

Attachment 3

Section 16 Application No. A/SLC/199

In response to the comments from the Planning Department, the following is provided to elaborate collectively as supplementary information:

Background

Strategic Context

1. The Proposed Centre at Shui Hau is situated within the Government's strategic policy framework for Lantau, as set out in the Sustainable Lantau Blueprint (June 2017) and further developed in the Lantau Conservation and Recreation Masterplan (2020). Under the overarching principle of "Development in the North; Conservation for the South" adopted in the Sustainable Lantau Blueprint (the Blueprint), and taking into account the characteristics of different parts of Lantau, CEDD has formulated the Lantau Conservation and Recreation Masterplan (the Masterplan) to provide a framework guiding conservation and recreation initiatives, and to orchestrate public and private projects better for achieving synergy in the conservation of Lantau.
2. The Blueprint adopts the spatial planning principle of "Development in the North; Conservation for the South", under which the southern part of Lantau, is to be conserved for its natural, cultural and heritage resources, with "low-impact leisure and recreational uses" developed where appropriate for public enjoyment. The Blueprint's major planning principle of Nature and Cultural Conservation emphasises that conservation resources should, where appropriate, be utilised for "education, eco-recreation and eco-tourism". The Masterplan operationalises this strategic direction by providing the overall framework for conservation and recreation in South Lantau, including the concept of the South Lantau Eco-recreation Corridor (the Corridor), and by identifying broad conservation and recreation priorities and site-based opportunities. As mentioned in para. 1.1.2 of the Planning Statement, CEDD is pursuing the beneficial use of the rich natural, historical and cultural resources of South Lantau for ecotourism or sustainable recreational uses under the context of the Corridor, which covers Cheung Sha, Shui Hau, Shek Pik and Pui O. The Proposed Centre is to be taken forward as one of the proposals under the Corridor.
3. The 2023 Policy Address promulgated that South Lantau should be pursued for eco-tourism or recreational uses, with diversified eco-recreational facilities at Cheung Sha, Shui Hau, Shek Pik and Pui O. The 2024 Policy Address announced to expedite the development of the Corridor.
4. The Proposed Centre thus reflects the policy intent of "balancing development and conservation" by strengthening the protection of natural, cultural and heritage resources, while facilitating the provision of

environmental and cultural education. The proposal is also aligned with the Policy Address.

Site Selection

Rich Ecological Value of Shui Hau

5. Shui Hau possess various habitats of high ecological value. The Executive Summary of the Planning Statement states that, Shui Hau boasts a rich ecological environment, including sandflats, wetlands, woodlands, and streams, which confers exceptional educational and conservation value and makes it particularly suitable for a targeted nature education facility. According to CEDD's ecological study previously conducted, namely "Ecological study for Pui O, Shui Hau, Tai O and neighboring areas – Feasibility Study" (the Ecological Study), over 560 species of flora and fauna were recorded in Shui Hau. The habitat map of Shui Hau surrounding area under the Ecological Study is provided in **Annex A**. This underscores the area's biodiversity significance and educational potential. The Shui Hau sandflat is a very rare and distinctive habitat in Hong Kong, preserving a seamless connection between terrestrial and marine natural habitats, as well as a gradual transition in the natural landscape. Of particular conservation importance, Shui Hau functions as an important breeding and nursery ground for the Chinese horseshoe crab (which is declared 'endanger' under the International Union for Conservation of Nature Red List of Endanger Species), and is very rich in variety and abundance of other intertidal organisms. Shui Hau also serves as a stopover site for migratory birds and is an important breeding and nursery ground for amphibians and odonates. The Ecological Study recommended establishing an education centre on government land to the northeast of Shui Hau, which corresponds to the Application Site (the Site) mentioned in the Planning Statement, to raise public conservation awareness and generate synergy with other conservation initiatives across areas of South Lantau.

Long History and Cultural Heritage of Shui Hau

6. Shui Hau is located between Tong Fuk and Shek Pik in South Lantau. Its name, literally "water mouth", was said to be originating from its location near the river mouth. Shui Hau has a long history which its name is listed in the *Gazetteer of Xin'an County* in 1819.
7. There are three major clans, surnamed Chi, Fung and Chan in Shui Hau. The Chi is said to move from Shek Pik Village earliest in 1625, then came the Fung from Shek Pik while the Chan, recorded in 1979, has been the 12th to 13th generation in Shui Hau. Prior to the construction of the South Lantau Road, villagers of Shui Hau made a living with rice farming. They also used to catch seafood such as clams and sea snails for food at the bay of Shui Hau.

8. Of the traditional buildings in Shui Hau, numbers 49 and 50 of Shui Hau are two graded III historic buildings with pitched roofs, green bricks and green glazed ceramic balustrades, were built by the Chan clan in the 1920s. Along a pair of boundary stones and the earth god shrine, the villagers also conduct ritual ceremony to Tai Wong Yeh, which is represented by two stones in a shrine, on the 16th day of the 12th lunar month and the 2nd day of the 1st lunar month for protecting the village and ensure abundant harvests. The Proposed Centre would also provide a platform to promote Shui Hau's cultural heritage, helping to sustain local traditions and strengthening public awareness of the village's historical value.

