

**PROJECT PROFILE FOR
COMPREHENSIVE DEVELOPMENT AND
WETLAND PROTECTION NEAR
YAU MEI SAN TSUEN**



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WETLAND PROTECTION NEAR
YAU MEI SAN TSUEN**

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1. Basic Information

1.1 Project Title

1.1.1 The title of this Project is:

“Proposed Comprehensive Development and Wetland Protection at Lot Nos. 3054 BRP and 3055 in DD 104 near Yau Mei San Tsuen, Mai Po, Yuen Long”

1.2 Purpose and Nature of Project

1.2.1 The Project Site covers Lot Nos. 3054 BRP and 3055 in DD 104 near Yau Mei San Tsuen, Mai Po, Yuen Long, with the total site area of about 8.3 ha. It is primarily commercial farmland abutting on Yau Pok Road near Kam Pok Road. It is located at the fringe of the Deep Bay area and bounded by a number of existing and planned residential developments adjacent to the Castle Peak Road and San Tin Highway. Under the Approved Mai Po and Fairview Park Outline Zoning Plan (OZP) No. S/YL-MP/6, the Project Site is zoned “Other Specified Uses” annotated “Comprehensive Development and Wetland Protection Area” (i.e. “OU(CDWPA)”). The planning intention of the zone is to allow comprehensive low-density residential development/ redevelopment with the protection and conservation of the existing continuous and contiguous fishponds within the zone. In brief, the site is designated by the Government for residential use and wetland protection purpose in line with the existing and planned uses on the adjacent sites.

1.2.2 According to the Town Planning Board Guideline TPB PG-No. 12B “Application for Developments within Deep Bay Area under Section 16 of the Town Planning Ordinance”, any development in the Deep Bay Area should be based on a “precautionary approach” and a principle of “no-net-loss of wetland” so as to conserve the ecological value of the wetland, while providing incentives for appropriate scale of residential developments in less ecologically sensitive area (only within the Wetland Buffer Area (WBA)) within the Deep Bay Area.

1.2.3 According to Figure A of the TPB PG-No. 12B, the northern portion of the Project Site, i.e. about 34% of the Project Site, falls within the Wetland Conservation Area (WCA) while the remaining portion falls within the Wetland Buffer Area (WBA). The project comprises the following developments:

- A comprehensive low-density residential development with a total domestic GFA of not more than 16,612m² within the WBA; and
- Wetland restoration/enhancement on the site within the WCA (including all the continuous and contiguous fishponds within the Project Site).

1.3 Name of the Project Proponent

1.3.1 The Project Proponent is the Asia King Development Limited, the registered owner of the Project Site (i.e. Lot Nos. 3054 BRP and 3055 in DD 104 near Yau Mei San Tsuen, Mai Po, Yuen Long).

1.4 Location and Scale of Project, and History of Site

Location and Scale of Project

- 1.4.1 The Project Site is located to the southeast of the Mai Po Ramsar Site. It is sandwiched by several suburban residential communities such as Palm Springs to the north, Yau Mei San Tsuen and Royal Palms to the east, Fairview Park to the west (Figure 1). A recently completed open drainage channel with about 40m wide and the associated roads, including Yau Pok Road and Kam Pok Road, (DSD Contract PWP No. 7100CD: Main drainage channel for Ngau Tam Mei Phase 1 - Yau Mei San Tsuen to Tai Sang Wai section) are located to the immediate south of the Project Site. Further to the south across the drainage channel and the said local roads are residential zones (including "R(D)" and "V" zones) with existing and approved house developments. Major roads (the San Tin Highway and Castle Peak Road) lie further east. In general, the locality of the Project Site is sub-urban residential in nature. The Project Site is well connected with the adjacent major roads by local roads along the drainage channel.
- 1.4.2 Figure 2 shows the existing land-use zones for the Project Site and its adjacent areas. These statutorily approved land-use zones show that this area, including the Project Site, is mainly planned for residential use.
- 1.4.3 The Project Site boundary falls within the "OU(CDWPA)" zone for low-density residential use and wetland protection. The Site occupies about 8.3 ha. of land, of which about 5.5 ha is commercial farm land, whereas the remainder (about 2.8 ha.) is largely abandoned fishpond overgrown with vegetation. The northern portion of the Project Site (about 2.8 ha.) falls within the WCA, whereas the remaining portion of the Site (5.4 ha) falls within the WBA (Figure 3).
- 1.4.4 According to the Mai Po & Fairview Park OZP (No. S/YL-MP/6), the Project Site (i.e. the "OU(CDWPA)" zone) is permitted to have a plot ratio of only 0.2 and a maximum building height of 3 storeys including car park.

Land Use History of the Project Site

- 1.4.5 In the 1940s and 1950s, majority of the Project Site and its surrounding area were rice paddies. Later, in the 1960s and 1970s, when fresh water fish farming prospered, some of the rice paddies were changed into fish ponds. Between 1980 and 1990, other large-scale, low-density residential developments including Fairview Park, Palm Springs and Royal Palms were developed next to the Project Site. Some of the abandoned ponds/fields in the general area were filled for small scale residential development and open storage.
- 1.4.6 The statutory zoning of the Project Site changed together with the planning context. The first statutory plan for the Project Site, the Mai Po and Fairview Park Interim Development Permission Plan (IDPA/YL-MP/1), was gazetted on 17 August 1990 and the Project Site was zoned as 'Unspecified Use'. Later in the Draft Mai Po and Fairview Park OZP No. S/YL-MP/1 gazetted on 3 June 1994, the Project Site was zoned for 'Recreation' use. Town Planning Board first introduced the OU(CDWPA) zoning to the Project Site in Plan No. O/S/YL-MP/1-B published on 6 April 2001 and later incorporated as part of the Draft Mai Po and Fairview Park OZP No. S/YL-MP/3 which was gazetted on 18 May 2001. Thereafter, there has been no material change in the planning intention and development restrictions of the Project Site.

1.5 The Type of Designated Project Covered in the Profile

- 1.5.1 The Project is a Designated Project according to Item P1 of Part I, Schedule 2 of Environmental Impact Assessment Ordinance (EIAO), since it is a residential development other than New Territories exempted houses within the Deep Bay Buffer Zones.

