



33/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
香港灣仔告士打道 5 號稅務大樓 33 樓

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Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report

Shuen Wan Golf Course

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report on “Shuen Wan Golf Course” (“the Project”) submitted under Section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-260/2019). Sha Lo Tung Development Company Limited (SLTDC) (“the Applicant”) and its consultants will present the report at the meeting of the EIA Subcommittee.

ADVICE SOUGHT

2. Members’ views are sought on the findings and recommendations of the EIA report. The Director of Environmental Protection (DEP) will take into account the comments from the public and the Advisory Council on the Environment (ACE) in deciding whether or not to approve the EIA report under Section 8(3) of the EIAO.

BACKGROUND

3. For the purpose of the long-term conservation of Sha Lo Tung (SLT), the Chief Executive in Council gave in-principle agreement in June 2017 to the pursuit of a proposal for the contemporaneous surrender of private land with high ecological importance in SLT by SLTDC to the Government and granting of a piece of land at the Shuen Wan Restored Landfill (SWRL) in Tai Po to SLTDC (“the non-in-situ land exchange”). Under the non-in-situ land exchange proposal, SLTDC will pursue the

development of a private golf course at the SWRL site, while SLT will be put under active conservation management by the Government.

4. This EIA report covers the golf course development at SWRL by SLTDC. The Project comprises the construction and operation of an 18-hole golf course and its ancillary facilities; and associated infrastructure such as drainage system, sewerage system, irrigation system, etc. to support the daily operations of the golf course.

5. The Applicant submitted the EIA report for the Project for approval. DEP, in consultation with the relevant authorities, considered that the EIA report has met the requirements in the EIA Study Brief and the Technical Memorandum on EIA Process (TM), for the purpose of its exhibition for public inspection under Section 7(4) of the EIAO.

NEED FOR THE PROJECT

6. With the development of the golf course at the SWRL, the SLTDC will surrender the private land with high ecological importance at SLT to the Government for pursuing long-term conservation of Sha Lo Tung under the New Nature Conservation Policy. According to EIA Report, the golf course project would fulfil the aspiration from Tai Po District Council to establish a golf course in Tai Po since 2004.

ENVIRONMENTAL BENEFITS

7. A number of environmental initiatives have been recommended for incorporation in the detailed design of the Project. Key environmental benefits and achievements of the Project identified during the EIA process include:

- (i) **Provide opportunity to realise the conservation of SLT:** Upon completion of the non-in-situ land exchange, the surrendered land together with the existing Government land in SLT which is considered to be of high ecological value will be put under active conservation management by the Government;
- (ii) **Rehabilitate landscape character, reinstate and enhance planting areas of SWRL site:** The Project will replace the existing amenity landscape of the SWRL site with recreational landscape. With the plantation of new trees surrounding the play areas and in-fill whips on preserved slopes, landscape

character of the Project site will be enhanced;

- (iii) **Ecological enhancements at SWRL:** The existing plantations at SWRL are largely exotic or pioneer species. Trees felled under the Project will be compensated with native trees or locally adopted species as far as practicable to provide more resources and increase utilisation of wildlife, thereby enhancing ecological value of the Project site;
- (iv) **No marine construction works:** The construction methodology has been designed to eliminate any need for marine construction works;
- (v) **No discharge of first flush surface runoff to Tolo Harbour:** On-site underground water storage tanks with a total volume of 30,000m³, i.e. equivalent to the total volume of 12 Olympic-size swimming pools, have been included in the design to collect and reuse stormwater run-off which contains agrochemicals including pesticides (i.e. fungicides, insecticides & herbicides) and fertilizers. Only when the water storage tanks are full would the additional runoff bypass the tank and enter Tolo Harbour. There will be no direct discharge from water storage tanks to Tolo Harbour;
- (vi) **Minimised fresh water consumption:** Rainwater will be harvested and stored in the water storage tanks and additional stormwater will be extracted from a nearby existing open channel to minimise consumption of fresh water from Water Supplies Department (WSD);
- (vii) **Optimal use of agrochemicals:** The Applicant will devise a Turfgrass Management Plan during detailed design stage to establish the optimal approach for agrochemical applications, and ensure best practices are incorporated for an environmentally responsible golf course;
- (viii) **Minimal export of inert construction & demolition material:** The terrain profile of the Project has been designed for in-situ reuse of construction and demolition materials as far as practicable to minimise export of the material; and
- (ix) **Maximise recycling of natural resources:** Wood and barks recovered from tree and shrub will be reused as mulching for planting/landscape areas as much as possible.

