



TOWNLAND CONSULTANTS LTD.

URBAN AND REGIONAL PLANNING, DEVELOPMENT CONSULTANCY, MASTER PLANNING, URBAN DESIGN, ARCHITECTURE,
LANDSCAPE ARCHITECTURE, PROJECT MANAGEMENT AND SOCIAL DEVELOPMENT

Reference SYRKTS/JANICE/04
Date 24 December 2025

By HAND and EMAIL

The Secretary, Town Planning Board
c/o Planning Department
15/F North Point Government Offices
333 Java Road, North Point,
HONG KONG

Dear Sir / Madam,

**SECTION 12A PLANNING APPLICATION
TOWN PLANNING ORDINANCE (CHAPTER 131)**

**PROPOSED AMENDMENT TO THE APPROVED KWU TUNG SOUTH OUTLINE ZONING
PLAN NO. S/NE-KTS/22 FROM "AGRICULTURE" ZONE AND "GREEN BELT" ZONE TO
"GOVERNMENT, INSTITUTION OR COMMUNITY" ZONE AT VARIOUS LOTS IN D.D. 94, 98, &
100 AND ADJOINING GOVERNMENT LAND, KWU TUNG SOUTH, NEW TERRITORIES
(TPB Ref. Y/NE-KTS/18)**

We write with regards to the captioned Planning Application submitted to the Town Planning Board ("TPB") on 23 October 2025 and received by TPB on 18 November 2025.

Comments were received from various Government Departments, including Drainage Services Department ("DSD"), Transport Department ("TD"), Architectural Services Department ("ArchSD"), Fire Services Department ("FSD"), Agriculture, Fisheries and Conservation Department ("AFCD"), Kindergarten Administration Section, Education Bureau ("EDB"), Food and Environmental Hygiene Department ("FEHD"), Landscape Unit ("LU"), Urban Design & Landscape Section of Planning Department ("PlanD"), Leisure and Cultural Services Department ("LCSD"), Electrical & Mechanical Services Department ("EMSD"), Highways Department ("HyD"). Please find our responses provided in the enclosed Responses-to-Comments ("R-to-C") table at **Attachment 1**. Replacement pages to the Sewerage Impact Assessment and Revised Drainage Impact Assessment are provided in **Attachment 2** and **Attachment 3** respectively.

Please note that these responses are clarification purposes only and there are no changes to the S12A Planning Application or the conclusion of the Technical Assessments.

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MAIN HONG KONG OFFICE :

2801, 28th Floor, 148 Electric Road, North Point, Hong Kong
Telephone : (852) 2521 2911 Facsimile : (852) 2521 6631
E-mail address : tcld@townland.com Website : www.townland.com

CHINA OFFICE :

Room 1111, Building 1, Yagang Industry and Trade Building, No.18 Fuan Avenue,
Hehua Community, Pinghu Street, Longgang District, Shenzhen, PRC. Postal Code 518111
Telephone : (86) 181 2417 9366
E-mail address : tcld@townland.com

INDIA OFFICE :

Coworking Space Ministry of New, 3rd Floor, Kitab Mahal,
192 Dr Dadabhai Naoroji Road, Azad Maidan, Fort, Mumbai, India
Telephone : (91) 9819919804
E-mail address : tcpl@townland.com

INDONESIA OFFICE :

Gedung Menara Anugrah, Lantai 21
Kantor Taman E.3.3, Jl. DR. Ide Anak Agung Gde Agung Lot.8.6-8.7
Kawasan Mega Kuningan, Jakarta Selatan 12950, Indonesia
Telephone : (62 21) 2941 0621
E-mail address : tcjkt@townland.com

ASSOCIATED COMPANIES :

TOWNLAND CONSULTANTS (INTERNATIONAL) LIMITED (International)

TOWNLAND CONSULTANTS (SHENZHEN) LIMITED (China)

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HOWARD & SEDDON PARTNERSHIP (United Kingdom)



ISO 9001:2015
Certificate No.: CC844

Reference SYRKTS/JANICE/04
Date 24 December 2025

The Secretary, Town Planning Board
c/o Planning Department

We trust the information provided fully addresses the issues raised by the relevant Departments.
Should there be any queries, please do not hesitate to contact the undersigned or Ms Janice Wong.

Yours faithfully,
FOR AND ON BEHALF OF
TOWNLAND CONSULTANTS LIMITED



Vincent Lau
Director

VIN/JANICE/yv

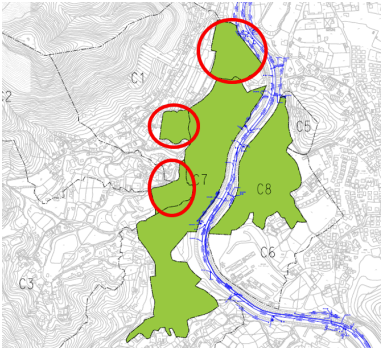
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cc Client / Team
Ms. LAW Yuk Ling, Kirstie, Senior Town Planner/ Fanling, Sheung Shui 2
Ms. SIU Wai Yin, Florence, Town Planner / Fanling, Sheung Shui 3

Attachment 1

	Responses-to-Comments Table
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Proposed Amendment to the Approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22 From “Agriculture” Zone and “Green Belt” Zone to “Government, Institution or Community” Zone at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories (TPB Ref. Y/NE-KTS/18)
Responses to Comments Table

Comments/ Suggestions	Applicant/ Consultant's Responses
A. Comments from Drainage Services Department received from Planning Department on 04.12.2025: (Contact person: Mr. Liu Qi, Keith, Tel no.: 2300 1595)	
Please find preliminary comments from DSD after quick review of your submissions (responsible officer: Mr. Keith Liu, 2300 1595). More comments will be supplemented after detailed review of the submissions For SIA: - Please include the tentative layout plans of the proposed 2 STPs (and its emergency storage tanks) and its design discharge standard for report completeness. - The SIA report needs to meet the satisfaction of SIG/EPD, the planning authority of sewerage infrastructure For DIA: - Section 3.1.3 - Please correct typo in "Ration" method. - Appendix 2 - Please advise what catchment no. do these circled areas fall into. If they fall within Catchment C1-C6, please update the table in Appendix 2. 	The tentative locations of the Proposed 2 STPs and its emergency storage tanks are supplemented in Appendix 2.2 of the revised SIA report and their design standards are supplemented in Section 2.5.6 of the revised SIA report (Attachment 2 refers). Please be advised that the footprints and sizes of STPs and their emergency storage tanks are subject to detailed design stage as there is flexible room in the proposed car park area. Noted. Section 3.1.3 of the DIA has been revised accordingly (Attachment 3 refers). Please be advised that the circled areas fall within Catchment C7 of the Application Site.

Proposed Amendment to the Approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22 From “Agriculture” Zone and “Green Belt” Zone to “Government, Institution or Community” Zone at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories (TPB Ref. Y/NE-KTS/18)

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3.	Appendix 2 - Please enhance the legibility of the layout plan shown in the capacity check.	Noted. Legends are supplemented to the Annex 3 (Former Annex 2) of the revised DIA (Attachment 3 refers).
4.	Appendix 2 - Please assess the potential drainage impacts to the River Beas.	Noted. Sensitivity checking of Beas River is provided in the Annex 4 of the revised DIA (Attachment 3 refers).
5.	Master plan - Please advise if there are any piers for the proposed link bridges within the Beas River.	Please be advised that no piers are proposed for the two link-bridges across Beas River. The Master Layout Plans of the Indicative Development Scheme are also supplemented in Annex 1 of the DIA (Attachment 3 refers).
B.	Comments from Transport Operations (NT) Division of Transport Department received from Planning Department on 05.12.2025: (Contact person: Mr. CHAN Chi Ching, Brian / Ms. Wong Ho Yan, Doris, Tel no.: 2399 2175 / 2399 6998)	
1.	We note from the Traffic Review Report that student dormitory with internal transport facilities would be provided at this international school development. Please advise whether "student services" (i.e. school bus services) will be provided to all the students travel between their home places and this school development. If not, please provide public transport analysis for this school development and provide proposals on improvement of public transport services for consideration.	Please be advised that school bus services will be provided for the Proposed School. Applications for operation of Student Service (A03) will be submitted to Transport Department prior to commencement of operation.
C.	Comments from Transport Planning Division of Transport Department received from Planning Department on 05.12.2025: (Contact person: Ms. REN Yannan, Tel no. 3842 6035)	
1.	In light of the proposed international school potentially interfacing with the NMH, please find below our comments on the Traffic Review report regarding the aspects related to NMH. The NMH project is currently under investigation stage under Agreement No. CE 4/2024 (HY). The project proponent should maintain close liaison with the HyD project office to ensure smooth project integration with NMH for the proposed connection between the San Tin Technopole Interchange (i.e. NMH interchange I/C 04) and the proposed school. Based on our understanding, the design of the San Tin Technopole Interchange is ongoing. Please ensure that an agreement on the future connection arrangement is obtained in a timely manner between the two projects for smooth implementation of proposed school and NMH.	Noted.

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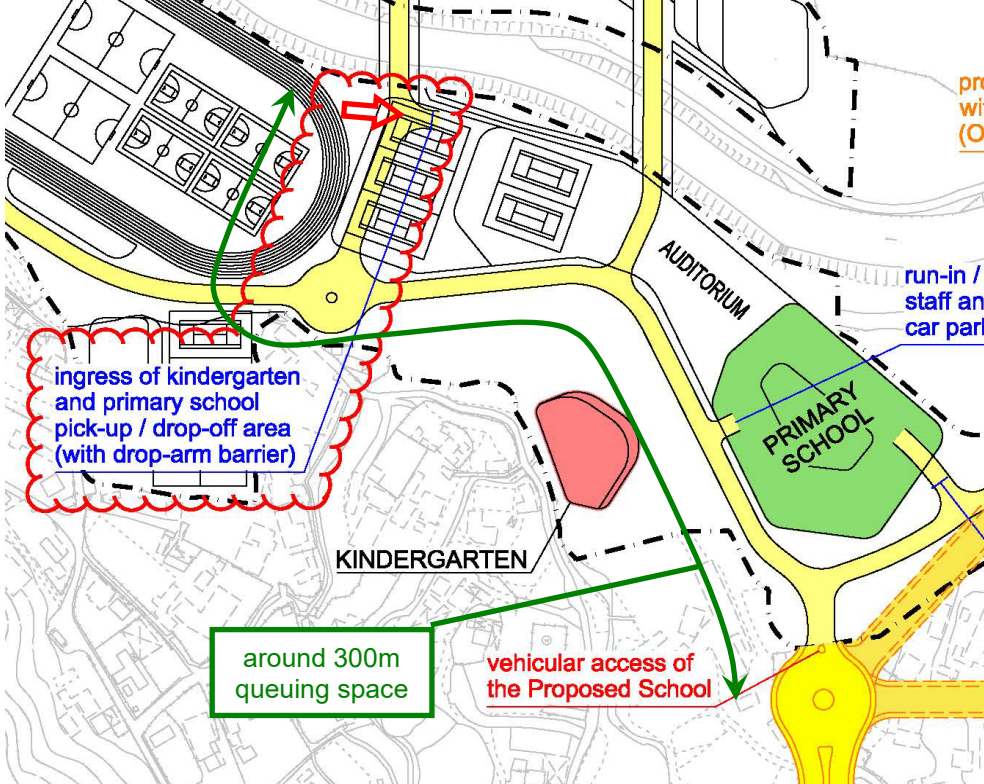
Comments/ Suggestions	Applicant/ Consultant's Responses
2. Table 4.3 – Please double-check with the NMH project to ensure that the traffic flows and v/c adopted align with NMH's latest traffic assessment results.	Noted.
3. Please clarify if the design of the San Tin Technopole Interchange has accounted for the traffic generated by the proposed school.	Given that the design of San Tin Technopole Interchange is ongoing and is yet to be finalised, the Project Proponent will liaise with Highways Department at appropriate time to ensure that traffic generated by the Proposed School would be duly considered in the design.
4. Other than the above aspects mainly related to the NMH, please also find below our observations related to traffic generation and traffic assessment for your consideration.	
a. Section 4 – Considering the projection location is close to strategic roadwork, and the traffic generation is much higher than 100 pcu/hr, a 2-tier transport model should be developed to estimate the future traffic impact induced by the proposed development, especially to proposed NMH.	According to the Final Report of “TD507/2023 Base District Traffic Models for the New Territories Area (2024 Update)” (the “ <i>BDTM Study</i> ”) purchased from Transport Department, “ <i>the overall modelling approach for BDTMs adopts a two-tier modelling approach. The upper tier is the CTS Model, which is a strategic multi-modal model ...</i> ”. In view of the above, 2-tier transport model with appropriate assumptions has been duly considered to assess the traffic impact of the Proposed School.
b. Table 4.1 (trip generation rates) – Please justify whether the trip generation rates adopted are suitable for estimating traffic generation for an international school. Consideration should be given to the characteristics of student pick-up and drop-off activities at international schools. Reference traffic count surveys of international schools should be carried for deriving a more realistic trip generation rate.	The TPDM has no trip generation rates for kindergarten, primary school and middle / high school. To ensure consistency, reference is made to the BDTM Study Final Report published by TD. As “ <i>Kindergarten (Private)</i> ”, “ <i>Primary School (Private)</i> ” and “ <i>Secondary School (Private)</i> ” have higher trip generation rates than “ <i>Kindergarten</i> ”, “ <i>Primary School</i> ” and “ <i>Secondary School</i> ”, the rates for “ <i>Kindergarten (Private)</i> ”, “ <i>Primary School (Private)</i> ” and “ <i>Secondary School (Private)</i> ” are adopted in the submitted Traffic Review in Appendix 4 to represent the worst case scenario.
c. Section 4.5 (proposed school traffic generation) – It is noted that the estimation of traffic generation is based on the assumption of staggered school hours, which is not considered conservative. Please conduct a sensitivity test that takes into account traffic generation from kindergarten, primary, middle/high school students during the same period.	Staggered school hours is a normal arrangement in Hong Kong schools as accommodating all student arrivals and departures simultaneously pose significant logistical challenges. Furthermore, learning hours required for various educational stages differ. Generally, “ <i>Staggered School Hours</i> ” situations are: - Kindergartens offering 3–4 hours of structured learning - Primary schools having about 5–5.5 hours of class per school day - Secondary schools with a wider curriculum have often longer school days The conduct of sensitivity test is therefore considered not necessary.
d. Consideration should be given to the potential mismatch in the commissioning timelines of the proposed school and NMH. If the San	There is no intention to commence operation of the Proposed School prior to the commission of the NMH. The Proposed School <u>will only open for operation after</u>

Proposed Amendment to the Approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22 From “Agriculture” Zone and “Green Belt” Zone to “Government, Institution or Community” Zone at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories (TPB Ref. Y/NE-KTS/18)

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Tin section of NMH is commissioned after the school, please advise on the vehicular access arrangement for the school. Relevant traffic assessment to local road networks should be reviewed and included in the submission. e. A traffic flow split diagram should be provided to indicate the ingress and egress routes for traffic generated by the proposed school, for both scenarios: connection to NMH and connection to the local road network in case NMH is delayed. f. Section 3.18 – It is noted that approximately 300 meters are proposed within the school for queuing of vehicles. However, according to the master layout plan attached in the planning application, the proposed location of the kindergarten and primary school is close to the vehicular access. Please clarify the location of the pick-up and drop-off area for private cars for the kindergarten and primary school, and demonstrate that parent vehicles will not queue back to the local road and slip road of the NMH.	<u>commissioning of the San Tin Section of Northern Metropolis Highway</u>, tentatively scheduled for 2036. Given that the design of San Tin Technopole Interchange is ongoing and is yet to be finalised, the Project Proponent will liaise with Highways Department once a clearer picture is available. At the planning stage, it is anticipated that the Proposed School will generate insignificant traffic volume onto the Northern Metropolis Highway (NMH) as boarding facilities will be provided for senior primary (i.e. middle school) and secondary school (i.e. high school) students. The Proposed School will only commence operation once NMH is operational and it is not intended to connect to local road network. As shown in the below diagram extracted from Figure 3.1 of the submitted Traffic Review Report in Appendix 4, the ingress of pick-up / drop-off area for kindergarten and primary school (<u>indicated in red coloured cloud and red arrow</u>) is located around 300m from the vehicular access:

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g. Section 4.7 – Please provide the modelling methodology of the proposed Local Area Traffic Model.	 The BDTM NTW1, produced by Transport Department, has been adopted in the submitted Traffic Review. Although the BDTM was well-validated, the traffic network and zone within and in the vicinity of the subject site were reviewed to ensure that the level of details of the BDTM could produce the required traffic flows. In addition, please be advised that the planned developments and road networks were considered to ensure that the required traffic flows could be produced. The major planned developments and road networks include but not limited to the following: • San Tin Technopole • Kwu Tung North and Fanling North New Development Area

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h.	Section 3.16 – Please advise if all middle/high school students are boarding students.	• Ngau Tam Mei Area • Innovation and Technology Park in the Lok Ma Chau Loop • Northern Metropolis Highway Based on the above, the design year traffic flows are estimated with reference to the following: • 2036 and 2041 peak hour traffic models from the BDTM; and traffic generation to / from the Proposed School.
i.	An assessment of the traffic impact on local road networks and public transport reviewed and included in the submission.	As stated in the submitted Traffic Review Report, all middle / high school students are boarding students. The submitted Traffic Review Report has concluded that the Northern Metropolis Highway has sufficient capacity to accommodate the additional traffic generated by the Proposed School. Nevertheless, the Project Proponent will liaise with Highways Department at appropriate time to ensure that traffic generated by the Proposed School is duly taken into account in the ongoing design of the San Tin Technopole Interchange.
D.	Comments from Architectural Services Department received from Planning Department on 12.12.2025: (Contact person: Ms. CHEUNG Wai, Jacqui, Tel no. 2582 5322)	
1.	Based on the information provided, it is noted that the proposed development mainly consists of 24 building blocks with a maximum building height (BH) of 10 storeys (53.5mPD). The building scale of the proposed development appears to be much larger than the existing low-rise developments. However, from the photomontages provided, it appears that the proposal would have little impact to the surrounding environment. In this regard, we have no comment from architectural and visual impact point of view, subject to PlanD's view.	Noted.
E.	Comments from Fire Services Department received from Planning Department on 12.12.2025: (Contact person: Mr. LI Chi Fung, Tel no. 2733 5844)	
1.	Please be informed that we have no specific comment on the proposal subject to fire service installations and water supplies for firefighting being provided to the satisfaction of the Director of Fire Services.	Noted. The Applicant will take responsibility to plan and install firefighting facilities to the satisfaction of FSD during implementation stage.

