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EXECUTIVE SUMMARY

1. INTRODUCTION

- 1.1 Territory Development Department (TDD) commissioned a consultant to conduct a feasibility study for housing development (the Study) in the Whitehead and Lee On area in Ma On Shan. The Study Area is about 60 hectares covering the Whitehead peninsula, the proposed Ma On Shan (MOS) Rail Wu Kai Sha Station and the private land in between Whitehead and Lee On (Figure 1). The Study is to establish a preferred development option for the Study Area. The proposed development will provide private housing development to accommodate a total number of about 6,800 flats for about 17,000 residents and about 11 ha of recreational facilities such as water recreation centre, visitor/heritage/ecological centres, themed dining and botanical garden (Figure 2). The proposed development will involve site formation works and construction of infrastructure including building substructures, roads, drains & utilities, and landscape areas (the Project).
- 1.2 The proposed development intensity is a result of optimizing the development potential of the Study Area with respect to the major development parameters such as size of the recreation use, overall population threshold and target housing number, the public views solicited from the consultations with Sha Tin District Council (STDC) and Town Planning Board (TPB) and the conclusion made by the Study Steering Group.
- 1.3 Whilst it is fully appreciated from the public consultations that there is a strong desire to limit the total population and development intensity of the Study Area, it is equally important to make use of the mass transportation system to achieve the best integration of transport and land use planning for the Study Area. With the implementation of the MOS Rail, higher intensity development should therefore be assumed at the Wu Kai Sha Station development to optimize utilization of land in close proximity to rail station. To strike a balance, the government considered it more appropriate to limit the development intensity of Wu Kai Sha Station development to a plot ratio of 5. For the Lok Wo Sha site, only a maximum plot ratio of 3 is proposed in view of its prominent location at the headland and hence the visual impact resulting from more intensive development.
- 1.4 The Project falls within Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO) and requires an Environmental Impact Assessment (EIA) report to be approved under the EIAO. The Project also includes a number of Schedule 2 Designated Projects.

- 1.5 This document is to summarise the findings of the EIA Study undertaken in accordance with the Environmental Impact Assessment Study Brief No. ESB-029/1999. The summary is intended to provide an overall appreciation of the key issues associated with the proposed development. The major environmental impacts of the proposed development with respect to noise, air quality, water quality, ecology, cultural heritage and landscape & visual, and possible measures to alleviate the impacts are summarised below.

2. NOISE

Construction Noise

- 2.1 Noise from the use of powered mechanical equipment during construction activities and the haulage of material may potentially cause exceedance of construction noise standard at the nearby existing noise sensitive receivers (NSRs) if the construction noise is not appropriately mitigated. Adequate mitigation measures will be required for the construction works to meet the noise standard.
- 2.2 The use of quiet plant and working methods, reducing the number of equipment, restricting the extent of works and the use of temporary noise barriers to protect the nearby residences and schools have been recommended and would be sufficient to reduce noise levels to compliance levels at the NSRs. A noise monitoring programme has been proposed to ensure that construction noise is within the recommended criteria throughout the construction stage.

Operational Noise

Traffic Noise

- 2.3 Traffic noise assessment for the proposed development has been conducted. Most of the sensitive receivers within the proposed development will not be subject to traffic noise nuisance, except for some of the façades at the Wu Kai Sha Station development due to the technical inapplicability of direct noise mitigation measure such as noise barriers at Sha On Street. Provision of window insulation and air-conditioning or special layout design has been proposed to resolve the traffic noise nuisance.
- 2.4 Residual impacts may arise at some units of the Symphony Bay and one village house at Wu Kai Sha. Eligibility test on these façades has been conducted, but none of these façades qualify for the noise insulation works under the ExCo directive.

Rail Noise

- 2.5 Rail noise assessment has been undertaken to investigate the potential noise impact from operational trains of MOS Rail on the proposed residential areas within the proposed development. With the implementation of the recommended noise mitigation measures such as central plenum or equivalent on the concerned viaduct section of MOS Rail, the nearby noise sensitive uses will not be subject to train noise level above the NCO noise limit.

