S16 Application TPB/A/TP/684 - Further Information to TPB

1. INTRODUCTION

The S16 Application (TPB/A/TP/684) for the proposed Tai Po Kau Nature Academy at Lots 1, 2, 4-8 in D.D.33 and adjoining Government land in Tai Po Kau, Tai Po was considered by the Town Planning Board on 21.4.2023. After giving consideration to the application, the TPB decided to defer a decision on the application pending supplementary information from the applicant on (i) green building design and construction method; (ii) construction impacts; (iii) effective management measures to minimise impact on the surroundings; (iv) possibility to allow more public access (without prior appointment) to the proposed development; and (v) elaboration on how the proposed development can complement the Tai Po Kau Nature Reserve, for further consideration of the TPB.

This Further Information is intended to respond to TPB's comments and elaborate on the merits, and seek for the approval of the S16 application.

2. GREEN BUILDING DESIGN

Tony Ip, who is a renowned award-winning sustainable/ green design architect, will be responsible for the design and overall project development.

The project adopts a sustainable design concept, namely the **"Three Zeros"**, indicating ***"Zero Carbon", "Zero Waste Water", and "Zero Distance to Nature".***

Elements from the existing structures will be preserved or repurposed to reduce the carbon footprints in the construction stage. By adopting passive design strategies, the Visitor Centre and the Activity Centre will use split-levelled ceilings design to introduce natural lighting and reinforce natural ventilation. These buildings will provide flexible activity areas with folding walls, which can be opened up and turned into a space in complete unison with nature. In addition, ecologically responsible building design is adopted, such as bird-friendly windows. An on-site sewage treatment plant will be installed in the Plant Nursery to minimise wastewater output for the Nature Academy. Furthermore, sustainable construction materials adopt the principles of **REUSE**,

including renovating existing structures, using recycled materials (e.g. recycled debris salvaged from demolition waste as the inner core of gabion walls), and design for manufacture and assembly (DfMA) to minimise site work; **REDUCE,** including material optimization and the specification of low to zero carbon materials (e.g. low carbon concrete with pulverized fuel ash (PFA) or ground granulated blast-furnace slag (GGBS); and SEQUESTER, including the use of carbon sequestering or bio-based materials (e.g. bamboo, glulam and cross-laminated timber).

The visitor centre will be located at the entrance of the site and will be redeveloped from an existing structure with salvaged elements, incorporating a natural and green design with openable walls. The activity centre, situated uphill, will also feature a natural and green design with openable walls and flexible floor use and will preserve an existing rock to create a courtyard feature. The plant nursery will serve as a working area for the native plant nursery and field study works and will feature eco-friendly facilities, such as outdoor nursery and seed preparation areas, as well as a sewage treatment plant and E&M facilities.

3. CONSTRUCTION METHOD

The construction methods target minimizing negative environmental impacts and carbon emissions. One approach is on-site pollution-free and decarbonization, which involves transitioning to become 100% diesel generator-free and expanding the use of mass battery energy storage. This includes providing electricity and battery energy storage systems (BESS) to support further electrification and increased use of electric-powered plants and equipment. Besides, solar energy can also be used to power construction activities. The construction approach will adopt lean construction principles and prioritize achieving cut-and-fill balance. The project will not require significant site formation and foundation works, and only minor excavation will be necessary to enhance the pond. The use of heavy machinery and construction vehicles will be avoided and minimised. It is expected that not more than 5 trips of construction vehicles of maximum length 5.7m will be used per day.

The **construction process** will primarily consist of demolishing two abandoned, single-story buildings and modifying existing structures to create a visitor centre, activity centre, and plant nursery. Construction methods will include casting in-situ reinforced

concrete for spread footing foundations and some parts of the superstructure, as well as installing pre-fabricated and precast structural and non-structural components and building service systems and equipment. Fitting-out works, access path formation and landscaping works will also be carried out, along with slope upgrading works if deemed necessary.

The **construction period** for the project is expected to be approximately 12 months. Major construction works include site formation works, foundation works, substructure & superstructure concreting works and external drainage works will be carried out during the dry season, i.e. November to March, while minor construction works include on-site assembly & installation of prefabricated building components, building services installation, fitting-out works and soft landscaping works will be carried out in wet/ dry season. Due to the small scale of the construction works with the adoption of electrification and lean construction approaches, any potential dust, noise, and water quality impacts resulting from construction activities are expected to be minimal. As the project primarily involves modifying existing building structures and only minor excavation works, the amount of construction and demolition materials generated will be small.