Public concerns and the need for an education-led approach

9. There are public concerns about possible haphazard and uncontrolled development in South Lantau, including Shui Hau. To better protect the natural and landscape character of the area to avoid disturbance to the natural environment, an area of about 626 ha (including the environmentally and ecologically sensitive area in Shui Hau) has been designated as Regulated Area under the South Lantau Coast Outline Zoning Plan No. S/SLC/23 to enable the Planning Authority to instigate enforcement actions against any unauthorised developments. Other than legal enforcement for controlling unauthorised developments, there are increasing public concerns about the potential threats due to the human activities at Shui Hau posed to the habitats of high ecological value. In particular, public concerns have been raised about the impact of excessive clam digging activities at Shui Hau sandflat during weekends and public holidays on existing ecological habitats. Recent observations recorded a daily average of 380 visitors at Shui Hau, with peak reaching approximately 1,000 visitors during public holiday or weekends. Excessive clam digging activities may disrupt the ecological roles of clams, including water purification and food web support, thereby disrupting the equilibrium of the ecosystem. Clam diggers should be educated on responsible and sustainable clam digging practices to avoid or minimise habitat disturbance, and allow juvenile clams to grow and reproduce. In this context, the Proposed Centre will help promote public awareness of environmental protection and conservation as well as responsible visitor behaviour, and support long-term conservation of the area.

Site Suitability and Locational Advantages

10. As mentioned in Section 7.3 of the Planning Statement, the location of the Proposed Centre has been strategically selected. Located adjacent to South Lantau Road, the Site is convenient to be accessed by means of public transport. The Proposed Centre's prominent, easily identifiable and accessible position will provide a convenient gathering point for giving briefings to participants prior to guided tours and field studies. The Site sits at a popular entry point to the Shui Hau sandflat, thereby enabling early and proactive reaching out to engage visitors with information on how to protect horseshoe crabs and the surrounding coastal environment. In the past,

education booths could only be temporarily set up at the Shui Hau sandflat on a short-term basis to support this kind of public education promotion activities. The Site's close proximity to Shui Hau Village also further facilitates collaboration with local villagers and the organization of cultural guided tours.

11. Within Shui Hau, the Site comprises available government land of a suitable size to accommodate an education facility of the required scale. No rare or protected tree species, registered/registerable Old and Valuable Trees, or plant and animal species of conservation importance have been recorded on the Site. Having regard to connectivity, accessibility, potential environmental and visual impacts, land availability and other factors, the Site is considered an appropriate location for the Proposed Centre to promote conservation and education in Shui Hau and is considered the most suitable and practical option for implementation.

In Line with Planning Intention of “Coastal Protection Area” (“CPA”) Zone

12. As mentioned in Section 4 and para. 7.2 of the Planning Statement, the Site falls within an area zoned “CPA” under the approved South Lantau Coast Outline Zoning Plan No. S/SLC/23 (the OZP). According to the Schedule of Uses of “CPA” zone under the OZP, *“in general, only development that are needed to support the conservation of the existing natural landscape or scenic quality of the area or are essential infrastructure projects with overriding public interest may be permitted”*. The Proposed Centre will serve as an education base to promote the ecological value of the Shui Hau area and other ecologically sensitive areas in Lantau, as well as the local traditional village culture and customs, and to raise public awareness of nature conservation. In collaboration with relevant departments and interested parties, the geographical advantage of the Proposed Centre can be utilized to conduct on-going ecological monitoring, review habitat conditions and quality, assess the effectiveness of conservation measures, and identify any potential adverse changes at an early stage. The Proposed Centre will also facilitate proactive reaching out to engage visitors with information on how to protect horseshoe crabs and the surrounding coastal environment.
13. The Proposed Centre is intended to be small in scale (total floor area of about 440m²) and focused on guided education programmes, research support and community outreach, thereby minimising its physical and ecological footprint while maximising educational benefits. The illustration is provided in **Annex B** to show the indicative scale, design and greening provisions of the Proposed Centre. In this regard, the Proposed Centre is considered to be conservation-supportive in nature and compatible with the planning intention of the “CPA” zone.

Role of the Proposed Centre in Conservation Outcomes and Visitor Management

14. As explained in the Planning Statement, the proposed use of the Proposed Centre is to serve as an education base to promote the natural ecological value of the Shui Hau area as well as the local traditional village culture and customs and raise public awareness of nature conservation. By providing a structured venue for interpretation and coordinated activities, the Proposed Centre is intended to:

- concentrate educational uses in an appropriately managed setting;
- help promote environmental protection awareness among visitors through various publicity and educational efforts on avoiding or minimizing potential disturbance to sensitive habitats; and
- support long-term conservation outcomes through a combination of education, monitoring support, and community participation.

Sustainable Building Design

15. The Proposed Centre will also serve as a demonstration of how sustainable building design can be integrated into the project. Where appropriate and subject to detailed design, the Proposed Centre may incorporate the following elements. For illustration purpose, the sustainable building design arrangement is shown in **Annex C**.

