Environmental Impact Assessment
Executive Summary

Proposed Low-rise and Low-density Residential Development At Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T.

Prepared by
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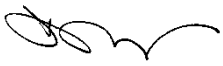

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1. INTRODUCTION

1.1 Background

1.1.1 This Project is a proposed low-rise and low-density residential development in the Project Site. The Site comprises various leased lots and their adjoining Government Land in D.D. 104, East of Kam Pok Road in Mai Po, Yuen Long. It covers a total area of about 3.8ha. The Project Site is bounded by Kam Pok Road to its west, Fung Chuk Road to its north, Ha Chuk Yuen Road to its north-east and Ha San Wai Road to its south and south-east. The site is surrounded by a number of existing and planned residential developments. **Figure 1** shows the location and the surrounding environment of the Project Site.

1.1.2 According to the requirement of the Environmental Impact Assessment Ordinance (EIAO), an Environmental Impact Assessment (EIA) has been undertaken for the Project. It provides a detailed assessment of the nature and extent of potential environmental impacts associated with the construction and operation of the Project, including impacts on air quality, noise, water quality, waste management, ecology, fisheries, cultural heritage, landscape and visual resources; it also recommends mitigation measures to comply with relevant environmental legislations and standards. The impact assessments in the EIA have been conducted by qualified and experienced environmental experts in association with experts in various special fields including ecology, fisheries, engineering, urban planning, architecture, traffic, cultural heritage, landscape and urban design in accordance with the Project EIA Study Brief requirements as well as the Technical Memorandum on Environmental Impact Assessment Process ("EIAO-TM").

1.1.3 This Executive Summary provides a summary of the key findings of the EIA study. A non-technical summary providing a reader-friendly understanding of the key results of EIA study, is provided in **Appendix A** for reference.

1.2 Project Site

1.2.1 The Project Site is shown in **Figure 1**. It is zoned "Residential (Group D)" ("R(D)") on the Approved Mai Po and Fairview Park Outline Zoning Plan (OZP) No. S/YL-MP/6 ("Subject OZP") (see **Figure 2**). According to the Notes of the Subject OZP, the "R(D)" zone is intended primarily for improvement and upgrading of the existing temporary structures within the rural area through redevelopment of existing temporary structures into permanent buildings. **It is also intended for low-rise, low-density residential developments** if a planning permission is given by the Town Planning Board.

1.2.2 The Project Site is bounded by a number of existing and planned residential developments (i.e. Fairview Park to its west; Helene Terrace and Villa Camellia to its south; a vacant site planned for "Village Type Development" use to its east; and a vacant site planned for "R(D)" use to its north). The existing Ngau Tam Mei Drainage Channel is located to the further west of the Project Site across Kam Pok Road. To its further west and north across the said drainage channel is a Government proposed cycle track linking the existing local cycle track networks of Yuen Long to Sheung Shui.

1.2.3 In addition, the Project Area is located outside the Wetland Buffer Area and Wetland Conservation Area under the Town Planning Board Guidelines (TPB PG-No. 12C). The "no-net-loss in wetland" principle and wetland enhancement and management scheme according to the Guidelines do not apply to the Project.

1.3 EIAO and Designated Projects

1.3.1 Residential or recreational developments within Deep Bay Buffer Zones 1 or 2 are "designated projects" under the EIAO, of which environmental impact assessment (EIA) is required to be conducted. As the Project falls within Deep Bay Buffer Zone 2 (**Figure 1**) and comprises residential development, an EIA is required for the Project.

1.4 Project Description

1.4.1 The proposed development is a low-density residential development with residential clubhouse, swimming pool, and site drainage system and ancillary facilities. There are thirty-two (32) houses of two storeys (6.6m in height) set in spacious surrounding and provided with private gardens and carports (**Figure 3**).

N

Royal Palms
加州豪園

Fairview Park
錦繡花園

"OU" Site
「其他指定用途」
住宅用地

Yau Mei San Tsuen 攸美新村

"REC" Site
「康樂」
用地

Yau Pok Road 悠學路

牛潭尾的排水道

Proposed San Tin No.1 SPS (Indicative)
擬議新田一號污水泵房(參考用)

Government's Proposed Public Sewers (Indicative)
政府擬議公共污水渠
(參考用)

Tam Mei Drainage Channel

Ngau Tam Mei Road 牛潭尾路

Government's Proposed Cycle Track (Indicative)
政府擬議單車徑
(參考用)

"R(D)" Site
「住宅(丁類)」
用地

Ha Chuk Yuen Road 下竹園路

Chuk Yuen Tsuen
竹園村

Tai Yuen Villa 泰苑小築

Castle Peak Road 青山公路

San Tin Highway 新田公路

Fairview Park
錦繡花園

Hang Fook Garden
幸福花園

"V" Sites
「鄉村式發展」
用地

Kam Pok Road 錦學路

Project Site
項目地點

"REC" Site
「康樂」
用地

Proposed Public Sewers

Ha San Wai Tsuen
下新圍村

Ha San Wai Road 下新圍路

Helene Terrace 明珠花園

Villa Camellia 海錦花園

Fairview Park Boulevard 錦繡花園大道南

Royal Camellia海錦豪園

Man Yuen Chuen
文苑村

Greenery Gardens
御翠園

Meister House
首譽

Legend 圖例

Project Site Boundary 項目範圍

Boundary of Deep Bay Buffer Zone 2
后海灣2號緩衝區

Figure 附圖: 1	RAMBOLL ENVIRON
Title 名稱: Location and Environ of the Project 項目位置及附近環境	Drawn by: HN Checked by: TC
Project 項目: Proposed Low-rise and Low-density Residential Development at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T. 新界元朗米埔錦學路以東丈量約份第104約多個地段及和鄰近政府土地的低層數和低密度住宅發展項目	Rev.: 1.2 Date: Jul 2016

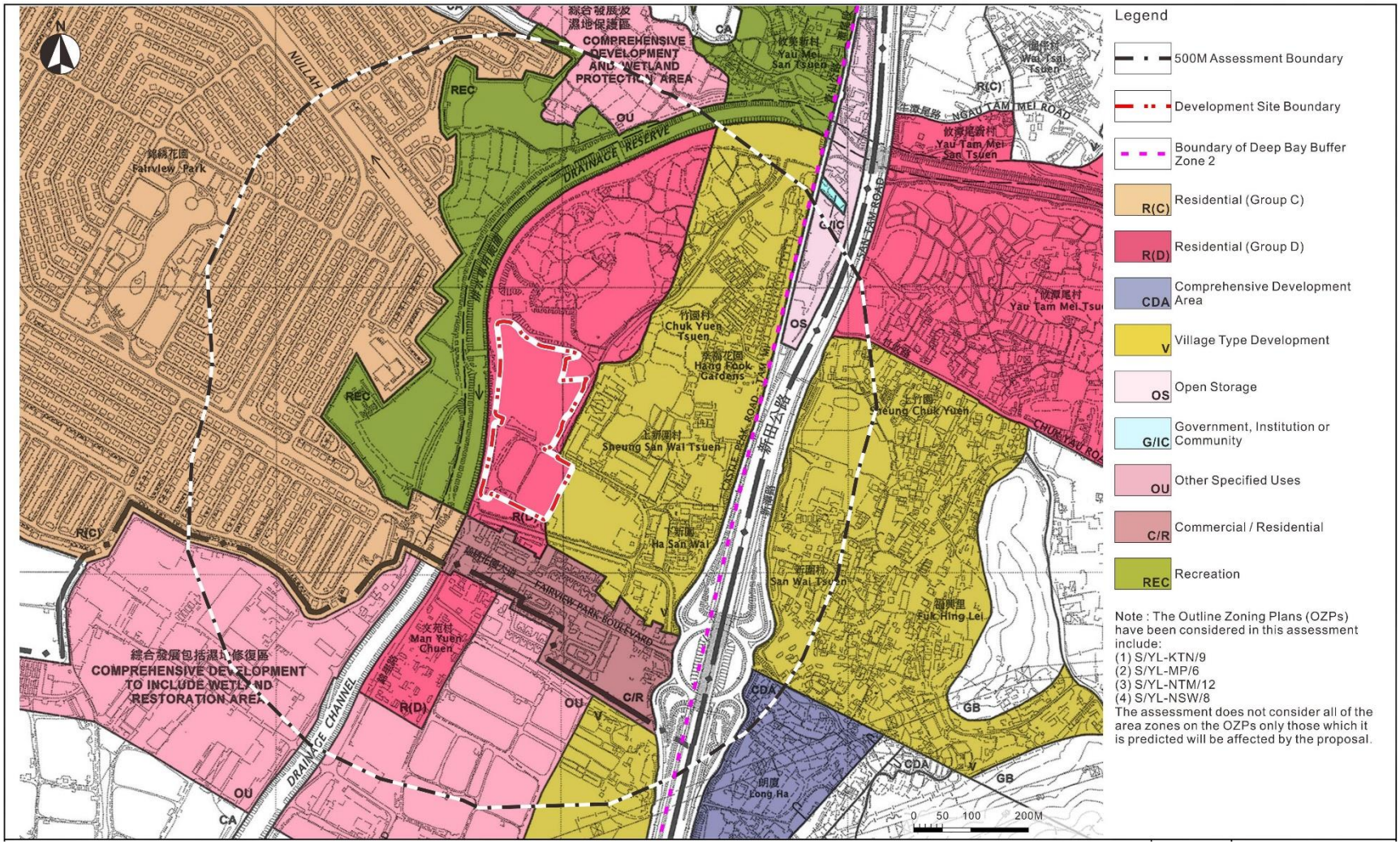


Figure 2 Outline Zoning Plan

Figure 3 Conceptual Layout of the Project

2. KEY FINDINGS OF ENVIRONMENTAL IMPACT ASSESSMENT ("EIA")

2.1 General

2.1.1 An EIA has been undertaken for the proposed development in accordance with the requirements stipulated in the EIAO-TM as well as those in the Project EIA Study Brief issued by the Government. The EIA is to provide a detailed assessment of the nature and extent of potential environmental impacts associated with the construction and operation of the Project.

2.1.2 The key findings, conclusions and recommendations of the EIA are summarised in the following sections.

2.2 Air Quality

Construction Phase Impact Summary

2.2.1 During the construction phase of the Project, fugitive dust emissions from the site formation work due to earth movement activities and transportation of excavated/ fill materials are the major sources of air pollution.

2.2.2 A number of mitigation measures and good housekeeping practices have been recommended such as dust control measures required under the Air Pollution Control (Construction Dust) Regulation, which will be implemented by the works contractors (e.g. imposing hard paving on the designated haul road; enclosing dump trucks with impervious sheeting when transporting dusty materials; spraying water on areas with active site formation work during workdays; covering excavated dusty materials or stockpile of dusty materials by impervious sheeting or sprayed with water; dusty materials to be sprayed with water prior to any loading, unloading or transfer operation; and limiting the speed of vehicles within construction site, etc.). The EIA also recommends project specific measures (e.g. site formation works to be conducted in stages so as to minimise construction dust emission). With implementation of all these mitigation measures, the dust level would comply with the relevant air quality objectives/ criteria under the Air Pollution Control Ordinance. The predicted mitigated dust levels due to construction of this Project are listed below:

	TSP (1-hour average)	**RSP (24-hour average)**	**RSP (Annual average)**	**PM2.5 (24-hour average)**	**PM2.5 (Annual average)**
Predicted Range, $\mu g/m^3$	164 – 316 **	78-80 *	43.3 – 43.7 **	59-59 *	30.7 – 30.8 **
No. of Exceedance	n/a	1 ***	n/a	1 ***	n/a
Compliance with Air Quality Criteria?	**Yes**	**Yes #**	**Yes**	**Yes #**	**Yes**
Air Quality Criteria, $\mu g/m^3$	500	100	50	75	35
No. of Exceedance Allowed	n/a	9	n/a	9	n/a

Remark: * The 24-hour average levels are based on the 10th highest 24-hour average concentrations at the receivers (Appendix 3-7 of EIA report refers).

