 2, no unacceptable impact is anticipated for sewage generation from the Proposed Development.

Appendix A Calculation of Sewage Generation

Sewage Calculations for the Proposed Development	Notes
<p>A. Sewage generated by the Site</p> <p>1) Sewage generated by Staff without Showering</p> <p>Max No of Site Staff without Showering = 42 staff</p> <p>Unit Flow Factor (UFF) per staff = 0.230 m³/day-staff</p> <p>Total Average Dry Weather Flow (without showering) = 9.660 m³/day</p> <p>2) Wastewater generated by Staff with Showering</p> <p>Max No of Site Staff with Showering = 8 staff</p> <p>UFF of Showering = 0.120 m³/day-staff</p> <p>UFF per Staff without Showering = 0.230 m³/day-staff</p> <p>Total UFF per Staff with Showering = 0.350 m³/day-staff</p> <p>Total Average Dry Weather Flow (with showering) = 2.800 m³/day</p> <p>Overall Average Daily Dry Weather Flow of Proposed Development = 12.460 m³/day</p>	<p>As advised by the Applicant</p> <p>Refer to "Commercial Employee" and "J9 Construction" of Table T-2 of Reference 1.</p> <p>Average Dry Weather Flow (a)</p> <p>As advised by the Applicant</p> <p>With reference to Section (4) of Appendix III of Reference 1, average non-flushing fresh water consumption of R1 Residents and Public Housing Residents is 0.120m³/person/day. While non-flushing fresh water consumption of R1 is not described in detail in reference 1, it should comprise having bath, other uses of non-flushing fresh water such as plate washing. Therefore, the UFF of showering is assumed to be 0.120m³/day-staff for the worst-case scenario.</p> <p>Refer to "Commercial Employee" and "J9 Construction" of Table T-2 of Reference 1.</p> <p>Average Dry Weather Flow (b)</p> <p>(a) + (b)</p>
<p><u>Sewage Handling Options</u></p> <p>Option 1 Septic Tank/Soakaway Pit System</p> <p>The Minimum Capacity of Septic Tank = 12.460 m³</p> <p>Option 2 Container Toilets</p> <p>Size of a Sewage Storage Tank = 3,000 L/ toilet</p> <p>Min. No. of containers required (3,000L each) = 5 tanks</p>	<p>In accordance with Section 65 of Reference 2, the capacity of septic tank shall be:</p> <p>(1) not less than 2.3m³ or more than 41m³.</p> <p>(2) capable of storing the quantity of soil and waste discharged thereto during any one day.</p> <p>According to a supplier, the typical size of a sewage holding tank for container toilet is approx. 3,000L each.</p>

Reference:

- 1 Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning ("GESF") Version 1.0, Environmental Protection Department of HK Government, March 2005
- 2 Building (Standards of Sanitary Fittings, Plumbing, Drainage Works and Latrines) Regulations (Cap.123I)



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Accountability

We understand the importance of being accountable to each other and our clients.



Passion

We are completely passionate about providing practical solutions and outcomes that deliver for our clients.



Insight

We work in an environment that encourages and values insight as a critical quality which informs our decisions and our clients and supports practical solutions and project delivery.



Integrity

We behave with respect and honesty toward each other, our clients and our stakeholders.

Enclosure | 3
Revised Drainage Proposal



Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po

Drainage Proposal

Prepared for:

Sanfield (Management) Ltd

4 June 2024

Temporary Storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery at Various Lots in DD 107, Sha Po Drainage Proposal

Prepared for
Sanfield (Management) Ltd

For and on behalf of EnviroSolutions & Consulting					
Alexi BHANJA Country Manager – Hong Kong					
ESC Project No.	EPA23.1044-J.01				
Deliverable No.	D02				
Revision No.	4				
File Location					
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2.2	Drainage Proposal	MW	JC	AW	26/03/2024
3	Drainage Proposal	MW	JC	AW	26/04/2024
4	Drainage Proposal	MW	JC	AW	04/06/2024
Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Confidential <input type="checkbox"/> Public					
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1 PROJECT BACKGROUND

1.1 Introduction

- 1.1.1 Aligning with Government directives to enhance the quantity, speed, efficiency, and quality of housing, the construction industry is spearheading the development of highly productive construction methods, including the widespread adoption of Modular Integrated Construction (“MiC”). MiC, an innovative construction method, involves assembling building components off-site in a controlled environment before transporting and seamlessly integrating them into the construction site.
- 1.1.2 In order to support in adopting MiC, a temporary storage for MiC Components and Construction Materials with Ancillary Workshops, Office, Staff Car Park and Machinery for a period of three years (“the Proposed Development” or “Proposed Use”) at various lots in DD 107, Sha Po, Yuen Long, New Territories (“the Site”) is proposed.
- 1.1.3 The Site is zoned Comprehensive Development Area (1) (“CDA(1)”) under the Approved Kam Tin North Outline Zoning Plan (“OZP”) No. S/YL-KTN/10. In accordance with Note (11) of the OZP, temporary use of development of any land or building exceeding a period of three years will require permission from the Town Planning Board (“TPB”). Therefore, a planning application pursuant to Section 16 of the *Town Planning Ordinance* (“TPO”) is required.
- 1.1.4 In order to support the planning application for the Proposed Development, EnviroSolutions & Consulting Ltd (“ESC”) has been appointed to prepare this Drainage Proposal.

1.2 Site Description

- 1.2.1 The Site locations and its environs are shown in **Figure 1-1** which the uses surrounding the Site include:
- To the North: Park Yoho
 - To the East: temporary structures
 - To the South: nullah and open storage
 - To the West: Park Yoho

1.3 Project Description

- 1.3.1 The Site area will be approx. 9,705m². The indicative layout of the Proposed Development can be referred to the Planning Statement.
- 1.3.2 The Proposed Use aims to serve as a transshipment depot for MiC components, with the objective of meeting the growing demand for MiC applications while ensuring efficient logistics and seamless implementation of MiC in housing projects. MiC components intended for temporary storage will weigh about 10 to 20 tonnes, with maximum length and width of approx. 8m and 2.5m respectively. The proposed use also serves as a hub for modular construction materials being used for housing project sites in order to promote more Green Construction Methodology. The Proposed Development comprises an open storage area, providing a secure location for the temporary storage of MiC components

and modular construction materials, along with ancillary facilities, including three workshops, an office, a staff car park, a guardhouse and machinery (i.e. tower crane and hoisting crane etc.) to support its operation needs. The proposed ancillary office is a two-storey structure designed to accommodate about 50 staff members. The office is intended to provide administrative/supporting services to facilitate the seamless transshipment of MiC components. The proposed ancillary single-storey workshops, equipped with lifting machinery, will be enclosed, primarily serving for internal quality control and quality assurance checks of MiC components, as well as any necessary final touching-up works before their delivery to construction sites. Additionally, solar panels will be installed on the workshop and office roofs for self-sufficiency purpose, contributing to environmental protection through renewable energy generation.