- a. photovoltaic system
 - solar panels may be installed to generate renewable electricity on-site. The electricity produced can help offset a portion of the Proposed Centre's power consumption (for example, lighting and small power loads), thereby reducing reliance on grid electricity and lowering carbon emissions from operation;
- b. bio-filtration / detention and infiltration rain garden
 - bio-filtration / detention and infiltration rain garden may be introduced as a landscape feature to capture, temporarily store (detain), and naturally filter stormwater runoff. The system can slow down the flow of rainwater, improve water quality through bio-filtration (using soil and plants), and allow water to infiltrate into the ground where suitable. Where feasible, collected and treated rainwater may also be reused for landscape irrigation, reducing potable water demand;
- c. skylights at roof
 - roof skylights may be incorporated to bring daylight deeper into interior spaces. This can improve indoor visual comfort and reduce the need for artificial lighting during daytime hours, contributing to

energy savings while creating a brighter, more pleasant environment for visitors;

- d. permeable paving
 - permeable or porous paving may be used in selected outdoor areas (e.g., walkways or forecourts) to allow rainwater to pass through the ground surface and seep into the underlying layers/soil. This approach helps reduce surface runoff, lowers peak discharge to drains and thus reduce the burden on the drainage system, and supports more sustainable stormwater management;
- e. biophilic design elements
 - the Proposed Centre may incorporate biophilic design measures that enhance biodiversity and improve visitor experience. These may include planting species suitable for butterfly foraging and habitation, installing bird houses and perches, and providing “insect hotels” to offer shelter and nesting spaces for insects. Collectively, these features can encourage urban wildlife, support ecological education, and create a more engaging natural setting, and thus strengthen the connection between visitors and nature;
- f. green roof and vertical greening
 - green roof and vertical greening may be provided on the roof and external walls to enhance green coverage, enabling the Proposed Centre to better blend with the surrounding natural environment. These features will provide vegetation layers for birds and insects to inhabit, thereby enhancing local biodiversity. These features can also help reduce direct solar radiation from reaching the building, and thus lowering indoor temperature and reducing energy consumption.

Preliminary Operational Mode

16. As mentioned in para. 5.3.2 of the Planning Statement, the Proposed Centre will function as a platform for environmental conservation and culture-based activities in collaboration with non-governmental organisations (NGOs), educational groups, relevant government departments and nearby villagers. The overall purpose of these programmes is to:

- enhance visitors’ awareness of environmental conservation, particularly the local ecology and sensitive habitats in and around Shui Hau; and
- strengthen understanding and appreciation of rural culture, including local traditions, livelihoods and community heritage.

Potential Activities

17. Activities are expected to take the form of exhibitions, seminars, talks, workshops, guided tours and field studies, supported by community

engagement and ecological monitoring initiatives, where possible. Further to the information provided in the Planning Statement, the following elaborates on potential educational elements under consideration:

(a) Exhibitions

- exhibitions supported by augmented reality (AR) technology and interactive elements to present ecological and cultural themes in an engaging manner; and
- intend to strengthen visitors' basic understanding before entering the surrounding environment, supporting more responsible behaviour for avoiding inadvertent disturbance.

(b) Talks, workshops and seminars

- talks and workshops to enhance visitors' understanding of Lantau's ecology and heritage while fostering expert collaboration;
- seminars to bring together experts and scholars to discuss conservation issues and explore collaboration opportunities; and
- intend to build an informed visitor base and create a mechanism for specialist exchange and collaboration.

(c) Guided tours and field studies

- hands-on experiences and site-based learning, such as guided tours and field studies for visitors, enabling them to gain a better understanding of local species, habitat and ecosystems through real-world observation;
- these activities would be designed to improve understanding while promoting managed access (i.e., guided movement, appropriate viewing areas, and avoidance of access to sensitive habitats); and
- intend to provide meaningful visitor experiences.

(d) Collaboration with NGOs, schools and academic institutions

- partnerships with NGOs and academic institutions to implement diversified conservation activities to foster a strong sense of stewardship for environmental protection among visitors;
- collaborations with the AFCDC on public education activities such as distributing leaflets, and sharing information with visitors on protecting horseshoe crabs and coastal environment to enhance public awareness of nature conservation;
- partnerships with schools and academic institutions to provide experiential learning opportunities for students; and
- intend to ensure programmes are credible, varied, and aligned with broader conservation objectives.

- (e) Ecological monitoring
 - subject to feasibility and detailed planning, the Proposed Centre may explore the use of artificial intelligence (AI) technology to support monitoring ecological conditions at Shui Hau; and
 - intend to strengthen evidence-based understanding of site conditions and support continual improvement of conservation and education efforts.

- (f) Community engagement and cultural continuity
 - community-based activities such as eco-tours, cultural talks, and traditional craft workshops may be organized, in partnership with nearby villagers, NGOs, and academics; and
 - intend to strengthen community cohesion and social harmony, support mutual understanding between visitors and local residents, and promote conservation awareness in a manner that respects local culture and livelihood.

Staffing and Opening Hours

18. As mentioned in Section 5.3 of the Planning Statement, the daily operation of the Proposed Centre is expected to require about five on-site staff. The Proposed Centre would operate from 9:30am – 4:30pm on Mondays, Wednesdays to Sundays, and public holidays, and would be closed on every Tuesday except public holidays.

Activity Delivery and Capacity Management

19. Activities at the Proposed Centre will primarily be conducted on a pre-registration basis to facilitate activity planning and participant management. It is anticipated that each activity session could accommodate an average of about 20 to 50 participants, with more than 60 educational activities to be held annually. Effective visitor management measures, such as registration at the entrance, will be implemented to receive walk-in visitors. This approach helps maintain oversight of visitor flows and supports clear communication of site guidance and behavioural expectations.