** Predicted concentrations at ASRs (Tables 3-9, 3-12 to 3-13 of the EIA report refer).

*** Based on the maximum number of exceedances of the model-predicted 24-hour average concentrations at the receivers (Tables 3-10 to 3-11 of the EIA report refer).

The predicted 10th highest 24-hour average concentrations as well as the no. of exceedances from the calculated 24-hour average concentrations are both within the air quality criteria / AQO.

2.2.3 Hence, according to the assessment results, no unacceptable air quality impacts are anticipated. Nevertheless, monitoring during construction is still recommended to ensure proper implementation of the mitigation measures, and to minimize the construction dust level as far as practicable. No adverse residual air quality impact is therefore anticipated.

Operational Phase Impact Summary

2.2.4 During operational phase (when the residents live in these dwellings), there will be no planned dust generating activities from the Project. Given the scale of this Project (for small houses development), vehicular emissions due to traffic of this Project is unlikely to be significant (~19 vehicles/ hour to be generated during peak hour), and it is unlikely that the Project will generate any adverse air quality impact. In addition, this Project would not contribute to additional traffic flow on nearby roads when compared with traffic flow generated by its existing open car park operation. Sewage generated by the proposed development will be discharged to the planned public sewerage system. The interim sewage treatment plant will be within enclosed building and located underground, and will be equipped with odour absorptive system (with odour removal efficiency of not less than 99.5%, and that the exhaust of the STP will be directed away from nearby ASRs). Thus, the Project Site itself will not cause any adverse air pollution or odour nuisance. There is also no air quality impact relating to industrial chimney emissions as no chimney is identified within the Assessment Area. Although the Project is adjacent to existing road network, sufficient setback distance (varies from 7m to over 104m) has already been incorporated between the development and the adjacent roads, hence the impact from vehicular emission from the roads is insignificant. Overall, no unacceptable air quality impact is expected.

2.2.5 In brief, with the implementation of the mitigation measures as recommended in the EIA report, no adverse residual air quality impact due to the Project is anticipated.

2.3 Noise

2.3.1 The use of Powered Mechanical Equipment for various construction activities will be the primary potential noise source during the construction phase of the Project. For operational phase, the main noise sources would be road traffic noise; fixed noise sources; as well as noise from proposed interim sewage treatment plant.

Construction Phase Impact Summary

2.3.2 The use of Powered Mechanical Equipment for various construction activities will be the primary potential noise source during the construction phase of the Project. A combination of noise mitigation measures have been proposed to minimize the noise level due to project works such as the use of quiet type equipment; scheduling of construction programme to avoid concurrent works; adaptation of best practices; provision of movable temporary noise barriers, etc. With the adoption of the recommended mitigation measures, the predicted mitigated construction noise level would range from 58dB(A) to 74dB(A), which comply with the relevant construction noise criteria specified in the Technical Memorandum on Environmental Impact Assessment Process. In addition, as a precautionary measure, a section of 3m tall temporary fixed noise barrier will be erected along a portion of the western site boundary to shield NSR (Bethel High School) near Fairview Park, which is over 150m away from the Project Site boundary, only if this Project has concurrent construction activities with other nearby planned public sewerage and cycle track projects. It can be seen from the above that, no adverse construction noise impact due to the Project or the nearby concurrent projects is anticipated.

Unmitigated Noise Level, dB(A)	Mitigated Noise Level, dB(A) *	Noise Criteria, dB(A)	Mitigation Measures
>75 (for dwellings)	58 - 74	75dB(A) for residential uses; and 70dB(A) for educational institutions (65B(A) during school examination period)	Quiet type construction equipment; scheduling of construction programme to avoid concurrent works; best practices; and provision of movable noise barriers and fixed temporary noise barriers.
>70 (for educational institutions)	61-62		

Remark: * Mitigated construction noise level due to construction of this Project. Extracted from Table 4-19 of the EIA report.

2.3.3 Monitoring of the construction noise is recommended in the EIA report to ensure proper implementation of the required mitigation measures, and to minimize the noise level as far as practicable.

Operational Phase Impact Summary

2.3.4 Regarding the traffic noise impact from the adjacent roads on future residents of the Site, the proposed development has set back from Kam Pok Road (>8m). Thus, the predicted road traffic noise level would range from 46dB(A) to 70dB(A) at the proposed development, which can comply with the relevant noise criteria of 70dB(A). Hence, there will be no unacceptable noise impacts from road traffic.

2.3.5 An evaluation conducted on potential industrial noise from activities within nearby open storage sites to the further east of the Project Site and the proposed interim STP has found no adverse noise impacts on the residents in this Project by placing noise tolerant uses such as the proposed Sewage Treatment Plant (being 10.4mPD at roof level) between the proposed house and the industrial noise source; a noise barrier along the remaining eastern site boundary which has a solid boundary wall of 4.5m minimum height; and provision of recommended noise mitigation measures for the interim STP (see Section 2.3.6) The predicted noise level due to operation of the open storage site would comply with the relevant noise criteria of 55dB(A) (day-time) and 45dB(A) (night-time), respectively.

	Calculated Noise Level, dB(A)	Noise Criteria, dB(A)
Road Traffic Noise	46 – 70 *	70
Industrial Noise	52 / 45 (day-time/ night-time) **	55 (day-time); and 45 (night-time)

Remark: * Extracted from road traffic noise level in Appendix 4-3 of the EIA report.

** Estimated maximum noise level due to nearby industrial noise sources during day-time period and night-time period, respectively under a worst case scenario. Extracted from Appendices 4-6 and 4-7 of the EIA report.

2.3.6 With regard to the above, recommendations have been proposed for the proposed interim STP. Acoustic treatments such as provision of acoustic silencer and acoustic enclosure shall be proposed so that the SWL of STP should be 74dB(A) or below in order to meet the noise criteria (55 (day time); and 45 (night time)).

2.3.7 From the above, it is concluded that with the adoption of the noise mitigation measures recommended in the EIA report, there will be no unacceptable noise impacts.

2.4 Water Quality

Construction Phase Impact Summary

2.4.1 The Project will involve land-based works only. Thus, during construction of this Project, the major potential water quality impact will be from surface runoff and soil erosion of exposed surfaces. To alleviate the impacts, the EIA report recommends the adoption of good site practices and construction of a properly designed temporary drainage system within the site.

2.4.2 A peripheral site drainage system comprising precast concrete u-channels along the site boundary, together with sand/silt removal facilities and in accordance with the requirements stipulated in Professional Persons on Environmental Consultative Committee Practice Notes on the Site Drainage (ProPECC PN 1/94), will be constructed. The surface runoff will be properly treated prior to the discharge into Ngau Tam Mei Drainage Channel (NTMDC). Pursuant to the "Water Pollution Control Ordinance", applications to the Environmental Protection Department for Discharge Licences are required prior to the commencement of the construction works and occupation of the development. A drainage management plan for the construction phase will be submitted by contractor, and its implementation will be monitored and audited. In addition, regular environmental audits, as part of the proposed Environmental Monitoring and Audit (EM&A) programme, including regular water quality monitoring and site inspections will be undertaken routinely in order to ensure there is no uncontrolled discharge of surface runoff and that the recommended mitigation measures are properly implemented.

Operational Phase Impact Summary

2.4.3 Upon occupation of the Site, all domestic sewage generated will be discharged to the future public sewerage system near Ngau Tam Mei Channel and Castle Peak Road between Ngau Tam Mei and San Tin under PWP item 4235DS. Before this proposed public sewerage system becomes available, an interim sewage treatment plant will be used for treatment of sewage generated from the proposed development and the treated effluent will be discharged to the adjacent NTMDC. The discharge of treated effluent would comply with the relevant discharge limits/ criteria in order to ensure there will be no net increase in pollution loading to Deep Bay areas (please refer to the sewerage section for details) by co-treatment of water extracted from nearby drainage channel with sewage generated from this Project . The discharge from the Sewage Treatment Plant is also subject to a discharge licence under the Water Pollution Control Ordinance, and the discharge will comply with the terms and conditions in the licence as well as the conditions specified in the Environmental Permit (EP) of this Project.

2.4.4 Surface runoff from the development site will be discharged to the NTMDC. Best Management Practices have been proposed in order to abate first flush pollution in stormwater runoff. Examples of practices are: design measures to minimise soil erosion, minimizing paved area; proper managed landscape area; proper site drainage design/control; provision of devices/ facilities to control pollution and to remove pollution source; minimizing the use of fertilizers; and administrative measures for maintenance issues. Road gullies with silt traps and standard design, oil interceptors, etc. will be incorporated during the detailed design. Drainage outlet of covered car park will also be equipped with oil interceptor. With appropriate drainage system equipped within the proposed development, there will be no adverse water quality impact during the operation of the Project as the increase in surface runoff from this Project is insignificant when compared with the capacity of the trained downstream Ngau Tam Mei Drainage Channel, which are carefully constructed drainage channels designed for collecting stormwater.

2.4.5 Asides from the above, emergency response plans will also be developed to deal with inclement weather and emergencies for both construction and operation phases.

	Recommended Mitigation Measures
Construction Phase	• A peripheral site drainage system comprising precast concrete u-channels along site boundary and works area; • Equipped with sand/silt removal facilities in accordance with the requirements stipulated in Professional Persons on Environmental Consultative Committee Practice Notes on the Site Drainage (ProPECC PN 1/94); • Surface runoff to be collected and directed for treatment before discharge into Ngau Tam Mei Drainage Channel; • A construction phase drainage management plan with details of design of the temporary site drainage system to be prepared, implemented, and audited; • Regular environmental audits, as part of the proposed Environmental Monitoring and Audit (EM&A), including regular water quality monitoring and site inspections to ensure there is no uncontrolled discharge of surface runoff and that the recommended mitigation measures are properly implemented; • Pursuant to the "Water Pollution Control Ordinance", applications to the EPD for Discharge Licences prior to the commencement of the construction works and occupation of the development; and • An Emergency Response Plan during inclement weather and emergencies.
Operational Phase	• Domestic sewage to be discharged into planned public sewers under the permanent disposal scheme; • A sewage treatment plant to treat generated sewage in interim; • Treated effluent is to comply with relevant discharge limits in the licence and the conditions in the EP, and there is no net increase in pollution loading to Deep Bay areas; • Best Management Practices have been proposed to abate first flush pollution in stormwater runoff, which covers design measures; provision of devices/ facilities to remove pollutants; and administrative measures; • Proper drainage system to collect surface runoff from the development with appropriate facilities and sand traps. Road gullies with sand traps and oil interceptor and car park and similar facilities to be installed with oil interceptors; and • An Emergency Response Plan during inclement weather and emergencies.

2.4.6 With the adoption and implementation of the mitigation measures recommended in the EIA report, no adverse water quality impact is anticipated during both the construction and operation of the Project.

2.5 Sewerage and Sewage Treatment

Construction Phase Impact Summary

2.5.1 The proposed residential development is located at the east of Kam Pok Road near Fairview Park at Yuen Long in New Territories. During construction, chemical toilets will be provided to contain sewage generated from the construction workforce, which will be serviced and cleaned by a specialist contractor at regular intervals. Thus, no adverse

residual sewerage impact is anticipated.

Operational Phase Impact Summary

2.5.2 There is currently no existing public sewerage system in the vicinity of the Development. The Project Area with maximum 132 people (including residents and employees) will generate a peak flow of about 4.4 L/s. As a permanent measure, sewage generated from the Development will be discharged to the planned San Tin and Ngau Tam Mei Trunk Sewerage under PWP No. 4235DS. Hydraulic analysis showed that the future public sewerage and pumping stations have sufficient spare capacity for conveying the overall sewage generated in year 2030 which includes the additional sewage from the Development. The hydraulic analysis also revealed that the Yuen Long Sewage Treatment Work (YLSTW) after upgrading would have adequate capacity for the sewage generated in year 2030.