DESCRIPTION OF THE PROJECT

8. The Project site is located at SWRL with an area of about 53 ha. The location and layout plan of the Project is shown in **Figure 1**. The Project is a Designated Project under Item O.1, Part I, Schedule 2 of the EIAO, for “*an outdoor golf course and all managed turf areas*”.

9. The EIA report covers two development scenarios. Besides the development scenario described in the Project Profile, an additional scenario with staff quarters and overnight accommodations as Ancillary Facilities has been studied in the EIA. Assessment results of the EIA concluded that the environmental impacts caused by both scenarios (i.e. with and without the staff quarters and overnight accommodations) of the Project are environmentally acceptable.

CONSIDERATION OF ALTERNATIVE OPTIONS

10. The EIA report has considered alternative options for the development of the Project, including project design, layout options, and construction methodologies to avoid and minimise environmental impacts. The key alternative considerations and outcomes in the EIA report are highlighted below:

- (i) In order to retain an existing plantation area of about 1.2 ha frequently used by Collared Crow (*Corvus torquatus*) 白頸鴉 (a species ranked as Vulnerable by IUCN Red List) and Black Kite (*Milvus migrans*) 黑鳶 (a species protected under Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586) as night roost, the Project layout was adjusted during the course of the EIA study by reducing the size and changing the orientation of the driving range;
- (ii) The construction programme and phasing has been designed to minimise the duration of possible indirect disturbance to roost sites of Collared Crow and Black Kite. Existing plantation trees will be removed in phases with new tree groups planted before moving onto the next phase of site clearance works;
- (iii) Box culverts instead of drainage conduits have been recommended to provide maximised storage volume for rainwater harvesting;
- (iv) Fresh water consumption for irrigation is minimised by adopting rainwater harvesting, reuse of surface runoff, and extraction of stormwater from a nearby existing open channel. Freshwater supply from WSD will be only used as a back-up. Other options of water supply, e.g. seawater desalination

and the use of treated effluent from adjacent Tai Po Sewage Treatment Works (TPSTW), have also been explored but abandoned due to environmental impact such as need to discharge effluent into Tolo Harbour; and

- (v) Hazard to life risks is avoided by locating the Ancillary Facilities at the southeastern corner of Project site, away from Tai Po Gas Production Plant and outside its consultation zone.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Water Quality

11. The Project is land-based and does not involve any dredging or marine works. To avoid site runoff during construction from entering Tolo Harbour, the EIA report recommended that the construction of on-site water storage tanks should commence in the first phase of the Project to allow early interception of construction site runoff for sedimentation before discharge to municipal storm drain system at Ting Kok Road. During the operational phase, stormwater run-off which contains agrochemicals will be conveyed by drainage system to water storage tanks with a total volume of 30,000m³. The water collected at the storage tanks will be reused on site for irrigation only and direct discharge into nearby water bodies including the Tolo Harbour will be prohibited although the EIA has assessed that the agrochemical concentrations of surface runoff collected in water storage tanks would comply with the criteria of Organisation for Economic Co-operation and Development (OECD)'s Predicted No Effect Concentration (PNEC) for fungicides & insecticides, and the 2016 annual mean of total inorganic nitrogen (TIN) and total phosphorus (TP) measured at the nearest EPD's marine monitoring station (TM3) in Tolo Harbour and Channel Water Control Zone.

12. When the water storage tanks are full under prolonged and heavy rainfall events, the surface runoff will bypass the water storage tanks and flow directly to Tolo Harbour. Given the dilution effect, it is predicted that the level of agrochemicals concentration in the bypass water would be lower than that of the water in storage tanks therefore will not cause unacceptable water quality impact to Tolo Harbour. As hand weeding will be the primary means of weed control, the concentration of residual herbicide in runoff is considered insignificant in the EIA study. In addition, the Applicant will prepare a Turf Grass Management Plan during detailed design stage to provide further details on the application of agrochemicals.

13. A 500 m³/day sewage pumping station and associated sewers will be constructed to convey wastewater from the Project to the public sewers at Ting Kok Road for treatment at TPSTW.

14. With the recommended design and mitigation measures in place, adverse water quality impact from Project is not anticipated.