Foundation works with Excavation of Land

20. Excavation works will be required to construct the foundation of the Proposed Centre. Based on the available ground investigation information, the superficial soil layer of the site comprises mainly a mixture of colluvium and clayey silt, which is comparatively soft. Excavation is anticipated to be required to found the foundation at an appropriate soil stratum with sufficient bearing capacity, ranging from approximately 2.8m to 6.3m in depth. Upon completion of the foundation works, excavated soil will be backfilled to the ground up to site formation level similar to the existing ground level ranging

from approximately +2.6mPD to +6.1mPD. The depth of associated filling is expected to range from 2.2m to 5.7m. As such, the filling works will not result in formation of temporary or permanent fill slopes. The excess excavated soil will be dispatched to public filling reception facilities or other construction sites for reuse. Please refer to the supplementary figures in **Attachment 4** of the responses to comments.

21. Confirmatory ground investigation will be carried out during the construction stage to verify the geological conditions and to optimise the design of foundation works aiming to further minimise the extent of excavation and filling works.

Technical Clarifications

22. Further to the information in the Planning Statement, technical clarifications on water supply, sewage, drainage and traffic are provided in **Annex D** for PlanD's information.

Environmental Mitigation and Precautionary Measures

23. The ecological sensitivity of Shui Hau is well recognised. To avoid or minimize potential environmental impacts in various aspects, comprehensive environmental mitigation and precautionary measures have been formulated with reference made to the relevant legislations and guidelines, including but not limited to Water Pollution Control Ordinance (Cap. 358), Waste Disposal Ordinance (Cap. 354), Air Pollution Ordinance (Cap. 311), Professional Persons Environmental Consultative Committee Practice Notes (ProPECCPN), such as ProPECC PN 1/24 and ProPECC PN 2/24, Environmental, Transport and Works Bureau Technical Circular (Works) No. 5/2005, etc. The environmental mitigation and precautionary measures planned to be implemented during construction and operation stages, including those proposed in Sections 6.2 to 6.7 of the Planning Statement, are summarised in **Annex E**.

Annex D

Technical Clarifications

Further to the information provided in the Planning Statement, the following technical clarifications are provided for PlanD's information.

Water Supply

1. Further to the information about the estimated fresh water demand for the Proposed Centre provided in para. 6.6.1 of Planning Statement, the following elaboration is provided as supplementary information.
2. Reference has been made to the relevant standards, code of practice, guidelines and design manuals, including:
 - WSD's Civil Engineering Design Manual;
 - EDP's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning;
 - Manual of Mainlaying Practice (2012 edition);
 - WSD's DI N0.1309; and
 - Guidelines for Hydraulic Modelling, WS, AD/NW's memo ref. (24) in WSD/CONS/01/50 Pt.1 dated 26.6.2017
3. The total fresh water daily demand of 15.1 m³/day is conservatively estimated based on assumed water consumption of 12.0 m³/day by visitors and participants, and 3.1 m³/day by staff respectively, with reference to the EPD's Guidelines for Estimating Sewage Flows and WSD's DI 1309 on water demand. For water demand estimate purpose, 1,080 daily visitors and participants and 10 staff are conservatively assumed. A summary is provided in **Table 1**.
4. New water mains are proposed to tee off from the nearby existing water supply network. As the water demand is relatively small, the existing water supply system could cater for the water demand arising from the Proposed Centre.

Sewage

5. Further to the information about the estimated sewage generation for the Proposed Centre provided in para. 6.4.1 of Planning Statement, the following elaboration is provided as supplementary information.
6. Reference has been made to the relevant standards, code of practice, guidelines and design manuals, including:
 - EPD's "Guidelines for Estimating Sewerage Flows for Sewerage Infrastructure Planning" (GESF);
 - DSD's Sewerage Manual (Part 1) – Key Planning Issues and Gravity Collection System; and
 - DSD's Sewerage Manual (Part 2) – Pumping Stations and Rising Mains

7. The total Average Dry Weather Flow (ADWF) of 13.6 m³/day is estimated based on assumed unit flow factor of 0.01 m³/day for visitors and participants, and 0.28 m³/day by staff respectively, with reference to the EPD's Guidelines for Estimating Sewage Flows. For sewerage generation estimate purpose, 1,080 daily visitors and participants and 10 staff are conservatively assumed. A summary is provided in **Table 2**.
8. The public sewerage at South Lantau is being planned and implemented in a progressive manner. The public sewerage, including the Shui Hau Sewage Pumping Station, is yet to be available in Shui Hau. There will be no discharge of sewage from the Proposed Centre to the local environment. An underground tank is designed as an interim measure to store the sewage generated from the Proposed Center. The tank is designed with a capacity of 127 m³, which is more than 9 times the estimated total ADWF, with an additional 30% allowance for contingency.
9. A licensed service provider will collect and dispose of the stored sewage regularly. Monthly inspection and regular desilting will be carried out by the service provider to avoid excess buildup within the tank. Monitoring sensors will be installed to keep track the sewage level in the tank to prevent sewage overflow.
10. Provision for facilitating future connection to the nearby public sewerage, when available, will be allowed in the design of the Proposed Centre. The Applicant will keep in close liaison with DSD for the earliest possible sewerage connection.
11. Based on the above, no adverse sewerage impact is anticipated. The Applicant will implement appropriate environmental mitigation measures during construction and operation stages including those summarised in Annex E of Attachment 3 of this further information.