1.3.3 The operating hours of the Proposed Use will be from 8:00 a.m. to 7:00 p.m. from Monday to Saturday and without operation on Sunday and public holidays.

1.4 Objectives of this Report

1.4.1 The objectives of this Drainage Proposal are to:

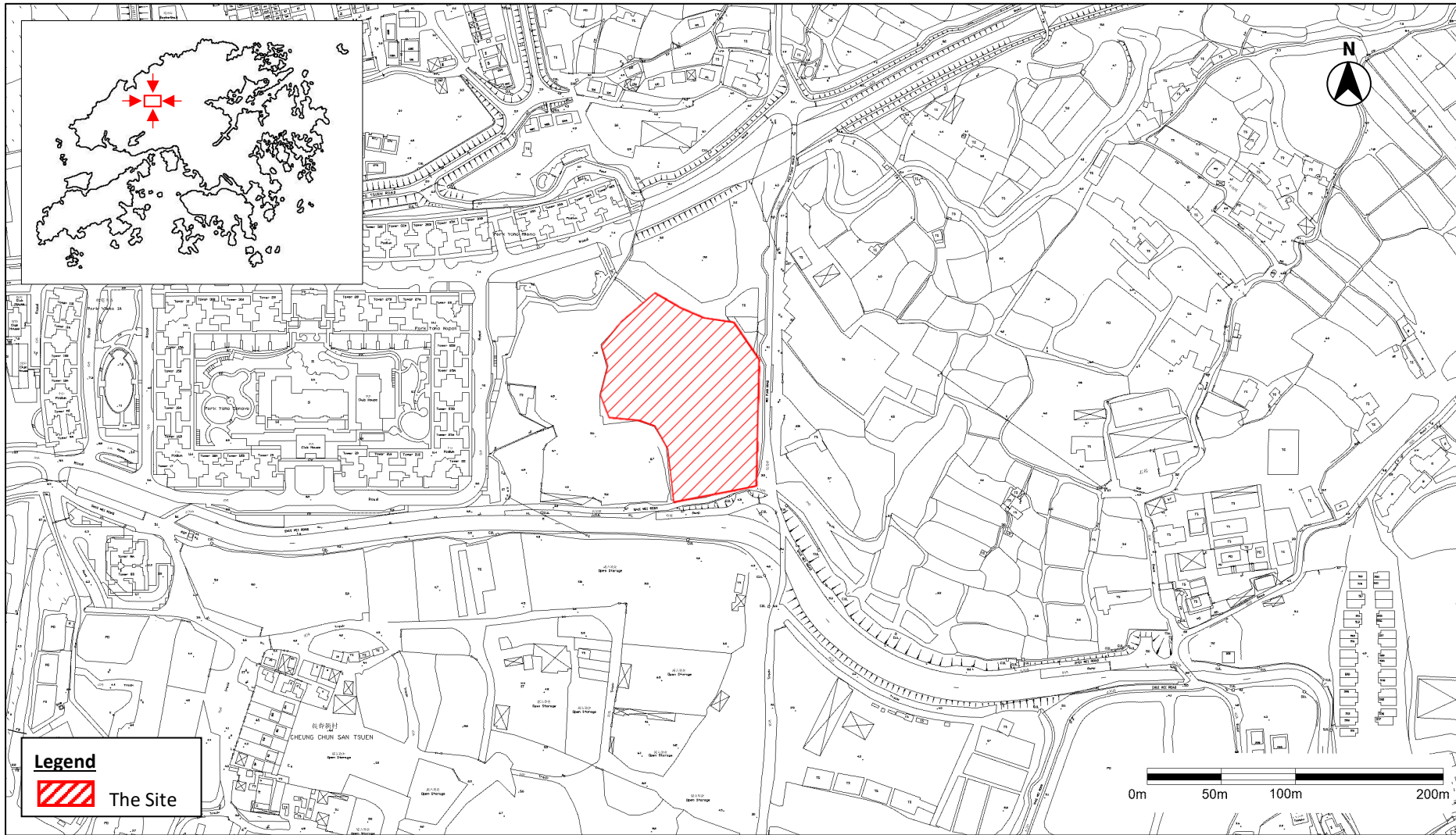
- Assess the potential drainage impacts arising from the Proposed Development.
- Recommend the necessary mitigation measures to alleviate any impacts.

1.5 Reference Materials

1.5.1 In evaluating the drainage impact arising from the Proposed Development, the following materials have been referred to:

- Drainage Services Department (“DSD”) publication *Stormwater Drainage Manual (with Eurocodes incorporated) – Planning, Design and Management (2018 Edition)*
- DSD Advice Note No. 1 – Application of the Drainage Impact Assessment Process to Private Sector Projects
- Drainage Services Department publication Technical Note to prepare a “Drainage Submission”.
- Drainage data of GeoInfo Map reviewed on 23 November 2023.