1.6 Contact Person

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2. Planning and Implementation Programme

2.1 Statutory Planning Polices

- 2.1.1 The zoning of the Project Site is “OU(CDWPA)” under the approved Mai Po and Fairview Park OZP, S/YL-MP/6, dated 18 February 2005.
- 2.1.2 The statutory approved planning intention for this zone is to allow the consideration of comprehensive low-density residential development or redevelopment, provided that all the existing continuous and contiguous fishponds within the zone are protected and conserved. “No-net-loss in wetland” principle is adopted. No pond filling and no decline in wetland function of the fishponds are also the key considerations required to be taken into account for any development. Any new development should be located on the formed land and as far away from the existing contiguous fish pond area within the development site.
- 2.1.3 The Town Planning Board Guideline PG-No 12B for Application for Developments within Deep Bay Area under section 16 of the Town Planning Ordinance also set out non-statutory development guidelines; and the relevant sections applicable to the Project Site are described below.
- The “Precautionary approach” to environmental impacts principle is to be applied in formulating the development proposal.
 - The “No-net loss in wetland” principle provides for the conservation of continuous and adjoining fishponds.
 - Wetland Conservation Area (WCA): New development within the WCA would not be allowed unless it is required to support the conservation of the ecological value of the area or the development is an essential infrastructural project with overriding public interest.
 - Wetland Buffer Area (WBA): A buffer area of about 500m along the landward boundary of the WCA is designated as WBA. Within WBA, development will require planning permission and need to be supported by an ecological impact assessment to demonstrate that the proposed development will not have adverse impact on the ecological value of the WCA.
- 2.1.4 The habitats within WCA will be enhanced in terms of ecological functions for birds and other wetland fauna and flora. Buffering design/element will be formed between the WCA and the development area in the WBA to further minimize the potential human disturbance to the WCA.

2.2 Construction Methodology

- 2.2.1 Construction of the Project involves three components, 1) site formation, 2) wetland restoration/enhancement and 3) building and infrastructure works.
- 2.2.2 The allowable development is a maximum building height of 3 storeys including car park; the same as the surrounding existing residential developments.

- 2.2.3 Subject to the ecological impact assessment, a scheme for restoration/enhancement of the area within the WCA will be developed. In general, the existing abandoned fishponds and overgrown fishponds in WCA will be restored, managed and enhanced as pond or marsh areas. Displaced pond and pond bund material will be reused on site for the creation of landscaped areas and/or enhancement of the wetland area of the Project Site. Prior to excavation, testing of the existing sediment will be conducted in accordance with ETWB Technical Circular Works No. 34/2002.
- 2.2.4 Spike tests are suggested to confirm that potential methane generation from the former fishponds is no longer a hazard.

2.3 Project Time Table

- 2.3.1 The Project is expected to be occupied around 2012/2013 in order to match with the provision of the public sewerage system.

2.4 Considerations on Programme Requirements and Interaction with Other Projects

- 2.4.1 The main considerations in respect of programme requirement are the capacity of the Yuen Long Sewage Treatment Works (YLSTW) and that of the Ngau Tam Mei Pumping Station as well as the completion of the sewerage system for Ngau Tam Mei area. Since the volume of sewage generated from the Project is likely to be small, the capacity of the current YLSTW is likely to be sufficient.

Table 1 Details of Interfacing Projects

No.	Interfacing Project	Client Department	Tentative Schedule
1	Agreement No. CE30/2006 (DS) Yuen Long and Kam Tin Sewerage and Sewage Disposal – Design and Construction	DSD/ Drainage Services Department	The Project comprises the construction of trunk sewers, rising mains, sewage pumping stations and expansion of the existing sewage pumping station and sewage treatment works, etc. The construction works are currently programmed to be implemented starting in September 2009 for completion around 2012/2013.
2	Construction of Cycle Tracks and the associated Supporting Facilities from Sha Po Tsuen to Shek Sheung River	CEDD/ Civil and Engineering Development Department	The Project comprises the construction of cycle track and 2 Rest Areas along Kam Tin River, Ngau Tam Mei Drainage Channel and Castle Peak Road to San Tin. The works are tentatively scheduled to commence in mid 2009 and will be completed by the end of 2011.

3. Major Elements of the Surrounding Environment

3.1 Existing and Planned Sensitive Receivers

Air and Noise Sensitive Receivers

- 3.1.1 Fairview Park, Palm Springs, Royal Palms and Yau Mei San Tsuen are existing residential development within immediate vicinity. Chuk Yuen Tsuen, Hang Fuk Garden and Tai Yuen are to further to the southeast across the drainage channel next to Castle Peak Road-Tam Mei.

Water Quality Sensitive Receivers

- 3.1.2 There are some fishponds within the northern portion of the Project Site and one stream running from east to west within the southern portion of the Project Site. Fishponds are located immediately north of the Project Site, while a newly completed drainage channel is located south of the Project Site.
- 3.1.3 All water sensitive receivers are located within Inner Deep Bay catchments where the “Zero Discharge Policy” has been applied in order to prevent increase of pollution loading to the poorly mixed water body, i.e. for protection of the marine environment.

Ecological Sensitive Receivers

- 3.1.4 Figure 3 shows the existing ecological sensitive receivers in the northwest New Territories where the Project Site is located.

Mai Po and Inner Deep Bay Ramsar Site

- 3.1.5 In 1995, Mai Po and Inner Deep Bay area was designated as an area of “Wetland of International Importance” under the Ramsar Convention. This Ramsar Site includes extensive natural inter-tidal mudflats, *gei wai*, dwarf mangroves and fishponds, covering an area of about 1,500 ha in the northwestern New Territories.
- 3.1.6 The Ramsar Site is located at the mid-point of the East Asian-Australasian Flyway and serves as an important staging site for migratory birds as well as supporting approximately 60,000 waterbirds during each winter. The Project Site is 865 m from the closest part of the Ramsar Site. In addition, the fishponds in the WCA portion of the Project Site are contiguous with the larger Inner Deep Bay wetland system, though the connection is constrained by the Fairview Park, Royal Palms and Palm Springs residential developments.

Sites of Special Scientific Interest

Mai Po Village

- 3.1.7 Mai Po Village SSSI was designated in 1979. It is a *fung shui* wood, which has supported an egret in the past. However, as is discussed below, this egret is now located to the east Mai Po Village at Mai Po Lo Wai (AEC unpubl. data)

Mai Po Marshes

- 3.1.8 Mai Po Marshes SSSI was designated in 1976. It holds an important area of dwarf mangrove as well as the largest reedbeds and (semi-) tidal open water habitats derived from *gei wai* shrimp ponds. The productive seral community and man made key *gei wai* provide important foraging sites for both resident and migratory birds as well as supporting an important and diverse fauna and flora. The SSSI is located entirely within the Ramsar Site.

Inner Deep Bay

- 3.1.9 Inner Deep Bay SSSI was designated in 1986. Inner Deep Bay contains the largest and most important dwarf mangrove communities in Hong Kong and extensive natural inter-tidal mudflats. Both the dwarf mangroves and mudflats provide an important feeding and resting ground for waterbirds. The SSSI is located entirely within the Ramsar Site.

Egrettries

- 3.1.10 In addition to the egretty SSSI described above, the following egrettries are approximately within 4 km of the Project Site. This distance is considered to reflect the foraging range of breeding egrets (Young, 1993). Again, as the egrettries are relatively distant from the Project Site, and the Project Site is located at inland area and in the middle of sub-urban area adjacent to San Tin Highway and Castle Peak Road, no impacts to flight lines are predicted.

Mai Po Lo Wai

- 3.1.11 Mai Po Lo Wai egretty supported 23 nests of Chinese Pond Heron and one nest of Little Egret in June 2007 (AEC unpubl. data)

Mai Po Lung Tsuen

- 3.1.12 Mai Po Lung Tsuen egretty held a total of 20 nests of Chinese Pond Heron and 17 nests of Little Egret in June 2007 (AEC unpubl. data).