Ecology

15. The roost surveys conducted during the EIA study confirmed that the Project site is used by Collared Crow for pre-roosting and roosting, and Black Kite for roosting. The EIA report recommended preserving several tree groups totalling 6.1 ha, including those most frequently used by Collared Crow and Black Kite, in particular a major area of 1.2 ha at the southern side of the Project site. The future golf course will include new plantation areas of about 10 ha, and the planting mix will include Horsetail Tree (*Casuarina equisetifolia*) 木麻黃, the species observed to be most frequently used for roosting, and other heavy standard and mature-size trees. In particular, native trees with large growth form will be planted to enhance the ecological value of the Project Site. Two individuals of protected tree species Incense Tree (*Aquilaria sinensis*) 土沉香 within Project boundary will be retained in-situ.

16. To mitigate construction impact on night roosts, the EIA report recommended restricting the working hours on the use of Powered Mechanical Equipment near the preserved tree groups to end at least one hour before sunset each day, at a fixed time between 16:30 and 18:00, to be varied on a monthly basis to suit the season. Tree planting is also recommended to be implemented in phases to ensure availability of roosting sites at all times during construction stage.

17. With the proposed design and mitigation measures in place, the residual ecological impacts are considered acceptable.

Landfill Gas Hazards and Impact to SWRL

18. The Project will be developed on top of the SWRL. A qualitative Landfill Gas Hazard Assessment was conducted in the EIA, which concluded that the risk level for landfill gas impacts during construction and operation phases are acceptable with the implementation of protective and precautionary measures. During construction, good site practices and confined space entry safety procedures are recommended to be adopted. During operation, mechanical ventilation system for

indoor areas with unrestricted access, wind scoops for car park, compacted high density concrete and gas-proof membranes in floor and wall construction, and always-on gas detection system in all rooms and indoor environment are recommended to be provided as protective and precautionary measures.

19. The expected modification works to existing landfill restoration facilities include vertical/ horizontal extension and relocation of landfill gas and leachate extraction wells, relocation/ modification of leachate pump houses, etc. With the adoption of proposed precautionary measures, e.g. relocation of extraction wells in phases and in small batches, ensuring active pumping within the waste mass, etc., adverse impact on existing landfill restoration facilities is not anticipated. The Applicant will prepare a Design Plan and a Works Plan during detailed design stage to provide details on landfill restoration facilities affected and to evaluate the potential environmental impacts and precautionary measures required.

Landscape and Visual

20. A broad brush tree and vegetation survey and a review field survey after the Typhoon Mangkhut incident were conducted during the EIA, which identified 11,198 nos. of trees within Project site. One each of India-rubber Tree (*Ficus elastica*) 印度橡樹 and Chinese Banyan (*Ficus microcarpa*) 細葉榕, both registrable as Old and Valuable Trees, and 2 nos. of Incense Tree (*Aquilaria sinensis*) 土沉香 are recommended to be retained in situ. A total of 1,874 nos. (17%) of trees are recommended to be retained, 326 nos. (3%) transplanted and 8,998 nos. (80%) felled. A compensatory planting ratio of 1:1 is recommended by planting 4,180 nos. of trees and 4,818 nos. of whips. Broadleaf and evergreen trees, native or locally adopted tree species, and ornamental species and flowering trees are recommended to be planted to enhance the biodiversity of the Project site. The EIA report also recommended introduction of landscape features such as lakes/ water ponds to enhance the landscape context of the Project site.

21. For the visual aspect, design of buildings will harmonise with the seashore context, making use of small building mass, low profile, earth sheltered design, green roof, etc. The EIA report has also recommended the control of operation lights with use of directional lights and limited lux level to minimise glare and light nuisance.

22. Overall, landscape and visual impacts of the Project are considered acceptable with mitigation measures in place.

Other Environmental Impacts

23. Other environmental impacts including air quality, hazard to life, noise, waste management, land contamination and fisheries impacts are relatively minor and have also been addressed in the EIA report. With the implementation of the recommended mitigation measures, the Project will comply with the relevant requirements under the TM.

ENVIRONMENTAL MONITORING AND AUDIT

24. The EIA report has included an Environmental Monitoring and Audit (EM&A) Manual, which recommends an EM&A programme during the construction and operation phases of the Project. Key recommended EM&A requirements cover water quality, ecology, landfill gas, noise and air quality issues.

PUBLIC CONSULTATION

25. The Applicant has made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO from 4 April 2019 to 3 May 2019. A summary of all public comments received by EPD during the public inspection period and a gist of the main concerns raised in the public comments will be provided separately.

May 2019

Environmental Assessment Division

Environmental Protection Department



Project Title: Shuen Wan Golf Course

Figure 1

Tentative Project Layout Plan

[Remarks: This figure is prepared based on Figure 2.1 of the EIA Report]

EIA Application No.:

EIA-260/2019