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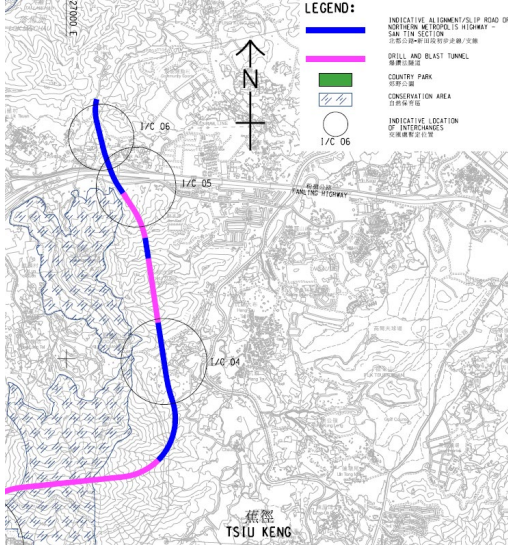
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2.	Detailed fire safety requirements will be formulated upon receipt of the formal submission of general building plans.	Noted.
3.	Furthermore, the provision of emergency vehicular access in the subject work shall comply with the requirements as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011.	Noted.
4.	Moreover, if the proposed work affect any provision of emergency vehicular access to nearby buildings, the consultant should make a separate enquiry to this Department to ensure the feasibility of the work.	Noted.
F. Comments from Agriculture, Fisheries and Conservation Department received from Planning Department on 12.12.2025 and 18.12.2025: (Contact person: Mr. LAU Yun Kwan, Tel no. 2150 6931)		
	<u>Comments received on 12.12.2025</u> Our comments from agricultural and fisheries perspectives will be provided once available. At the same time, please find our comments from nature conservation perspective as follows:	
1.	AFCD's site visit on 2.12.2025 recorded floral and faunal species of conservation importance (e.g. Black-winged stilts, Eurasian Teals, Common Kingfishers, Grey Herons and Greater Coucals, etc.), wooded habitats, and wetland habitats within and in the vicinity of the application site.	Noted. Please be advised that published bird observations records of those identified species from 'ebird' are reported in the submitted Ecological Review in Appendix 6.
2.	Part of the application site encroaches over existing mitigation areas on government land, which were established when River Beas was channelised under the Rural Drainage Rehabilitation Scheme. The mitigation areas where AFCD is responsible for vegetation maintenance are attached and <u>highlighted in green</u> for reference. Please consider avoiding the encroachment and establishing buffer zones around the areas first. If the encroachment is demonstrated to be unavoidable, reprovion of the areas within the application site is required. [See attachment "The concerned mitigation areas.pdf"]	Noted. Please note that the layout of the Development Scheme is currently indicative only and during detailed design, the Applicant will review the feasibility of avoiding existing mitigation areas of the stream and establish buffer zones per current practices as far as practical to minimise adverse ecological impact, subject to detailed design. In any event that if avoidance is not considered feasible in the Indicative Development Scheme, the Applicant will consider reprovioning mitigation areas nearby, subject to further detailed design.

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3. The ecological review at Appendix 6 is preliminary in nature and cannot support evaluations of potential ecological impacts arising from the proposed development at this stage. The applicant is advised to conduct a detailed ecological impact assessment (EcoIA) including ecological baseline surveys covering the wet and dry seasons. For general requirements for an EcoIA, reference should be made to Annexes 8 and 16 of the Technical Memorandum on Environmental Impact Assessment Process and Environmental Impact Assessment Ordinance Guidance Notes No. 7/2023 and No. 10/2023. The EcoIA should also take into account how construction materials will be transported to the site and whether any haul roads or traffic roads will need to be constructed by the applicant for the proposed development.	The Rezoning Site is not considered ecological sensitive with reference to the findings on the agricultural uses of two relevant studies in the vicinity, namely: (1) The 'Report on Preliminary Technical Study (Final) – Engineering Feasibility Study for the Establishment of an Agricultural Park – Feasibility Study (Feb 2017) (2) Northern Metropolis Highway – San Tin Section (Project Profile) under EIAO, April 2025 In particular, the proposed Interchange No. I/C 04 is located next to the Site, as indicated below.

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4. Mitigation measures in the order of avoidance, minimization and compensation should be proposed for any significant ecological impacts to be identified. - When significant ecological impacts are identified, modification of the project shall be considered first (e.g. change of site, design, construction method, alignment, layout, programme, etc.). Preservation of natural habitats (e.g. secondary woodland, natural watercourses, etc.) and floral species of conservation importance should also be considered first. - In terms of compensation measures, significant loss of important species and habitats shall be mitigated by measures such as reprovision of the same or similar species/habitats or enhancement of existing habitats within the application site. 5. The applicant should submit a working paper for ecological baseline surveys for AFCD's review before conducting the surveys. In addition, the surveys should investigate potential bird flight lines, if any, over the application site and its vicinity.	 Indicative Location of Interchange No. I/C 04 next to the Site The principle of “avoidance, minimization and compensation” will be adopted in the construction and operation stages. Noted. A working paper for ecological baseline survey may be required to monitor the ecology therein and will be provided in the event that an ecological assessment is required.

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6. Further comments will be provided when the working paper for ecological baseline surveys and the EcolA are available for review.	Noted.
<u>Comments received on 18.12.2025</u>	
<u>From agricultural perspective</u>	
7. The subject site falls within the "AGR" and "GB" zones and is generally abandoned with some agricultural activities. The agricultural activities are also active in the vicinity, and agricultural infrastructures such as road access and water source are also available. The subject site can be used for agricultural activities such as open-field cultivation, greenhouses, plant nurseries, etc. As the subject site possesses potential for agricultural rehabilitation, the proposed rezoning is not supported from agricultural perspective.	As the Site is strategically located within the Northern Metropolis, which has drastically altered the planning context, a new and innovative mindset which responds to the current National and Government planning initiatives in supporting the Educational and I&T hub developments within the Northern Metropolis is considered necessary. The proposed rezoning to “G/IC” zone, which facilitates the provision of the Proposed School, is considered a key supporting aspect to bring forth this vision.
<u>From fisheries perspective</u>	
8. Agriculture (AGR) zone is intended primarily to retain and safeguard good quality agricultural land, farms, and fishponds for agricultural purposes. Given there are active fishponds located within and adjacent to the application sites, the proposed rezoning and development is anticipated to result in permanent loss of fisheries resources and secondary impact to fisheries.	Ditto. Please refer to our response provided in Column F8.
9. The application site is in close vicinity to other major development projects such as San Tin/Lok Ma Chau Development Node, North Metropolis Highway, and Northern Link, cumulative fisheries impacts should be assessed and taken into account to avoid, minimise and mitigate additional impacts on fisheries resources.	Please be ensured that the principle of avoidance, minimisation and mitigation has been adopted in the Indicative Development Scheme.
10. Considering that no fisheries impact assessment has been included in the submission, AFCD (Fisheries) has reservation regarding the proposed rezoning and development. The applicant should assess and evaluate the potential and cumulative impacts of the proposed rezoning and development on fisheries, particularly on the existing fishponds within and adjacent to the application sites.	Noted.

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Comments/ Suggestions		Applicant/ Consultant's Responses
G.	Comments from Kindergarten Administration Section, Education Bureau received from Planning Department on 15.12.2025: (Contact person: Ms. AU Suet Yee, Christine, Tel no. 2892 5033)	
	<u>KG provision</u>	
1.	KGs in Hong Kong are privately run and the provision of KG in private land lot is market driven. We have no specific views on the provision of KG in the subject area.	Noted.
2.	Please find below our comments/ concerns for matters regarding Schedule of Accommodation (SoA), Gross Floor Area (GFA) and parking and loading/unloading (L/UL) spaces for the proposed KG(s).	
	<u>SoA and GFA for a 6-classroom KG</u>	
3.	Please be informed that the “SoA for KG premises” has been revised to improve the learning environment by increasing the indoor floor area for each student by 20%. The revised recommended SoA for a 6-classroom KG has come into effect from October 2017 which is recommended for reserving space in developing new KGs as far as practicable, and is available for reference in the Appendix 3 of the “Operation Manual for Pre-primary Institutions” (OM). We wish to point out that the total area for all items excluding toilet and outdoor play area as stated in the revised SoA for a 6-classroom KG is 551 square metres, and we trust that the toilet and sanitary facilities for students and staff should be adequately provided and outdoor play area should be provided whenever possible in the proposed KG. For your reference, for some KG premises having marked in GIC sites, the GFA for a 6-classroom KG is approximate 900 square metres. <i>[See attachment "Annex - Revised recommended SoA for 6-classroom KG.pdf"]</i>	Noted.
4.	As for a KG with more than 6 classrooms which targets to accommodate greater number of students and school staff, the revised SoA for 6 classrooms may not fully meet the needs of more students and teaching staff. Under such situation, the developer may consider making corresponding adjustment to increase the indoor areas (e.g. multi-purpose area/room, small group teaching rooms, etc.) as far as practicable. Moreover, the developer may also consider adjusting the numbers and/or size for the items where deemed necessary (e.g.	Noted. Please be advised that the proposed KG provides equal or greater indoor floor area than recommended in the SOA.

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reasonable provision of general facilities, such as Staff Office, Administrative Office, General Store, Kitchen, Laundry and Toilet etc.) to cater for the greater number of teaching staff and students as far as practicable.	
5. It is also noted from the planning statement that the proposed KG block with building height 29.5m PD would be proposed. Please refer to relevant requirements as stated in the OM: “to ensure that children gain easy access, pre-primary institutions should ideally, be located on the ground floor or the podium floor” and “In case of child care centres and KGs for children over 2 years of age, the height shall not be more than 24m above ground level” (items 1.1.1 and 1.21. of OM refer).	Noted. Please be advised that the building height of the proposed KG is 16.5m above ground level.
<u>Safety concerns on L/UL spaces for KG school buses</u>	
6. While parking and L/UL requirements for KG school buses are beyond our Bureau's preview, the developer concerned may refer to Table 11, Section 2 of Chapter 8 “Internal Transport Facilities” of the Hong Kong Planning Standards and Guidelines for relevant requirements as necessary. The developer is also advised to note the following safety concerns on L/UL space in respect of the KG students' use:	
a. designated L/UL period for KG school buses so as to avoid possible danger to KG students owing to the clash in using the space with other users;	Noted.
b. the safety of KG students walking between the L/UL spaces to the KG premises should be ensured at all time.	Noted.
7. Meanwhile, the developer should ascertain the premises for the proposed KG(s) can meet the various requirements laid down in:	
a. the Education Ordinance, Education Regulations and relevant statutory requirements; and	Noted and please be advised that the proposed KG will comply with all relevant statutory requirements.
b. “Operation Manual for Pre-primary Institutions”. Relevant link of “Operation Manual for Pre-primary Institutions”: https://www.edb.gov.hk/attachment/en/edu-system/preprimary-kindergarten/about-preprimary-kindergarten/Operation_Manual_eng.pdf	Noted and please be advised that the proposed KG will comply with all relevant statutory requirements.

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Responses to Comments Table

Comments/ Suggestions		Applicant/ Consultant's Responses
H.	Comments from Food and Environmental Hygiene Department received from Planning Department on 16.12.2025: (Contact person: Mr. CHAN Lap Yan, Raymond, Tel no. 3141 1231)	
	Please be informed that FEHD has no adverse comment on the subject planning application. Our advisory comments are provided as follows. Thank you.	
1.	No Food and Environmental Hygiene Department's (FEHD) facilities should be affected. If any FEHD facility is affected by the development, FEHD's prior consent must be obtained. Reprovisioning of the affected facilities by the project proponent up to the satisfaction of FEHD would be required.	Noted.
2.	Proper licence / permit issued by this Department is required if there is any food business / catering service / activities regulated by the Director of Food and Environmental Hygiene (DFEH) under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public. In accordance with Section 4 of Food Business Regulation, Cap.132X, the expression 'food business' means any trade or business for the purpose of which any person engages in the handling of food or food is sold by means of a vending machine but does not include any school or work place (other than a factory canteen referred to in section 31) for the use exclusively of the pupils of the school and the persons employed in the work place. As such, a staff canteen that exclusively use by the staff members of that working place does not require a food business licence from this department. However, if the business is conducted in such a way as to fall within the definition of “food business”, a food licence will be required.	Noted.
3.	Depending on the mode of operation, if canteen (other than a factory canteen referred to in section 31, Cap. 132) is provided exclusively for the use of person exclusively employed or residing in the development, FEHD staff may conduct inspections of the canteen on regular basis.	Noted.
4.	With regard to the sale of milk, frozen confections, non-bottled drinks, cut fruit, sushi and sashimi etc., being restricted foods items as specified in the Schedule 2 to the Food Business Regulation, the	Noted.

Proposed Amendment to the Approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22 From “Agriculture” Zone and “Green Belt” Zone to “Government, Institution or Community” Zone at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories (TPB Ref. Y/NE-KTS/18)

Responses to Comments Table

Comments/ Suggestions	Applicant/ Consultant's Responses
5. permission in writing of the Food and Environmental Hygiene Department is required under Section 30 of the said Regulation. Proper licence issued by this Department is required if related place of entertainment is involved. Any person who desires to keep or use any place of public entertainment for example a theatre and cinema or a place, building, erection or structure, whether temporary or permanent, on one occasion or more, capable of accommodating the public presenting or carrying on public entertainment within Places of Public entertainment (PPE) Ordinance (Cap. 172) and its subsidiary legislation, such as a concert, opera, ballet, stage performance or other musical, dramatic or theatrical entertainment, cinematograph or laser projection display, a circus, a lecture or story-telling, an exhibition of any 1 or more of the following, namely, pictures, photographs, books, manuscripts or other documents or other things, a sporting exhibition or contest, a bazaar, a dance part or an amusement ride and mechanical device which is designed for amusement, a Place of Public Entertainment Licence (or Temporary Place of Public Entertainment Licence) should be obtained from FEHD whatever the general public is admitted with or without payment.	Noted.
6. Under section 3A of the Ordinance (Cap. 172), the Secretary for Home Affairs (SHA) may by order published in the Gazette exempt places of public entertainment from the application of the Ordinance or any part thereof. The Places of Public Entertainment (Exemption) Order (Cap.172D) (Last updated in 2015) is an exemption order made under that section to exempt the following places of public entertainment from certain requirements to obtain a licence under the Ordinance (a) Places that are under the management of the Leisure and Cultural Services Department (LCSD), the Home Affairs Department (HAD), the Legislative Council Commission or the Judiciary; (b) Places issued with a liquor licence under the Dutiable Commodities (Liquor) Regulations (Cap. 109 sub. leg.); (c) Places that are club-houses under the Clubs (Safety of Premises) Ordinance (Cap. 376); and (d) Places issued with a public dance-hall licence under the Miscellaneous Licences Ordinance (Cap. 114).	Noted.