Tam Kon Chau

- 3.1.13 Tam Kon Chau egretty supported 26 nests of Chinese Pond Herons in June 2007 (AEC unpubl. data). This egretty is important as it is the only colony that falls within the boundary of the Mai Po Deep Bay Ramsar Site.

Birds

- 3.1.14 Based on the preliminary on-site survey, birds utilizing the commercial farm land within and adjacent to the Project Site are likely to be common and widespread species typical of agricultural and urban fringe habitats. Provisional survey findings suggest that the Project Site and its environs are not particularly important for large waterbirds, probably as a consequence of a combination of their remoteness from the main contiguous fishpond area, the presence of nearby residential developments and the overgrown and abandoned nature of the ponds.

Amphibians and reptiles

- 3.1.15 The human-modified commercial farm land, inactive fishponds and highly polluted streams in the Project Site are relatively unfavorable habitats for amphibian and reptile species. Preliminary herpetofauna surveys in September 2007 found individuals of only three species: Changeable Lizard *Calotes versicolor*, Checkered Keelback *Xenochrophis piscator* and Günther's Frog *Rana guentheri*, all species which are common in disturbed fringe areas around Deep Bay.

Butterflies and dragonflies

- 3.1.16 The abundance and diversity of butterflies and dragonflies is closely related to habitat type. In the case of butterflies distribution is closely related to the occurrence of larval food plants, whilst all dragonflies have wetland-dependent aquatic larvae. Relatively few butterfly species in Hong Kong are wetland dependent or wetland associated and, unsurprisingly, preliminary surveys have identified no butterfly species are of particular conservation importance and no wetland-dependent species. More butterfly species were recorded in the contiguous fishponds and areas with tall vegetation, and were dominated by common or very common species. Small numbers of an uncommon butterfly species Danaid Eggfly *Hypolimnas misippus* were recorded in a fishpond within the Project Site and in other contiguous fishponds.

Fish

- 3.1.17 Fishponds are an important wetland habitat providing a rich food source for waterbirds. However, all fish in this anthropogenic habitat are likely to be aquaculture or common exotic species tolerant of eutrophic and turbid conditions and moderate pollution levels. Though the fishponds in the Project Site are largely abandoned, it is likely that small numbers of such tolerant fish species will be found. The recent stream survey in September 2007 found low diversity of common exotic freshwater fish (Mosquito Fish *Gambusia affinis*, Small Snakehead *Channa asiatica* and Nile Tilapia *Oreochromis niloticus*) in the semi-natural stream passing through the dry commercial farm land in the Project Site. None of these fish species are of conservation significance.

Vegetation

- 3.1.18 The commercial farm land in the Project Site either supports managed crops/herbs or has been invaded with exotic creepers and grasses. Plant species diversity is low, the species are widespread and many are exotic and/or invasive. Diversity and richness of plants around the fishponds or within the overgrown ponds are low and dominated by common grasses and herbs or planted with fruit trees along the pond bunds.

Landscape and Visual Sensitive Receivers

- 3.1.19 Residents of the nearby villages and residential developments are considered to be the potential sensitive receivers that may be visually affected by the Project. The nearest sensitive receivers are Royal Palms, Palm Springs to the north and Fairview Park to the east and next to the proposed site as well as the Yau Mei San Tsuen Village to the east.

3.2 Natural Environment

- 3.2.1 The existing habitats of the Project Site have been mapped through the updated aerial photos and site visits in 2007. The Project Site mainly consists of commercial farm land, abandoned fishponds, overgrown ponds, small patches of grassland with isolated shrubs, and a semi-natural stream.
- 3.2.2 Nearly all existing commercial farm lands are active dry agricultural areas which produce vegetables (lettuce and *Ipomoea aquatica*) to the villagers and local markets. The fishponds, within WCA, in the Project Site are continuous and contiguous with the fishponds connected to the Pak Hok Chau and Mai Po Nature Reserve. Though the fishponds in the Project Site are mostly abandoned or overgrown, they support a low number of large waterbird, compared with the core wetland areas of Deep Bay. The only overgrown pond in the Project Site is dominated by exotic and invasive plants *Typha angustifolia*, which is of low conservation value and function to the birds.

4. Possible Impact on the Environment

4.1 Ecology

- 4.1.1 The proposed comprehensive development will cause direct or indirect impacts on the existing environment and associated wildlife and vegetation. The level and severity of the proposed developmental impacts depend on the habitat quality, species, habitat size, species abundance, duration and reversibility of impact, and magnitude of environmental changes.
- 4.1.2 To maintain the ecological integrity of the Deep Bay ecosystem as highlighted in the statutory planning intentions of OZP and the TPB PG-No. 12B and Technical Memorandum of EIAO, the low rise residential component will be restricted to that part of the Project Site within the WBA (now being used for commercial farming), where it is inevitable that there will be a loss of the existing commercial farm land. Initial surveys suggest that this area is of low ecological value due to the intensive agricultural use. However, this will be confirmed during field surveys and any findings will be taken into account in mitigation design.
- 4.1.3 All the existing abandoned fishponds and overgrown ponds within the Project Site will be retained. Those within the WCA will be restored and their ecological value enhanced and other areas within the WCA will be restored to wetland.

Evaluation of Impacts

- 4.1.4 It is inevitable that some species will suffer direct habitat loss and/or disturbance during the construction and operational phases.
- 4.1.5 Potential impacts on butterflies during the construction period are not expected to be of significance. Butterflies will not benefit significantly from wetland restoration. However, they will be able to utilize the recreated habitats, where trees and shrubs which are larval food species can be planted.
- 4.1.6 Except an individual of the uncommon Coastal Glider *Macrodiplax cora* found in the commercial farm land within the Project Site, all recorded dragonflies are common or abundant species in Hong Kong.
- 4.1.7 It is inevitable that some individual amphibians will suffer direct habitat loss and/or disturbance during the construction phase but impacted species are not likely to be of conservation significance. During the operational phase, the creation of managed wetland habitats will be of benefit to herpetofauna.
- 4.1.8 The ecological value of the vegetation on site is considered to be low and neither construction nor operational phase impacts are expected to be of significance.
- 4.1.9 In addition to direct habitat loss, there may be some disturbance impacts to disturbance-sensitive fauna (primarily large waterbirds) arising from noise during the construction period and human activity once the residential development is occupied. The species most sensitive to any disturbance will be larger waterbirds which make use of fishponds, notably ardeids and, to a lesser extent, wildfowl.