Drainage

12. Further to the information about the drainage aspect provided in para. 6.5.1 of Planning Statement, the following elaboration is provided as supplementary information.
13. Reference has been made to the DSD's Stormwater Drainage Manual (Fifth edition, January 2018) and its Corrigenda Nos. 1/2022, 1/2024 and 2/2024.
14. As mentioned in para. 6.5.1 of Planning Statement, surface runoffs from the Proposed Centre will be naturally drained or be properly collected and discharged to existing drainage system. With reference to DSD's Stormwater Drainage Manual and its Corrigenda, the runoffs from the Proposed Centre are estimated by rational method with a 50-year storm return

period adopted for estimating the rainfall intensity, taking into account the effects of climate change up to end of 21st Century and design allowance for the uncertainties in the range of possible future climate change development and global actions among nations on reducing carbon emissions. The runoff coefficient for green area, porous paving and roofing are taken as 0.2, 0.4 and 0.9 respectively. A summary of estimation of runoff from the Proposed Centre is summarised in **Table 3**.

Table 3 – Summary of estimation of runoffs from the Proposed Centre

Rainfall intensity (mm/hr)	Runoffs from the Centre (m ³ /s)			Total runoff (m ³ /s)
	Green Area	Porous Paving	Roofing	
357	0.0046	0.0176	0.0313	0.0535

15. The capacity of existing drainage system in adjacent to the Proposed Centre is reviewed and summarised in **Table 4**. It shows that the incremental surface runoff from the Proposed Centre could be accommodated by the existing drainage system. No adverse impact on the existing drainage is anticipated.

Table 4 – Summary of capacity of the existing drainage system

Cumulative runoff (m ³ /s)	Capacity of existing drainage (m ³ /s)	Proportional capacity
0.1058	0.1980	0.53

16. The Contractor will be required to observe relevant requirements to make proper temporary drainage arrangement to ensure that the existing drainage system adjacent to the Site would not be affected at the construction stage. The Contractor shall follow the relevant guidelines and site practices, including those outlined in DSD Technical Circular No. 1/2017 “Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage System”, DSD Practice Note No. 1/2004 “Design Rainfall Depth for Temporary Works within the Dry Season”, ProPECC PN 2/24 “Construction Site Drainage” and Environmental, Transport and Works Bureau Technical Circular (Works) No. 5/2005 “Protection of natural streams/ rivers from adverse impacts arising from construction works”, as appropriate.
17. Based on the above, no adverse drainage impact is anticipated. The Applicant will implement appropriate environmental mitigation measures during construction and operation stages including those summarised in Annex E of Attachment 3 of this further information.

Traffic

18. Further to the information about the traffic aspect provided in section 6.1 of Planning Statement, the following elaboration is provided as supplementary information.
19. Activities at the Proposed Centre will primarily be conducted on a pre-registration basis to facilitate activity planning and participant management. It is anticipated that each activity session could accommodate an average of about 20 to 50 participants, with more than 60 educational activities to be held annually. It is noteworthy that South Lantau Road is a Closed Road. Motorists who wish to access roads on South Lantau are required to hold a valid Lantau Closed Road Permit issued by the Transport Department. Visitors are expected to take public transport to the Proposed Centre, while schools and groups visiting the Proposed Centre will arrange coach as transport means for their participants. Information about suggested transportation for visitors and travelling routing for coaches will be disseminated through various channels, including activity registration forms, confirmation letters, and the Proposed Centre's website. Visiting schools and groups will be suggested to utilize 28-seater coaches. For smooth operation, the management staff of the Proposed Centre will provide guidance to drivers.
20. For each activity session targeted at visiting schools and groups, it is anticipated that two 28-seater coaches will be utilized to meet the anticipated participant demand, which is equivalent to three passenger car unit (pcu). The total incremental daily traffic is expected to range from five to ten coaches per day. For traffic generation estimate purpose, three pcu/hr of traffic generation rate is conservatively assumed.
21. Taken into account the three pcu/hr generated, the road link performance of South Lantau Road is presented in **Table 5**. The result shows that South Lantau Road will perform satisfactorily when the Proposed Centre is in operation.

Table 5 – Road Link Performance

Road Link	Capacity (pcu/hr)	Traffic Flow (pcu/hr) ⁽¹⁾				V/C Ratio ⁽²⁾			
		AM Peak	PM Peak	Week end Peak	Public Holiday Peak	AM Peak	PM Peak	Week end Peak	Public Holiday Peak
South Lantau Road near Tong Fuk Beach E/B	1990	95	115	115	115	0.1	0.1	0.1	0.1
South Lantau Road near Tong Fuk Beach W/B	1990	140	75	145	125	0.1	0.1	0.1	0.1

Note :

- (1) Traffic flow is forecasted with reference to the traffic count survey conducted in 2022, 2019-based Territorial Population and Employment Data Matrices from Planning Department and historical traffic data from Annual Traffic Census, taking into account of the anticipated traffic generation from the Proposed Centre during operation.
- (2) V/C ratio is rounded up to the nearest 0.1.