Proposed Amendment to the Approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22 From “Agriculture” Zone and “Green Belt” Zone to “Government, Institution or Community” Zone at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories (TPB Ref. Y/NE-KTS/18)

Responses to Comments Table

Comments/ Suggestions		Applicant/ Consultant's Responses
7.	A swimming pool licence must be obtained from FEHD for any artificially constructed pool used for swimming or bathing and to which the public have access (whether on payment or otherwise) or which is operated by any club, institution, association or other organization.	Noted.
8.	There should be no encroachment on the public place and no environmental nuisance should be generated to the surroundings. Its state should not be a nuisance or injurious or dangerous to health and surrounding environment. Also, for any waste generated from such development/ operation, the applicant should arrange disposal properly at their own expenses.	Noted.
9.	If provision of cleansing service for new public roads, streets, cycle tracks, footpaths, paved areas etc, is required, FEHD should be separately consulted. Prior consent from FEHD must be obtained and sufficient amount of recurrent cost may have to be provided to us.	Noted.
10.	If domestic waste collection service of FEHD is required in future, prior comments from this Department on the waste collection plan, including the accessibility and maneuverability of RCV to RCP, should be sought.	Noted.
I.	Comments from Landscape Unit, Urban Design & Landscape Section of Planning Department received from Planning Department on 16.12.2025: (Contact person: Mr. NG Tat Yuen, Henry, Tel no. 3565 3950)	
	I refer to your preceding emails. We have <u>reservation</u> on the application and our detailed comments from landscape planning perspective are as follows: -	
(a)	With reference to the aerial photo taken in Feb 2024, the Site occupies two pieces of land totaling about 17.1 ha, which is largely vegetated with tree clusters and contains streams, ponds and patches of hard-paved areas to the north and south. It is located to the south of Fanling Highway on both sides of Sheung Yue River, flanked by Ki Lun Shan to the west and Hang Tau Village to the east. The Site is situated in an area of rural inland plain landscape character comprising Sheung Yue River, ponds, tree clusters, farmlands, village houses, low-rise residential developments and temporary structures;	Noted.
(b)	Section 2 of the Application Form stated that the development proposal would not cause any adverse landscape impact nor tree	As with most development projects in rural areas, there are initial landscape impacts which require mitigation. As outlined in the submitted Landscape Proposal in

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Responses to Comments Table

Comments/ Suggestions	Applicant/ Consultant's Responses
fellings. However, discrepancies are found in the Landscape Proposal under the Supplementary Planning Statement (SPS) in that filling of ponds and streams, and felling of approx. 1250 – 1300 trees in groups and 39 individual trees (including trees of particular interest (TPI) with DBH over 1m, mature trees and protected species under Cap. 96) are proposed. It is considered that there will be adverse landscape impacts;	Appendix 2 of the SPS, tree removal in the Indicative Development Scheme is considered necessary to make way to site formation works to facilitate the Indicative Development Scheme. While there are inevitably initial impacts on existing landscape resources which include the potential loss of some agricultural ponds, modified streams and trees of planted origin, subject to detailed design, as illustrated in the submitted Landscape Impact Assessment in Appendix 2, it is considered that these impacts can be mitigated in the longer term with the implementation of the proposed landscape measures.
(c) According to the application, planting of 1,150 new heavy standard trees and large palms (i.e. in a replanting ratio of 1:1 (new trees : trees felled)) is proposed inside the Site. There is no information whether preservation of the distinctive landscape resources, including TPI, mature trees and protected species, has been fully considered; and	Please be advised that the Applicant has given due consideration for the preservation of the trees of larger sizes identified within the Site. However, given the necessary site formation level is typically 1-2m or more above existing levels to minimise potential flooding risk, negating localised tree retention within the development area. Nevertheless, the proposed setbacks for the formation of a riverside park can facilitate preservation of some of these larger trees. The protected species (<i>Magnolia x alba</i>) is a commonly planted tree species in Hong Kong, and the surveyed trees are clearly of planted origin. The intent of Cap 96. is to protect naturally occurring specimens of this species but can be discounted for these amenity trees.
(d) The applicant should ensure that no adverse landscape impacts would be caused by the proposed cross-river links crossing Sheung Yue River.	Some localised tree removal is required in the vicinity of the bridge abutments, which is accounted for in the submitted Landscape Impact Assessment in Appendix 2. As the bridges are proposed as a single span, with no piers or structures within the river course, further adverse impacts are not anticipated.
<u>Advisory Comments</u>	
(a) The applicant should be advised that approval of the application does not imply approval of tree works such as pruning, transplanting and felling. Application for any tree works should be submitted to relevant departments for approval; and	Noted.
(b) For compliance of site coverage of greenery requirements under PNAP APP-152, submission should be made to Building Department (BD) for comments and approval.	Noted.

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Responses to Comments Table

Comments/ Suggestions		Applicant/ Consultant's Responses
J.	Comments from North District Leisure Services Office (NDLSO) and New Territories North Tree Team (NTNTT) of Leisure and Cultural Services Department received from Planning Department on 17.12.2025: (Contact person: Miss TSOI Tan Ha, Sarah, Tel no. 3549 6618)	
1.	<u>NDLSO</u> Should any existing facilities or roadside amenity areas under LCSD's purview be affected, the applicant should act in accordance with the prevailing guidelines or technical circulars issued by DEVB or other government departments. LCSD reserves the right to provide further comment on LCSD-related issues upon receiving relevant submissions in the future.	Noted.
2.	<u>NTNTT</u> Should any tree under LCSD maintenance be inevitably affected by the captioned application, the project department should act in accordance with the prevailing DEVB TC (W) No. 4/2020 and relevant guidelines stipulated by DEVB and other departments.	Noted.
K.	Comments from Electrical & Mechanical Services Department received from Planning Department on 18.12.2025: (Contact person: Mr. HO Kin Yip, Tel no. 2808 3111)	
1.	<u>Electricity Safety</u> Please be advised that we have no particular comment on the document from electricity supply safety aspect. However, in the interests of public safety and ensuring the continuity of electricity supply, the parties concerned with planning, designing, organizing and supervising any activity near the underground cable or overhead line under the mentioned document should approach the electricity supplier (i.e. CLP Power) for the requisition of cable plans (and overhead line alignment drawings, where applicable) to find out whether there is any underground cable and/or overhead line within and/or in the vicinity of the concerned site. They should also be reminded to observe the Electricity Supply Lines (Protection) Regulation and the “Code of Practice on Working near Electricity Supply Lines” established under the Regulation when carrying out works in the vicinity of the electricity supply lines.	Noted.

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Responses to Comments Table

Comments/ Suggestions		Applicant/ Consultant's Responses
2.	We have no particular comment on the document as far as electricity supply safety is concerned.	Noted.
L. Comments from Highways Department received from Planning Department on 18.12.2025: (Contact person: Mr. LAM Chun To, Tel no. 2762 4090)		
	I refer to your email dated 27 November 2025, we have no comment on the subject application from the highways maintenance perspective.	Noted.
	Meanwhile, the applicant should be reminded that:-	
1.	The proposed access arrangement should be commented by TD;	Noted.
2.	HyD is not/shall not be responsible for the maintenance of any access connecting the application site and the nearest public road. Presumably, the relevant departments will provide their comments to you, if any; and	Noted.
3.	Adequate drainage measures should be provided to prevent surface water running from the application site to the nearby public roads and drains.	Noted.

It is noted that the following Government Departments have no objections to / no adverse comments to the S12A Planning Application:

- Civil Engineering and Development Department (North Development Office) (received on 17/12/2025)
- Hong Kong Police Force (received on 17/12/2025)
- Home Affairs Department (North District Office) (received on 17/12/2025)

Date: 24 December 2025

File Ref: SYRKTS

Attachment 2

Replacement Pages to Sewerage
Impact Assessment

TABLES

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APPENDIX

Appendix 1.1	Master Layout Plan
Appendix 2.1	Detailed Sewage Flow Calculation
Appendix 2.2	Locations of the STPs

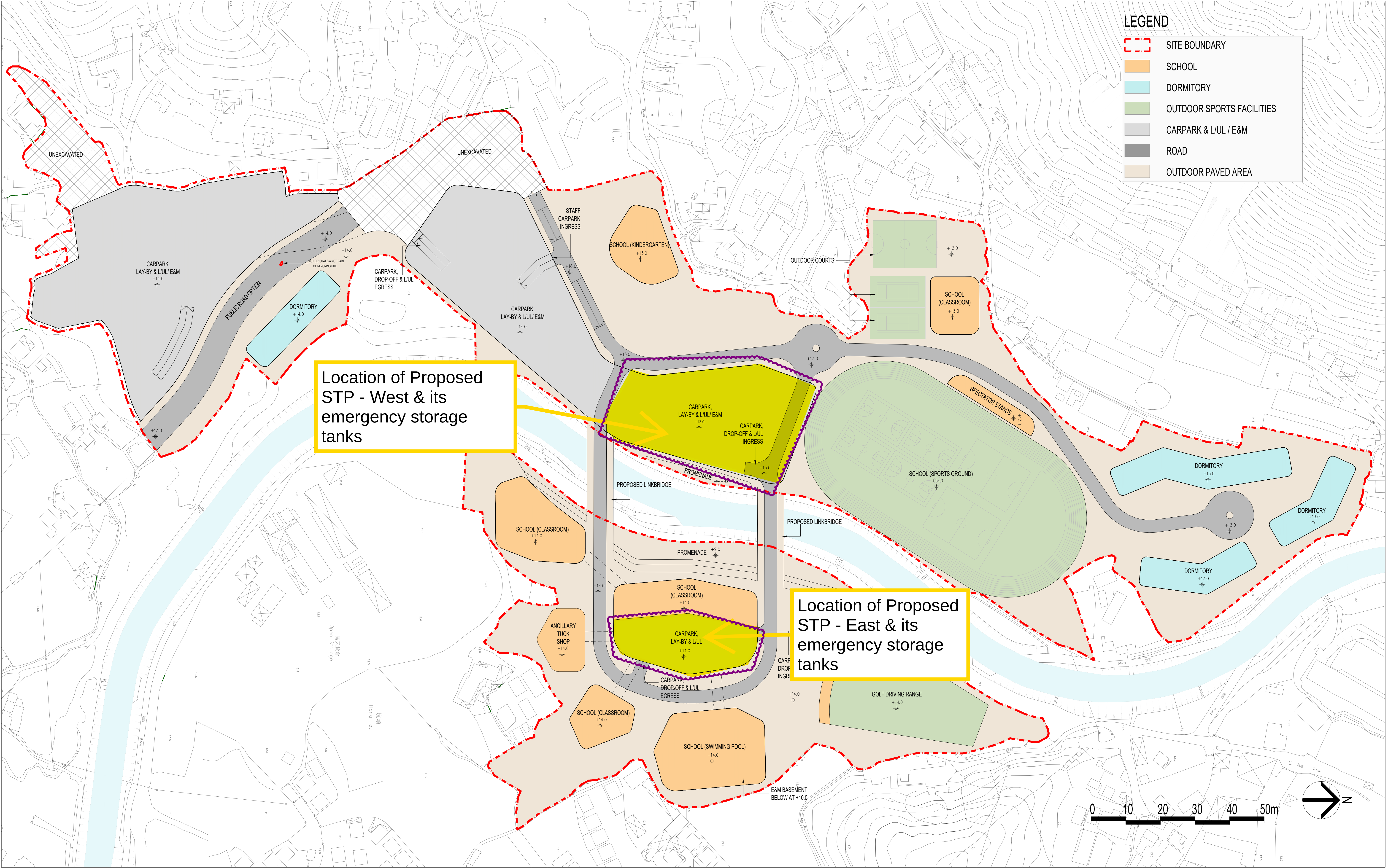
- 2.5.3 The sewage generated from the Proposed Development would be collected and treated on-site and ultimately be discharged to Sheung Yue River through proposed stormwater drain.
- 2.5.4 To avoid the contamination of the Sheung Yue River, no sewage can be passed through and discharged to the Sheung Yue River before treatment. Therefore, two private sewage treatment plants, namely STP – West and STP – East are proposed to treat the sewage discharge generated from West and East Portion of the development respectively. The design capacity of each STP is summarized in **Table 2.2** and the location of the STPs are presented in **Appendix 2.2**.

Table 2.2 Design Capacity of STPs

	Design Capacity (m³/day)
STP – West	705.7
STP – East	380.3
Total	1086.0

- 2.5.5 The design capacity of STP – West and STP – East are calculated and the construction of STP – West and STP – East shall be completed before the school admission in 2036. The treated effluent will be discharged to Sheung Yue River through the proposed storm drain.
- 2.5.6 The exact treatment process would be subject to later detailed design and submissions. It will be necessary for the treatment facilities to achieve the necessary discharge standards, as set out in EPD's Technical Memorandum – Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. **STP – West corresponds to flow category ">600 and <=800", while STP – East corresponds to flow category ">200 and <=400".**
- 2.5.7 Membrane bioreactor with ultra-filtration (MBR) is generally recommended to achieve required effluent discharge standard and sludge dewatering system will be provided and designed in accordance with the requirement in the "Guidelines for the Design of Small Sewage Treatments Plants" issued by EPD.
- 2.5.8 Sludge storage tank with deodorisation facilities will be provided. Exhaust fan will be located and facing away from existing and planned air sensitive uses. The sludge after having been dewatered and thickened will be tanked away to the landfill for disposal subject to confirmation with future licensed collector/contractor. As good practice for sewage treatment facilities, measures will be incorporated into the design to minimize the risk of emergency overflow from the treatment plant. These measures will include standby pumps, secure power supplies and appropriate alarms, as well as comprehensive Operation and Maintenance procedures, to keep the facilities in good working order. Holding tank for emergency storage/retention will be included with adequate capacity (e.g. to store 6-hours of ADWF discharge) to minimise need of emergency discharge. In the event of any emergency overflow, on-call crews will follow the overflow emergency response plan and proceed with the best response to correct the problem immediately. For example, the alarm system will be activated once overflow occurs. The on-call crews will provide instant response by acknowledging the alarm, to investigate the cause of overflow and correct the problem. The alarm system will repeat until it is acknowledged. In addition, the on-call crews will ensure the

Appendix 2.2 Locations of the STPs



Rev.	Description	Drawn	Checked	Approved	Date
1	PLANNING SUBMISSION	I HKO	I JHK	I JHY	9-2025
2	PLANNING SUBMISSION	I HKO	I JHK	I JHY	11-2025

Rev.	Description	Drawn	Checked	Approved	Date

Check all measurements on site.
Do not scale off drawings.

This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.

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B.D. Ref.	
F.S.D. Ref.	
D.L.O. Ref.	
Drawn	HKO Date 11-2025
Checked	JHK Date 11-2025
Approved	JHY Date 11-2025
Cad File No.	
P:\JHK\25018NT\planning submission\PL0T_BD\GBP_04	



呂元祥建築師事務所

Project Title		Drawing Title	FULL PHASE – GROUND FLOOR PLAN	Drawing Purpose	
		Project No.	25018NT		
		Scale	1:1000	Issue Date	NOV 2025
		Drawing No.	A/GBP_04		

Attachment 3

Revised Drainage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

**PROPOSED SCHOOL AT VARIOUS LOTS IN D.D. 94, 98 & 100
AND ADJOINING GOVERNMENT LAND, KWU TUNG SOUTH,
NEW TERRITORIES**

DRAINAGE IMPACT ASSESSMENT

Date **December 2025**

Prepared by **Sunny Yeung**
Assistant Engineer

Signed



Approved by **Tony Cheng**
Senior Manager

Signed

Project Reference **HENKTSISEI00**

Document No. **R9864_v1.1 _250910.docx**

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Ramboll Hong Kong Limited

21/F, BEA Harbour View Centre
56 Gloucester Road, Wan Chai, Hong Kong

Tel: (852) 3465 2888
Fax: (852) 3465 2899
Email: hkinfo@ramboll.com

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Figure F2	Existing Catchment Area
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APPENDICES

Annex 1	Master Layout Plan
Annex 2	Runoff Calculations
Annex 3	Design of Drainage System
Annex 4	Sensitivity Checking of River Beas

1. INTRODUCTION

1.1 Project Background

- 1.1.1 Ramboll Hong Kong Limited in associated with Binnies Hong Kong Limited (Binnies) has been commissioned to carry out drainage impact assessment (DIA) for the Proposed International School in Kwu Tung South. (Application Site).
- 1.1.2 The Application Site is divided into eastern and western parts by the River Beas, with a few local village houses. Access to the Application Site is provided via Hang Tau Road and village track roads (**Figure F1**).
- 1.1.3 The Application Site covers an area of approximately 127,000 m².
- 1.1.4 The Proposed Development consists of kindergartens, primary schools, middle & high schools and ancillary facilities, with a total plot ratio of 1.35. There are two phases for this development. The scheduled year of completion of 2036. A summary of key information of the Proposed Development is shown below in **Table 1-1**

Table 1-1 Development Schedule (Final Phase)

Development Parameter	Proposed Development
<i>Site Area</i>	About 127,000 m ²
<i>Plot Ratio</i>	About 1.35
<i>Total Gross Floor Area (GFA)</i>	About 171,000 m ²
<i>Anticipated Population</i>	
<i>Kindergarten</i>	About 600
<i>Grades 1-5</i>	About 1,000
<i>Grades 6-12</i>	About 1,400

- 1.1.5 This DIA is prepared based on available information and requirement under Drainage Services Department (DSD) Advice Note No. 1 – Application to Drainage Impact Assessment Process to Private Sector Projects.

2. EXISTING DRAINAGE NETWORK

2.1 The Application Site

- 2.1.1 The Application Site is currently occupied by a number of temporary structures. The land use of the Application Site will be changed to approximately 70% paved after the Proposed Development.