2.5.3 The current implementation programme of San Tin and Ngau Tam Mei Trunk Sewerage under PWP No. 4235DS is still tentative and is subject to public consultation. It is necessary to consider the provision of on-site sewage treatment plant as an interim measure to handle the sewage generated from the Development. By co-treating the channel water from Ngau Tam Mei Drainage Channel, the on-site interim sewage treatment plant (STP) will achieve the target of no net increase of pollution load to Deep Bay as well as Group C inland water discharge standard in WPCO.

2.5.4 The interim STP shall comply with the no net increase in pollution load to the Deep Bay under the Town Planning Board (TPB) Guidelines. Since there is currently no existing sewage or pollution load generated from the Development Site, any on-site treatment with discharge would lead to increase in pollution load. Abstraction of water from the Ngau Tam Mei Drainage Channel for co-treatment in the interim STP is therefore proposed. According to the result of water quality monitoring at the Ngau Tam Mei Drainage Channel from September 2012 to September 2013 and from March 2015 to April 2015, samples covered 2 wet seasons and 2 dry seasons. The lowest pollutant concentration between the Wet Seasons average and Dry Seasons average were used to estimate the amount of channel water required, approximately 200 m^3 per day will be abstracted to offset the pollution load due to the Development. Low side of pollutant concentrations are adopted in the offsetting calculation, which means this approach already taken into account the water quality fluctuation, as most of the time channel water pollutant will be above the adopted concentration, especially in Dry Seasons. Depending on the actual channel water quality during operation, the amount of abstraction requirement can be adjusted. The loading of BOD_5, TN-N, TP, TSS, NH_3-N, and E.*coli* all have reduction after the co-treatment as shown in table below which demonstrates that the Development will not cause net increase in pollution load thus can comply with the no net increase in pollution load requirement in Deep Bay under the TPB Guidelines.

2.5.5 The proposed treatment process of the interim STP include biological treatment, membrane filtration (including MBR – Membrane Bioreactor), and Reverse Osmosis (RO). The treatment technology is proven to be capable of producing high-quality effluent under of low turbidity, BOD_5, nitrogen, and bacteria level. The proposed treatment process could achieve target effluent standards and comply with the requirement under WPCO and TPB Guidelines. With the proposed treatment system, it would bring improvement by reducing pollutant load to the Deep Bay.

Item	Target Effluent Quality of STP *	Group C Inland Discharge Standards in WPCO (for flow of ≤100 m^3/d) *	Annual Pollution Loads from 200 m^3 channel water (before Development), **	Annual Pollution Loads (after Development with co-treatment) **	Annual Reduction of Pollution Loads at Deep Bay WCZ **
BOD_5	3	<20	292	274	18
TN-N	4	Not Specified	398	365	33
TP	0.5	<10	58	47	11
TSS	10	<20	4,453	916	3,537
NH_3-N	2	<2	197	183	15
E.*coli.* (no.)	1000	<1,000	2.2×10^{13}	9.1×10^{11}	2.1×10^{13}

Remark: * All units in mg/L except *E. coli* which is in no./100ml.

** All units in Kg per annual except E. coli which is in no. per annual.

2.5.6 The sewerage system within the Development will be designed to facilitate the future connection to the San Tin and Ngau Tam Mei Trunk Sewerage once it becomes available. Adverse short-term and long-term environmental impacts in respect of water quality, ecological, public health and safety arising from both the long term and interim sewerage scheme are not anticipated. No adverse residual sewerage impact will be incurred as a result of the Development.

	Recommended Measures
Sewage from construction workforce (Construction Phase)	• Chemical toilets will be provided on-site; and • The facility will be serviced and cleaned by a specialist contractor at regular intervals.
Domestic Sewage (Operational Phase)	• A peak flow of 4.4 L/s sewage to be generated; • Sewage to be discharged to planned public sewer under permanent disposal scheme; • An interim sewage treatment plant (STP) will be in operation before the completion of San Tin and Ngau Tam Mei Trunk Sewerage; • The interim STP to be designed to facilitate future connection to the planned San Tin and Ngau Tam Mei Trunk Sewerage; • Maintenance and emergency measures recommended to ensure effective operation of the STP; • Discharge from interim STP will **NOT** result in net increase in pollution loads to Deep Bay by abstracting 200 m^3 of water per day from Ngau Tam Mei Drainage Channel for co-treatment at interim STP; • Equalization tank (with capacity of ~3 days of sewage storage) will be provided in case of entire outage of the STP. Tank away will be provided for prolonged outage of STP; • The discharge of treated effluent from the interim STP is to comply with the terms and conditions in the discharge licence under the WPCO as well as the conditions specified in the EP of this Project.

2.6 Waste Management

Construction Phase Impact Summary

2.6.1 The types and categories of waste that would be generated during the construction phase of the Project include site clearance, excavated soil/ sediment, construction and demolition materials, chemical waste from the maintenance of construction plant and equipment, and general refuse from the workforce. Opportunities for reduction in waste generation through recovery, re-use or recycling have been identified in the assessment. Excavated materials and C&D materials can be reused as filling materials where possible.

2.6.2 The Project Site is vacant and partially used as open air car park. No historic and/ or existing land uses at the Project Site that would result in potential land contamination has been identified. Thus, land contamination at the Project Site is not expected.

2.6.3 The appropriate disposal method for each type of waste generated from the construction method has been identified. Opportunities for reducing construction waste generation and maximizing re-use on-site have been evaluated. Environmental mitigation measures and good practices have been recommended in the EIA report in order to mitigate the environmental impacts.

	Recommendations
Construction Waste	• A waste management plan to be prepared and implemented by contractor(s) through-out construction; • Implementation of proper trip ticket system; • Proper training on waste management to workers; • Avoidance and minimization to reduce the potential quantity of C&D materials generated; • Reuse of materials as practical as possible; • Recovery and Recycling as practical as possible; • Proper treatment and disposal in respect to relevant laws, guidelines and good practice; • Landfill disposal as the last resort; and • Regular environmental audit and monitoring to ensure effective implementation; • On-site re-use of excavated materials/ sediment will be required.

2.6.4 With the recommended practices strictly followed, no adverse residual impacts to the environment associated with waste generated by the construction phase of the Project are anticipated.

Operational Phase Impact Summary

2.6.5 As the Project is not a high-density development, even when fully occupied the development will generate limited amount of domestic waste. Appropriate refuse collection points will be provided for the handling and disposal of this small quantity of waste during the operational phase. Waste generated will be collected and disposed of properly by a licensed contractor using refuse collection vehicle. Thus, no adverse waste management issues are expected to arise during operation of the Project.

2.7 Ecology

2.7.1 The present Project will involve a low-density residential development. The Project Area mainly comprises of urbanised/disturbed area, and with small area of plantation and an abandoned pond. A twelve-month survey programme was conducted between 2009 and 2010 to assess the ecological value of habitats and wildlife utilisation within the Project Area and areas within 500m from the Project Area. Habitats within the Project Area only support low diversity of plant and most of which are exotic species. The faunal diversity was also low. The existing ecological values of these habitats are ranked as "very low". Surveys were undertaken in 2011, 2014, 2015 and 2016 to confirm the validity of habitat conditions and ecological data, and it was convinced that there would be no significant adverse impact.

2.7.2 Within the 500m Assessment Area, eight types of habitats were identified, including urbanised/disturbed habitat, plantation, agricultural land, pond, flood storage pond, grassland/shrubland, nullah and drainage channel. Apart from the Ngau Tam Mei Drainage channel, all habitats were ranked as ecological values of "very low"/"low"/"low to moderate". The Ngau Tam Mei Drainage Channel was considered of "moderate" ecological value. Large waterbirds mainly flew along this channel within the Assessment Area. As revealed from reviewed literatures and ecological surveys, high counts of waterbirds was only occasionally utilised this channel during low tides in winter. Black-faced Spoonbills were recorded in this channel but the abundance was very low.

Construction Phase Impact Summary

2.7.3 The ecological impact has been assessed in accordance with the requirements of Annexes 8 and 16 of the EIAO-TM and the EIA Study Brief for the Project (ESB-210/2009). Estimated habitat loss on-site includes 3.17 ha of urbanised/disturbed area, 0.3 ha of plantation and 0.33 ha of abandoned pond. The abandoned pond was not considered important habitat of waterbirds due to the small size, abandoned status, isolated from other wetland ecosystems in Deep Bay and subjected to long term disturbance from the adjacent car park at least since early 1990's. Loss of habitats will only result in "insignificant" ecological impact. No mitigation measure for loss of habitats is therefore required. As the Project falls outside Wetland Conservation Area (WCA) and Wetland Buffer Area (WBA) under the relevant Town Planning Board Guidelines (TPB PG-No. 12C). The "no-net-loss in wetland" principle and wetland enhancement and management scheme according to the Guidelines do not apply to the Project. There will be no impact due to temporary or permanent loss of habitats from construction of access as public access road is available. Potential impact to surrounding habitats and associated fauna due to construction disturbance and runoff are considered Moderate and Minor to Moderate respectively.

2.7.4 Waterbirds foraging in the Ngau Tam Mei Drainage Channel during construction phase are considered the sensitive receivers of the Project. Abundance of waterbirds is higher in winter. A number of mitigation measures were recommended, including uses of quiet construction method and machinery, erection of site hoardings outside wintering season of waterbirds between October and March, provision of mobile noise barriers in adjacent to construction plants or provision of acoustic screens and implementation of good site practice to avoid adverse impact on birds along Ngau Tam Mei Drainage Channel. The effectiveness of the recommended mitigation measures will be evaluated by ecological monitoring in wintering season of bird during construction phase. Regular site audits will be conducted for checking the implementation of the proposed measures.

Operational Phase Impact Summary

2.7.5 It is anticipated that the Project will not cause significant ecological impact in the surrounding areas due to the new generated human activities and traffic noise offset by the existing car park vehicular and pedestrian movement, runoff and drainage/effluent discharge, habitat fragmentation, artificial lighting and barrier to bird flight during operation phase. Minimization of bird collision will also be taken into account in the

design of noise barrier. Materials which are opaque, non-reflective panels with colour will be used for construction of noise barriers to reduce the risk of bird collision, particularly under dim condition (e.g. dusk and dawn). The wall of the interim sewage treatment plant will form part of noise mitigation measures and hence the extent of glass panel of the noise barrier will be reduced.

2.7.6 The Project will bring about reduction in environmental disturbance such as noise level, air quality and dust during operation phase. Landscape planting of the Project will increase the vegetation cover in the Project Site.

2.7.7 Overall, with the above mitigation measures in place, there would not be significant cumulative and adverse residual ecological impact from the proposed development during construction phase and operational phase.

2.8 Fisheries

Impact Summary

2.8.1 Assessment of potential fisheries impacts was conducted in accordance with the EIAO-TM requirements. The Project would cause loss of an abandoned fishpond of 0.33 ha. The chance that the small fishpond within the Project Area would be resumed as active pond is very low. Hence, the impact was considered insignificant. No mitigation measure is considered necessary. Water quality impacts on fishponds during construction and operation phases would be insignificant given that recommended mitigated measures (i.e. mitigation measures for water quality impact) are implemented. There will be no residual adverse impact due to this Project.

2.8.2 Hence no fisheries specific mitigation measure for construction and operation phases of the Project is required.

2.9 Cultural Heritage

Impact Summary

2.9.1 A Cultural Heritage Impact Assessment has been carried out for the Project. There is neither declared monument nor graded or proposed graded historic building identified within or adjacent to the Project Site. The proposed development will not encroach upon any known sites of archaeological interest or areas of archaeological interest, and will not have any direct or indirect impacts on any declared monuments, graded or proposed graded historic buildings, cultural landscape features, graves or historical village during construction and operational phases. No specific EM&A requirement is considered necessary.