- 4.1.10 As a group, birds are relatively sensitive to disturbance arising from human activities. The degree of sensitivity to disturbance depends on the species, the habitat which they occupy and the nature of the disturbance. In general, large bird species and those occupying open habitats (such as ponds and mudflats) are more sensitive than those utilizing closed habitats (such as woodlands and reedbeds). Further, birds, particular large waterbirds, tend to react more to irregular activities and direct human presence than to regular events and vehicles and disturbance from the latter tends to decline over time as habituation takes place. Regular activities such as noise from piling works or vehicle movements cause much less disturbance.
- 4.1.11 Disturbance impacts are likely to be small during the construction period, even in the absence of mitigation measures, due to the small number of large waterbirds using ponds close to the Project Site. However, disturbance impacts can be reduced still further by the erection of a solid barrier along the edge of the works area. This will function to reduce disturbance from noise, will shield human activities from view and will prevent unauthorized access to the wetland area by construction workers.
- 4.1.12 During the operational period the primary concern is to prevent disturbance to the existing and restored and enhanced wetland area arising from residents' activities. This will be achieved by restricting general access to the wetland area by walling the residential development and by designing buffering elements, such as landscape between the residential development and that part of the restored and enhanced wetland. These barriers can block or minimize the line of sight of the bird from the wetland area to the future residents.
- 4.1.13 Since the Project Site is largely surrounded by the existing residential buildings and most fishponds have been abandoned, the proposed low-density development is not expected to pose a significant barrier to flight lines of birds.
- 4.1.14 'Best practice' will be required during the construction period to prevent any disruption to ecological functions outside the project works area by deliberate or accidental spillage or deposit of construction or waste materials.

4.2 Fisheries

- 4.2.1 Fishponds within both the Project Site and the adjacent area are inactive and some former fishponds are now overgrown. Accordingly there will be no direct impact on current aquaculture activities arising from the proposed development.

Evaluation of Impacts

- 4.2.2 It is proposed to enhance all ponds in that part of the Project Site within the WCA. However, the restoration and enhancement of fishponds will effectively be neutral in respect to fisheries in that it is not proposed to restore the ponds to active aquaculture use.
- 4.2.3 'Best practice' will be required during the construction period to prevent any disruption to fisheries outside the project works area by deliberate or accidental spillage or deposit of construction or waste materials.

4.3 Visual and Landscape Character

- 4.3.1 The project may cause temporary landscape and visual impacts.
- 4.3.2 Temporary landscape and visual impacts will arise from disturbance to the existing landscape of the site, from construction works and plant and from the presence of temporary structures, such as hoardings and falsework for structural elements.
- 4.3.3 Sources of permanent adverse landscape and visual impact might include residential units and associated driveways, clubhouse, etc. The potential creation of wetland type landscape and other landscape features will likely represent a source of positive landscape/visual impact in the longer term.

Evaluation of Impacts

- 4.3.4 Impacts on Sensitive Visual Receivers notably residents of surrounding villages / developments may be significant during the construction phase, due to the removal of the commercial vegetable farm, the presence of construction works and activity and partly completed structures in the landscape. Sensitive visual receivers are located within 50m from the project at the worst case location. During the operational phase, design of mitigation measures including screen planting, building colour treatments, finishes and texture of materials will be fully considered to ensure that the development will be compatible with the landscape setting and it is considered that adverse Visual Receivers will be minimal
- 4.3.5 Impacts on Landscape Resources are unlikely to be moderately significant during the construction and operational phases, due to the limited sensitivity of resources currently on site. Tree felling will be avoided wherever possible by good planning of the development. If tree removal cannot be avoided, transplanting affected trees to an appropriate location will be considered. Compensatory planting will also be provided to compensate for the loss of any vegetation.
- 4.3.6 Impacts on Landscape Character may be moderately significant during the construction phase resulting from the presence of construction plant, activity and partly completed structures. Permanent long term impacts are less likely during the operational phase.

4.4 Contaminated Materials

- 4.4.1 For the past decades, the Project Site was used for commercial farm and fresh water aquaculture. Now, the intended land-use of the site is residential development and wetland protection. Neither constitute contaminating land uses, and hence land remediation is not required for the site.

Evaluation of Impacts

- 4.4.2 The proposed development is unlikely to constitute land contamination impact.

4.5 Generation of Solid Waste

- 4.5.1 Construction waste impact is expected to be minimal as much of the displaced pond and pond bund material can be reused on site for the creation of landscaped area and enhancement of wetland area of the Project Site.
- 4.5.2 A small quantity of municipal waste will be generated by the proposed residential development.

Evaluation of Impacts

- 4.5.3 No unacceptable construction waste impact is expected.

4.6 Generation of Effluents

- 4.6.1 The Project Site is located in the unsewered area and falls outside San Tin sewerage catchment under Yuen Long and Kam Tin Sewerage Master Plan (SMP) Study.
- 4.6.2 Following the recommendations of the SMP Study Review, DSD proposed to construct trunk sewerage works under Yuen Long and Kam Tin Sewerage and Sewage Disposal Project in vicinity of the site area. One of the Works Package 2A-2T for Ngau Tam Mei Trunk Sewerage is scheduled for completion around 2012-2013. In the meantime, another Works Package 1A-1T for Kam Tin Trunk Sewerage and Au Tau Trunk Sewers are being implemented by DSD. By 2012/2013, the trunk sewerage system will be available for serving the nearby areas. Based on the population estimation, the trunk sewer adjacent to the Site can cater for the sewage flows generated by the total population of about 17,000 persons in 2030.
- 4.6.3 The adjacent trunk sewer which would be designed as 600mm diameter will be laid along Yau Pok Road and connected to the proposed Ngau Tam Mei Sewage Pumping Station. The sewage flow will then be conveyed by rising mains and gravity pipes to the proposed Nam Sang Wai Pumping Station and eventually discharged to Yuen Long Sewage Treatment Works for disposal.
- 4.6.4 The sewage generated from the Site is mainly due to the residences in the area. A gravity sewerage system would be used for collecting the sewage from the houses in the site area.

Evaluation of Impacts

- 4.6.5 Based on the preliminary estimation, the sewage flow discharges would be very small. Assuming the population of the Site is about 300 persons, the unit flow factor is 0.37 m³/d/head. Then, the ADWF of the proposed Site is about 111m³/d or 1.28 l/s. Peak sewage flow is about 7.7 l/s when a peaking factor of 6 is applied. The capacity of the planned adjacent trunk sewer of 600mm is about 180 l/s, the sewage flow generated from the Site to the trunk sewer is less than 5%. Spare capacity of the adjacent trunk sewer should be sufficient to cater for this extra sewage flow from the Site. This needs to be confirmed with EPD upon the finalisation of the planned population of the development.

- 4.6.6 The capacity of the Yeung Long Sewage Treatment Works is about 70,000 m³/d of average dry weather flow (ADWF) and the ADWF sewage discharge to the treatment works is about 44,790 m³/d ultimately (in 2030). Hence, no expansion of the treatment works is required as its capacity is sufficient enough for the ultimate stage. The impact to the existing Yuen Long Sewage Treatment Works is minimal. The flow generated from the Site is insignificant compared with the spare capacity of the treatment works.

4.7 Contaminated Runoff

- 4.7.1 The surface runoff generated from the Project Site will be discharged into the Ngau Tam Mei Channel. A gravity stormwater drainage system would be used for collecting and conveying the runoff to the engineered channel, which is designed for the ultimate scenario of 50 year return period. As the ground will be changed from unpaved to partially paved, it is expected that the surface runoff will be increased. Assuming the residential portion of the Project Site is fully paved and the future land will be 60% paved, the surface runoff increase would be less than 2.5m³/s (i.e. the total catchment, where the Ngau Tam Mei Channel served, is about 82 hectare and the coefficient of the unpaved and paved lands are 0.15 and 0.85).
- 4.7.2 The Ngau Tam Mei Channel is designed with freeboard (500mm and 800mm are roughly estimated from the hydraulic models for 50 year and 200 year return periods) and it is expected that the channel will be capable to handle the surface runoff generated from the Site.