Figure 1-1 Site Location and its Environs



2 DESCRIPTION OF EXISTING ENVIRONMENT AND DRAINAGE CONDITIONS

2.1 Site Location and Topography

2.1.1 As illustrated in **Figure 1-1**, the Site is located to the south of a nullah and the north of the other nullah.

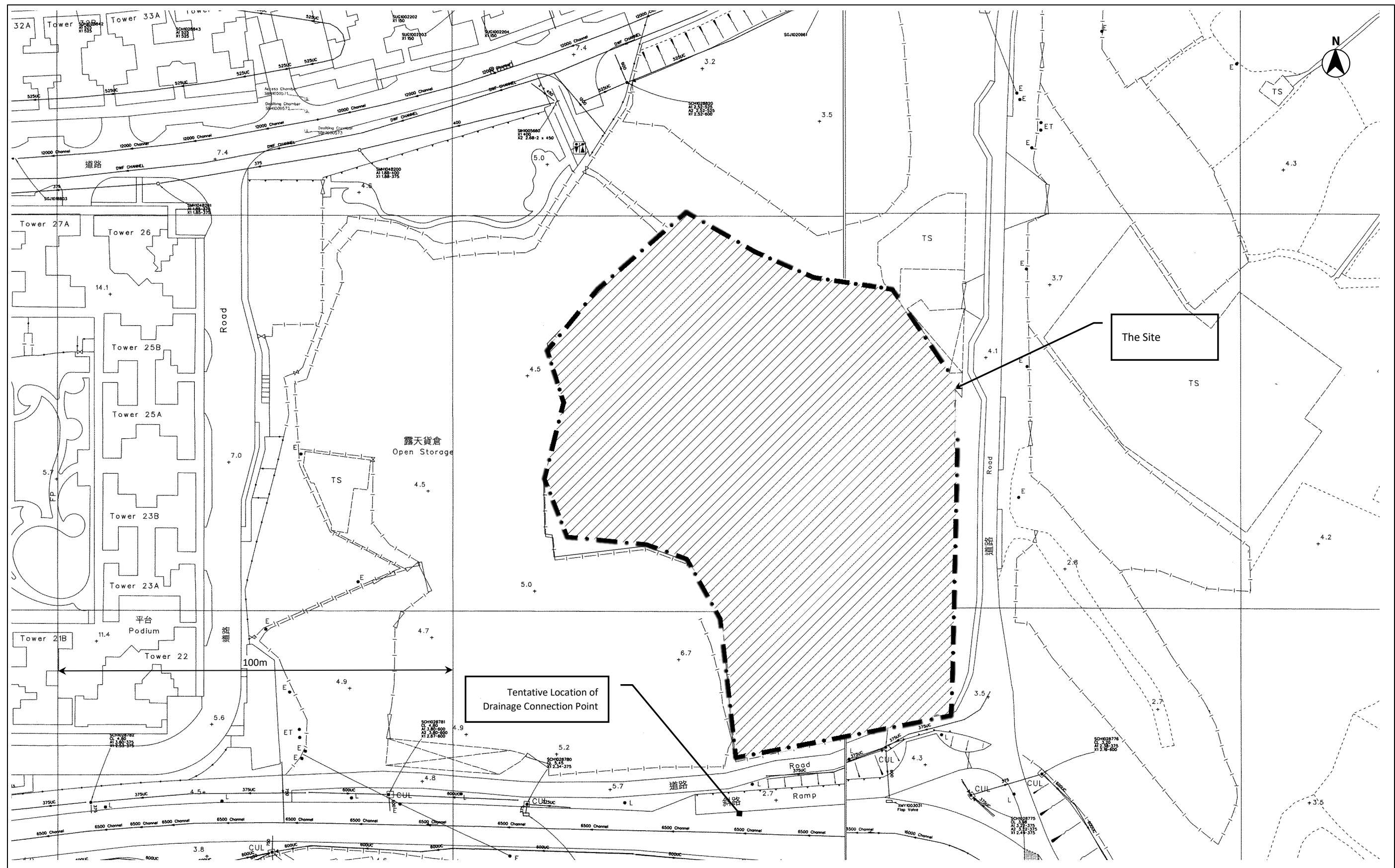
2.1.2 With reference to the layout plans appended to the Planning Statement, the Site elevations range between +3.31mPD and +4.20mPD.

2.2 Existing Baseline Conditions

2.2.1 Majority of the Site area is currently paved.

2.2.2 With reference to the drainage layout plans obtained from the DSD as shown in **Figure 2-1**, it is proposed to divert the Site runoff to the nullah to the south of the Site.

Figure 2-1 Drainage Layout Plan



3 DRAINAGE ANALYSIS

3.1 Assumptions and Methodology

3.1.1 Peak instantaneous run off before and after the Proposed Development was calculated based on the Rational Method. The recommended physical parameters, including runoff coefficient (C) and storm constants for different return periods, are as per the *Stormwater Drainage Manual*.

3.1.2 The Rational Method has been adopted for hydraulic analysis and the peak runoff is given by the following expression:

$$Q_p = 0.278 C i A \quad \text{--- Equation 1}$$

where Q_p = peak runoff in m^3/s
C = runoff coefficient
 i = rainfall intensity in mm/hr
A = catchment area in km^2

3.1.3 Rainfall intensity is calculated using the following expression:

$$i = \frac{a}{(t_d + b)^c} \quad \text{--- Equation 2}$$

where i = rainfall intensity in mm/hr
 t_d = duration in minutes ($t_d \leq 240$)
a,b,c = storm constants given in table 3 of SDM

3.1.4 For a single catchment, duration (t_d) can be assumed equal to the time of concentration (t_c) which is calculated as follows:

$$t_c = t_0 + t_f \quad \text{--- Equation 3}$$

where t_c = time of correction
 t_0 = inlet time (time taken for flow from the remotest point to reach the most upstream point of the urban drainage system)
 t_f = flow time

3.1.5 Generally, t_0 is much larger than t_f . As shown in Equation 2, t_d is the divisor. Therefore, larger t_d will result in smaller rainfall intensity (i) as well as smaller Q_p . For the worst-case scenario, t_f is assumed to be negligible and so:

$$t_c = t_0 = t_f$$
$$t_0 = \frac{0.14465 L}{H^{0.2} A^{0.1}} \quad \text{--- Equation 4}$$

where A = catchment area (m^2)
H = average slope (m per 100m), measured along the line of natural flow, from the summit of the catchment to the point under consideration
L = distance (on plan) measured on the line of natural flow between the summit and the point under consideration (m)

- 3.1.6 The Colebrook-White Equation was adopted for calculation of drainage capacity of pipes. Full bore flow with no surcharge is assumed, and 10% sedimentation was incorporated in the calculation of drainage capacity in accordance with the *Stormwater Drainage Manual*.

$$V = -\sqrt{8gDsg} * \log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{2gDs}}\right) \quad \text{--- Equation 5}$$

where

- V = mean velocity (m/s)
- g = gravitational acceleration (m/s²)
- D = internal pipe diameter (m)
- ks = hydraulic pipeline roughness (m)
- v = kinematic viscosity of fluid (m²/s)
- s = hydraulic gradient (energy loss per unit length due to friction)

- 3.1.7 On the other hand, the capacity of open channel has been calculated using the Manning's Equation:

$$V = \frac{R^{1/6}}{n} \times \sqrt{Rs} \quad \text{--- Equation 6}$$

where

- V = mean velocity (m/s)
- R = hydraulic radius (m)
- n = Manning coefficient (s/m^{1/3})
- s = hydraulic gradient (energy loss per unit length due to friction)