2.10 Landscape and Visual

2.10.1 Within the Study Area, there are a total of 43 Landscape Resources (LRs) including village settlements, roadside amenity planting areas, grasslands, agricultural fields, fishponds, engineered water channels, development areas and open yard carparks. There are 6 Landscape Character Areas (LCAs) showing different rural residential, nullahside rural, open storage and warehouse landscape characters within the Study Area. These LRs and LCAs are considered to be relatively tolerable to the changes from the implementation of the proposed residential development and have a low to medium sensitivity to accommodate changes. A total of 11 Visually Sensitive Receivers (VSRs) and 3 Planned Visually Sensitive Receivers (PVSRs) were selected for the visual assessment, of which there are 1 VSR (existing villagers living adjacent to the Project Site) and 1 PVSR (planned residents adjacent to the Project Site) which are considered to have a high sensitivity to the change as a result of the implementation of the proposed development.

Review of the Planning Development Control Framework

2.10.2 The proposed house development will have direct impact on a Residential (D) zone under S/YL-MP/6 Mai Po & Fairview Park OZP. There is no impact on other zonings under S/YL-KTN/9 Kam Tin North, S/YL-NTM/12 Ngau Tam Mei and S/YL-NSW/8 Nam Sang Wai OZPs. The proposed development is a low-rise and low-density residential development which is compatible to the existing and planned land uses and planning framework. The introduction of a high quality residential landscape within the Project Site will assist the phasing out of unpleasant industrial uses in the rural area of New Territories. The proposed development is thus considered to be acceptable in planning terms. Upon full establishment of the recommended landscape and visual mitigation measures, proposed development will be integrated with the future outlook of this rural landscape context in combination with other planned low-rise residential and recreational developments along the Ngau Tam Mei Nullah. The proposed development scheme has been approved by the Town Planning Board under Section 16 of the Town Planning Ordinance.

Landscape Impact Summary

Construction Phase Impact Summary on LRs and LCAs

2.10.3 The main potential impacts on the existing LRs are the loss of the existing trees (LR3.5 and 3.8), abandoned fish pond (LR6.1) and open yard (LR10.3) due to the site formation works, building works and construction of the sewage treatment plant (temporary), utilities system, internal road network and the noise mitigation measures proposed within the Project Site.

2.10.4 Majority of the Project Site is hard-paved (over two-thirds of the total site area), the existing trees and vegetation are only concentrated at the periphery of the Project Site. A preliminary tree survey identified a total of 364 trees within and close to the Project Site boundary. A combination of native, a few ornamental and pioneer species are densely located on the sloping areas along Kam Pok Road, Fung Chuk Road and Ha Chuk Yuen Road, they create dense foliage and a greening effect for the roadside and nullahside amenity. Besides, approximately 15% of the existing trees (56 out of 364) are *Leucaena leucocephala* (銀合歡), which are weedy trees, and are proposed to be removed. The proposed development recognises the importance of tree preservation and the impacts on the overall landscape character and amenity of the Study Area. Approximately 274 existing trees (75.2%) can be retained, in their current locations or through tree transplanting.

2.10.5 To minimise the potential impacts on the above resources, a number of mitigation measures have been recommended including the preservation of the existing trees, limited works areas, coordination with concurrent projects, replanting of disturbed vegetation at the earliest possible stage, the reinstatement of roadside amenity planting areas, provision of new tree planting in proposed gardens within proposed development which will utilise a combination of ornamental, amenity, native and broadleaf tree species, introduction of landscape pond with surrounding planting which are bird and butterfly attracting plant species, preserve and create new landscape buffer and planting strip at the periphery of the Project Site. It is expected that the loss of trees will be compensated in terms of both quantity and quality with a replanting ratio of not less than 1:1. Through the implementation of landscape mitigation measures, construction impact significance on the affected LRs will be mitigated from moderate (unmitigated) to moderate or slight level (mitigated).

2.10.6 Proposed development will have a direct impact on Kam Pok Road Low-rise Residential Landscape Character Area (LCA5) due to the change of landscape character and the loss of LRs mentioned above during construction phase. Construction impacts on this LCA will be alleviated from moderated (unmitigated) to slight level (mitigated) through implementation of landscape mitigation measures. No direct impact on other LCAs identified within the assessment area.

Operation Phase Impact Summary on LRs and LCAs

2.10.7 With implementation of the landscape mitigation measures and maturity of the landscape planting during operation phase, the moderate unmitigated impact significance on the affected LRs and LCAs will be alleviated to moderate or slight (Day 1 mitigated) and slight adverse or insubstantial (Yr10 mitigated). The proposed development will be compatible within the existing rural lowland and nullahside landscape context.

2.10.8 There are many planned residential and recreational developments being undertaken surrounding the site along the Ngau Tam Mei Nullah. Although the proposed development does not have direct impact on the surrounding landscape characters, the introduction of proposed residential development and its associated landscape works in Kam Pok Road will benefit the landscape characters surrounding the site replacing the unpleasant industrial uses in rural area, and in combination of the proposed landscape mitigation measures mentioned above, the implementation of the proposed development would enhance and benefit to the landscape context of the assessment area.

Visual Impact Summary

Construction Phase Impact Summary on VSRs

2.10.9 Significant to moderate unmitigated impacts on the visual amenity of the VSRs will be alleviated to moderate to slight level (mitigated) with implementation of visual mitigation measures for construction phase.

Operation Phase Impact Summary on VSRs

2.10.10 The residential development and associated infrastructure, utilities, noise barriers and facilities proposed within the Project Site, would have significant to moderate unmitigated impacts on the VSRs without mitigation measures during operation phase. With implementation (Day1) and full establishment (Yr10) of visual mitigation measures, including limited works areas, innovative and responsive building disposition and design, integrated design of engineering structures including the proposed noise barrier and temporary sewage treatment plant, the use of green roof and vertical greening measures, creation of landscape berm and planting strip (**Figure 4 to 6** refer), and the restoration of the disturbed areas with roadside and amenity planting, the development mass will be softened. Hence, the mitigated impact on the VSRs both in close proximity to the Project

Site and in the wider context will be alleviated to moderate to slight level at Day 1 operation phase and to a slight to insubstantial level at Yr10 operation phase. There is no residual impact on majority of VSRs with exception of the road users along roads and residents located immediately surrounding the site who will have slight adverse impacts (Yr10 mitigated). Furthermore, proposed development assists in phasing out the visually unpleasant features in the visual context along Ngau Tam Mei Channel, and hence will benefit the visual amenity in the views of the planned future residents and recreational users alongside of the Channel. Proposed development will change the visual amenity along the Ngau Tam Mei Channel however it will uplift the quality of the visual context through the implementation of landscape proposals associated with the development and hence proposed development will fit into the existing and planned visual context in a long term.

2.10.11 In accordance with Annex 10 and 18 of the EIAO-TM, the landscape and visual impacts of the proposed works would be 'acceptable with mitigation measures' that is to say 'there would be some adverse effects, but these can be eliminated, reduced or offset to a large extent by specific measures'.

Table 2.10.1 Summary of Landscape and Visual Impact

ID	Sensitivity	Magnitude of Change		Significance Threshold (Unmitigated)		Mitigation Measures*	Significance Threshold (Mitigated)	
		Construction Phrase	Operation Phrase	Construction Phrase	Operation Phrase		Construction Phrase/ Operation Phase Day 1 (Mitigated)	Operation Phrase Year 10 (Residual)
1.0 Key Landscape Resources (LRs) – Insubstantial to Slight residual impact significance								
LR3.5 Fung Chuk Road Roadside Amenity	Medium	Intermediate	Intermediate	Moderate Adverse	Moderate Adverse	CP1, CP3, CP4, OP1, OP2, OP6	Slight Adverse	Insubstantial
LR3.8 Kam Pok Road Roadside Amenity		Small	Small			CP1, CP3, CP4, OP1, OP2, OP6		
LR6.1 Ha San Wai Road North Fish Pond (Abandoned)	Low	Large	Large			CP3,OP2, OP7	Moderate Adverse	Slight Adverse
LR10.3 Ha Chuk Yuen Road Open Yards		Intermediate	Intermediate			CP3,OP1, OP2	Slight Adverse	Insubstantial
2.0 Key Landscape Character Areas (LCAs) – Insubstantial residual impact significance								
LCA5 Kam Pok Road Low-rise Residential Landscape	Low	Intermediate	Intermediate	Moderate Adverse	Moderate Adverse	CP1, CP3, CP4, OP1, OP2, OP5, OP6, OP7	Slight Adverse	Insubstantial
3.1 Visually Sensitive Receivers (VSRs) - slight residual impact significance								
VSR 3 Vehicular Travellers and Pedestrians along Fung Chuk Road	Medium	Large	Large	Significant Adverse	Significant Adverse	CP1, CP2, CP5, OP3, OP4, OP5, OP6	Moderate Adverse	Slight Adverse Further to the establishment of tree preservation and transplanting proposals and new tree planting proposals in the landscape buffer, the proposed development will be largely screened as in their original visual context.

ID	Sensitivity	Magnitude of Change		Significance Threshold (Unmitigated)		Mitigation Measures*	Significance Threshold (Mitigated)	
		Construction Phase	Operation Phase	Construction Phase	Operation Phase		Construction Phase/ Operation Phase Day 1 (Mitigated)	Operation Phase Year 10 (Residual)
VSR 5 Vehicular Travellers and Pedestrians along Ha Chuk Yuen Road						CP1, CP2, CP5, OP3, OP4, OP5, OP6		Slight Adverse Further to the establishment of tree preservation proposals and new tree planting proposals in the landscape buffer, the proposed development will be largely screened as in their original visual context.
VSR 7 Residents of Low-rise House Development along Ha San Wai Road						CP1, CP2, OP3, OP4, OP5, OP6		Slight Adverse Responsive design of the building height profile and massing and innovative design of noise barrier.
VSR 11 Vehicular Travellers and Pedestrians alongside of Ngau Tam Mei Drainage Channel						CP2, OP3, OP4, OP5		Upon full establishment of transplanting proposals in landscape area of Ha San Wai Road, visual impact will be alleviated
3.2 Visually Sensitive Receivers (VSRs) – Insubstantial impact significance								
PVSR 1 Residents of Planned Low-rise House Development at Fung Chuk Road North	High	Intermediate	Intermediate	Moderate Adverse	Moderate Adverse	CP1, CP2, CP5, OP3, OP6	Slight Adverse	Insubstantial
VSR 4 Villagers of Chuk Yuen Tsuen and Hang Fook Gardens						CP2, OP3,OP4,		
VSR 8 Residents of Low-rise House Development along Fairview Park Boulevard	Medium	Small	Small	Moderate Adverse	Moderate Adverse	CP2, OP3, OP4, OP5	Slight Adverse	Insubstantial

ID	Sensitivity	Magnitude of Change		Significance Threshold (Unmitigated)		Mitigation Measures*	Significance Threshold (Mitigated)	
		Construction Phase	Operation Phase	Construction Phase	Operation Phase		Construction Phase/ Operation Phase Day 1 (Mitigated)	Operation Phase Year 10 (Residual)
VSR 10 Residents of Low-rise House Development at Fairview Park		Intermediate	Intermediate			CP1, OP6		
VSR 2 Workers at Chuk Yuen Floodwater Pumping Station and Storage Pond	Low	Intermediate	Intermediate	Moderate Adverse	Moderate Adverse	CP1, CP2, CP5, OP3,OP6	Slight Adverse	Insubstantial
VSR 6.1 Workers of Warehouses and Open Container Storage at Ha San Wai Tsuen						CP1, CP2, CP5, OP3,OP4, OP5, OP6		
VSR 6.2 Villagers of Ha San Wai						CP2, OP3, OP4, OP5, OP6		
VSR 9 Vehicular Travellers and Pedestrians along Fairview Park Road South						CP2, OP3, OP4, OP5		
3.3 Visually Sensitive Receivers (VSRs) – beneficial impact significance								
PVSR 12A Future Residents of Planned Recreation Zone to the east of Fairview Park	Medium	Intermediate	Intermediate	Moderate Adverse	Moderate Adverse	CP1, CP2, CP5, OP3, OP5, OP6	Slight Adverse	Slight Beneficial Responsive design of the building height profile and massing. Upon full establishment of tree preservation, transplanting and new planting proposals in the roadside landscape area of Kam Pok Road, visual impact will be alleviated
PVSR 12B Future Recreational Users of Planned Recreation Zone to the east of Fairview Park								

Note: Only key LRs, LCA and VSRs with impact as a result of proposed works are summarised in the table. Detail assessments refer to EIA Report Chapter11.