Evaluation of Impacts

- 4.7.3 During construction, sediments or concrete washings could pollute storm water runoff if preventive and control measures are not taken. Sewage generated from construction activities is also a potential source of construction phase pollution.

4.8 Air Quality

- 4.8.1 During construction, dust is a potential air quality impact which would be generated from construction activities such as material handling, site formation, vehicle movement, and erosion of unpaved areas. Powered mechanical equipment will be used to achieve the desired gradient.

Evaluation of Impacts

- 4.8.2 The potential air quality impact however is anticipated to be short-term and would be controlled through appropriate measures and good site practice.
- 4.8.3 Materials will be transported to the site by the existing road networks. Dust from the road is expected to be minimal. Nevertheless, measures should be implemented to minimize dust generation such as wheel washing facilities, watering of roads and covering of lorries' loads with impermeable sheets, etc.

4.9 Noise

- 4.9.1 During construction, powered mechanical equipment will be used for site formation, wetland restoration and building construction. The nearest noise sensitive receivers are the residential development Palm Springs to the north, Royal Palms to the northeast and Fairview Park to the south of the Project Site (see Figure 1).

Evaluation of Impacts

- 4.9.2 Short term minor to moderate noise impacts are likely during the construction phase. Use of Powered Mechanical Equipment on site has been identified as the major source of noise nuisance. Mitigation measures should be implemented to minimize construction noise generation.

4.10 Traffic emission related pollution

- 4.10.1 Negligible noise and air quality impact is expected during the operation phase in view of the low traffic volume. Also, there is a buffer with about 250m from the San Tin Highway to the Project Site.

Evaluation of Impacts

- 4.10.2 With sufficient buffer distance, impacts from the existing road networks are anticipated not to be significant. Boundary wall and tall trees around the residential development will further provide physical screening from any potential noise and air nuisance.

5. Environmental Protection Measures to be Implemented

5.1 Ecology

5.1.1 In view of the presence of disturbance sensitive species and the potential disturbance and impacts on the sensitive areas, the following environmental protection measures will be implemented:

- i. During the construction phase, temporary solid barriers will be built around the areas for residential development to minimize the noise and visual disturbance from construction work and human activities on the birds using the nearby habitats.
- ii. During the construction phase, the work programme will be reviewed and scheduled to minimize the intensity of piling work and heavy construction work during November to March, which is the peak period for migratory birds wintering in the Mai Po and Inner Deep Bay Ramsar Site and the nearby fishponds.
- iii. During the operational phase, buffering design/elements will be considered between the restored wetland for disturbance sensitive species and the residential development area.
- iv. 'Best practice' site management measures to prevent pollution of fishponds by waste, dust and polluted run-off will be required during both construction and operational periods.

5.2 Fisheries

5.2.1 'Best practice' site management measures to prevent pollution of fishponds by waste, dust and polluted run-off will be required during both construction and operational periods.

5.3 Landscape and Visual Mitigation Measures

5.3.1 Mitigation measures should be undertaken to reduce the potential landscape and visual impacts. The proposed mitigation measures comprise:

5.3.2 Optimal Site Layout - Selection of a layout that minimises landscape and visual impacts. A number of alternative layouts will be considered to ensure that landscape and visual impacts are minimised.

5.3.3 Retention of Valuable Landscape Resources on Site: - valuable landscape resources found on site (including trees, topsoil, pond bund material, etc) will be retained where possible for reuse in the works.

5.3.4 Good Construction Practice – Landscape and visual impacts will be minimised by regulation of working hours, minimisation of the duration of the works; and minimising export of material off-site, etc.

- 5.3.5 Tree Protection - Trees to be retained within or adjacent to the works area will be carefully protected to avoid damage by machinery as well as to prevent contractors compacting soil around tree roots or dumping materials. There is no evidence of any rare or valuable trees on site.
- 5.3.6 Tree Transplanting - Any trees identified as affected by the Project will be first considered for transplanting to a location within the site. The feasibility of transplantation will depend on a number of factors such as size, health and species of trees as well as the condition of the local terrain. Adequate time (a minimum of 3 months) should be allowed for preparing trees for transplantation.
- 5.3.7 Compensatory Amenity and Wetland Type Landscape – the creation of water bodies as well as the planting of amenity and habitat landscapes will act as mitigation for any loss of vegetation currently on site.
- 5.3.8 Screen/Buffer Planting - Planting of dense belts of trees at the periphery of the site will assist in screening visual impacts from surrounding VSRs.
- 5.3.9 Aesthetic Treatment of Buildings - Sensitive chromatic treatment and general design of residential buildings will assist in reducing their visual impact.

5.4 Solid Waste Management Measures

- 5.4.1 The general waste management strategy is to avoid waste generation in the first place. If that is unavoidable, source reduction and segregation should be exercised as far as practicable and at the same time, recycling and reuse should be adopted to salvage as much as possible all the recyclable and reusable materials.

Construction Waste Disposal Measures

- 5.4.2 Waste disposal from construction site is subject to control under the Waste Disposal Ordinance and the Technical Memorandum Standards for Effluents Discharged in Drainage and Sewerage Systems, Inland and Coastal Water issued by EPD.
- 5.4.3 On-site sorting of construction wastes will be recommended. Secondary on-site sorting can be achieved by avoiding the generation of “mixed waste” through good site control. Construction wastes shall be sorted to remove contaminants, with the inert materials broken up into small pieces before being transported to Refuse Transfer Station (RTS) for subsequent delivery to landfill sites.
- 5.4.4 Chemical and oily wastes generated from the construction activities, vehicle and plant maintenance and oil interceptors should be disposed of as chemical waste in strict compliance with the Waste Disposal (Chemical Waste) (General) Regulations.

5.5 Effluents and Runoff Management

- 5.5.1 During construction phase of the Project, the practices outlined in ProPECC PN1/94 Construction for Drainage as well as other good site management practices to avoid site runoff and minimize the potential water pollution will be implemented. All site construction runoff should be controlled and silt removal facilities incorporated to prevent high levels of suspended solids entering the drainage network. The contractors should be required under the contract specification to ensure that site management is optimised and that the deposit of any solid materials, litter or wastes does not occur in drainage channels or surface waters.
- 5.5.2 Appropriate temporary drainage facilities will be provided during construction phase of the proposed development in the Site.

5.6 Dust Mitigation Measures

- 5.6.1 Fugitive dust emission arising from construction activities can be effectively suppressed by incorporating proper mitigation measures into work procedures through contractual clauses, good site management, and close enforcement of the resident engineers. The contractor shall require following the requirements of the Air Pollution Control (Construction Dust) Regulations. With such good practice, it is expected that emission of construction dust can be kept at an acceptable level.