Fixed Noise

- 2.6 No existing industrial noise sources were identified during site surveys. An existing sewage pumping station is found to be located near Lee On Estate. With the enclosure and sufficient buffer distance, the fixed noise generated from the sewage pumping station does not pose any noise nuisance to the proposed development.
- 2.7 Potential fixed noise sources assessed include noise from ventilation system of the proposed commercial centre within the proposed development and that of the indoor recreational centre, proposed salt water pumping station, public transport terminus and ventilation exhaust and plant room from MOS Rail Wu Kai Sha Station. Noise impacts on the nearby NSRs from these fixed noise sources will not be insurmountable provided that the noise levels from the different fixed plants do not exceed the maximum allowable sound pressure level (design noise limit) predicted in the assessment.

3. AIR QUALITY

Construction Dust Impact

- 3.1 Site formation and haul road traffic would potentially be the main causes of construction dust impact. With adequate dust suppression measures, dust levels from the Project will not exceed the Air Quality Objectives (AQOs) at nearby air sensitive receivers.
- 3.2 Mitigation measures such as watering of exposed areas or pavement of haulage route have been proposed to suppress dust generation. With the implementation of the recommended mitigation backed up by an air quality monitoring programme, the Project should comply with the AQOs.

Operational Air Quality Impact

- 3.3 Assessment of the vehicular emission due to the major roads shows that the proposed buffer areas adjacent to the major traffic corridors such as Road T7, Sai Sha Road and proposed local roads are adequate. The predicted air pollutant concentrations at all the air sensitive receivers due to vehicular emission will comply with the AQOs. No mitigation measure will be required.
- 3.4 The air quality due to the chimney emissions within the vicinity of the Study Area will comply with the AQOs. Assessment of cumulative effect from traffic emission and industrial emission shows that the air quality within Study Area is acceptable and below the AQOs. The air quality associated with the proposed car parks is expected to be acceptable provided the design considerations stipulated in ProPECC PN2/96 – Control of Air Pollution in Car Parks are adhered to.

4. WATER QUALITY

- 4.1 The proposed development provides an opportunity for improving the water quality of the area by installation of sewerage and drainage networks. Starfish Bay, a sensitive receiver, will benefit as no additional stormwater will be discharged into it in future. The waterfront at Whitehead will be preserved and better managed for visitors. All stormwater runoff from the proposed development to the north of Sai Sha Road will be discharged to the north and west of Whitehead at Tolo Harbour where stronger current could dilute and assimilate pollutants more effectively.
- 4.2 Full implementation of recommended mitigation measures during construction and operational phases will ensure that the proposed development will not have adverse impacts on the water quality.

5. ECOLOGY

Construction Stage

- 5.1 The potential sources of impacts from project construction on ecology include: site formation, noise and disturbance, surface runoff, and suspended solid.

- 5.2 Site formation within the development boundary will cause direct and permanent loss of all habitats and their associated flora, with the exception of the preserved woodland and preserved plantation within the boundary. The estimated loss of habitat includes 0.48 ha woodland, 8.19 ha plantation, 2.66 ha grassland, 2.08 agriculture and 36.65 ha disturbed/urbanized area. Potential ecological impact on the woodlands and plantations are considered to be minor to moderate. Mitigation measures including compensatory planting for loss of woodlands and plantations will be required. Potential impacts to flora in grassland and agriculture habitats are considered minor, while loss of disturbed/urbanized area will cause minimal potential impacts. Mitigation for loss of these habitats are therefore not required.
- 5.3 Since most woodlands in the Study Area will be preserved, species of conservation importance (e.g., Crested Goshawk) are therefore not going to experience habitat loss. Potential impacts to fauna from habitat loss of other habitat types are considered minor. Considerable noise and visual disturbance may be generated during site formation and construction, potentially affecting the distribution and behaviour of fauna of the adjacent/remaining habitats. Most fauna recorded in the Study Area are disturbance tolerant, and alternative habitats are available in and near the Study Area, and the disturbance is going to be short term. Therefore, the impact from disturbance during the construction stage on terrestrial fauna is ranked as minor.
- 5.4 Impacts from excavation and surface runoff on benthos and other sessile or mobile organisms would be localised and would be self-correcting after project completion without active restoration efforts. Species of conservation value in aquatic ecology such as black corals outside the peninsula would not be impacted. Impacts are thus ranked as largely minor in nature.