3.2 Assessment Assumptions

Identification of Catchments

- 3.2.1 With reference to the layout plans and the elevations as mentioned in **paragraph 2.1.2** and some elevations shown on **Figure 2-1**:

1. The elevation the area to the north of the Site should be +3.5mPD which is lower than that of ~3.56mPD of the northern portion of the Site. Therefore, it is not likely for runoff overflowing from the areas to the north of the Site to the Proposed Development.
2. For the areas to the east and south of the Site, they are separated by Mei Fung Road and Shui Mei Road. Based on the Site observations which can be verified by reviewing Street Views of Google Map, Mei Fung Road and Shui Mei Road are provided with road drains. Therefore, runoff from these areas including the roads is not likely overflowing to the Site..
3. For the area to the immediate west of the Site, there is an existing open storage. This open storage to the west of the Site should be filled ponds for plant nursery which was approved with conditions by the TPB on 10 September 1999 (TPB's ref.: A/YL-KTN/95). One of its approval conditions was "*The provision of drainage facilities to the satisfaction of the Director of Drainage Services or of the Town Planning Board*". Although the existing use of the aforementioned open storage could not be observed during the site visit on 9 April 2020 because the open storage was fenced off, according to the satellite photograph dated 16 March 2020 that open storage is still used for plant nursery. Therefore, drainage facilities should be provided for the aforementioned open storage. Moreover, with reference to the topographic basemap

from Lands Department (**Figure 2-1** refers), the catchment flow of the open storage to the west of the Site should be from East to West, which is away from the Site. Hence, there should be no runoff overflowing to the Site.

3.2.2 As mentioned in **paragraph 2.2.2** and indicated on **Figure 2-1**, it is recommended to divert the runoff from the Site to the open channel/nullah to the south of the Site. Therefore, the Site itself is the only catchment to be assessed and three sub-catchments, Catchments A, B and C, have been indicated and shown on **Figure 3-1**.

3.3 Estimated Runoff

Peak Runoff from the Site

3.3.1 Based on the assumptions as described in **Section 3.2**, the runoff from the Site was estimated based on the return periods of 2, 10 and 50 years summarised in **Table 3-1** and detailed in **Appendix A**.

Table 3-1 Estimated Peak Runoff of the Site

RETURN PERIOD	ESTIMATED PEAK RUNOFF (m ³ /s)
2 Years	0.433
10 Years	0.537
50 Years	0.596

3.4 Proposed Indicative Drainage Layout

3.4.1 A proposed drainage layout showing U-channels, underground pipes and invert levels has been indicated based on the calculations in **Appendix B**. The U-channels and underground pipe of the indicative drainage layout and their invert levels are summarised in **Table 3-2** and shown on **Figure 3-2**. Note that calculation of drainage capacity below is indicative only and will be finalised in the Updated Drainage Proposal prepared by the qualified engineer.

Table 3-2 Summary of Indicative Drainage Facilities

DESCRIPTION	SIZE (mm)	RELATED CATCHMENT	RUNOFF (m ³ /s)	CAPACITY (m ³ /s)	% OF CAPACITY USED	SUFFICIENT CAPACITY?
U-Channel 1 with gradient of 1:200	Not less than Ø590mm	Catchment A of the Site	0.339	0.430	79	Yes
Boundary-Channel 2 with gradient 1:200	Not less than Ø530mm	Catchment B & C of the Site	0.258	0.323	80	Yes
Underground Pipe 1 with gradient 1:200	Not less than Ø750mm	Catchment A, B & C of the Site	0.596	0.786	76	Yes

3.4.2 The indicative outfall to be provided with a sand trap is tentatively connected to the open channel/nullah via Underground Pipe 1 as shown on **Figure 3-2**. The typical design of catchpit and sand trap can be referred to **Figure 3-3** and **Figure 3-4**. With the provision, implementation and maintenance of the indicative drainage layout, no adverse drainage impact due to the Proposed Development is anticipated.