2.2 Existing Catchment Drainage

- 2.2.1 The Application Site lies in the middle reach of River Beas. River Beas runs from the south to the north and discharges into River Indus, which further discharges into Shenzhen River to the north. Shenzhen River flows to the west and eventually discharges into Deep Bay.
- 2.2.2 River Beas locates within the Indus Basin forming one of the tributaries of River Indus and serves the southwest part of the Indus Basin.

2.3 Site Drainage and Sub-catchments

- 2.3.1 The identified relevant sub-catchments for and in vicinity of the Application Site are shown on **Figure F2**. The existing drainage system in vicinity of the Application Site is shown on **Figure F3**.
- 2.3.2 Runoff from all sub-catchments (Catchments 1 to 5) drains to the River Beas. Runoff from these area passes through the Application Site and discharge to the River Beas.

2.4 Ground Levels

- 2.4.1 The western part of the Application Site slopes downward from the south and west in general, and dipped gently towards River Beas.
- 2.4.2 The existing ground level of the western part falls gently from +10.0 mPD to +20.5 mPD (south to north). The existing ground level of the eastern part falls gently from +13.0 mPD to +10 mPD (north to south).

3. METHODOLOGY AND DESIGN PARAMETERS

- 3.1.1 The assessment criteria for the Application Site is based on the standards as set out in DSD's 5th edition of Stormwater Drainage Manual (SDM) published in January 2018 and the updates pursuant to Corrigendum No. 1/2022 and No.1/2024 promulgated. Table 10 of the SDM provides the recommended design return periods based on flood levels for the various drainage systems depending on the land use.
- 3.1.2 According to the SDM, 50-year design return period is recommended for the design of drainage system.
- 3.1.3 The **Rational** Method is adopted for evaluating the runoff for the drainage design.
- 3.1.4 According to the rainfall zone as shown in Figure 3 of SDM, the Application Site is located in an area that adopts rainfall statistics of North District Area. Hence, the design storm constants are adopted in accordance with Table 3a of the SDM corrigendum No.1/2024. The storm constants are shown in **Table 3.1** below.

Table 3-1 Storm Constants with 50-year Return Period

Parameter	Value
A	474.6
B	2.9
C	0.371

- 3.1.5 The runoff coefficient (C) values for the Rational Method were adopted in accordance with Clause 7.5.2 of the SDM. A table of runoff coefficient is shown in **Table 3.2** below.

Table 3-2 Runoff Coefficient

Land Use	Runoff Coefficient (C) Value
Unpaved (e.g. existing tree groups)	0.35
Paved (e.g. concrete)	0.95

- 3.1.6 The effects of climate change are considered in accordance with Clause 6.8, Table 28 and Table 29 of the SDM corrigendum No.1/2022. A summary of increased rainfall due to climate change is shown in **Table 3.3** below.

Table 3-3 Rainfall Increase due to Climate Change

Classification	Rainfall Increase (%)	Sea Level Rise (m)
End of 21 st Century (2081-2100)	16.0	0.47

- 3.1.7 Design allowance in the End-21st Century is considered in the calculation as well and summarized in **Table 3-4**.

Table 3-4 Design Allowance in End of 21st Century

Rainfall Increase	Sea Level Rise (m)
12.1%	0.23

- 3.1.8 The roughness values of pipes were adopted in accordance with Table 13 and 14 of the SDM. As a conservation approach, 10% (of flow area) sedimentation is adopted for the proposed drainage system in design checking. A summary of roughness coefficients is shown in **Table 3-5** below.

Table 3-5 Roughness Coefficient

Classification	Roughness Coefficient	Remarks
Poor Precast Concrete Pipes	Colebrook-White $k_s = 0.6\text{mm}$	Concrete Pipe
Rectangular Channel	Mannings' $n = 0.015$	Peripheral drains

4. POTENTIAL DRAINAGE IMPACT OF PROPOSED DEVELOPMENT

4.1.1 The Application Site will be developed into an international school. The Master Layout Plan of the Proposed Development is shown in **Annex 1**.

4.2 Changes to Drainage Characteristics

4.2.1 The Proposed Development will induce changes to the land use of the Application Site. The percentage of paved area comprising building blocks, concrete structures, roads and other paved facilities will be increased. As a result, there will be an increase in surface runoff generated from the Application Site.

4.3 Volume of Runoff and Peak Runoff Rate

4.3.1 The increase in the peak runoff rates due to the Proposed Development at the Application Site against various rainstorm return periods are shown in **Tables 4-1** below.

4.3.2 The relevant calculations are included in **Annex 2**.

Table 4-1 Estimated Peak Runoff Rate

Return Period	Peak Runoff Rate (m ³ /s)		
	Before Development (1)	After Development (2)	Increase in Runoff (2) – (1)
50 years	5.21	7.56	2.35
200 years	5.89	8.56	2.67

5. PROPOSED DRAINAGE IMPACT MITIGATION MEASURES

- 5.1.1 To intercept existing overland flow blocked by the Proposed Development, surface channels will be provided along the site boundaries of the Proposed Development. The catchment of the flow intercepted and the proposed drainage system are shown on **Figure F4**.
- 5.1.2 The flow will be discharged to River Beas through the proposed 1000 mm to 1650 mm diameter drains along the public road inside the Application Site.
- 5.1.3 Details of the hydraulic calculations and results of hydraulic check of the proposed drainage system along the public road inside the Application Site are contained in **Annex 3**.
- 5.1.4 The sensitivity checking of River Beas is included in **Annex 4**.
- 5.1.5 The runoff from the Proposed Development and its adjacent catchment as shown in **Figure F4**.

6. MAINTENANCE AND CONSTRUCTION CONSIDERATIONS

6.1 Maintenance Considerations

- 6.1.1 The parties responsible for managing and maintaining the completed proposed drainage works are listed in **Table 6-1**.

Table 6-1 Preliminary Management and Maintenance Matrix

Description of Proposed Drainage Works	Management and Maintenance Party
Stormwater Storage facilities, box culverts, drainage pipes and associated manholes on public roads or outside boundaries	Drainage Services Department
U-channels and associated catchpits which received the surface water inside the Development sites	The Applicant
Stormwater drainage facilities exclusively used for public roads (I.e. carriageway and footpaths.)	Highways Department

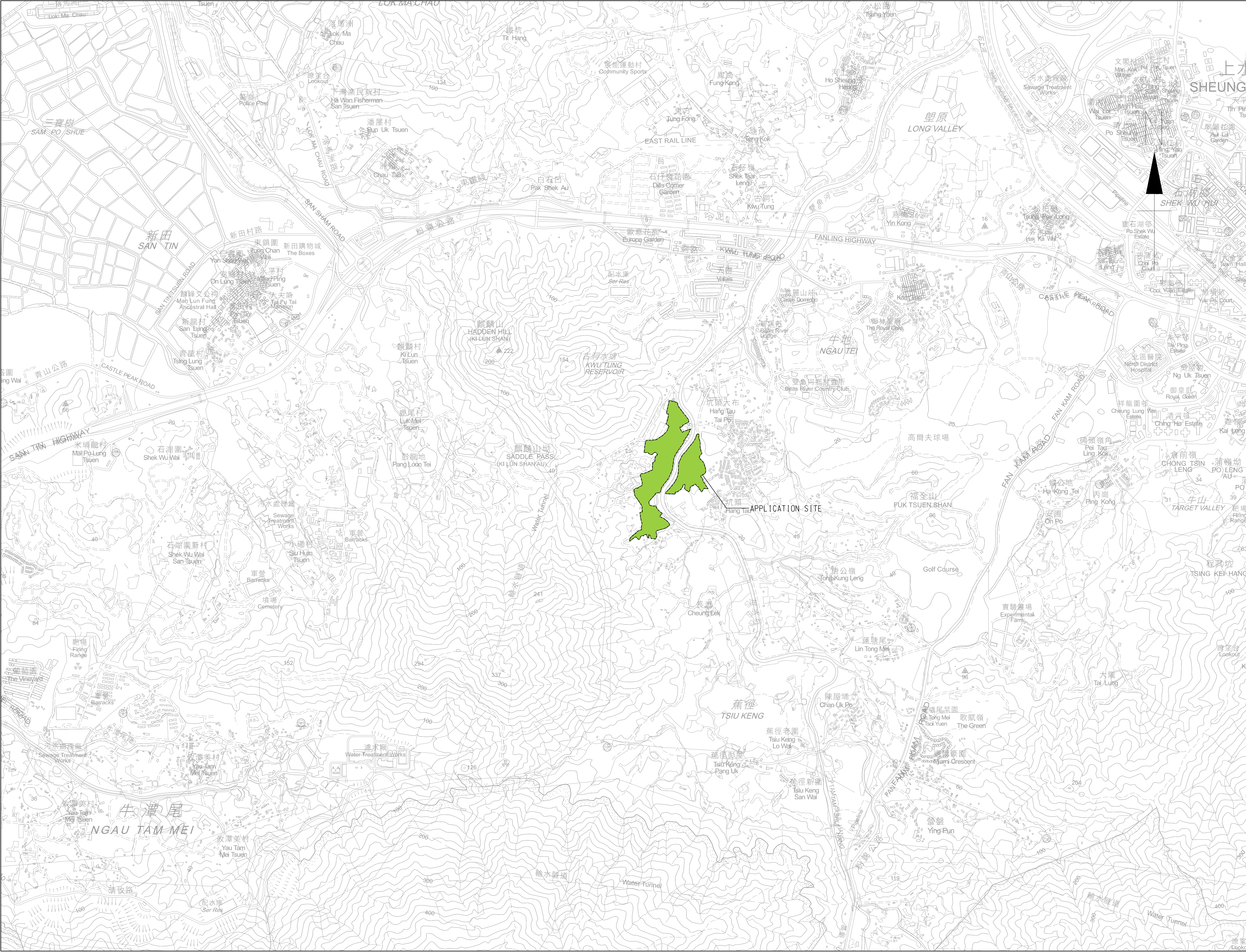
6.2 Construction Considerations

- 6.2.1 The contractor for the Proposed Development will be responsible for the maintenance of the existing drainage conditions in the vicinity of the Proposed Development during the construction stage. The contract documents will specify that the contractor must put in place appropriate temporary drainage measures to ensure that the flooding conditions during the construction period must not be worse than those under existing conditions.
- 6.2.2 The contractor's attention shall be drawn to the diversion of the existing U-channel along the boundary of the Proposed Development. Such measures must be submitted to the Authorised Person or his representative for approval before construction activities commence.
- 6.2.3 A settling basin will be installed to intercept runoff from the construction Application Site before discharge into the River Beas.

7. CONCLUSION

- 7.1.1 The runoff from the Proposed Development and from the adjacent catchment area of the Proposed Development will be diverted by the project proponent. The runoff will be conveyed by the proposed 1000 mm to 1800 mm diameter drains along public road inside Application Site.
- 7.1.2 The runoff generated from the Proposed Development and its adjacent catchment would only utilize about 84% of the proposed 1000 mm diameter drain, about 87% of the proposed 1500 mm diameter drain, about 52% of the proposed 1650 mm diameter drain and about 85% of the proposed 1800 mm diameter drain. The proposed drain in public road inside Application Site discharges into the upstream section of the River Beas.
- 7.1.3 Temporary drainage measures shall be implemented to ensure that the flooding conditions will not be worsened during construction. Periodic inspection by the Authorized Person or his representative will be carried out during construction.
- 7.1.4 With the implementation of the above proposed drainage measures and temporary drainage works, the Proposed Development at the Application Site is technically feasible from drainage impact point of view.

Figures

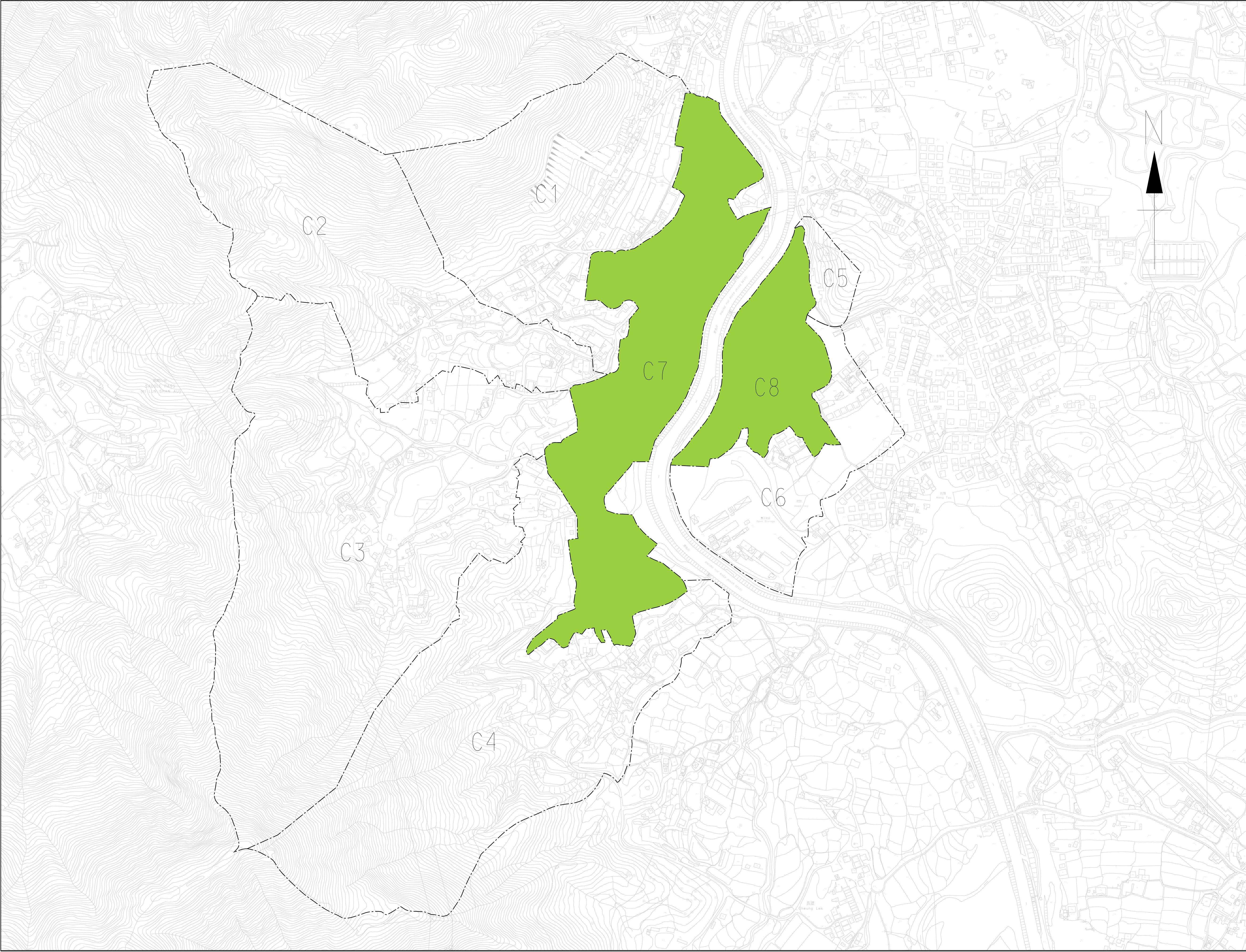


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LEGEND:

THE APPLICATION SITE

Initial	Date	Checked	Date
Project			
S16 APPLICATION FOR PROPOSED INTERNATIONAL SCHOOL IN KWU TUNG SOUTH			
Title			
LOCATION PLAN			
Figure No. K1		Scale A3 1 : 20000	
BINNIES HONG KONG LIMITED 賓尼斯工程顧問有限公司			



LEGEND:

THE APPLICATION SITE

CATCHMENT	AREA (m ²)
C1	99045
C2	122826
C3	211950
C4	164692
C5	7603
C6	46806
C7	91816
C8	35300

Initial	Date	Checked	Date
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Project