General Site Management

- 5.6.2 Appropriate working methods should be devised and arranged to minimise dust emissions and to ensure any installed control system and/or measures are operated and/or implemented in accordance with their design merits.
- 5.6.3 Frequent mist spraying should be applied on dusty areas. The frequency of spraying will depend upon local conditions such as rainfall, temperature, wind speed and humidity. The amount of mist spraying should be just enough to dampen the material without over-watering which could result in surface water runoff.

Vehicles and Unpaved Site Roads

- 5.6.4 Dust emission from unpaved roads comes predominantly from vehicle movements. Areas within the site where there are regular vehicle movements should have an approved hard surface. Speed controls with an upper limit of 8 km/hr should be imposed and movements should be confined to designed roadways within the site. All dusty vehicle loads should have side and tail boards covered by tarpaulin extending at least 300 mm over the edges of the side and tail boards. Wheel-wash troughs and hoses should be provided at exit points from the site.

Material Stockpiling and Handling

- 5.6.5 The amount of stockpiling should be minimised where possible. Construction material or debris should be covered and stored inside enclosed areas. Other control measures such as enclosed or semi-enclosed windboard should be used, where applicable, to minimise dust

emission. Regular watering is needed at areas such as storage piles, where there could be potential dust emission.

5.7 Noise Mitigation Measures

5.7.1 Sufficient noise mitigation measures should be introduced in each phase of development to alleviate potential noise impacts on nearby NSRs. A noise mitigation management system should be set up to ensure regular maintenance of all plant and equipment, reduce noise generation at source, and appropriate silencing applications should be used based upon best reasonable practice. The following noise mitigation measures are recommended for implementation through inclusion in contract documents.

- Application of properly designed silencers, mufflers, acoustically dampened panels and acoustic sheds or shields, etc.;
- Use of electric-powered equipment where applicable instead of diesel-powered or pneumatic-powered equipment;
- Erecting noise enclosures around noisy plants;
- Location of noise emitting plants at maximum possible distances from sensitive receivers;
- Contractual clauses for construction works; and
- Schedule of noisy operations during non-restricted hours.

6. Environmental Protection Measures at Operation Phase

6.1 Ecology

6.1.1 The following operational phase ecological mitigations will be implemented.

General ecology:

- i. The buffering design/element between the housing site and the adjacent wetland within the OU(CDWPA) zone will be maintained and managed so as to reduce the disturbance to them.

Restored wetlands:

- i. The created and restored wetland areas will be managed according to a Habitat Restoration and Management Plan which will detail habitat condition and species targets, management and monitoring methods and action and limit levels for remedial measures.
 - ii. Access to the created and restored wetlands will be managed and controlled at all times.
 - iii. 'Best practice' in the management and maintenance of the residential area will take into account the need to ensure that there are no direct or indirect adverse impacts on the wetland habitats (or indeed fauna and flora in other habitats) arising from routine or occasional management and maintenance activities.
 - iv. All materials, including rainwater run-off, from the residential site will be excluded from the wetland areas unless it can be demonstrated that these can be utilized in an environmentally beneficial fashion (for example, it may be possible to utilize rain water run-off as a water source for the wetland so long as appropriate measures to prevent contamination by pollutants are in place).
- 6.1.2 All materials, including rainwater run-off, from the residential site will be excluded from fishpond areas. Any discharge from the restored and enhanced wetland to watercourses will be restricted to water which is, as a minimum, of no lower quality than that which is currently discharging from the site.

7. Environmental Monitoring and Audit

7.1 Construction Phase

- 7.1.1 This Project Profile has outlined the potential environmental impacts which would arise from the construction of the project. Possible environmental mitigation measures that can be incorporated into the Project have been briefly introduced in this Project Profile. In order to ensure the effectiveness of the mitigation measures proposed, an environmental monitoring and audit (EM&A) programme for the construction of the Project will be developed in the EIA study. For this EM&A, construction noise, fugitive dust and water quality will be monitored to ensure that the temporary construction phase impact will be minimized with the implementation of mitigation measures.

Ecology

- 7.1.2 Environmental parameters and monitoring of target sensitive species will be measured and conducted during the construction phase to evaluate any adverse impacts from the development. Monitoring of target waterbird and bird species, herpetofauna, dragonflies and butterflies utilizing the conserved and restored fishponds/marsh areas will be carried out to identify any reduction of their abundance and diversity during the construction phase. Aquatic and benthic invertebrates will be sampled from the fishponds to determine any changes in community by any site runoff and substrate disturbance.
- 7.1.3 The surface water level and water chemistry (e.g. salinity, pH, BOD, dissolved oxygen and ammonia concentration) of the conserved and restored wetlands will be measured in the construction phase.

Landscape and Visual

- 7.1.4 It will be recommended that EM&A for landscape and visual resources is undertaken during the design, construction and operational phases of the project. The design, implementation and maintenance of landscape mitigation measures is a key aspect of this and will be checked to ensure that they are fully realised and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest possible date and without compromise to the intention of the mitigation measures.
- 7.1.5 Measures for the Construction stage will be identified along with the assigned funding and implementation agencies. Implementation of the mitigation measures recommended by the EIA applicable to the construction phase activities will be monitored through the site audit programme.

7.2 Operational Phase

Ecology

- 7.2.1 Regular monitoring of the target waterbird, bird species, herpetofauna, dragonflies and butterflies utilizing the restored and enhanced wetlands will be continued during the operational phase. This is to evaluate the utilisation level of the restored wetlands by the

target species and propose any subsequent remedial actions for the wetlands and the monitoring programmes.

- 7.2.2 Fish, aquatic and benthic invertebrates within the restored wetlands will be monitored so as to maintain populations at suitable levels for the target species.
- 7.2.3 Pond sediments, water quality parameters (e.g. temperature, pH, salinity, turbidity and dissolved oxygen) and water samples of the restored wetlands will be monitored and collected to ensure the provision of optimum habitats for the target species.
- 7.2.4 In addition, regular inspection of the restored wetlands and adjacent areas will be conducted. Any detrimental influences and operation of the wetlands will be highlighted, followed by suitable remedial actions.
- 7.2.5 All parameters to be measured and monitored will be consistent with the requirements detailed in the Habitat Restoration and Management Plan.

Landscape & Visual

- 7.2.6 On going maintenance and monitoring of the landscape will be undertaken to ensure the EM&A targets are achieved. This will include the preparation of an on-going landscape maintenance programme which will include measures to specifically address requirements of the EM&A in association with the site audit programme.

8. Conclusions

8.1 Ecology

- 8.1.1 The potential ecological impacts arising from the Project would be the direct loss of some low-ecological value habitat and the potential disturbance impacts to disturbance-sensitive fauna arising from construction and operation of the Project. However, the potential adverse impact is expected to be minor and temporary, and can be mitigated with mitigation measures. The development of the Project will follow the “Precautionary” and “No net-loss of Wetland” approach. With the preservation, restoration, enhancement and sustainable management of the wetland habitats within the WCA, there will be a net contribution to the conservation value of the contiguous fishpond system and the Mai Po and Inner Deep Bay Ramsar Site.