3.4.3 Indicative cross-section drawings can be referred to **Appendix C**.

Figure 3-1 Identification of Catchments

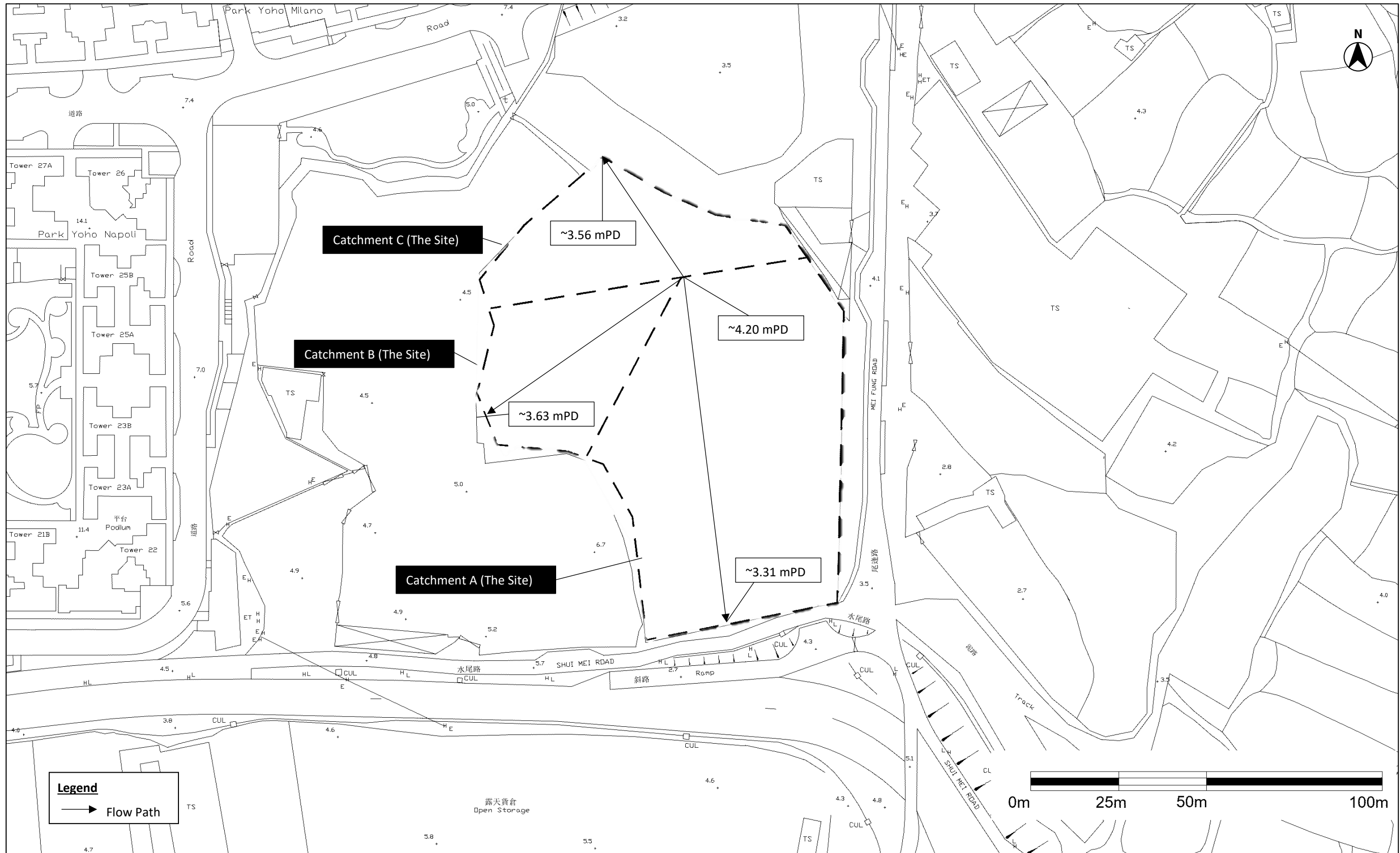


Figure 3-2 Indicative Proposed Drainage Diversion Layout