* Proposed Landscape and/or Visual Mitigation Measures

	Mitigation Code	**Mitigation Measures**	**Landscape/Visual**
Construction Phase	CP1	Preservation of Existing Vegetation	L/V
	CP2	Works Area and Temporary Works Areas	V
	CP3	Implementation of Mitigation Planting and Planting Species Selection	L
	CP4	Transplantation of Existing Trees	L
	CP5	Coordination with Concurrent Projects - Coordinated implementation programme with concurrent projects to minimise potential impacts and where possible reduce the period of disturbance.	V
Operational Phase	OP1	Roadside and Amenity Planting	L
	OP2	Compensatory Planting Proposals	L
	OP3	Responsive Design of Buildings	V
	OP4	Noise Mitigation Structures	V
	OP5	Design of Engineering Structure	L/V
	OP6	Creation of Landscape Buffer	L/V
	OP7	Provision of Landscape Pond	L

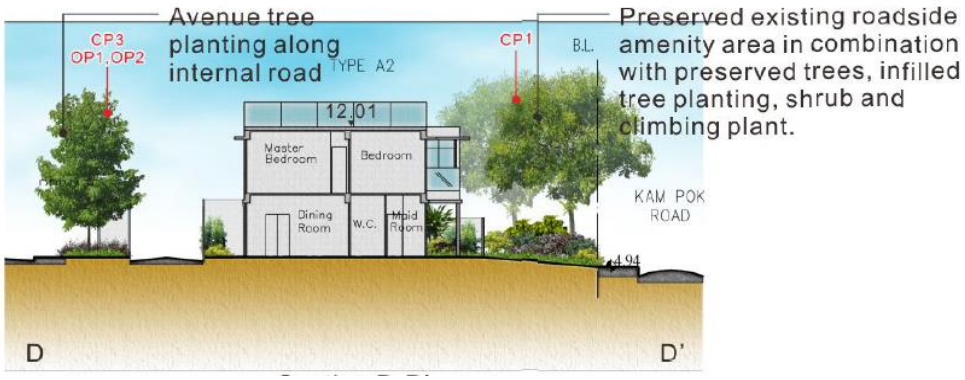


Figure 4 - Proposed Landscape Buffer along the Boundary of the Project Site

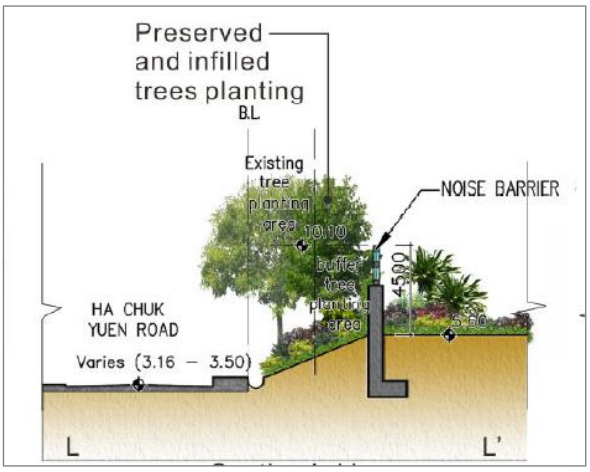
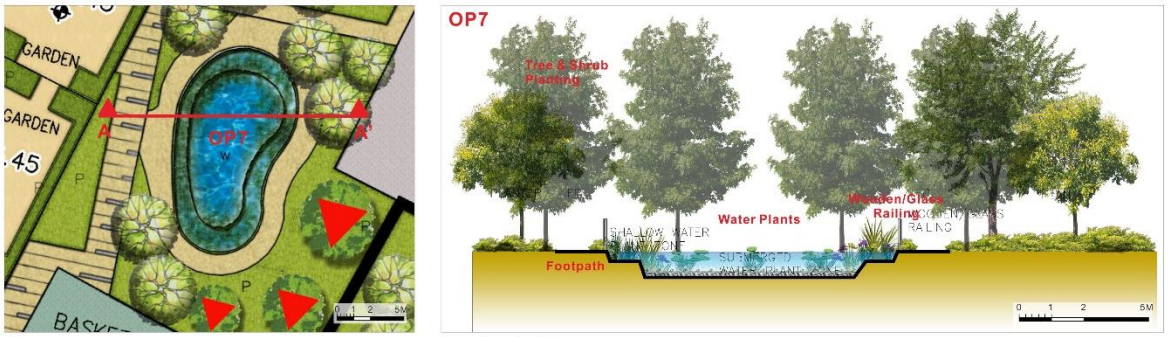


Figure 5 - Illustrative Section of Noise Barrier Buffered & Visually Enhanced by Peripheral Planting

Figure 6 – Recommended Landscape Mitigation Measures – Design of Landscape Berms



Plan Section A-A'

Figure 7 Recommended Landscape Enhancement – Provision of Landscape Pond

3. ENVIRONMENTAL MONITORING AND AUDIT

3.1.1 An environmental monitoring and audit (EM&A) programme will be implemented for the Project during the construction and operational phases to check sufficiency and effectiveness of the recommended mitigation measures in order to ensure compliance with relevant statutory criteria and requirements.

3.1.2 Details of the EM&A programme, mitigation measures required during construction and operational phases, and requirements are provided in the EM&A Manual of the EIA report. An Environmental Team (ET) comprises qualified staff and specialists shall be appointed to carry out the recommended EM&A works for the project. The Independent Checker (Environment) (IEC) shall advise the Engineer's Representative on environmental issues related to the project and audit ET's EM&A works. A summary of key monitoring schedule during construction and operation phases is provided below:

Key Monitoring Schedule During Construction and Operation

Environmental Aspects	**Monitoring Requirements**
General	Construction Phase: • Site Surveillance – once per week during construction phase by ET; • Environmental complaints investigation – upon receipt of complaints by ET and IEC; • Reporting – baseline monitoring report; monthly EM&A reports; quarterly EM&A summary reports; and final EM&A reports by ET.
Noise	Construction Phase: Monitoring noise level at nearby sensitive receivers. • Baseline Monitoring: Monitoring for 14 days prior to commencement of construction works by ET. • Impact Monitoring: Weekly monitoring throughout the construction phase by ET. Operational Phase: Nil
Air Quality	Construction Phase: Monitoring dust level at nearby sensitive receivers. • Baseline monitoring by ET: Monitoring for 14 days prior to commencement of construction works by ET. • Impact monitoring: Monitoring every six days and throughout the construction phase by ET. Operational Phase: Nil
Water Quality	Construction Phase: Monitoring water quality at nearby drainage channel and Ngau Tam Mei Drainage Channel by ET. • Baseline Monitoring: 3 days a week and for 4 weeks prior to commencement of construction works by ET.

Environmental Aspects	**Monitoring Requirements**
	• Impact Monitoring: 3 days a week throughout the construction phase by ET. Operational Phase: Nil
Sewerage and Sewage Treatment	Construction Phase: Nil. Operational Phase: Regular sampling and testing of treated effluent in accordance with discharge licence requirements as well as conditions specified in the EP during operation of the interim sewage treatment plant by ET. The water quality at Ngau Tam Mei Drainage Channel will also be monitored regularly.
Waste Management	Construction Phase: Monitoring on waste generation, disposal and minimisation by ET and Engineer. Auditing on contractor(s) waste management performance. Operational Phase: Nil
Landscape and Visual	Construction Phase: • Baseline Review: Undertaken a tree survey 1 month prior to commencement of construction work by Certified Arborist or who has tree survey relevant experiences not less than 1 year. • Impact Monitoring: Monitoring and auditing of the protection of preserved trees quarterly from Day 1 of construction phase to the end of planting establishment period. Operational Phase: Nil.
Ecology	Construction Phase (by qualified ecologist): • Regular site auditing for checking the implementation of good site practice; • Utilisation of the Ngau Tam Mei Drainage Channel by birds between October and March will be monitored during the construction phase. A baseline survey will be conducted before commencement of construction works to record bird uses of the Ngau Tam Mei Drainage Channel and identification of any site condition changes. Operational Phase: • Nil
Fisheries	Construction Phase: • Nil; Operational Phase: • Nil

4. OVERALL CONCLUSION

4.1.1 The findings of this EIA have provided information on the nature and extent of environmental impacts arising from the construction and operation of the Project Site.

4.1.2 Based on the results of the Assessment, the EIA study concludes that the Project would be environmentally acceptable and would comply with all environmental legislations and standards with mitigation measures in place. The EIA Study has also predicted that after the adoption of appropriate mitigation measures, there would be no adverse residual environmental impacts. An environmental monitoring and audit programme has been recommended to monitor the implementation of the mitigation measures and to ensure compliance with environmental requirements and standards.

APPENDIX A

Environmental Impact Assessment
Non-Technical Summary

環境影響評估**非技術摘要**

Environmental Impact Assessment
Non-Technical Summary

新界元朗米埔錦塱路以東丈量約份第104約多個地段和鄰近政府土地的
低層數和低密度住宅發展項目

Proposed Low-rise and Low-density Residential Development

at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T.

聯同
in association with

VISION RAMBOLL ENVIRON ADI AECOM CKM CHINA POINT 生態系統顧問有限公司 ECOSYSTEMS LTD. mcaal WHA

二零一六年八月
August 2016

CONTENTS

List of Figures

1.0 PURPOSE OF NON-TECHNICAL SUMMARY AND CONTENT

Figure 1.1: Proposed Development Blending in the Environment

This zone is intended primarily for improvement and upgrading of existing temporary structures within the rural areas through redevelopment of existing temporary structures into permanent buildings. It is also intended for low-rise, low-density residential developments…

Source: Approved Mai Po & Fairview Park OZP S/YL/-MP/6

Purpose

This Non-Technical Summary aims to explain in brief the result of the Environmental Impact Assessment ("EIA") for the proposed low-rise and low-density residential development at various lots and their adjoining government land in DD 104, East of Kam Pok Road, Mai Po, Yuen Long, New Territories (Subject Site). (Please refer to the EIA report for details of the assessment.)

Main objectives of the Project are:

i. Fulfilling the EIAO requirements for proposed residential development within Deep Bay Buffer Zone 2 so as to ensure no significant adverse impact on the ecological, drainage, sewerage, traffic and environmental aspects of the Mai Po Marshes Nature Reserve and Inner Deep Bay area;

ii. Following the basic principles of environmental protection to avoid, to minimize and to mitigate any environmental impact arising from the proposed scheme; and

iii. To implement the Project in accordance with the environmental monitoring and audit requirements.

2.0 DEEP BAY BUFFER ZONE 2

Government has adopted Buffer Zone approach for protection of Inner Deep Bay area in terms of development control. The proposed residential development is located within Deep Bay Buffer Zone 2 (**Figure 2.1**) in which low-density residential development may be considered subject to no significant adverse impacts to the Mai Po Marshes Nature Reserve (MPMNR) and the Inner Deep Bay area.