22. As mentioned in para. 6.1.5, the traffic generated during construction stage will be temporary and limited to small number of vehicles delivering construction plant and materials. Traffic diversion or impact on existing right-of-way, is not anticipated.
23. In view of the above, no significant traffic impact would be induced by the Proposed Centre. During the construction period, the Applicant will establish a traffic management liaison group (TMLG) to discuss and vet the temporary traffic arrangements (TTAs) for the Proposed Centre. TMLG comprises the Hong Kong Police Force, the Transport Department as well as the Applicant's site supervision team and contractor. In addition, the Applicant will set up telephone hotline and closely liaise with the local community for prompt response to public enquiries or complaints.

Table 1

Estimation on total fresh water daily demand for the Proposed Centre

Employee	Sewerage Unit Flow Factor for Employee	Conversion Factor ⁽¹⁾	Fresh Water Unit Flow Factor for Employee	No. of Employee	Fresh Water Daily Demand of Employee
	(A _E)	(B _E)	(C _E)=(A _E)/(B _E)	(D _E)	(E _E)=(C _E)*(D _E)
	(m ³ /unit/day)	(%)	(m ³ /unit/day)	(Unit)	(m ³ /day)
	0.28 ⁽²⁾	90	0.31	10	3.1

Visitor	Sewerage Unit Flow Factor for Visitor	Conversion Factor ⁽¹⁾	Fresh Water Unit Flow Factor for Visitor	No. of Visitor	Fresh Water Daily Demand of Visitor
	(A _V)	(B _V)	(C _V)=(A _V)/(B _V)	(D _V)	(E _V)=(C _V)*(D _V)
	(m ³ /unit/day)	(%)	(m ³ /unit/day)	(Unit)	(m ³ /day)
	0.01 ⁽³⁾	90	0.011	1080	12

	(F)=(E _E)+(E _V)
Total	15.1 m³/day

Notes:

(1) 90% of water demand contributes to the sewerage flow is assumed.

(2) With reference to EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, the sewerage unit flow factor comprises 0.2 m³/day for community, social and personal services and 0.08m³/day for commercial employee.

(3) It is assumed that visitors will be staying about 1 to 2 hrs per day within the facility on average. The unit flow factors for flushing use, has assumed flushing water consumption of 0.1m³/day for visitor usage. The unit flow factor from washing use is based on assumed consumption of 0.03m³/day. This results in unit flow factor of 0.01m³/day.

As backchecked with the alternative approach adopting unit water demands from WSD s DI1309, the estimated fresh water demand for the Proposed Centre will be noticeably lower.

Table 2**Estimation on Sewage Generated from the Proposed Shui Hau Education Centre**

Employee	Sewerage Unit Flow Factor for Employee ⁽¹⁾	No. of Employee	Total Average Dry Weather Flow
	(m ³ /unit/day)	(unit)	(m ³ /day)
	0.28	10	2.8

Visitor	Sewerage Unit Flow Factor for Visitor ⁽²⁾	No. of Visitor	Total Average Dry Weather Flow
	(m ³ /unit/day)	(unit)	(m ³ /day)
	0.01	1080	10.8

Total	13.6 m³/day
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Notes:

(1) With reference to EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, the sewerage unit flow factor comprises 0.2 m³/day for community, social and personal services and 0.08m³/day for commercial employee.

(2) It is assumed that visitors will be staying about 1 to 2 hrs per day within the facility on average. The unit flow factors for flushing use, has assumed flushing water consumption of 0.1m³/day for visitor usage. The unit flow factor from washing use is based on assumed consumption of 0.03m³/day. This results in unit flow factor of 0.01m³/day.

Annex E

Environmental Mitigation and Precautionary Measures

Reference has been made to the relevant legislations and guidelines, including but not limited to:

- Water Pollution Control Ordinance (Cap. 358)
- Waste Disposal Ordinance (Cap. 354)
- Air Pollution Control Ordinance (Cap. 311)
- ProPECC Practice Notes (latest version)
- Environmental, Transport and Works Bureau Technical Circular (Works) No. 5/2005

Aspects	Construction phase	Operation phase
Air Quality	<ul style="list-style-type: none"> • All trucks carrying dusty loads are required to be securely covered to prevent dust dispersion as per Air Pollution Control (Construction Dust) Regulation • The Site will undergo regular spraying with water on construction day, in alignment with the dust suppression measures outlined in the Air Pollution Control (Construction Dust) Regulation. Wheel washing system at exit points of the site will be provided • Excavation activities will be strategically sequenced to minimize the duration and extent of dust-generating operations at the Site • A limited number of powered mechanical equipment and vehicles will be utilized at the Site. The non-road mobile machinery used at the Site will follow the prescribed emission standards and requirement under Air Pollution Control (Non-road Mobile Machinery) 	<ul style="list-style-type: none"> • Given no openable window and fresh air-intake will be located within the 5m buffer distance with reference to Hong Kong Planning Standards and Guidelines, no adverse air quality impact on the Proposed Centre due to vehicular emission arising from South Lantau Road is anticipated