S16 APPLICATION FOR PROPOSED
INTERNATIONAL SCHOOL IN KWU
TUNG SOUTH

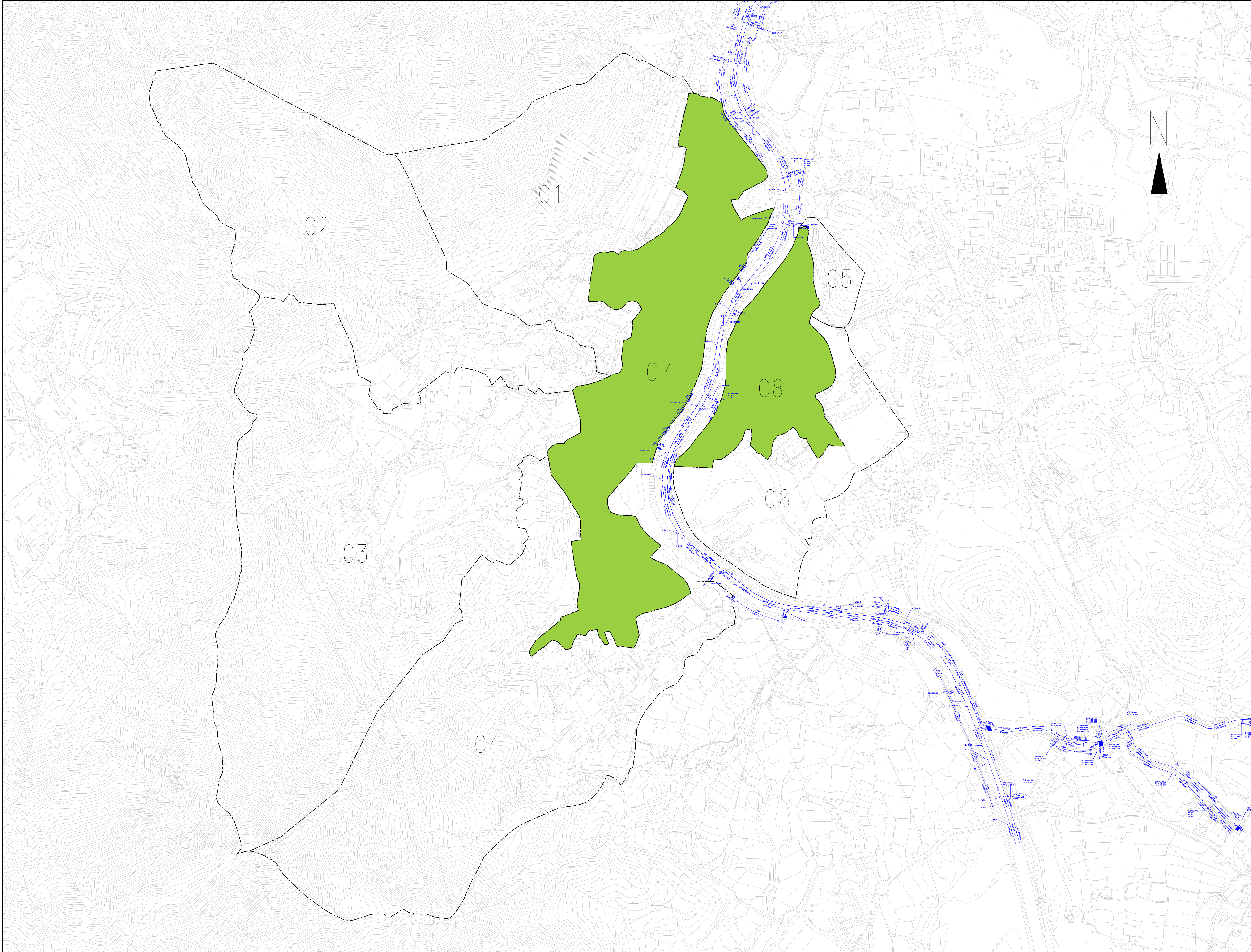
Title

EXISTING CATCHMENT AREA

Figure No. K2	Scale A3 1 : 5000
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LEGEND:

- EXISTING CATCHPIT
- THE APPLICATION SITE
- EXISTING DRAINAGE PIPE/ CHANNEL

Initial	Date	Checked	Date
---------	------	---------	------

Project

S16 APPLICATION FOR PROPOSED
INTERNATIONAL SCHOOL IN KWU
TUNG SOUTH

Title

EXISTING DRAINAGE
SYSTEMS

Figure No.

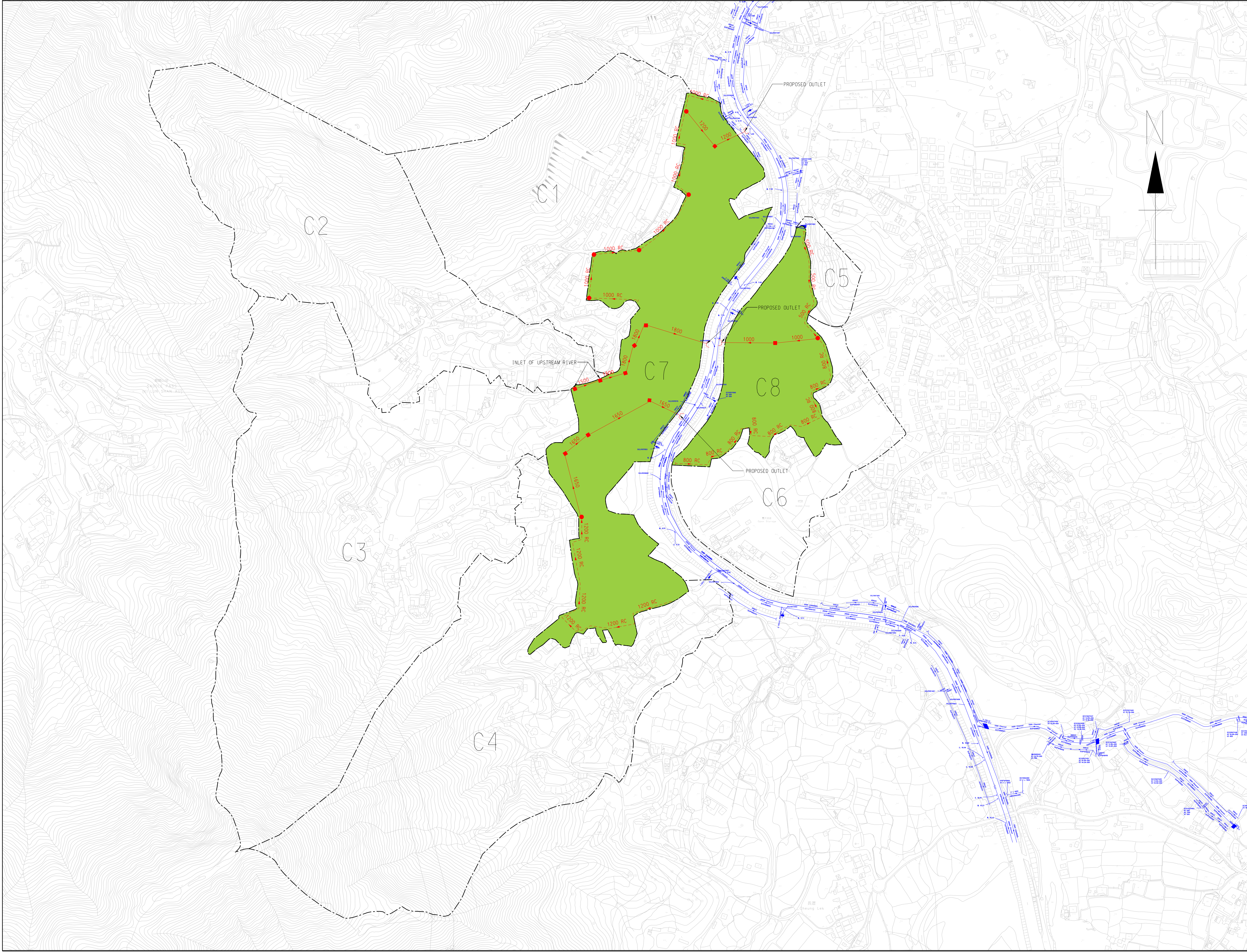
K3

Scale

A3 1 : 5000



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LEGEND:

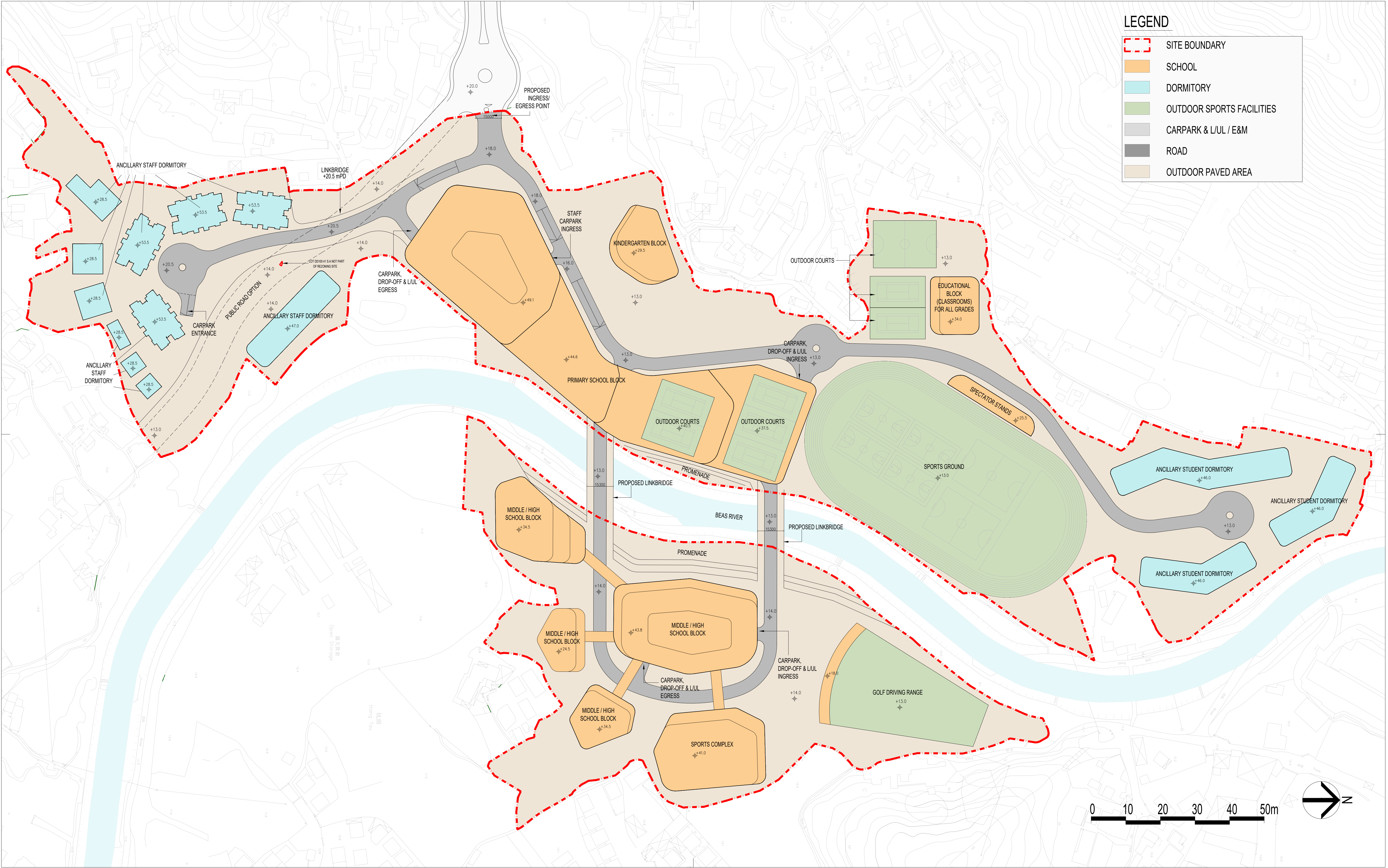
- EXISTING CATCHPIT
- THE APPLICATION SITE
- EXISTING DRAINAGE PIPE/ CHANNEL
- PROPOSED CATCHPIT
- PROPOSED MANHOLE
- RC. 800 PROPOSED 800mm RECTANGULAR CHANNEL
- RC. 1000 PROPOSED 1000mm RECTANGULAR CHANNEL
- RC. 1200 PROPOSED 1200mm RECTANGULAR CHANNEL
- DIA. 1000 PROPOSED 1000mm DIAMETER STORMWATER DRAIN
- DIA. 1200 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1500 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1650 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- DIA. 1800 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- PROPOSED OUTLET

CATCHMENT	AREA (m ²)
C1	99045
C2	122826
C3	211950
C4	164692
C5	7603
C6	46806
C7	91816
C8	35300

Initial	Date	Checked	Date
Project			
S16 APPLICATION FOR PROPOSED INTERNATIONAL SCHOOL IN KWU TUNG SOUTH			
Title			
EXISTING DRAINAGE SYSTEMS			
Figure No. K4		Scale A3 1 : 5000	
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Annex 1

Master Layout Plan



Rev.	Description	Drawn	Checked	Approved	Date
—	I PLANNING SUBMISSION	I HKO	I JHK	I JHY	9-2025
A	I PLANNING SUBMISSION	I HKO	I JHK	I JHY	11-2025

Rev.	Description	Drawn	Checked	Approved	Date

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Drawn	HKO
Date	11-2025
Checked	JHK
Date	11-2025
Approved	JHY
Date	11-2025
Cad File No.	P:\JHK\25018NT\planning submission\PILOT_BD\GBP_01_

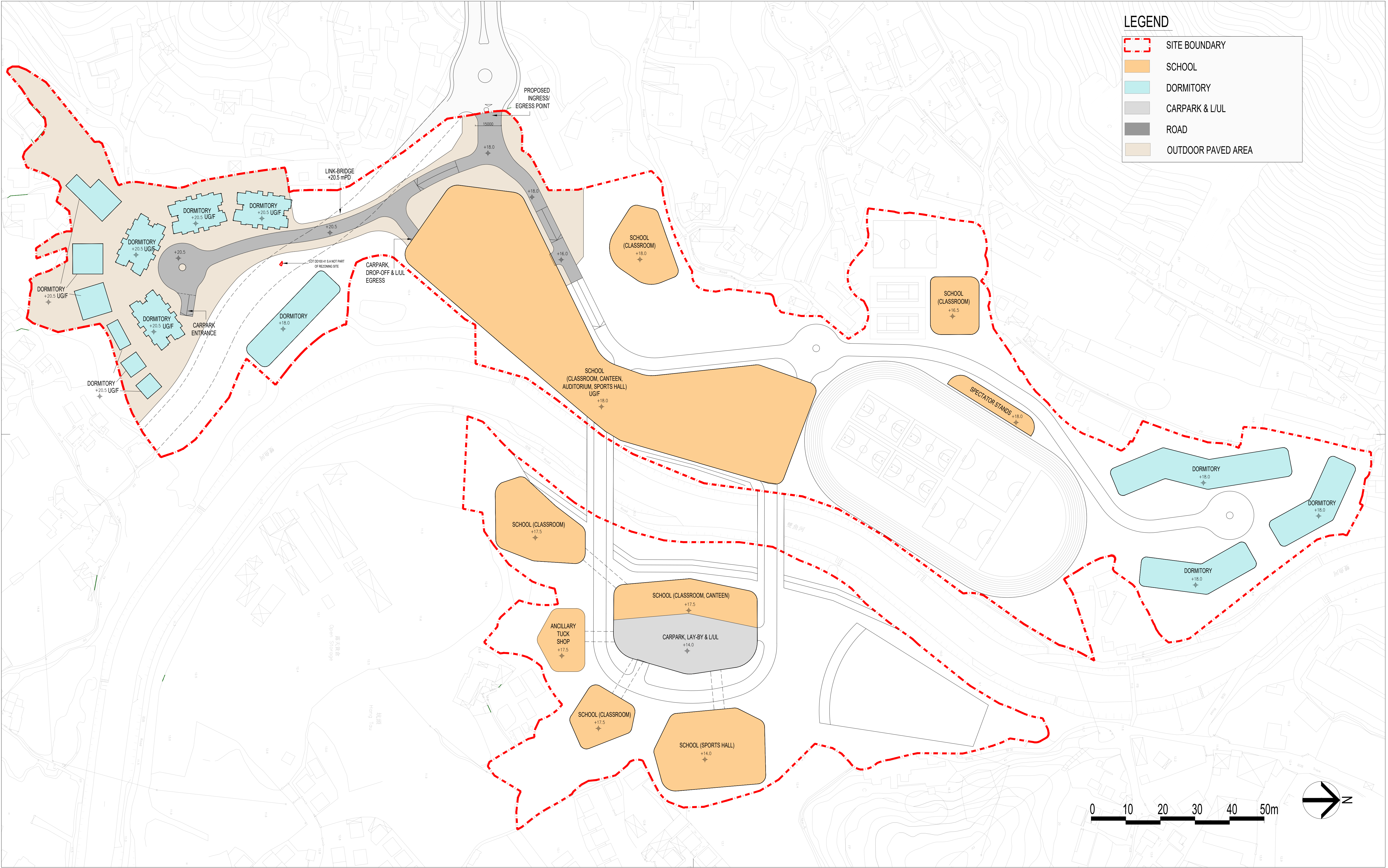


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Project Title
PROPOSED INTERNATIONAL
SCHOOL DEVELOPMENT AT KWU
TUNG SOUTH

Drawing Title	FULL PHASE – MASTER LAYOUT PLAN
Project No.	25018NT
Scale	1:1000
Issue Date	NOV 2025
Drawing No.	A/GBP_01_