The Subject Site, despite its Buffer Zone 2 designation, is surrounded by suburban residential development as well as abutting urban roads and is relatively remote from Deep Bay, about 1,200m away from MPMNR. (**Figures 2.2**)

Therefore the planning intention of prevailing statutory town plan has also set the scene as a suburban settlement area. (**Figure 2.3**)

Since the proposed residential development falls within Buffer Zone 2, the EIA shall be conducted to assess and mitigate possible adverse environmental impacts arising from the project. Through the EIA process, environmental impact could be either avoided or minimized and with the proposed mitigation measures, there is no significant adverse residual impact.

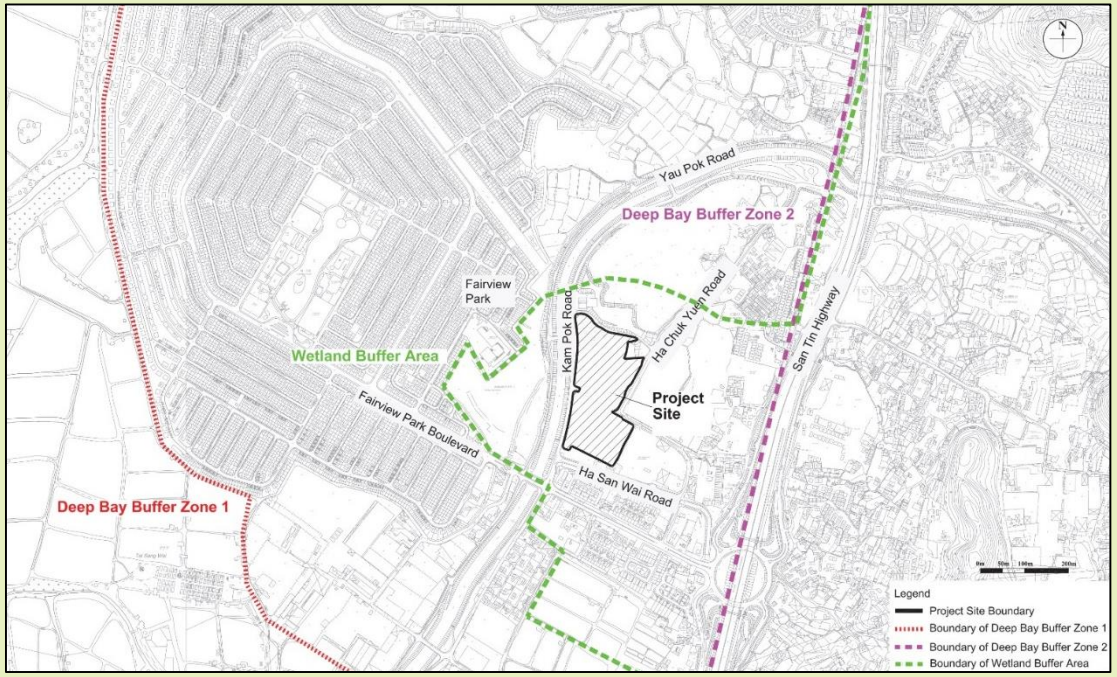


Figure 2.1: Subject Site located in Deep Bay Buffer Zone 2

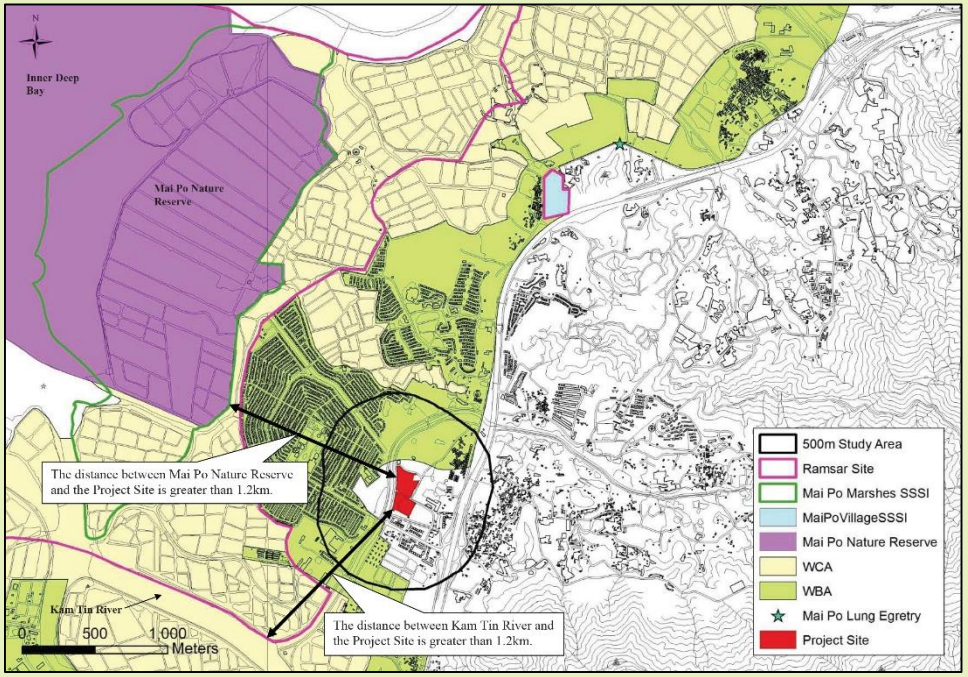


Figure 2.2: Site Location and its Land Use Context

2.0 DEEP BAY BUFFER ZONE 2

Figure 2.3: Site Location and Adjoining Compatible Residential Uses

① Proposed Residential cum Passive Recreational Development within "Recreation" Zone and "Residential (Group C)" Zone
(The Rezoning Application Y/YL-MP/3 was agreed by TPB on 13.5.2016.)

② Approved Planning Application for Proposed House Development, Minor Relaxation of Building Height Restriction and Filling and Excavation of Land (For Site Formation Only) - Case No. A/YL-MP/205

③ Comprehensive Development and Wetland Protection Near Yau Mei San Tsuen

3.0 CONSISTENT GOAL ON PLANNING INTENTION AND EIA'S REQUIREMENTS

Since 1994, town planning has utilized residential development as a driving force to phase out the incompatible land uses in Deep Bay Buffer Zone 2. (**Figure 3.1**) For this reason, the TPB has indeed approved with conditions a residential development scheme at this same location.

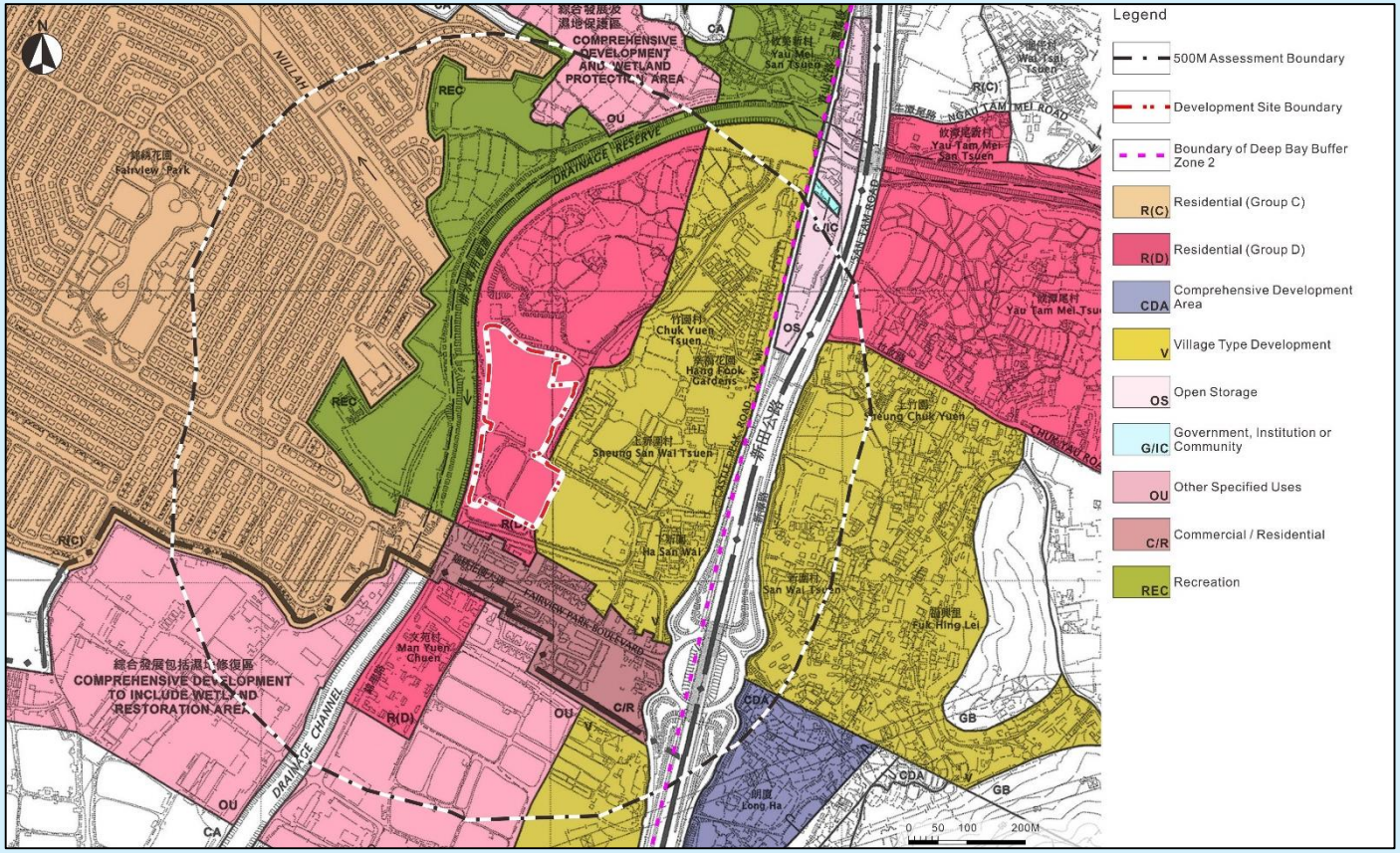


Figure 3.1: Residential Development in Deep Bay Buffer Zone 2

4.0 SELECTION OF APPROPRIATE DEVELOPMENT SCHEME

Under the EIAO process, two basic scenario, namely, 'with development' and 'no development' have to be assessed. Therefore, the EIA report will reveal the effect of the proposed development of subject site and its environmental impacts under the two basic scenario.

"No Development" Scenario (Existing Condition)
Under this scenario, most of the existing on-site land-use features, including the car-parking activities will likely be carried on. Also, the condition of existing abandoned pond, which is of low ecological value (also see Section 6.6), will definitely deteriorate further and may result in creating adverse environmental and hygiene problems on the local area.

"With Development" Scenario
Under this scenario, it takes into account of relevant government department's technical requirements, 3 development options have been assessed and compared. (**Figures 4.1-4.3**) The evaluation bases on a continuous improvement process and finally arriving at the recommended option.