Aspects	Construction phase	Operation phase
	<p>(Emission) Regulation</p> <ul style="list-style-type: none"> • Appropriate mitigation measures under EPD's Recommended Pollution Control Clauses (Air Pollution Control) for Construction Contracts will be implemented during the construction phase to minimise air quality impacts on the Site • Before works commence, the Contractor will submit their working methods, construction plant/equipment lists, and air pollution control plans for inspection and approval 	
Noise	<ul style="list-style-type: none"> • Quality Powered Mechanical Equipment recognized by EPD will be used • Appropriate mitigation measures under EPD's Recommended Pollution Control Clauses (Noise Control) for Construction Contracts, such as use of quieter construction plants (e.g. mini-excavators and noise enclosures), will be implemented during the construction phase to minimise noise impacts on the Site and its surroundings • Construction Noise Management Plan will be prepared by in accordance with ProPECC PN 1/24 "Minimizing Noise from Construction Activities" 	<ul style="list-style-type: none"> • With reference to "Good Practices on Ventilation System Noise Control", partial enclosures and silencers will be applied for the mechanical ventilation and air conditioning system equipment to achieve noise attenuation • Prior to the operation phase, commissioning test will be conducted to ensure the fixed plant noise could comply with relevant noise criteria as stipulated in the HKPSG • A regular plant maintenance programme will be developed and implemented so that equipment is properly operated and serviced in order to maintain a controlled level of noise
Waste management	<ul style="list-style-type: none"> • The inert C&D materials generated during the construction will be reused on-site as far as practicable. The remaining materials will be dispatched to public filling reception facilities or other 	<ul style="list-style-type: none"> • Recycling bins will be provided to promote recycling of waste • General refuse will be collected on a regular basis and delivered to the refuse transfer station by a reputable

Aspects	Construction phase	Operation phase
	<p>construction sites for reuse</p> <ul style="list-style-type: none"> • Non-inert C&D materials such as timber and woody materials generated from tree felling and vegetation clearance will be systematically delivered to the Yard Waste Recycling Centre in Y-Park for recycling • Non-inert C&D materials such as paper, plastic, steel, and glass will be reused and recycling wherever feasible • A trip-ticket system will be implemented to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping • All dump trucks engaged on site will be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routes and parking locations • Appropriate mitigation measures under EPD's Recommended Pollution Control Clauses (Waste Management) for Construction Contracts will be implemented during the construction phase • Waste Management Plan will be prepared for waste management and reduction • If chemical wastes are to be produced at the construction site, the Contractor will be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes 	<p>waste collector to avoid odour nuisance or pest / vermin problem</p> <ul style="list-style-type: none"> • For yard waste generated, the 3R principles - Reduce, Reuse, and Recycle - will be duly considered. Priority will be given to reuse and recycling options wherever practicable, thereby minimising the quantity of yard waste requiring final disposal

Aspects	Construction phase	Operation phase
Ecology	<ul style="list-style-type: none"> • Temporary works areas, storage areas and human activities associated with the construction works will be confined within the Site • Robust fencing will be used to fence off the Site to ensure the construction works will not encroach onto adjacent habitat areas • Good practices with respect to drainage aspect as mentioned in under this Annex will be implemented. In the event of rain or at any time when rainstorms are likely to happen, exposed surface within the works area would be covered by tarpaulin or by other means. 	<ul style="list-style-type: none"> • Mitigation measures with respect to lighting and bird friendly design aspects mentioned under this Annex will be incorporated • The well-vegetated riparian area will be retained as far as practicable with the supplementary planting of whip mix
Drainage	<ul style="list-style-type: none"> • Silt removal facilities, i.e. sand/silt traps, recommended in Appnedix A1 of ProPECC PN2/24 will be installed • Good site practices in accordance to ProPECC PN 2/24 “Construction Site Drainage” and Environmental, Transport and Works Bureau Technical Circular (Works) No. 5/2005 “Protection of natural streams/rivers from adverse impacts arising from construction works”, DSD Technical Circular No. 1/2017 “Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage System”, DSD Practice Note No. 1/2004 “Design Rainfall Depth for Temporary Works within the Dry Season”, will be implemented • A watercourse protection zone will be established at a minimum distance of 3 metres from the bank of the adjacent watercourse, within which no material 	<ul style="list-style-type: none"> • The sewage generated from the Proposed Centre will be stored in an underground tank • A licensed service provider will collect and dispose of the stored sewage regularly • Monthly inspection and regular desilting will be carried out by the service provider to avoid excess buildup within the tank • Monitoring sensors will be installed to keep monitoring the sewage level of the tank to prevent sewage overflow • Provision for facilitating future connection to the nearby public sewerage, when available, will be allowed

Aspects	Construction phase	Operation phase
	<p>stockpiling and construction activities will be allowed</p> <ul style="list-style-type: none"> • A watercourse protection proposal, covering drainage layout, erosion and sediment control measures, monitoring plan and emergency spill response procedures, will be prepared prior to construction • Precautionary actions for rainstorms will be taken with reference to the guidelines in Appendix A2 of ProPECC PN 2/24 • In the event of rain or at any time when rainstorms are likely to happen, exposed surface within the works area would be covered by tarpaulin or by other means • Construction debris and spoil would be covered up and /or disposed of as soon as possible • Sufficient mobile toilets will be provided in the works area, with a licensed waste collector employed to clean the toilets on a regular basis. All discharges during the construction phase of the Project are required to comply with the WPCO-TM issued under Section 21 of the WPCO • Waste oil will be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance • Oil and fuels should only be used and stored in designated areas which have pollution prevention facilities • Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease in the storm water drainage system 	