Drawing Purpose



Rev.	Description	Drawn	Checked	Approved	Date
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Date	11-2025
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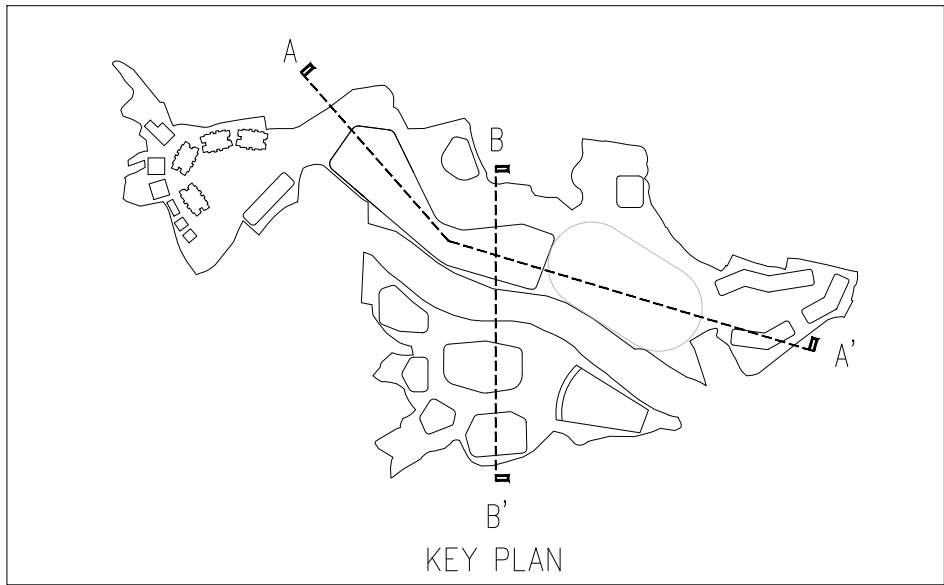
呂元祥建築師事務所

Project Title

Drawing Title
FULL PHASE –
FIRST FLOOR PLAN

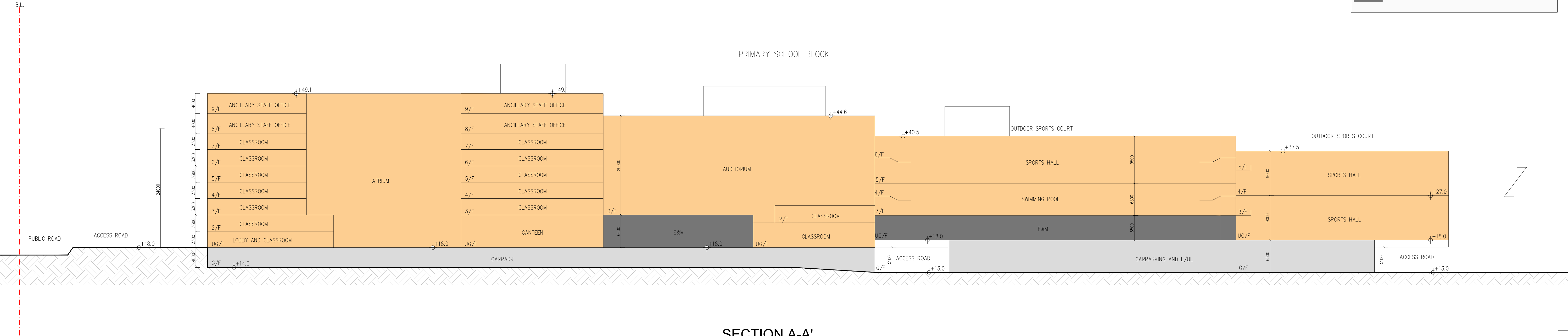
Project No.	25018NT
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Issue Date	NOV 2025
Drawing No.	A/GBP_03

Drawing Purpose

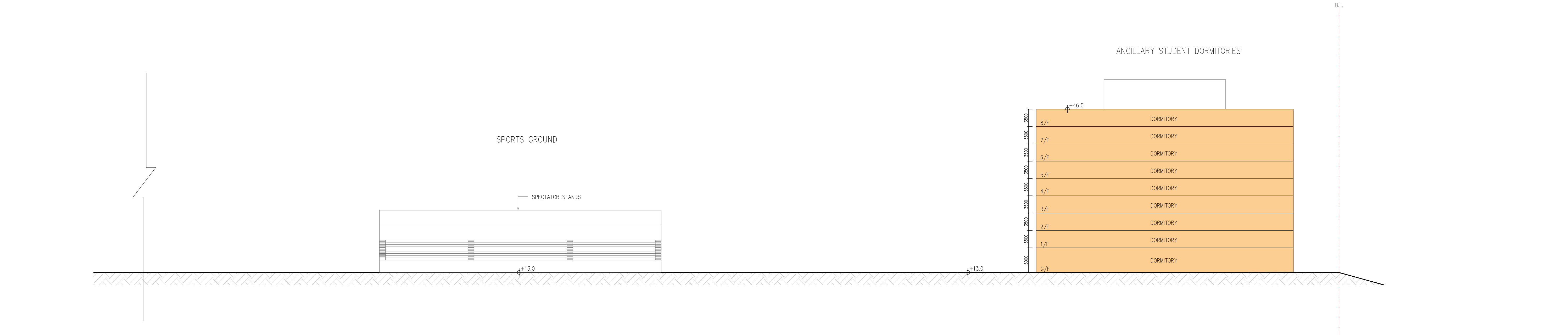


LEGEND

SITE BOUNDARY

SCHOOL

SECTION A-A'



SECTION A-A' (cont.)

Rev.	Description	Drawn	Checked	Approved	Date
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A	I PLANNING SUBMISSION	I HKO	I JHK	I JHY	11-2025

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Checked	JHK
Approved	JHY
Cad File No.	P:\JHK\25018NT\planning submission\PL0T_BD\GBP_05



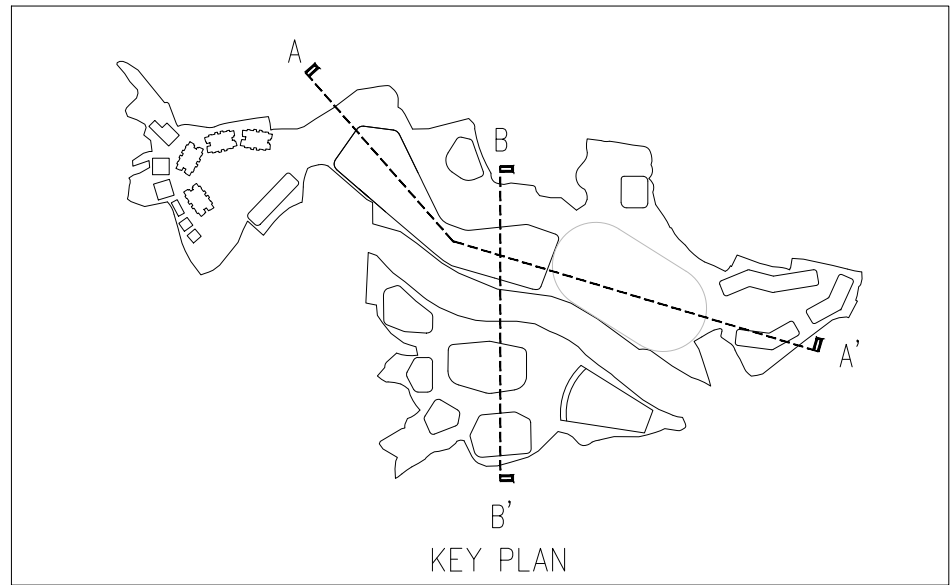
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Project Title

Drawing Title
SECTION A-A

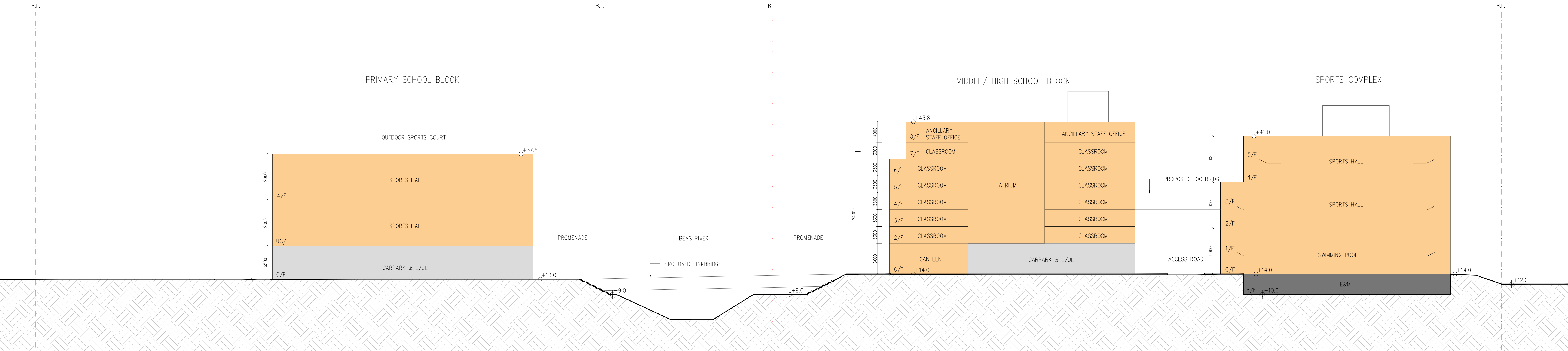
Drawing Purpose

Project No.	25018NT
Scale	1:400
Issue Date	NOV 2025
Drawing No.	A/GBP_05



LEGEND

SITE BOUNDARY

SCHOOL

SECTION B-B'

Rev.	Description	Drawn	Checked	Approved	Date
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A	I PLANNING SUBMISSION	I HKO	I JHK	I JHY	I 11-2025

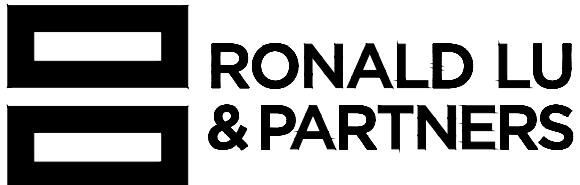
Rev.	Description	Drawn	Checked	Approved	Date

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Approved	JHY
Cad File No.	P:\JHK\25018NT\planning submission\PLOT_BD\GBP_06



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Project Title

Drawing Title
SECTION B-B

Project No.	25018NT
Scale	1:400
Issue Date	NOV 2025
Drawing No.	A/GBP_06

Drawing Purpose

Annex 2

Runoff Calculations

Capacity Check:

Catchment C7 and C8 (Before development) (50 years)

Design Parameters

Design storm		50	year return period	
Storm constants	a	474.6		
	b	2.9		
	c	0.371		
Average Slope	H	0.30	m/100m	
Length of flow	L	110	m	
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	6.25	min	
Unpaved area	A_U	88900	m^2	
Runoff coef.	C_U	0.35		
Paved area	A_P	38100	m^2	
Runoff coef.	C_P	0.95		
Catchment area	A_{Total}	127,000	m^2	
Runoff coef.	$C_{average}$	0.53		
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f	1 in 100		

Capacity Check:

Catchment C7 and C8 (Before development) (50 years)

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.38	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	9.63	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	238.01	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	4.454	m ³ /s	

Capacity Check:

Catchment C7 and C8 (After development) (50 years)

Design Parameters

Design storm		50	year return period	
Storm constants	a	474.6		
	b	2.9		
	c	0.371		
Average Slope	H	0.30	m/100m	
Length of flow	L	110	m	
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	6.25	min	
Unpaved area	A_U	38100	m^2	
Runoff coef.	C_U	0.35		
Paved area	A_P	88900	m^2	
Runoff coef.	C_P	0.95		
Catchment area	A_{Total}	127,000	m^2	
Runoff coef.	$C_{average}$	0.77		
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		

Capacity Check:

Catchment C7 and C8 (After development) (50 years)

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.38	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	9.63	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	238.01	mm/hr	(SDM Table 28)
Peak runoff	Q_p	=	$0.278 C i A$		
		=	6.470	m^3/s	

Capacity Check:

Catchment C7 and C8 (Before development) (200 years)

Design Parameters

Design storm		200	year return period	
Storm constants	a	501.4		
	b	2.45		
	c	0.348		
Average Slope	H	0.30	m/100m	
Length of flow	L	110	m	
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	6.25	min	
Unpaved area	A_U	88900	m^2	
Runoff coef.	C_U	0.35		
Paved area	A_P	38100	m^2	
Runoff coef.	C_P	0.95		
Catchment area	A_{Total}	127,000	m^2	
Runoff coef.	$C_{average}$	0.53		
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		

Capacity Check:

Catchment C7 and C8 (Before development) (200 years)

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.38	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	9.63	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	269.91	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	5.051	m ³ /s	

Capacity Check:

Catchment C7 and C8 (After development) (200 years)

Design Parameters

Design storm		200	year return period	
Storm constants	a	501.4		
	b	2.45		
	c	0.348		
Average Slope	H	0.30	m/100m	
Length of flow	L	110	m	
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	6.25	min	
Unpaved area	A_U	38100	m^2	
Runoff coef.	C_U	0.35		
Paved area	A_P	88900	m^2	
Runoff coef.	C_P	0.95		
Catchment area	A_{Total}	127,000	m^2	
Runoff coef.	$C_{average}$	0.77		
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		

Capacity Check:

Catchment C7 and C8 (After development) (200 years)

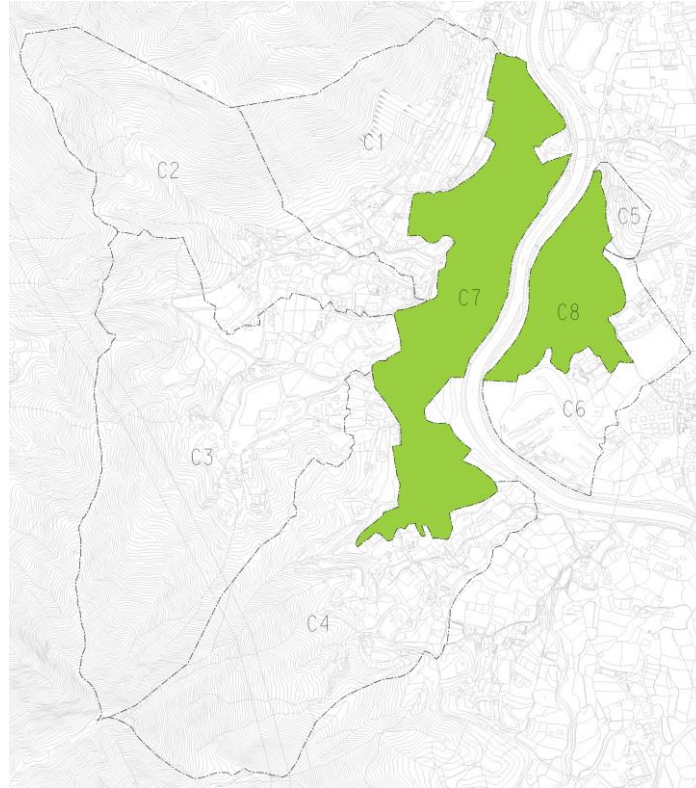
Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.38	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	9.63	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	269.91	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	7.338	m ³ /s	

Annex 3

Design of Drainage System

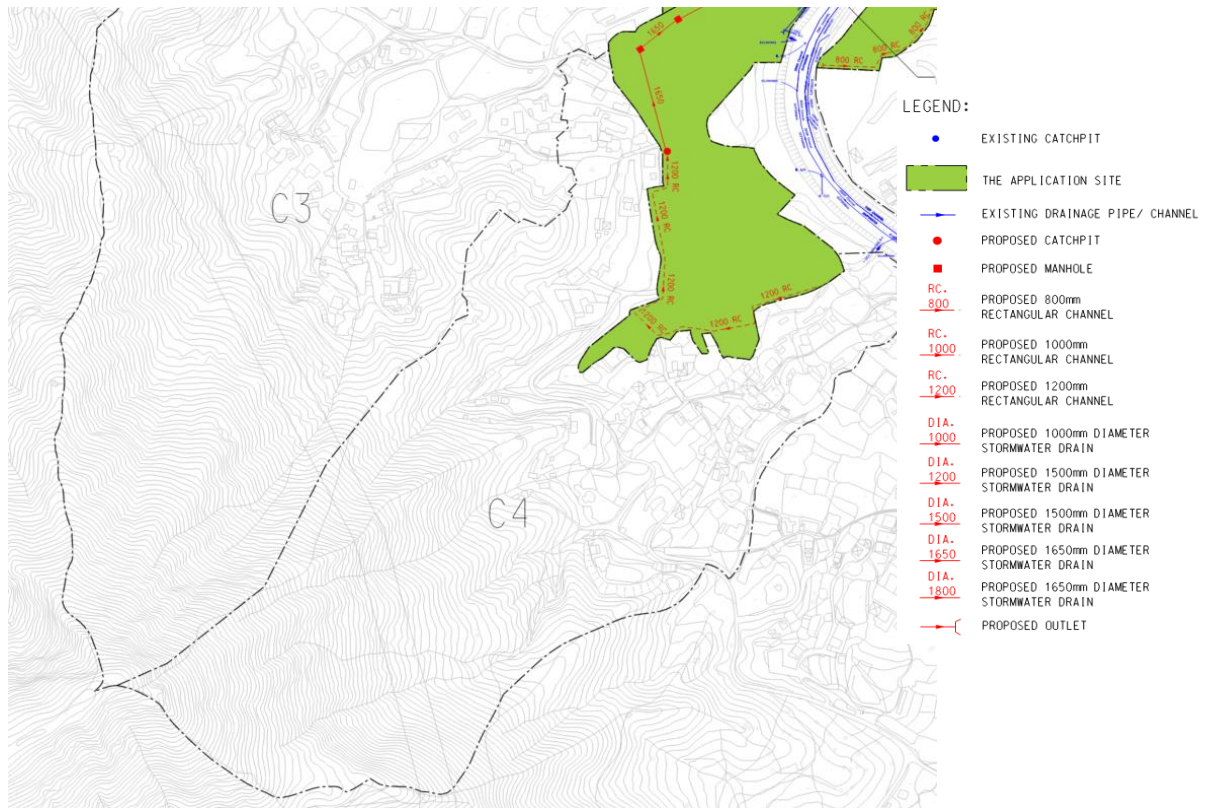
Summary of Catchment Characteristic



Cachment	Area (m ²)	Before Development		After Development		Runoff Coefficient	
		Paved Area (m ²)	Unpaved Area (m ²)	Paved Area (m ²)	Unpaved Area (m ²)	Paved	Unpaved
C1	99045	29,714	69,332	29,714	69,332	0.95	0.35
C2	122,826	36,848	85,978	36,848	85,978	0.95	0.35
C3	211,950	63,585	148,365	63,585	148,365	0.95	0.35
C4	164,692	49,408	115,284	49,408	115,284	0.95	0.35
C5	7,603	2,281	5,322	2,281	5,322	0.95	0.35
C6	46,806	14,042	32,764	14,042	32,764	0.95	0.35