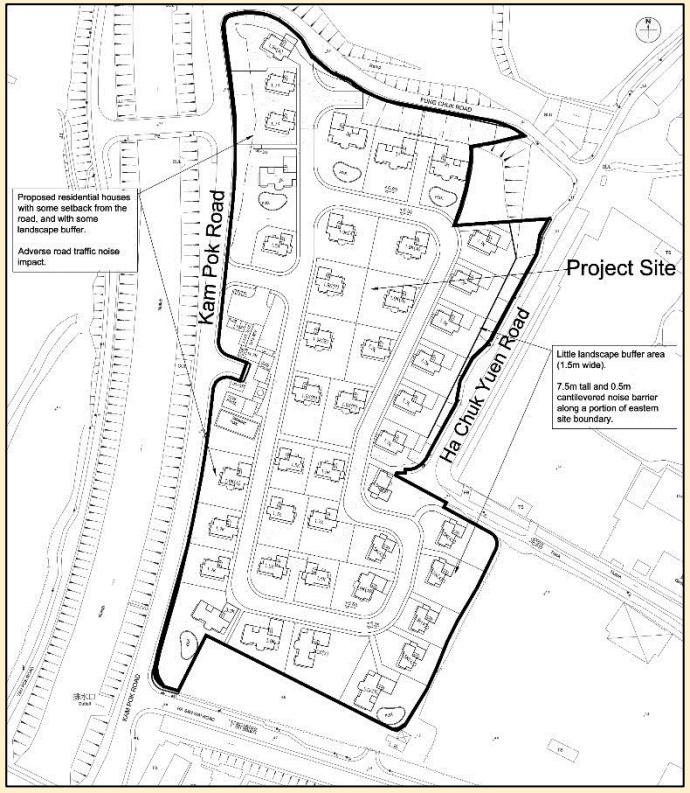


Figure 4.1: Alternative Layout Option A

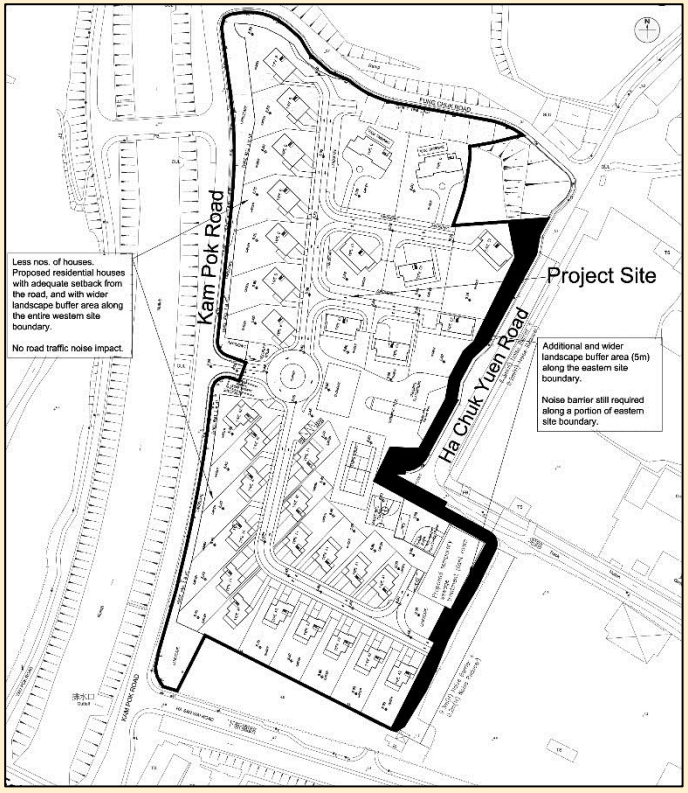


Figure 4.2: Alternative Layout Option B

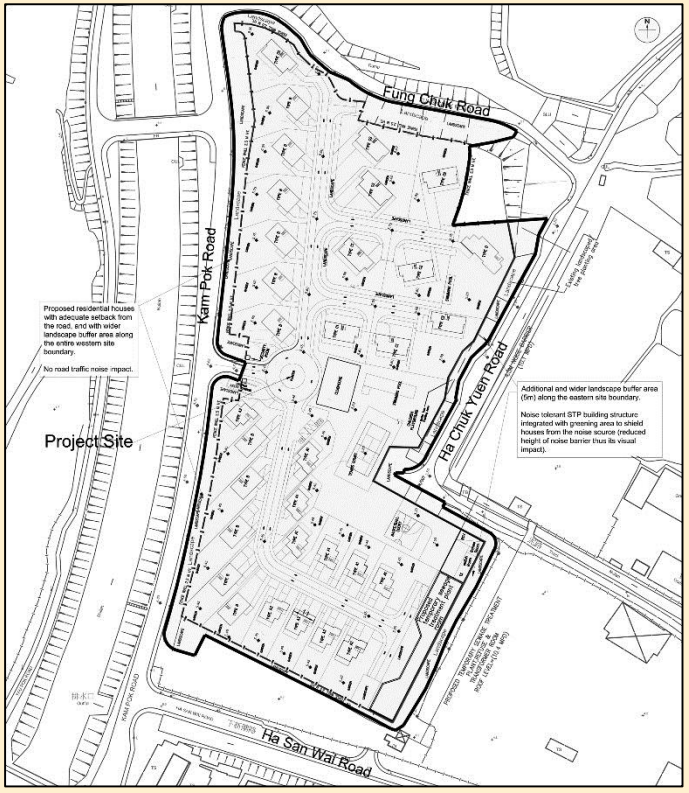


Figure 4.3: Recommended Layout Option

5.0 CONSIDERATIONS OF PROPOSED DEVELOPMENT SCHEME

To establish a recommended development with the basic principle of avoidance, minimization and mitigation of environmental impact, the special considerations are as follows: **(Figure 5.1**)

i. To avoid tree felling along perimeter, a 5-8m landscape buffer is provided in the perimeter of the Project Site except tree planting along the southern boundary;

ii. The sewerage treatment plant along the southeast side is set as a noise mitigation measures to mitigate the impact from adjoining industrial operation;

iii. To minimize the traffic noise impact, further setback of the buildings from Kam Pok Road by more than 8m.

iv. Adopting the latest sewage treatment technology to ensure that the quality of surrounding water source will not be affected; and

v. Mitigation measures will be implemented and monitored to ensure no significant adverse residual impacts.

Figure 5.1: Design Merits of the Proposed Development Scheme

6.0 KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

Designated Project under the EIAO

The Environmental Impact Assessment Ordinance (EIAO) requires residential or recreational developments within Deep Bay Buffer Zones 1 or 2 to carry out environmental impact assessment (EIA). The project is a residential development within Deep Bay Buffer Zone 2 and is subject to the provisions of the EIAO (An EIA report has been prepared). The potential environmental issues associated with the construction and operation of the Project have been assessed and addressed. Key findings are summarised in the following sections.

6.1 Air Quality

The nearby community will be concerned about air quality mainly during construction phase of the Project. (**Figure 6.1**) Fugitive dust emissions are envisaged from site formation works and various mitigation measures will be implemented to mitigate dust levels to meet the latest air quality objectives (AQOs)/ Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) criteria. During the operational phase, appropriate mitigation measures will be proposed so as to avoid adverse air pollution or odour nuisance from vehicular emissions and interim sewage treatment plant.

6.2 Noise

To ensure compliance with the relevant construction noise criteria, even including the nearby projects being implemented concurrently, various mitigation measures have been proposed. (**Figure 6.2**) For the operational phase, sufficient setback and special layout design to fully comply with the relevant noise criteria of day-time and night-time respectively.

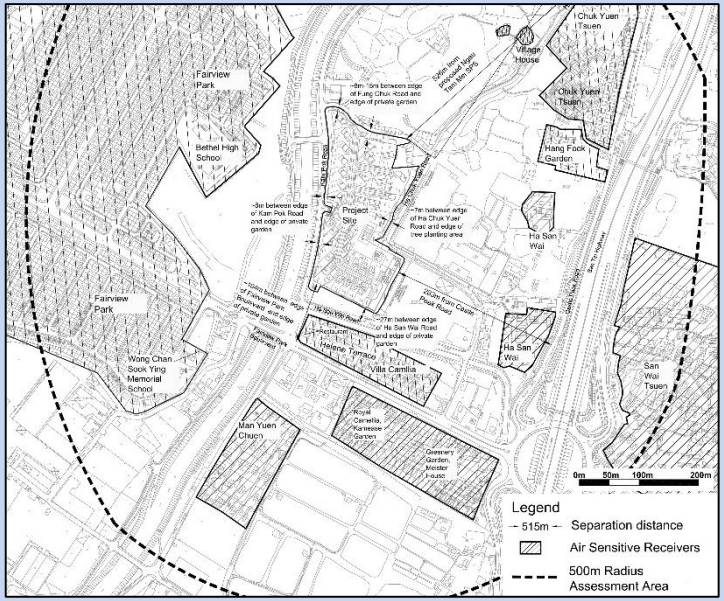


Figure 6.1: Location of Air Sensitive Receivers taken into Consideration during EIA Process

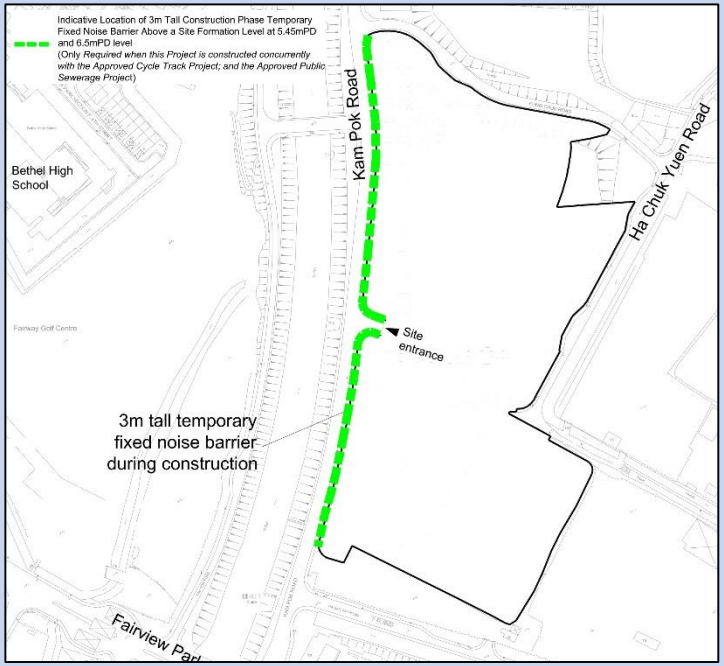


Figure 6.2: Mitigation Measure for Temporary Construction Noise

6.3 Water Quality

Prior to the commencement of the construction works, a temporary drainage system (with sand/silt removal facilities) will be constructed. The surface runoff will be properly treated prior to the discharge into Ngau Tam Mei Drainage Channel. The discharge will comply with the requirements in the discharge license under the "Water Pollution Control Ordinance" ("WPCO"). Before the operational phase, regular water quality monitoring and site inspections will be undertaken routinely in order to ensure that the discharge will comply with the terms and conditions. (**Figure 6.3**)

6.4 Sewerage and Sewage Treatment

An on-site interim sewage treatment plant (STP) will be provided to handle the sewage generated from the development until the planned public sewer is available for connection and discharge. (**Figure 6.4**) The interim Sewage Treatment Plant will adopt advanced treatment technologies capable of removing various pollutants in water compliance with the WPCO discharge license as well as meeting no net increase of pollution loads to Deep Bay as per Town Planning Board Guidelines. Ultimately, the sewage from the proposed development will be connected to the public sewer, no adverse environmental impacts arising from both interim and long-term sewerage scheme are anticipated.