8.2 Landscape & Visual

- 8.2.1 Landscape and visual impacts on sensitive receivers may arise from removal of commercial farming activities, construction works and the addition of man-made elements into the landscape. Landscape and visual mitigation, including compensatory planting, site layout, colour scheme design, finishes and texture of building materials used will be fully considered in the design to ensure that the development will be compatible with the landscape setting and surroundings. With all the measures put in place, there is potential for moderate visual impacts on nearby residents during the construction phase. Permanent, slight adverse landscape and visual impacts arising from the operational phase are likely.

8.3 Waste

- 8.3.1 No contamination is expected due to previous landuse history. Waste management and good site practice will be implemented to minimize waste generation. Wastes arising can be re-used on-site, so as to reduce quantity of disposal of un-used construction and demolition material. It is expected that no impact associated with waste during construction and operational phase of the Project.

8.4 Water

- 8.4.1 The Project will be served with public sewerage system when it is in occupation, i.e. complying no net increase of pollution loadings under the “Zero Discharge Policy”. Potential water quality impacts may arise during construction from site runoff, wastewater and sewage from site workers if preventive and control measures are not taken. However, the implementation of pollution control measures, good site practice will minimize the potential impacts, and ensure unlikely adverse water quality impacts on the surrounding sensitive receivers.

8.5 Air

- 8.5.1 Temporary construction phase air quality impacts resulting from the comprehensive development are anticipated not to exceed air quality objectives with mitigation measures.

8.6 Noise

- 8.6.1 Short-term construction noise impacts from the proposed construction works could be minimized to an acceptable level with the implementation of the mitigation measures.

9. Use of Previously Approved EIA Reports

- 9.1.1 No previously approved EIA reports have been referred to in the preparation of this Project Profile.

10. References

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Figures

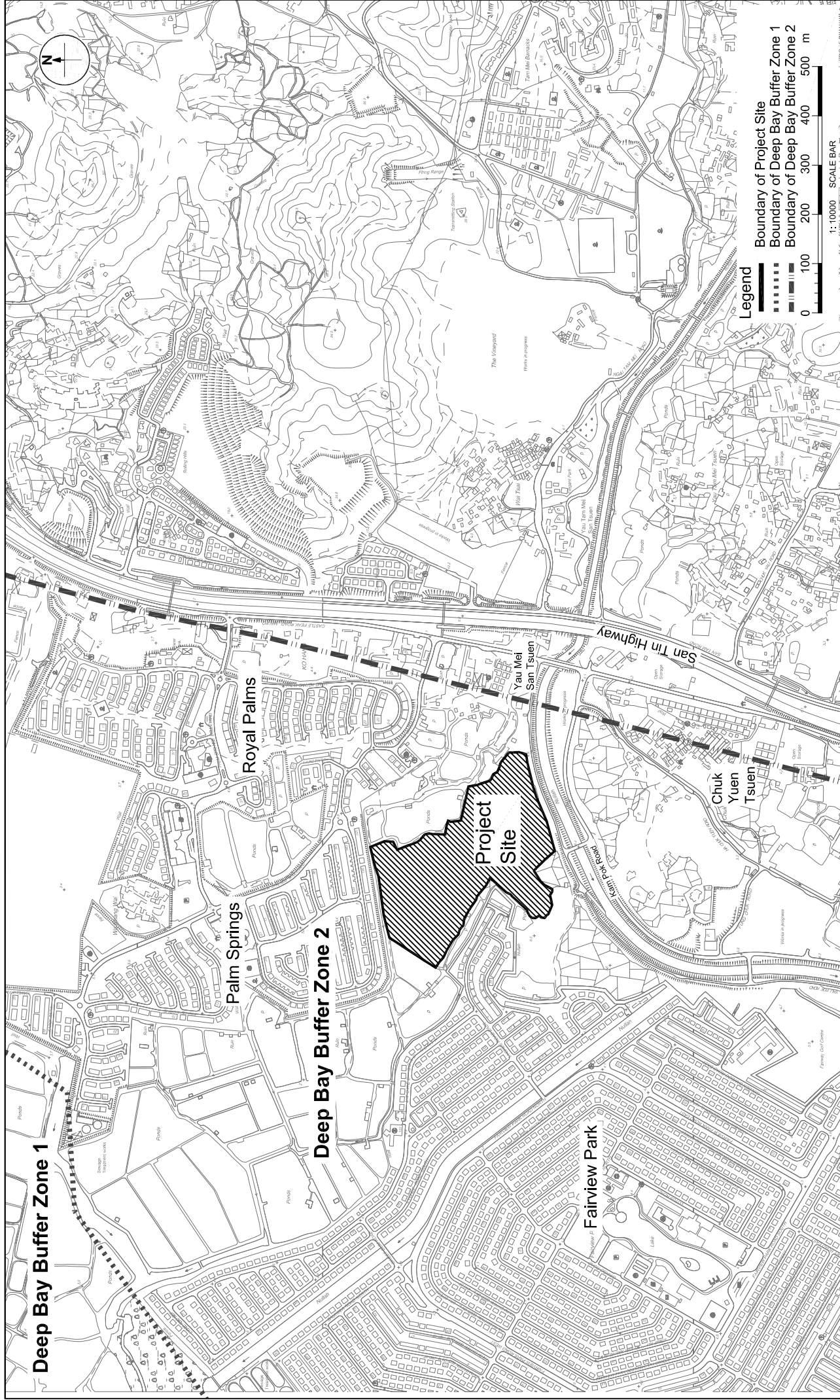


Figure: 1

Title: Location of the Project Site

Project: Project Profile for Comprehensive Development and Wetland Protection near Yau Mei San Tsuen