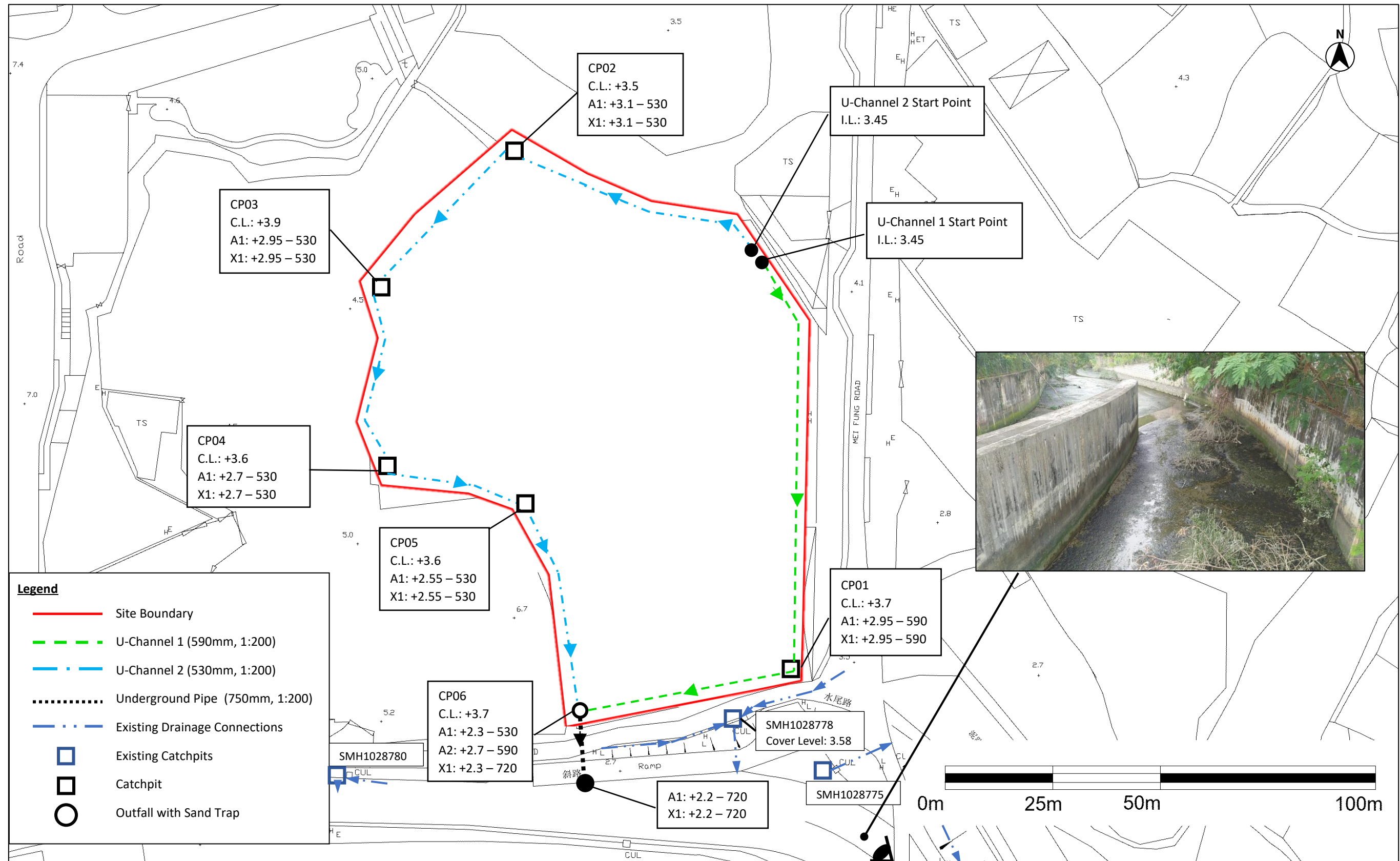


Figure 3-3 Typical Details of Catchpit and Sand Trap

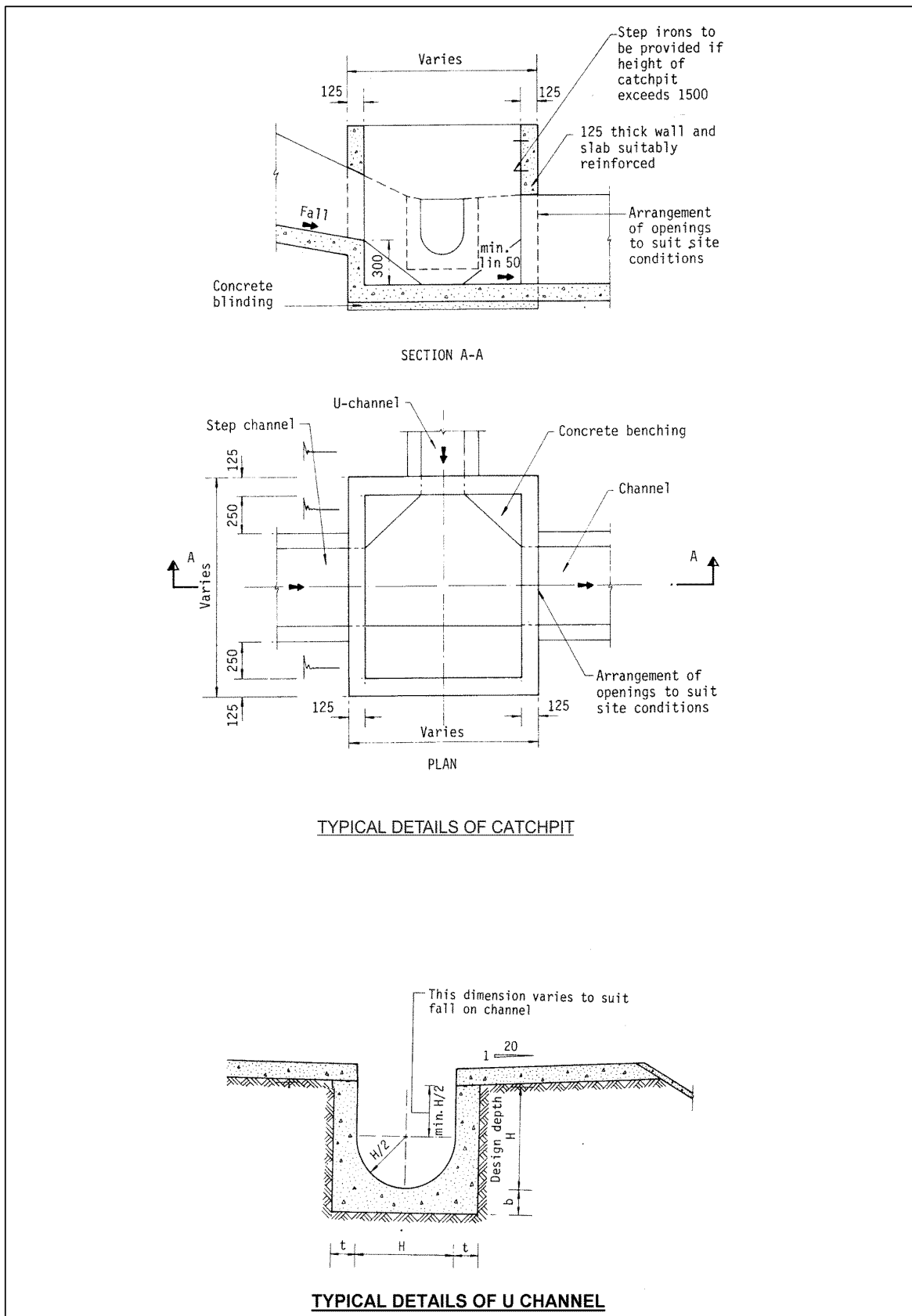
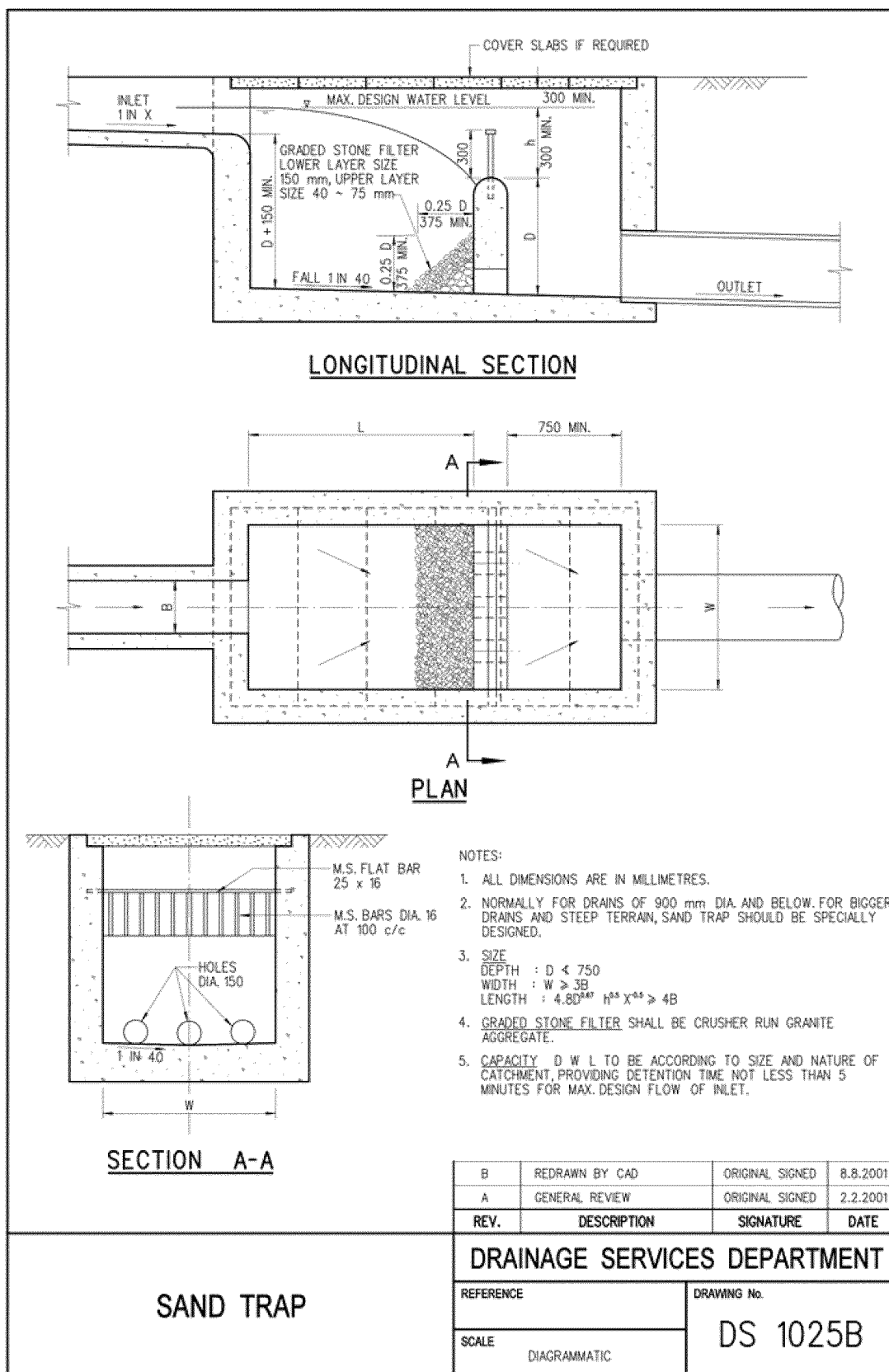