4. CONSTRUCTION PHASE ECOLOGICAL IMPACTS AND PROPOSED MITIGATION MEASURES

MINIMISATION OF ECOLOGICAL IMPACTS

- The Application Site is located outside of the Conservation Area and Tai Po Kau Nature Reserve / Tai Po Kau Special Area. All proposed developments will be located within the boundary of the Application Site, and will not encroach into any recognised sites of conservation importance. Therefore, **no direct impacts to any recognised sites of conservation importance will occur**.

- The Application Site is currently vacant with weedy and ruderal vegetation cover. There are several dilapidated single-storey existing structures. All proposed development would be confined to the footprints of existing structures, where three of them would be redeveloped into the Tai Po Kau Nature Academy, and the remaining two would be demolished. As such, **there will be no loss of any natural or semi-natural habitats**.

- There are no floral species of conservation importance present within the Project's footprint. In terms of fauna species of conservation importance, it is considered that their occurrence in the Application Site is only of a transient nature, meaning that they are not dependent on the Application Site. Most importantly, these species were recorded outside of the project footprint, and are highly mobile. As such, **no direct loss or harm to any species of conservation importance are anticipated.**

- Potential indirect impacts to other habitats and species of conservation importance during the construction phase may include artificial light, construction noise, vibration, dust, water quality impacts and other forms of human disturbances arising from construction activities. Nevertheless, considering the small scale of construction works required for the Project, the **potential indirect impacts will be minimal** as mainly modification of the existing building structures and only minor excavation works will be required.

PROPOSED MITIGATION MEASURES

- To minimise the construction phase disturbance to Tai Po Kau Nature Reserve and the associated wildlife, the use of heavy machinery and construction vehicles will be avoided and minimised when and where possible. Any use of heavy machinery and construction vehicles will be scheduled outside of the wet season during which breeding of most terrestrial fauna takes place. Major construction activities shall be carried out in the dry season (from November to March) only. There will be no more than 5 vehicle trips per day during construction period. To minimise disturbance to the wildlife, the maximum length of vehicle used would be 5.7m, where normally the size for construction vehicles is longer than 9m. It is considered that the volume of traffic generated from the construction activities would not generate significant additional impacts to the Tai Po Kau Nature Reserve.

- **Construction dust would be suppressed to avoid and minimise** the dust covering leaves of plants that would affect their photosynthesis, and thus their health and growth. Measures to be adopted include:
  1. *Regular watering to reduce dust emissions from exposed site surfaces and unpaved roads.*
  2. *Proper storage of construction materials.*
  3. *The use of tarpaulin covering of all dusty vehicle loads transported to, from and*

between site locations.

- **Noise impact during construction phase would be avoided and minimised** to reduce the disturbance to the habitats (including those in the Tai Po Kau Nature Reserve) adjacent to the works areas. Measures to be adopted include:
  1. *Machines, equipment and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;*
  2. *Machines and plants known to emit strong directional noise should, wherever possible, be orientated so that the noise is directed away from the nearby habitats; and*
  3. *Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.*

- In order to **avoid impacts of run-off causing pollution or sedimentation in the habitats adjacent to the Application Site** (including those in the Tai Po Kau Nature Reserve), it will be necessary to implement standard construction site practices in these sites that limit run-off into adjacent water bodies. Generally, indirect water impact to any aquatic fauna during the construction phase should be minimised by **implementing water control measures** (ETWB TCW No. 5/2005) and the Practice Notes for Professional Persons on "Construction Site Drainage" (ProPECC PN1/94) in controlling water pollution at construction site to avoid direct or indirect impacts any watercourses and good site practices. In particular, the following good site practices/water control measures should be adopted to minimise any pollution entering the watercourse nearby:
  1. *General refuse and construction wastes should be collected and disposed of in a timely and appropriate manner.*
  2. *The Application Site should be properly fenced off with hoarding or with sandbag stockpiled along the site boundary. Sediment traps should be installed within the Site to collect and control any construction run-off.*
  3. *All works and storage area should be restricted to the Application Site boundary and in accordance with the Master Layout Plan.*
  4. *Covering of any exposed soil or other loose materials with tarpaulins to prevent erosion.*
  5. *Exposed soil to be covered as quickly as possible following formation works, then seeded and covered with a biodegradable geotextile blanket for erosion control*

purposes.

6. *A temporary sewage treatment system or portable chemical toilets should be designed and installed to collect wastewater and prevent it from entering nearby habitats.*
7. *The proposed works site inside or in the proximity of nearby habitats should be temporarily isolated, such as by placing of sandbags or silt curtains with a lead edge at the bottom and properly supported props, to prevent adverse impacts on these areas.*
8. *Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby habitats by rain.*
9. *Contractors should adhere to a strict "clean site" policy, with all construction waste transported to predetermined sites for safe disposal. Under no circumstances should there be any disposal of waste oil or other materials on site.*
10. *Vehicles and other plant should be carefully maintained and properly used to minimise the chance for accidental spillage.*

5. ADDITIONAL EFFECTIVE MANAGEMENT MEASURES

Prior to the commencement of any works, the appointed Contractor / Construction Manager should conduct a formal briefing to the workforce to reinforce the message that the works are being conducted near Tai Po Kau Nature Reserve, an ecological and environmentally sensitive area and the surrounding areas. Workers should also be informed about the locations of any identified rare/ protected plant species adjacent to the Application Site, concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.