ENVIRON

Drawn by: SL

Checked by: TC

Rev.: 0

Date: Dec 2007

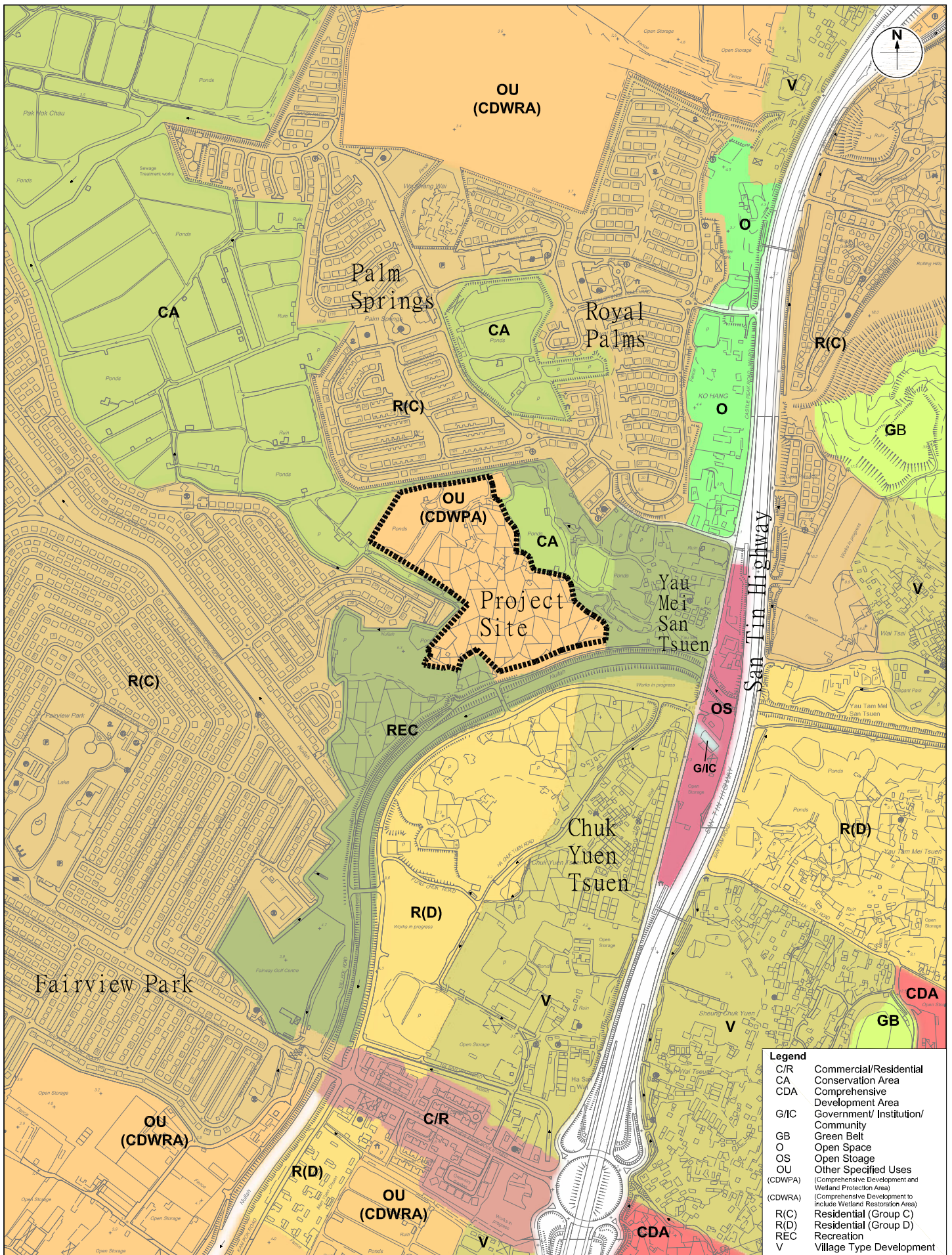


Figure: 2

Title: Existing Land-use Zones for the Project Site and Its Adjacent Areas

(Source: OZP / YL-MP/6-Mai Po & Fairview Park OZP, dated 10Feb05 & YL-NTM/12 -- Ngau Tam Mei OZP, dated 15Dec06)

Project: Project Profile for Comprehensive Development and Wetland Protection near Yau Mei San Tsuen

ENVIRON

Drawn by: SL

Checked by: TC

Rev.: 0

Date: Feb 2008

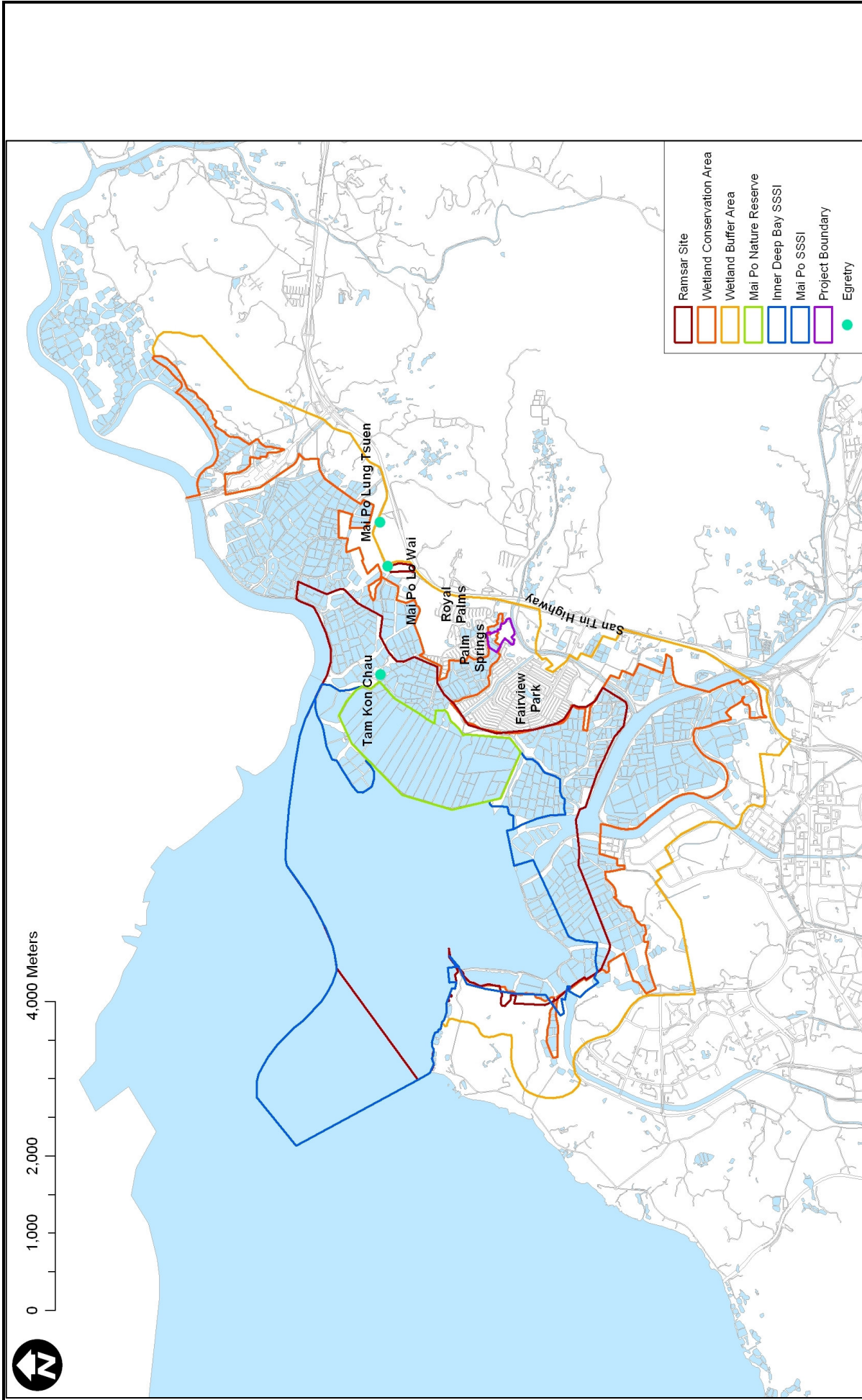


Figure: 3	ENVIRON
Title: Locations of Ecological Sensitive Receivers	Drawn by: SL
Project: Project Profile for Comprehensive Development and Wetland Protection near Yau Mei San Tsuen	Checked by: TC
	Rev.: 0
	Date: Dec 2007