Aspects	Construction phase	Operation phase
	<ul style="list-style-type: none"> Intercepting channels shall be provided to prevent storm runoff from washing across exposed soil surfaces 	
Traffic	<ul style="list-style-type: none"> The traffic generated from vehicles delivering construction plant and materials during construction stage will be limited and traffic impact is not anticipated 	<ul style="list-style-type: none"> The education activities will be conducted mainly via appointment-based registration to facilitate event arrangement and visitor management Information will be disseminated through various channels about public transport means to the Proposed Centre and the routing to the Proposed Centre for schools and groups who will arrange coach as transport means for their participants 1 no. of L/UL bay for coach will be provided within the Site to minimise the possible impact on South Lantau Road During the construction period, the Applicant will establish a traffic management liaison group (TMLG) to discuss and vet the temporary traffic arrangements (TTAs) for the Proposed Centre. TMLG comprises the Hong Kong Police Force, the Transport Department as well as the Applicant's site supervision team and contractor. In addition, the Applicant will set up telephone hotline and closely liaise with the local community for prompt response to public enquiries or complaints.

Aspects	Construction phase	Operation phase
Monitoring, Inspection and Reporting	<ul style="list-style-type: none"> • Regular checking will be conducted to ensure satisfactory implementation of necessary mitigation measures on site • Requirements for conducting regular site environmental monitoring will be specified in the contract documents. “Emergency and response plan” will also be specified for prompt notification of any environmental non-compliance events and responsive actions needed to be taken 	-
Lighting and bird friendly design	<ul style="list-style-type: none"> • Lighting provision to meet operational requirement or for safety and security purpose will be allowed as minimum as practicable and carefully controlled at night to minimize potential light impact. Lighting will be switched off or dimmed down when it is not operationally required • All luminaires will be downward-facing and appropriately shielded • No direct glare will be directed towards adjacent habitat areas, particular the adjacent watercourse and sandflat • A lighting plan, covering illumination contour drawings, lighting fixture details orientation and shielding arrangements will be prepared before commencement of the construction 	<ul style="list-style-type: none"> • Lighting provision to meet operational requirement or for safety and security purpose will be allowed as minimum as practicable. Lighting will be switched off or dimmed down when it is not operationally required • All luminaires shall be downward-facing and appropriately shielded • No direct glare shall be directed towards adjacent habitat areas • Bird friendly design will be incorporated to minimise the risk of bird collisions, including applying high contrast visual markers on exterior glass surfaces and switching off or dimming down the lighting when it is not operationally required

Attachment 7

major odour generating equipment and processes will be confined inside the substructure / superstructure. The exhaust, located at the roof top of the SPS, will be the only odour emission source of SPS. The air inside the SPS will be collected and passed through the deodorization facility with odour removal efficiency not less than 99.5%. Referring to the odour contour plot presented in Figure 7.7 (1.5m), Figure 7.14 (5m) and Figure 7.21 (7.6m) of the Approved EIA Report, the predicted odour levels at the boundary of the SPS would be less than 1 odour unit, which was well below the odour criterion. In fact, the building height of Proposed Centre would not be higher than 5 m. Therefore, no adverse odour impact to the Proposed Centre is anticipated.

- 6.2.12 Vehicular emission is mainly the air pollutant emission source in the study area. Site visit was conducted on 3 February 2026, there was no chimney and nor pier found within 500m assessment area from the Site. This project would not have any industrial chimney.

Noise

Construction Phase

- 6.2.13 Construction activities such as excavation, site formation and building works may pose noise impact. As the scale of construction works is small, the number and size of mechanical plant and equipment involved will be minimal. Quality powered mechanical equipment and quieter plant will be used to mitigate the noise at the source. Appropriate mitigation measures under EPD's Recommended Pollution Control Clauses (Noise Control) for Construction Contracts will be implemented during the construction phase to minimise noise impacts on the Site and its surroundings.

Operational Phase

- 6.2.14 During operational phase, mechanical ventilation and air conditioning system (MVAC) equipment installed at the Proposed Centre may incur fixed noise. The MVAC equipment will be enclosed within the building except the outdoor units of the air conditioning system on roof. The planned fixed noise sources of the Proposed Centre will be designed to comply with the noise standard as stipulated in the HKPSG. With reference to "Good Practices on Ventilation System Noise Control" (GP-VS), partial enclosures and silencers will be applied to achieve noise attenuation. Prior to the operation phase, commissioning test will be conducted to ensure the fixed plant noise could comply with relevant noise criteria. A regular plant maintenance programme will be developed and implemented so that equipment is properly operated and serviced in order to maintain a controlled level of noise. With implementation of aforementioned mitigation measures, no adverse fixed noise impact due to the Proposed Centre would be anticipated.
- 6.2.15 Considering that induced road traffic during operation of the Proposed Centre is low and all vehicles travelling on the closed roads on Lantau are required to possess valid Lantau Closed Road Permits, significant increase in road traffic noise level is not anticipated. Therefore, there will be no adverse noise impact from induced traffic during operation phase. The Proposed Centre, including the office and multi-purpose room will be equipped with air-conditioning and do not rely on opened windows for ventilation. As such, no adverse road traffic noise impact to the Proposed Centre is anticipated during operation phase.

Waste Management

- 6.2.16 The relevant legislation, standards and guidelines on assessment of waste management implications include:-
- Waste Disposal Ordinance (Cap. 354);
 - Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
 - Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);