Capacity Check:

Catchment C4



Design Parameters

Design storm		50	year return period
Storm constants	a	474.6	
	b	2.9	
	c	0.371	
Average Slope	H	28.00	m/100m
Length of flow	L	770	m
Inlet time $t_0 = 0.14465L/H^{0.2}A^{0.1}$	t_0	17.21	min
Unpaved area	A_U	115284	m^2
Runoff coef.	C_U	0.35	
Paved area	A_P	49408	m^2
Runoff coef.	C_P	0.95	
Catchment area	A_{Total}	164,692	m^2
Runoff coef.	$C_{average}$	0.53	
Surface roughness	k_s	0.6	mm
kinematic viscosity	ν	1.14	mm^2/s
Frictional gradient	S_f	1 in	100

For Poor Precast Concrete Pipes

Capacity Check:

Catchment C4

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.38	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	20.58	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	188.51	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	4.574	m ³ /s	

Using Manning's Equation for Rectangular-Channel Geometry

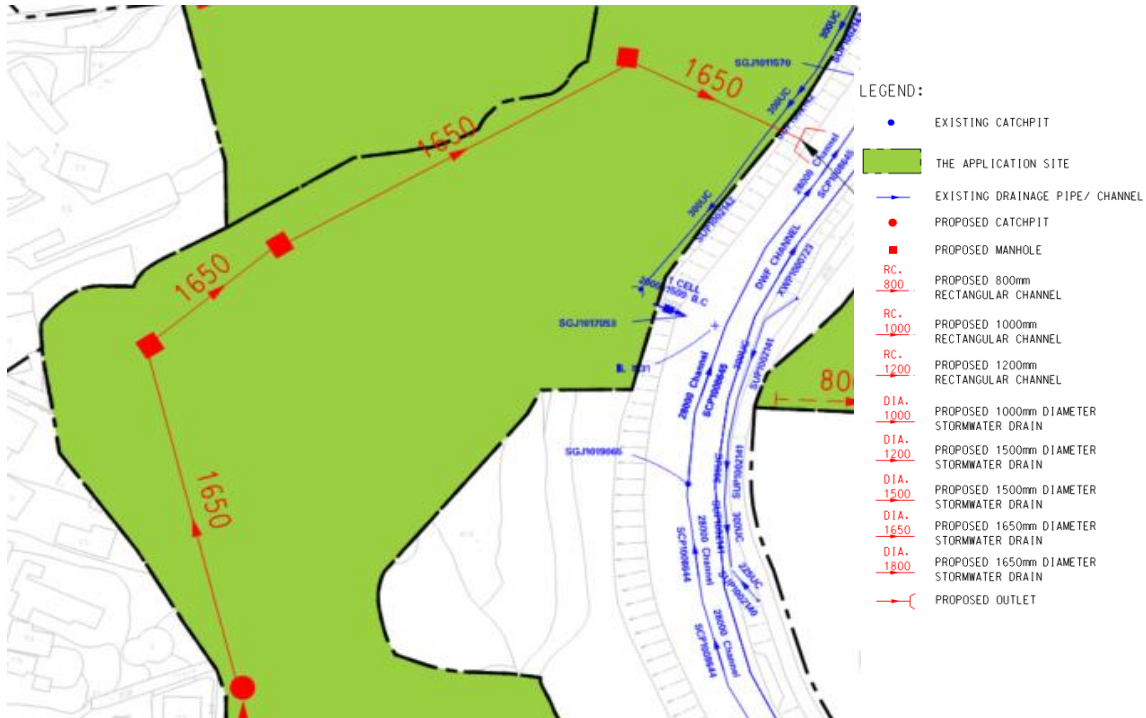
Width	1200	mm	Input Parameter
Height	1200	mm	Input Parameter
Area	1.440	m ²	
Wetted Perimeter	3.600	m	
Hydraulic Radius	0.400	m	
Slope [Decimal]	0.01		Slope = tan θ
Manning's Roughness	0.015		for Fair concrete Pipe
Full Flow Velocity Vu	3.62	m/s	
Full Flow Discharge	5.21	m ³ /s	
	312701	l/min	

Assume the maximum water depth in the Rectangular-channel be 100% of the size

Water Depth	Area	Wetted Perimeter	Hydraulic Radius	Velocity	Discharge
[mm]	m ²	m	m	m/s	m ³ /s
1200	1.440	3.600	0.400	3.619	5.212

> Peak runoff Q_p

Capacity Check: Proposed 1650mm Drain



Design Parameters

Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		

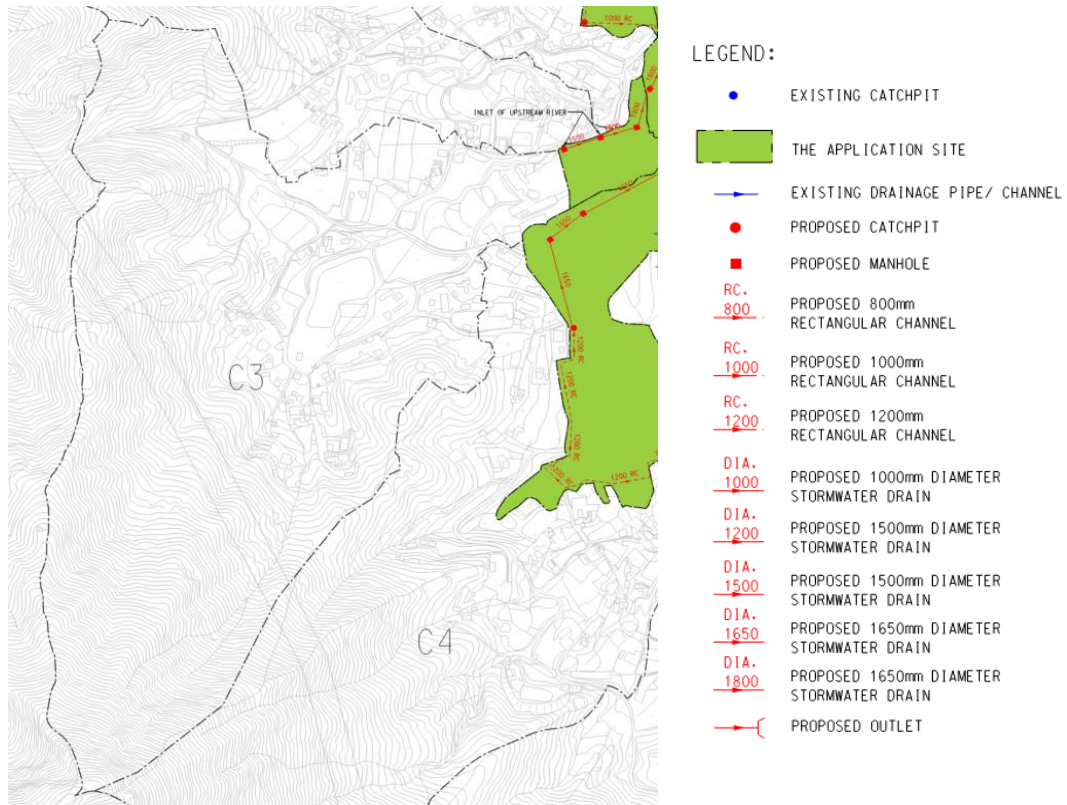
Peak runoff from C3 = 4.57 m^3/s

Capacity of Drain

Trial pipe size	D	=	1650	mm
Hydraulic radius	$R = D/4$	=	0.4125	m
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$	
		=	4.55	m/s
Capacity provided	Q	=	$\bar{V} \times \text{Cross Section Area of Drain}$	
		=	9.72	m^3/s
Allow 10% Area for Siltation	$Q_{90\%}$	=	8.75	m^3/s
		>	Peak runoff Q_p	
Utilization		=	$Q_p/Q_{90\%}$	
		=	52%	

Capacity Check:

Catchment C3



Design Parameters

Design storm		50	year return period
Storm constants	a	474.6	
	b	2.9	
	c	0.371	
Average Slope	H	26.00	m/100m
Length of flow	L	770	m
Inlet time $t_0 = 0.14465L/H^{0.2}A^{0.1}$	t_0	17.03	min
Unpaved area	A_U	148365	m^2
Runoff coef.	C_U	0.35	
Paved area	A_P	63585	m^2
Runoff coef.	C_P	0.95	
Catchment area	A_{Total}	211,950	m^2
Runoff coef.	$C_{average}$	0.53	
Surface roughness	k_s	0.6	mm
kinematic viscosity	ν	1.14	mm^2/s
Frictional gradient	S_f	1 in	100

For Poor Precast Concrete Pipes

Capacity Check:

Catchment C3

Peak Runoff

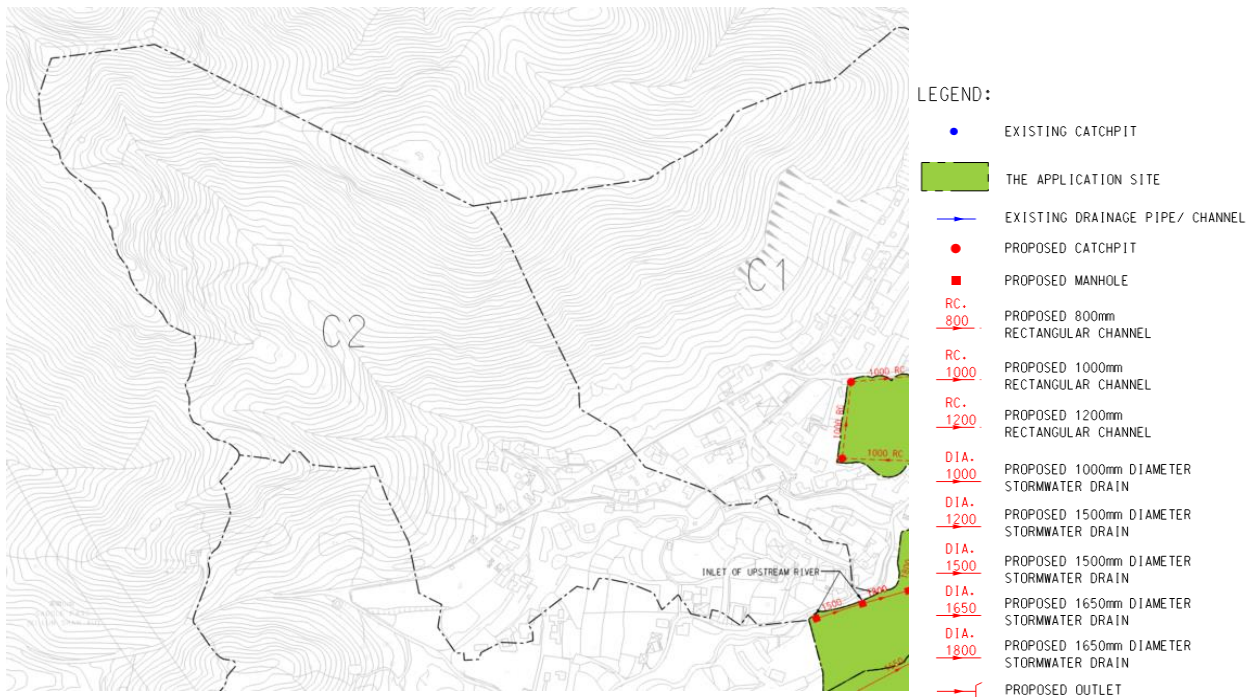
Flow time	t_f	=	L_j / V_j	
		=	3.20	min
Time of concentration	t_c	=	$t_0 + t_f$	
		=	20.23	min
Intensity	i	=	$a / (t_c + b)^c$	x 1.281 (Climate Change Factor)
		=	189.57	mm/hr (SDM Table 28)
Peak runoff	Q_p	=	$0.278 C i A$	
		=	5.920	m ³ /s

Capacity of Drain

Trial pipe size	D	=	1500	mm
Hydraulic radius	$R = D/4$	=	0.375	m
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{(32gRS_f)}} \right]$	
		=	4.29	m/s
Capacity provided	Q	=	$\bar{V} \times \text{Cross Section Area of Drain}$	
		=	7.58	m ³ /s
Allow 10% Area for Siltation	$Q_{90\%}$	=	6.82	m ³ /s
		<	Peak runoff Q_p	
Utilization		=	$Q_p / Q_{90\%}$	
		=	87%	

Capacity Check:

Catchment C2



Design Parameters

Design storm		50	year return period
Storm constants	a	474.6	
	b	2.9	
	c	0.371	
Average Slope	H	26.00	m/100m
Length of flow	L	770	m
Inlet time $t_0 = 0.14465L/H^{0.2}A^{0.1}$	t_0	17.98	min
Unpaved area	A_U	85978	m^2
Runoff coef.	C_U	0.35	
Paved area	A_P	36848	m^2
Runoff coef.	C_P	0.95	
Catchment area	A_{Total}	122,826	m^2
Runoff coef.	$C_{average}$	0.53	
Surface roughness	k_s	0.6	mm
kinematic viscosity	ν	1.14	mm^2/s
Frictional gradient	S_f 1 in	100	

For Poor Precast Concrete Pipes

Capacity Check:

Catchment C2

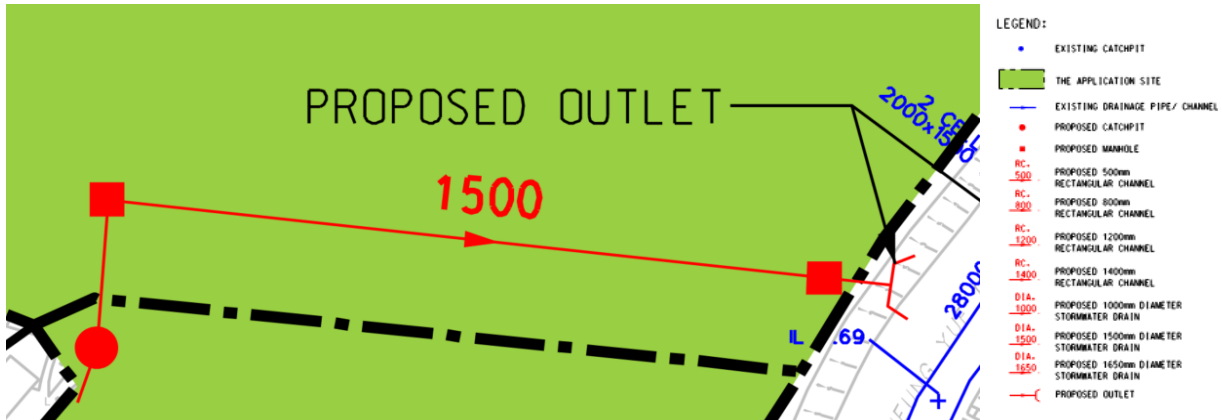
Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.20	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	21.18	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	186.75	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	3.380	m ³ /s	
Peak runoff from catchment 3		=	5.920	m ³ /s	
Total runoff		=	9.300		

Capacity of Drain

Trial pipe size	D	=	1800	mm	
Hydraulic radius	$R = D/4$	=	0.45	m	
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255v}{R\sqrt{(32gRS_f)}} \right]$		
		=	4.79	m/s	
Capacity provided	Q	=	$V \times \text{Cross Section Area of Drain}$		
		=	12.20	m ³ /s	
Allow 10% Area for Siltation	$Q_{90\%}$	=	10.98	m ³ /s	
		<	Peak runoff Q_p		
Utilization		=	$Q_p / Q_{90\%}$		
		=	85%		