Figure 3-4 Typical Details of Sand Trap



4 CONCLUSION

- 4.1.1 Potential drainage impacts that may arise from the Site after construction of the Proposed Development have been assessed.
- 4.1.2 The peak runoff before and after development of the Site has been estimated using the Rational Method and based on the catchment surface characteristics for the existing environment and the Proposed Development. The estimated peak runoff generated from the Site is 0.596m³/s under a 50 years return period.
- 4.1.3 The indicative drainage layout shown on **Figure 3-2** will properly divert the runoff arising from the Site which there should currently be no runoff from any upper catchments overflowing the Site. The runoff should be diverted to an open channel/nullah to the south of the Site according to the drainage plan shown on **Figure 2-1** and **Figure 3-2**. As such, no adverse drainage impact is anticipated.
- 4.1.4 Since this Drainage Proposal has been prepared based on the limited information available at this planning stage, the drainage layout shown on **Figure 3-2** is indicative only. The Applicant has committed to do the following if this planning application is approved:
4. Appoint a qualified surveyor to carry out topographical survey to identify, AS A MINIMUM, the existing elevations of the Site and within 200m from the Site boundaries. The topographical survey results mentioned shall be summarised in a Topographical Survey Report to be certified by the qualified surveyor.
 5. Appoint a qualified engineer to prepare an Updated Drainage Proposal including updated cross-section drawings indicated in **Appendix C** in accordance with relevant DSD guidelines, including *Technical Note to prepare a "Drainage Submission" and Stormwater Drainage Manual – Planning, Design and Management*, the latest DSD drainage records/SMO survey maps and the Topographical Survey Report mentioned above. The Updated Drainage Proposal shall include, AS A MINIMUM, the following information:
 - a. Identification of upper and lower catchments, if any, with reference to the Topographical Survey Report.
 - b. Review the extents of the cumulative catchments, if any, upon completion of topography survey and subsequently review the sizes of the proposed drainage facilities indicated on **Figure 3-2**.
 - c. Proposed drainage layout showing AS A MINIMUM the cover levels and invert levels of the U-channels, catchpits and sand traps.
 - d. Cross section plans showing the existing and proposed ground levels of the Site with respect to adjacent areas.
 - e. Provision of sand trap or similar before the collected runoff is discharged to public drainage facilities.
 - f. Provision of standard details to indicate the sectional details of the proposed drainage layout plan.
 - g. All other information and calculations required in relevant DSD guidelines.
 - h. Recommendation for providing adequate opening which should be at least 100mm for any walls or hoarding to be erected along the Site boundary to allow any overland flow passing through the Site walls/hoarding so that such runoff can

be properly intercepted and diverted by the proposed drainage system within the Site.

- i. Interpretation that no overland flow shall be obstructed and there will be no adverse impact on the existing natural streams, village drains, ditches and the adjacent areas, etc. due to the Proposed Development.
 - j. Prior to commencing the proposed drainage work, obtain Consent from the District Lands Office/Yuen Long and/or any other government departments for public lots; and/or owners of private lot to the drainage connection into the municipal drainage system.
6. The Updated Drainage Proposal shall be certified by the qualified engineer and annexed with the Topographical Survey Report certified by the qualified surveyor, and shall be submitted to TPB/DSD for approval.
7. Provide, implement and maintain all the mitigation measures to be recommended in the approved Updated Drainage Proposal to ensure that no additional drainage impact due to the Proposed Development will result in flooding/ponding to other off-site areas.

Appendix A Runoff Calculations

Calculation of Runoff for Return Period of 2 Years

Catchment ID	Catchment Area (A), km ²	Average slope (H), m/100m	Flow path length (L), m	Inlet time (t ₀), min	Duration (t _d), min	Storm Constants			Runoff intensity (i), mm/hr	Runoff coefficient (C)	C x A	Peak runoff (Q _p), m ³ /s
						a	b	c				
Catchment A (The Site)	0.0059	0.90	99.0	6.14	6.14	499.8	4.26	0.494	157.15	0.95	0.0056	0.244
Catchment B (The Site)	0.0019	0.84	68.0	4.79	4.79	499.8	4.26	0.494	168.36	0.95	0.0018	0.085
Catchment C (The Site)	0.0020	1.77	40.7	2.45	2.45	499.8	4.26	0.494	195.12	0.95	0.0019	0.105
Total											0.433	

Calculation of Runoff for Return Period of 10 Years

Catchment ID	Catchment Area (A), km ²	Average slope (H), m/100m	Flow path length (L), m	Inlet time (t ₀), min	Duration (t _d), min	Storm Constants			Runoff intensity (i) mm/hr	Runoff coefficient (C)	C x A	Peak runoff (Q _p), m ³ /s
						a	b	c				
Catchment A (The Site)	0.0059	0.90	99.0	6.14	6.14	471.9	3.02	0.397	195.85	0.95	0.0056	0.304
Catchment B (The Site)	0.0019	0.84	68.0	4.79	4.79	471.9	3.02	0.397	208.68	0.95	0.0018	0.105
Catchment C (The Site)	0.0020	1.77	40.7	2.45	2.45	471.9	3.02	0.397	240.32	0.95	0.0019	0.129
Total											0.537	

Calculation of Runoff for Return Period of 50 Years

Catchment ID	Catchment Area (A), km ²	Average slope (H), m/100m	Flow path length (L), m	Inlet time (t ₀), min	Duration (t _d), min	Storm Constants			Runoff intensity (i) mm/hr	Runoff coefficient (C)	C x A	Peak runoff (Q _p), m ³ /s
						a	b	c				
Catchment A (The Site)	0.0059	0.90	99.0	6.14	6.14	451.3	2.46	0.337	218.52	0.95	0.0056	0.339
Catchment B (The Site)	0.0019	0.84	68.0	4.79	4.79	451.3	2.46	0.337	231.50	0.95	0.0018	0.116
Catchment C (The Site)	0.0020	1.77	40.7	2.45	2.45	451.3	2.46	0.337	263.93	0.95	0.0019	0.141
Total											0.596	

Note:

1) Runoff is calculated in accordance with DSD's "Stormwater Drainage Manual (with Eurocodes incorporated) - Planning, Design and Management" (SDM), fifth edition, January 2018.