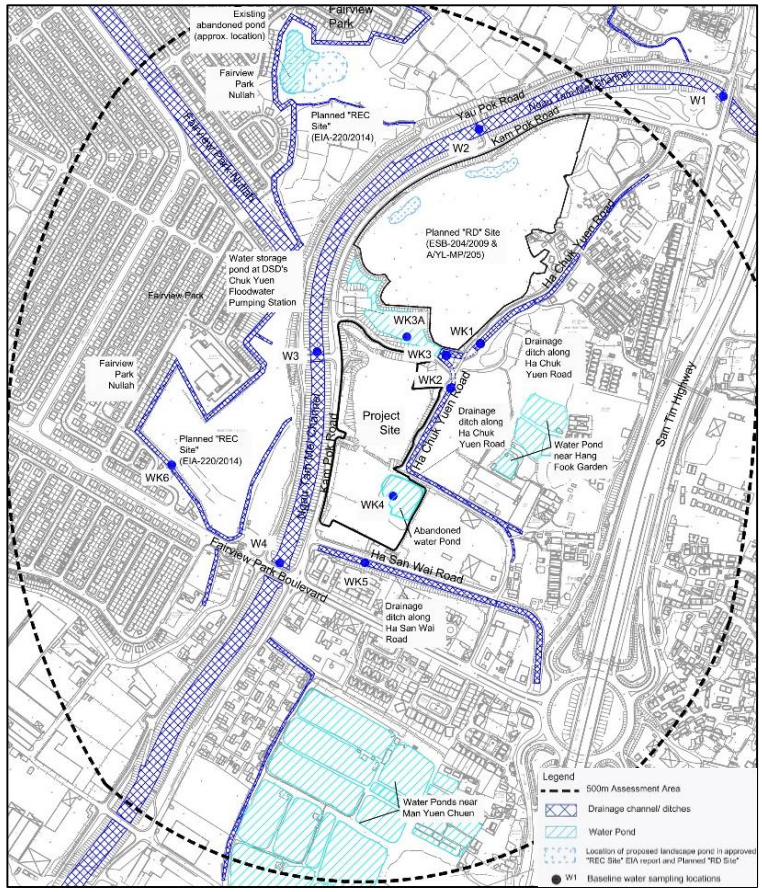


Figure 6.3: Location of Water Quality Surveys taken into Consideration during EIA Process

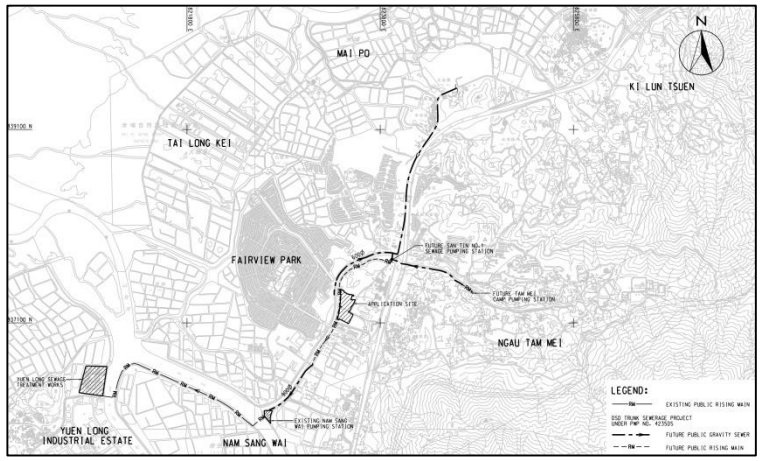


Figure 6.4: Government Proposed Sewerage Connection

6.5 Waste Management

The waste that would be generated during the construction phase of the Project will be treated through recovery, re-use or recycling. Environmental mitigation measures and good practices on site have been recommended in the EIA report in order to mitigate the environmental impacts. During the operational phase, waste generated will be collected and disposed of properly by a licensed contractor.

6.6 Ecology

The Project Area mainly comprises of urbanised/ disturbed area, and with small area of plantation and an abandoned pond. Habitats within the Project Area only support low diversity of plant and most of which are exotic species. The faunal diversity was also low. The existing ecological values of these habitats are ranked as "very low".

Within the 500m assessment area, apart from the Ngau Tam Mei Drainage Channel, all habitats were ranked as ecological values of "very low"/"low"/"low to moderate". (**Figure 6.5**)

The abandoned pond was not considered an important habitat of water birds as it is isolated from other wetland ecosystems in Deep Bay and is subjected to long-term disturbance from the adjacent car park. Loss of habitats will only result in "insignificant" ecological impact. No mitigation measure for loss of habitats is therefore required.

To minimize impacts on foraging birds along Ngau Tam Mei Drainage Channel, a number of mitigation measures were recommended in the assessment report, including uses of quiet construction method and machinery, erection of site hoardings outside wintering season of waterbirds between October and March, and provision of mobile noise barriers adjacent to construction plants.

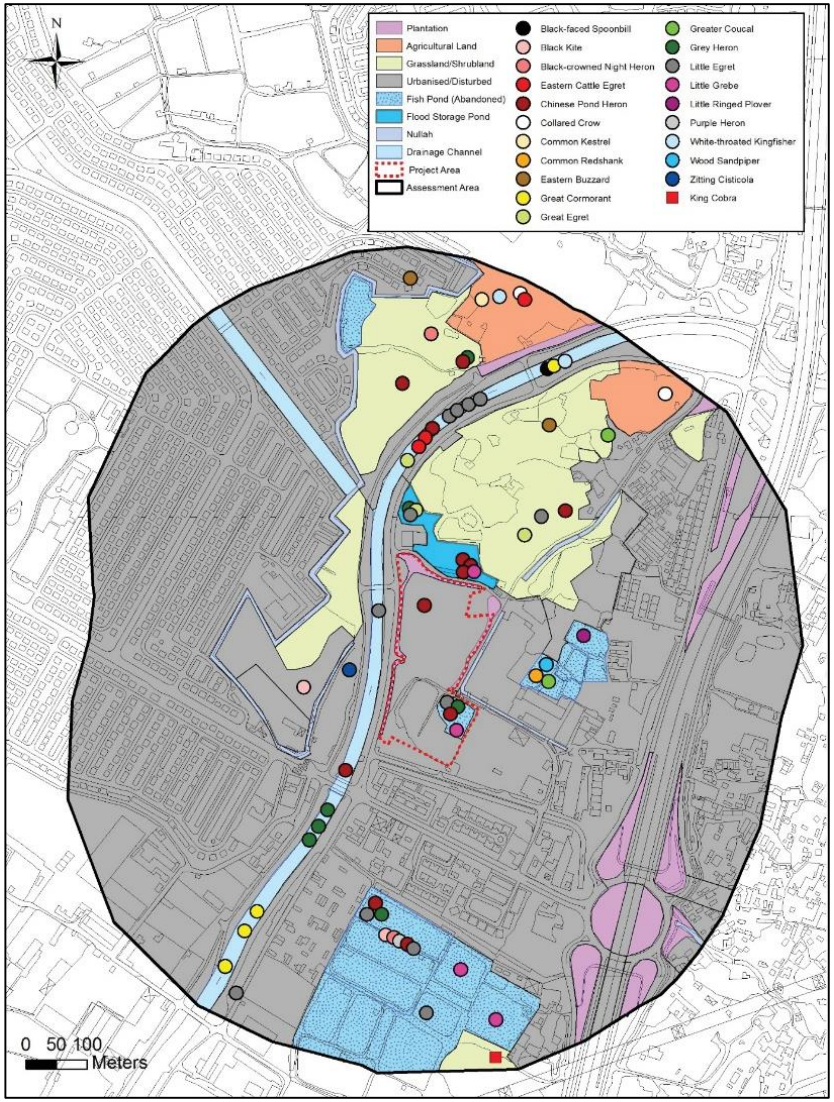


Figure 6.5: Habitats and Locations of Species of Conservation Importance

6.7 Fisheries

No active fish ponds would be affected by the Project.

6.8 Cultural Heritage

A Cultural Heritage Impact Assessment has been carried out for the Project. There is neither declared monument nor graded or proposed graded historic building identified within or adjacent to the Project Site. The proposed development will not encroach upon any known sites of archaeological interest or areas of archaeological interest, and will not have any direct or indirect impacts on any declared monuments, graded or proposed graded historic buildings, cultural landscape features, graves or historical village during construction and operational phases. No specific EM&A requirement is considered necessary.

6.9 Landscape and Visual

When compared with the existing car park, the proposed development would benefit the landscape and visual amenity of the area. During the construction phase, visual mitigation measures will be fully established, including the consideration of the size of works areas. There are innovative and responsive building disposition and design to integrate with the proposed noise barrier and temporary sewage treatment plant. Also, the use of vertical greening measures, creation of landscape berm, (**Figure 6.6**) and the restoration of the disturbed areas with roadside and amenity planting will be implemented. (**Figure 6.7**)

Figure 6.6: Vertical Greening & Landscape Berm

Figure 6.7: Restoration of perimeter planting

7.0 THE IMPORTANCE OF ENVIRONMENTAL MONITORING AND AUDIT

The success of the EIA process depends on the effectiveness of the environmental monitoring and audit (EM&A) programme. An EM&A mechanism is to ensure compliance of the recommended mitigation measures with relevant statutory requirements and standards and effectiveness of their implementation.

An Environmental Team (ET) comprising suitably qualified staff and specialists will be appointed to carry out the recommended EM&A works while an Independent Environmental Checker (IEC) will audit the EM&A results and advise the Engineer Representative (ER) on environmental issues related to the Project. (**Figure 7.1**)

Details of the EM&A programme, mitigation measures required during construction and operational phases, and requirements have been provided in the EM&A Manual of the EIA report.

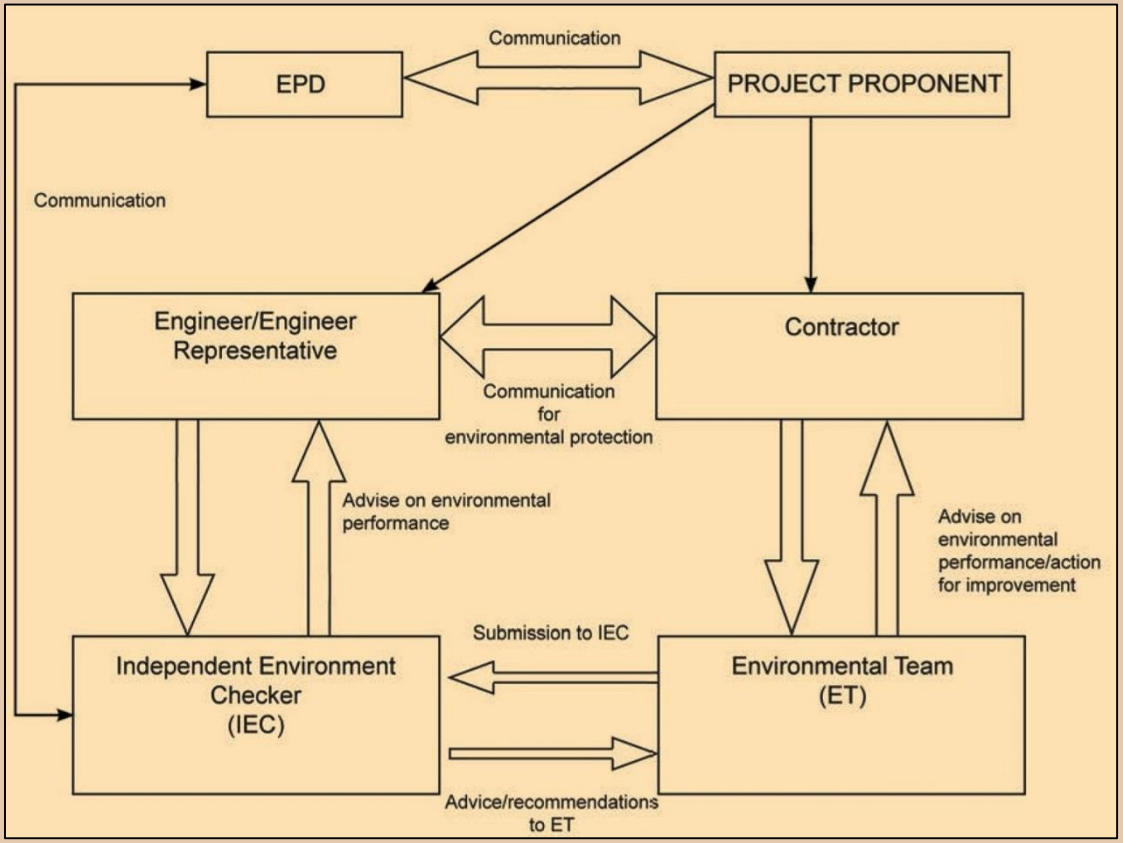


Figure 7.1: EM&A Monitoring Diagram

8.0 OVERVIEW

This proposed development meets the EIAO requirements for proposed residential development within Deep Bay Buffer Zone 2 and also is in line with the planning intention under Town Planning Ordinance. Taken into account of the basic principles of avoidance, minimization and mitigation of environmental impacts, the proposed residential development would not result in any significant adverse residual impacts.