Capacity Check: Proposed 1500mm Drain for Catchment C2



Design Parameters

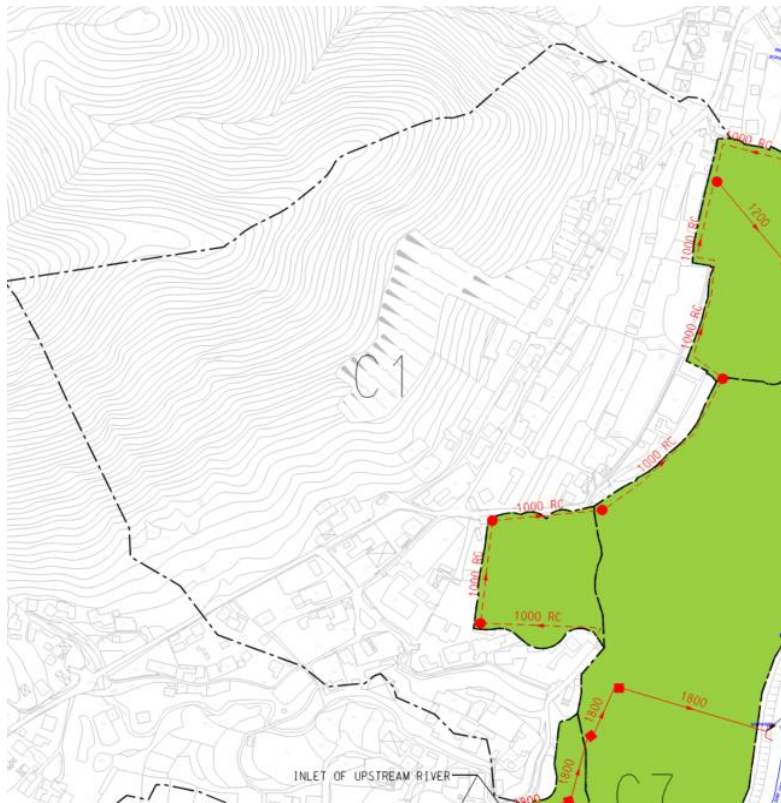
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		
Peak runoff from C2	=	5.92	m^3/s	

Capacity of Drain

Trial pipe size	D	=	1500	mm
Hydraulic radius	$R = D/4$	=	0.375	m
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$	
		=	4.29	m/s
Capacity provided	Q	=	$\bar{V} \times \text{Cross Section Area of Drain}$	
		=	7.58	m^3/s
Allow 10% Area for Siltation	$Q_{90\%}$	=	6.82	m^3/s
		>	Peak runoff Q_p	
Utilization		=	$Q_p/Q_{90\%}$	
		=	87%	

Capacity Check:

Catchment C1



LEGEND:

- EXISTING CATCHPIT
- THE APPLICATION SITE
- EXISTING DRAINAGE PIPE/ CHANNEL
- PROPOSED CATCHPIT
- PROPOSED MANHOLE
- RC. 800 PROPOSED 800mm RECTANGULAR CHANNEL
- RC. 1000 PROPOSED 1000mm RECTANGULAR CHANNEL
- RC. 1200 PROPOSED 1200mm RECTANGULAR CHANNEL
- DIA. 1000 PROPOSED 1000mm DIAMETER STORMWATER DRAIN
- DIA. 1200 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1500 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1650 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- DIA. 1800 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- PROPOSED OUTLET

Design Parameters

Design storm		50	year return period
Storm constants	a	474.6	
	b	2.9	
	c	0.371	
Average Slope	H	20.00	m/100m
Length of flow	L	770	m
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	19.37	min
Unpaved area	A_U	69332	m^2
Runoff coef.	C_U	0.35	
Paved area	A_P	29714	m^2
Runoff coef.	C_P	0.95	
Catchment area	A_{Total}	99,045	m^2
Runoff coef.	$C_{average}$	0.53	
Surface roughness	k_s	0.6	mm
kinematic viscosity	ν	1.14	mm^2/s
Frictional gradient	S_f	1 in	100

For Poor Precast Concrete Pipes

Capacity Check:

Catchment C1

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	3.81	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	23.18	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	181.32	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	2.646	m^3/s	

Using Manning's Equation for Rectangular-Channel Geometry

Width	1000	mm	Input Parameter
Height	1000	mm	Input Parameter
Area	1.000	m^2	
Wetted Perimeter	3.000	m	
Hydraulic Radius	0.333	m	
Slope [Decimal]	0.01		Slope = $\tan \theta$
Manning's Roughness	0.015		for Fair concrete Pipe
Full Flow Velocity V_u	3.20	m/s	
Full Flow Discharge	3.20	m^3/s	
	192300	l/min	

Assume the maximum water depth in the Rectangular-channel be 100% of the size

Water Depth	Area	Wetted Perimeter	Hydraulic Radius	Velocity	Discharge
[mm]	m^2	m	m	m/s	m^3/s
1000	1.000	3.000	0.333	3.205	3.205

> Peak runoff Q_p

Capacity Check: Proposed 1200mm Drain for Catchment C1



Design Parameters

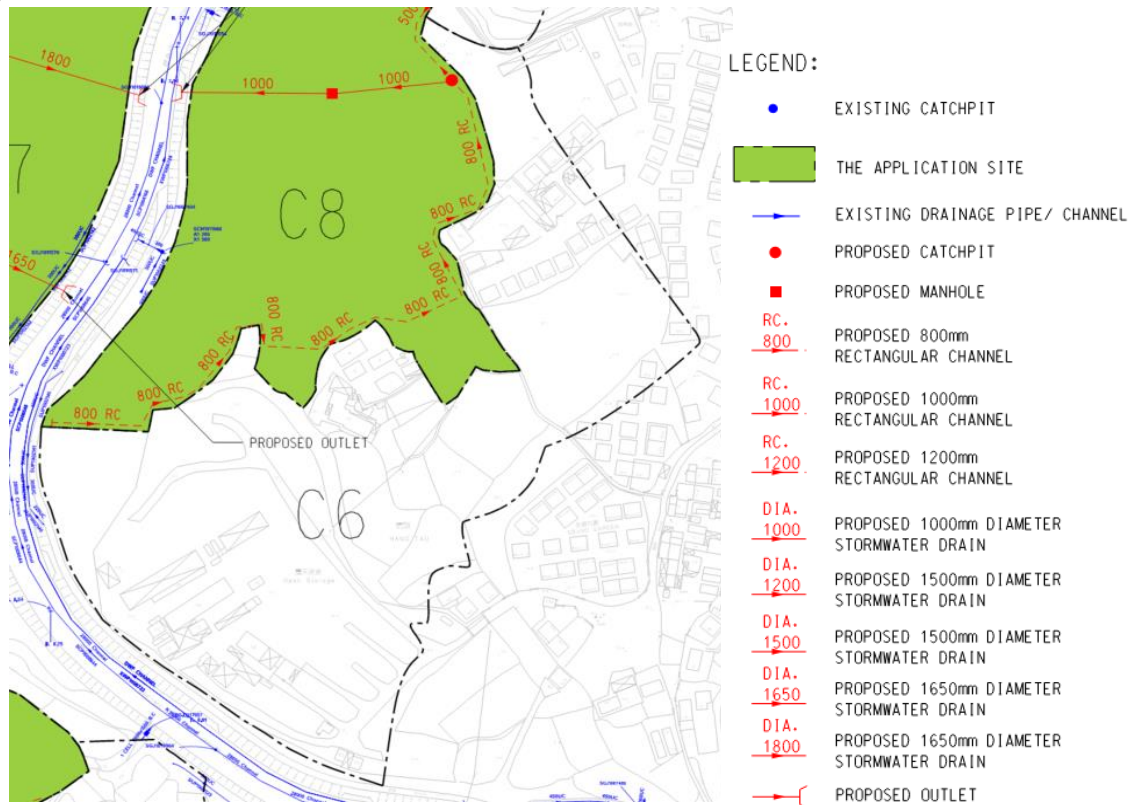
Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f 1 in	100		
Peak runoff from C1	=	2.65	m^3/s	

Capacity of Drain

Trial pipe size	D	=	1200	mm
Hydraulic radius	$R = D/4$	=	0.3	m
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$	
		=	3.74	m/s
Capacity provided	Q	=	$V \times \text{Cross Section Area of Drain}$	
		=	4.23	m^3/s
Allow 10% Area for Siltation	$Q_{90\%}$	=	3.81	m^3/s
		>	Peak runoff Q_p	
Utilization		=	$Q_p/Q_{90\%}$	
		=	70%	

Capacity Check:

Catchment C6



Design Parameters

Design storm		50	year return period
Storm constants	a	474.6	
	b	2.9	
	c	0.371	
Average Slope	H	0.30	m/100m
Length of flow	L	240	m
Inlet time $t_0=0.14465L/H^{0.2}A^{0.1}$	t_0	15.07	min
Unpaved area	A _U	23403	m ²
Runoff coef.	C _U	0.35	
Paved area	A _P	23403	m ²
Runoff coef.	C _P	0.95	
Catchment area	A _{Total}	46,806	m ²
Runoff coef.	C _{average}	0.65	
Surface roughness	k _s	0.6	mm
kinematic viscosity	ν	1.14	mm ² /s
Frictional gradient	S _f	1 in 100	

For Poor Precast Concrete Pipes

Capacity Check: Catchment C6

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	4.42	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	19.49	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	191.86	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	1.623	m ³ /s	

Using Manning's Equation for Rectangular-Channel Geometry

Width	800	mm	Input Parameter
Height	800	mm	Input Parameter
Area	0.640	m ²	
Wetted Perimeter	2.400	m	
Hydraulic Radius	0.267	m	
Slope [Decimal]	0.01		Slope = tan θ
Manning's Roughness	0.015		for Fair concrete Pipe
Full Flow Velocity V_u	2.76	m/s	
Full Flow Discharge	1.77	m ³ /s	
	106060	l/min	

Assume the maximum water depth in the Rectangular-channel be 100% of the size

Water Depth	Area	Wetted Perimeter	Hydraulic Radius	Velocity	Discharge
[mm]	m ²	m	m	m/s	m ³ /s
800	0.640	2.400	0.267	2.762	1.768

> Peak runoff Q_p

Capacity Check:

Catchment C5



LEGEND:

- EXISTING CATCHPIT
- THE APPLICATION SITE
- EXISTING DRAINAGE PIPE/ CHANNEL
- PROPOSED CATCHPIT
- PROPOSED MANHOLE
- RC. 800 PROPOSED 800mm RECTANGULAR CHANNEL
- RC. 1000 PROPOSED 1000mm RECTANGULAR CHANNEL
- RC. 1200 PROPOSED 1200mm RECTANGULAR CHANNEL
- DIA. 1000 PROPOSED 1000mm DIAMETER STORMWATER DRAIN
- DIA. 1200 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1500 PROPOSED 1500mm DIAMETER STORMWATER DRAIN
- DIA. 1650 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- DIA. 1800 PROPOSED 1650mm DIAMETER STORMWATER DRAIN
- PROPOSED OUTLET

Design Parameters

Design storm 50 year return period

Storm constants

a	474.6
b	2.9
c	0.371

Average Slope H 3.00 m/100m

Length of flow L 70 m

Inlet time $t_0 = 0.14465L/H^{0.2}A^{0.1}$ t_0 3.33 min

Unpaved area A_U 3041 m^2

Runoff coef. C_U 0.35

Paved area A_P 4562 m^2

Runoff coef. C_P 0.95

Catchment area A_{Total} 7,603 m^2

Runoff coef. $C_{average}$ 0.71

Surface roughness k_s 0.6 mm

kinematic viscosity ν 1.14 mm^2/s

Frictional gradient S_f 1 in 100

For Poor Precast Concrete Pipes

Capacity Check:

Catchment C5

Peak Runoff

Flow time	t_f	=	L_j / V_j		
		=	6.05	min	
Time of concentration	t_c	=	$t_0 + t_f$		
		=	9.38	min	
Intensity	i	=	$a / (t_c + b)^c$	x	1.281
		=	239.79	mm/hr	(Climate Change Factor)
Peak runoff	Q_p	=	$0.278 C i A$		(SDM Table 28)
		=	0.360	m^3/s	

Using Manning's Equation for Rectangular-Channel Geometry

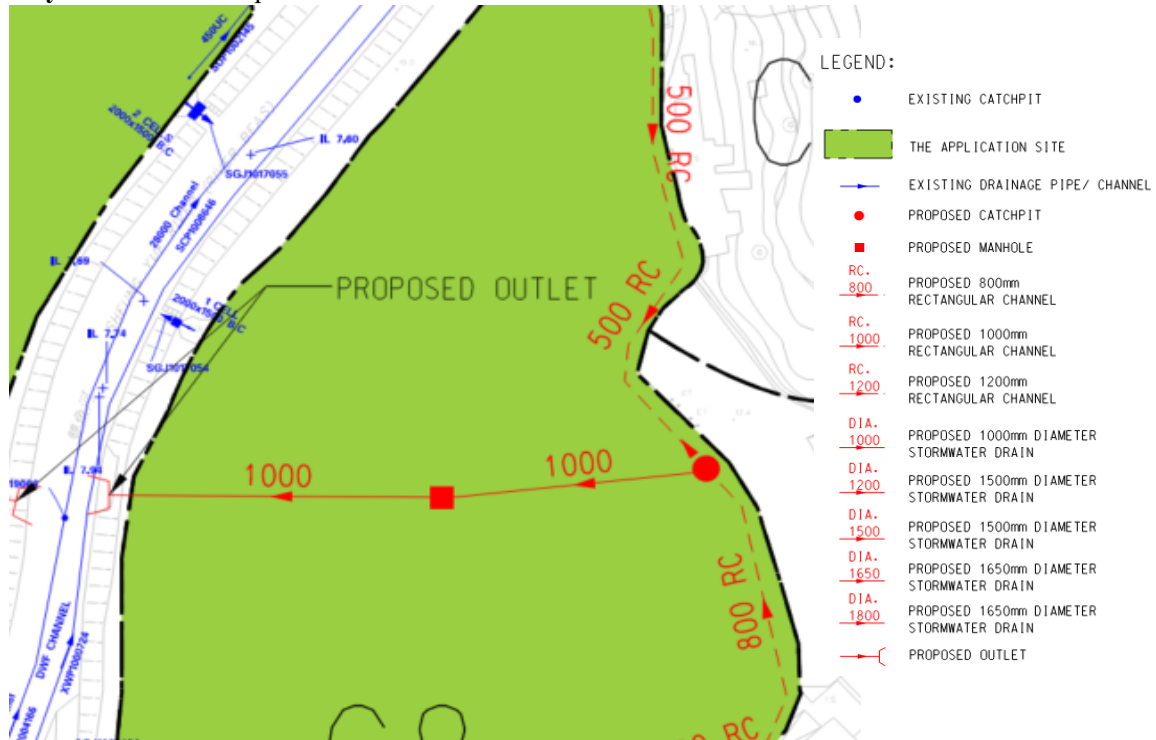
Width	500	mm	Input Parameter
Height	500	mm	Input Parameter
Area	0.250	m^2	
Wetted Perimeter	1.500	m	
Hydraulic Radius	0.167	m	
Slope [Decimal]	0.01		Slope = $\tan \theta$
Manning's Roughness	0.015		for Fair concrete Pipe
Full Flow Velocity V_u	2.02	m/s	
Full Flow Discharge	0.50	m^3/s	
	30285	l/min	

Assume the maximum water depth in the Rectangular-channel be 90% of the size

Water Depth	Area	Wetted Perimeter	Hydraulic Radius	Velocity	Discharge
[mm]	m^2	m	m	m/s	m^3/s
450	0.250	1.500	0.167	2.019	0.505

> Peak runoff Q_p

Capacity Check: Proposed 1000mm Drain for Catchment C5 and C6



Design Parameters

Surface roughness	k_s	0.6	mm	For Poor Precast Concrete Pipes
kinematic viscosity	ν	1.14	mm^2/s	
Frictional gradient	S_f	1 in 100		
Peak runoff from C5	=	0.36	m^3/s	
Peak runoff from C6	=	1.62	m^3/s	
Total runoff	=	1.98	m^3/s	

Capacity of Drain

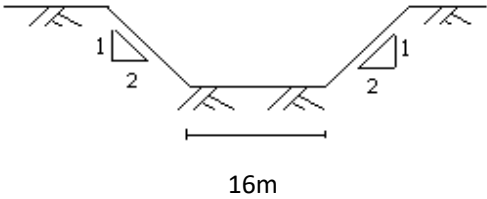
Trial pipe size	D	=	1000	mm
Hydraulic radius	$R = D/4$	=	0.25	m
Mean velocity (Colebrook-White)	$\bar{V}$	=	$-\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$	
		=	3.34	m/s
Capacity provided	Q	=	$\bar{V} \times \text{Cross Section Area of Drain}$	
		=	2.63	m^3/s
Allow 10% Area for Siltation	$Q_{90\%}$	=	2.36	m^3/s
		>	Peak runoff Q_p	
Utilization		=	$Q_p/Q_{90\%}$	
		=	84%	

Annex 4

Sensitivity Checking of River Beas

Annex 4 Hydraulic calculation at River Beas

$$Q = \frac{A}{n} S^{1/2} R^{2/3}$$



Area of flow	A =	47.380	m ²	(Based on as-built drawing)
Wetted Perimeter	P =	26.286	m	
Hydraulic radius	R =	1.802		
Hydraulic gradient	S =	0.002		From as-built
Mannings Coefficient	n =	0.035		Table 13 of SDM
Capacity of Channel	Q =	$\frac{A}{n} \times s^{1/2} \times R^{2/3}$		
	=	93.910	m ³ /s	
Increase rate of discharge	Q' =	2.28	m ³ /s	(Refer to Appendix 2)
Percentage with respect to Full flow of River Beas	=	2.43%		