Appendix B Calculation of Drainage Capacity

Calculation of Drainage Capacity for Return Period of 50 Years

Indicative Drainage capacity of the Internal Drainage System

Channel	Catchments	Shape	D, m	Depth, m	Slope (s)	A _w , m ²	P _w , m	R, m	n	v, m/s	Q _c , m ³ /s	Q _p , m ³ /s	Capacity	Remark
U-Channel 1	Catchment A	U-Shape	0.590	0.295	0.005	0.311	1.517	0.205	0.016	1.536	0.430	0.339	79%	OK
U-Channel 2	Catchment B & C	U-Shape	0.530	0.265	0.005	0.251	1.363	0.184	0.016	1.430	0.323	0.258	80%	OK

Legend

D = diameter, m
 A_w = Cross Section Area of Flow, m²
 P_w = Wetted Perimeter, m
 R = Hydraulic Radius = A_w/P_w, m
 s = Hydraulic Gradient
 n = Manning's roughness coefficient
 V = Mean Velocity, m/s
 Q_c = Flow Capacity (10% sedimentation inclusive), m³/s
 Q_p = Estimated Peak Flow, m³/s

Calculation of Pipe Capacity for Return Period of 50 Years

Indicative Drainage capacity of the Internal Drainage System

Segment	Upstream Manhole	Downstream Manhole	D, m	r, m	Slope (s)	A _w , m ²	P _w , m	R, m	k _s , mm	v, m/s	Q _c , m ³ /s	Q _p , m ³ /s	Capacity	Remark
Underground Pipe 1	CP06	Nullah	0.750	0.375	0.005	0.442	2.356	0.188	0.6	1.976	0.786	0.596	76%	OK

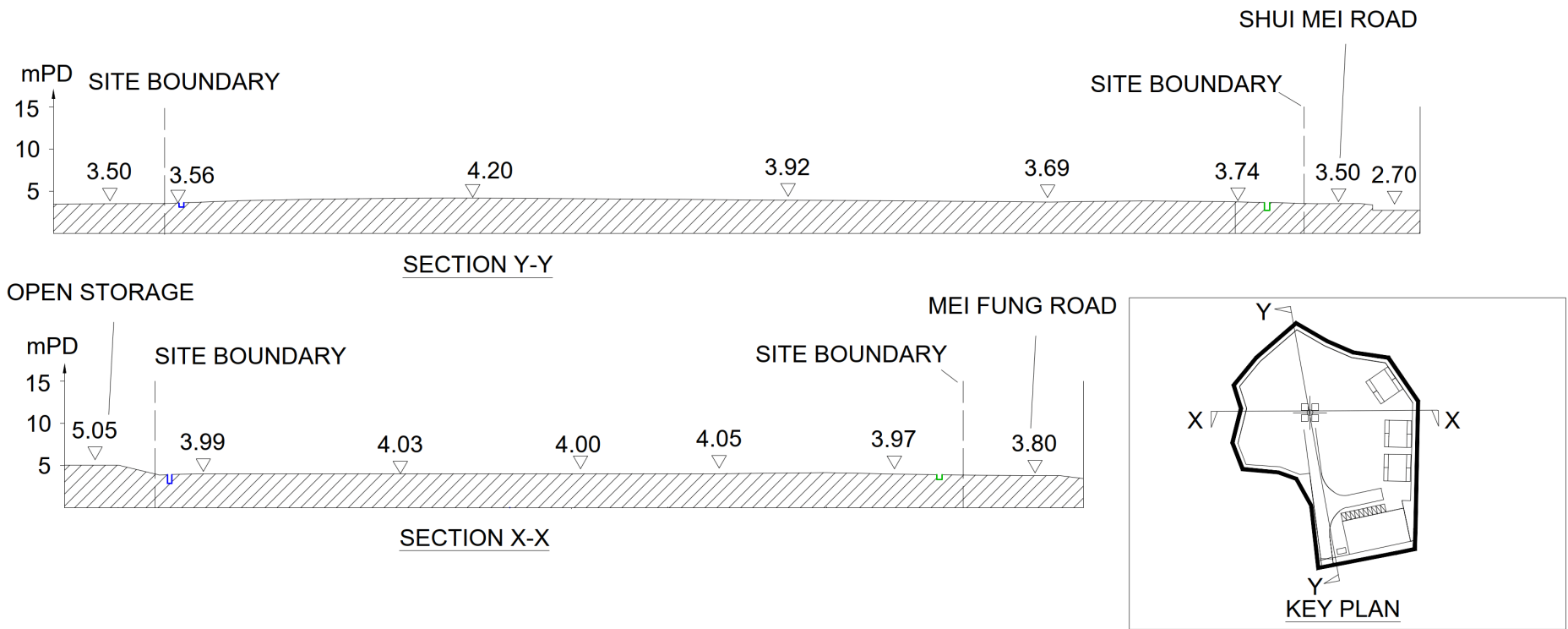
v, m ² /s	g, m/s ²
1E-06	9.81

Legend

d = pipe diameter, m
 r = pipe radius (m) = 0.5d
 A_w = wetted area (m²) = π r²
 P_w = wetted perimeter (m) = 2πr
 R = Hydraulic radius (m) = A_w/P_w
 s = Slope of the total energy line
 k_s = equivalent sand roughness, mm
 V = Velocity of flow calculated based on Colebrook White Equation, m/s
 Q_c = Flow Capacity (10% sedimentation incorporated), m³/s
 Q_p = Estimated total peak flow from the Site during peak season, m³/s

Appendix C Cross Section of the Site and the Surrounding Area After the Proposed Development

Figure C-1 Cross Section



Legend	
	U-Channel 1 (590mm, 1:200)
	U-Channel 2 (530mm, 1:200)



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Accountability

We understand the importance of being accountable to each other and our clients.



Passion

We are completely passionate about providing practical solutions and outcomes that deliver for our clients.



Insight

We work in an environment that encourages and values insight as a critical quality which informs our decisions and our clients and supports practical solutions and project delivery.



Integrity

We behave with respect and honesty toward each other, our clients and our stakeholders.