The workforce should be reminded of the need for environmental diligence throughout the duration of works, in particular to avoid littering, improper disposal of construction waste, avoid unnecessarily damage to vegetation or cause noise or visual disturbance during the works.

6. POSSIBILITY TO ALLOW MORE PUBLIC ACCESS (WITHOUT PRIOR APPOINTMENT) TO THE PROPOSED DEVELOPMENT

Yes, it is our original intention that the educational site should be open to public.

However, Transport Department is very concerned about the existing situation of illegal on-street parking near the entrance to Tai Po Kau Nature Reserve and is worried that the proposed Nature Academy would aggravate the situation. After discussion with Transport Department, the restrictions on the number of visitors and prior registration arrangement were proposed and accepted by Transport Department in order to avoid traffic congestions and on-street parking downhill. Besides, the proposed Nature Reserve also has carrying capacity. Due to the nature and operation of the Nature Academy, it will be limited to a maximum daily capacity of total 200 visitors during weekdays and 400 visitors during weekends. Therefore, effective management measures will be practiced. We understand that AFCD also have concern on overspilling effect on TPK Nature Reserve if pre-registration for individual visitors at the entrance of the Nature Academy is allowed but they do not successfully obtain a place to enter. Therefore, we will take a cautious and gradual approach after the Nature Academy is fully developed. It is expected that the review on opening up to more public access will take place after one year after adequate experience is gained in both dry and wet season.

7. THE PROPOSED DEVELOPMENT CAN COMPLEMENT TAI PO KAU NATURE RESERVE

At present, the overall education gain for general visitors to TPK is relatively low, due to the limited amount of educational hardware and activities (although it is duly noted that in TPK, AFCD has provided and managed hardware and infrastructures suitable for education, and has also been offering some education activities). Nonetheless, it is identified that there is a lack of supporting facilities; a sharing platform for collaboration opportunities for ecology/environmental science researchers; indoor venues for schools/NGOs to conduct education activities before entering the Nature Reserve; and resources to facilitate exploration of biodiversity for the general visitors.

In fact, in one of our previous meetings with AFCD, the department did mention that they believe our work will be a good complement to the Reserve. It is agreed in the meeting that AFCD's work and the proposed Nature Academy would produce a synergistic contribution to nature education.

In fact, in one of our previous meetings with AFCD,AFCD pointed out that because of TPK's status (i.e. a Nature Reserve), they tend to limit activities there. The department

did mention that they believe our work will be a good complement to their reserve.

Outdoor Wildlife Learning Hong Kong (OWLHK) will be commissioned to operate the field study/ education/visitor centre. OWLHK is a registered charity and a professional environmental education organization that is very experienced in conducting outdoor educational programmes for different age groups. They have various collaborations with AFCD and different Government Departments.

It is intended that the TPK Nature Academy will be the first nature education centre with the theme of forest ecology and forest ecosystem services in Hong Kong. With the location right OUTSIDE of the Tai Po Kau Nature Reserve, it will be the Gateway to the exploration of forest ecology and connecting with nature, for environmental conservation, education and sustainability. It will provide resources for the visitors to explore the forest biodiversity. Together with various educational activities, the TPK Nature Academy opens the senses of visitors to connect with nature. It will therefore complement and support the functions of Tai Po Kau Nature Reserve and provides demonstration for carbon neutrality. As green design is adopted to achieve Zero Carbon and Zero Waste Water, together with the nursery, it demonstrates the ecosystem services of forest for climate regulation and carbon neutrality. It will also function as a platform of nature community for all the stakeholders to use and to achieve 4 Cos: Co-use, Co-learn, Co-educate & Co-conserve. The vision and management plan of TPK Nature Academy is attached at Appendix 1.

8. CONCLUSION

TPK Nature Academy will be the first nature education centre with the theme of forest ecology and forest ecosystem services in Hong Kong. It will complement the Tai Po Kau Nature Reserve in nature education. With the green building design, mindful and effective construction management, the insignificant impact on the surroundings can be further minimised. Moreover, the operator, OWLHK who is a registered charity and a professional environmental education organization, will be responsible for the management and conducting outdoor educational programmes for different age groups. It is therefore provides planning gain and is beneficial to the community. Members of the Town Planning Board are requested to approve the application.