Operational Stage

- 5.5 Potential impacts of project operation on terrestrial ecology include long term noise and light generated by road lighting and traffic. Based on the limited fauna community observed in the field and the urbanised nature of the surrounding habitat, most terrestrial fauna in the Study Area are disturbance tolerant, and some are even dwellers of urbanized areas. Potential impacts to fauna are ranked as minimal. In addition, a botanical garden has been included in the development plan. This will provide habitats for wildlife in the Study Area. The design of the walking trails within the Study Area is aimed to keep visitors away from entering the intertidal sandflat. This can prevent excessive human disturbance on the intertidal fauna. As a large percentage of land surface will still be covered by vegetation, and with the construction of the new drainage outlet at the northern and western shore of the peninsula, surface runoff into the sandflat is not expected to significantly increase. Potential impacts from surface runoff are thus ranked as minimal.

6. CULTURAL HERITAGE

- 6.1 The raised beach south of To Tau Tsuen has been shown to contain prehistoric archaeological deposits dated to the Late Neolithic (2500-1500 BC) period which is potentially a site of cultural heritage with archaeological significance. The prehistoric site south of To Tau Tsuen should be avoided fully or integrated intact into the project design as open spaces. Full archaeological field evaluation was not possible at this stage for part of the central and eastern portion of the Study Area due to restricted access, a further archaeological field evaluation will be required within the project limit of the proposed new roads of D1(E), D1(W) and D1(N), the archaeological field evaluation shall be conducted before the commencement of construction of the D1 roads project or any works associated with the Projects, so as to ensure that no cultural relic will be affected by the roads project during the construction stage. Requirements in Annexes 10 and 19 of EIA TM should be strictly followed which includes the requirements for mitigation measures for cultural relics identified by the survey.
- 6.2 There is a likelihood that prehistoric material may lie under To Tau Tsuen, located on the same sand body. If concrete at To Tau Tsuen is to be broken or any structures razed it is recommended that the opportunity be taken to test any exposed areas of the sand bar below, the Antiquities and Monuments Office (AMO) should be notified prior to any such scheduled works.
- 6.3 The presence of the historical Song (AD 960-1279) and Qing (AD 1644-1911) period site in part of the central portion of the Study Area was confirmed by the field evaluation. Full evaluation was not possible at this stage due to restricted access. The portion of the historical archaeological site of Wu Kai Sha now under restricted access, will be fully tested before implementation of development. This should be laid down as a condition in the Outline Zoning Plan, planning brief, land exchange documents or Environmental Permit to alert the future developer or project proponent to include such a survey in the development process. The AMO should be consulted about the mitigation measures for the preservation of cultural relics identified during any future surveys, prior to their commencement. The archaeologist responsible for the survey should obtain a license from the authority before undertaking any fieldwork.
- 6.4 A total of 28 heritage features were recorded in the Built Heritage Survey. A total of two heritage grave features were recorded in the historical grave survey. The majority of the heritage and grave features will be indirectly impacted by the proposed development. All of the features will be preserved in-situ. The permanent grave feature and the historical well associated with the village of Wu Kai Sha will require protective screening during the construction phases. The alignment of Road D1 (W) has been altered to avoid the other permanent grave feature and the historical well of Wu Kai Sha village.

7. LANDSCAPE AND VISUAL

Landscape Impacts

- 7.1 The proposed development will result in various impacts on existing landscape resources on site, principally areas of plantation, secondary woodland, existing natural soils. These will need to be cleared to make way for the proposed development, although around the headland the proposed land uses will be able to incorporate existing woodland and soils into the design, thereby reducing actual losses. Landscape mitigation measures include extensive woodland and landscape planting and the re-use of soil materials from site, and these will effectively reduce long term impacts on woodland/plantation and soils to slight levels.
- 7.2 Impacts on agricultural land (moderate impact) will be permanent as it will not be practical to re-provision such elements within the nature of the proposed development.
- 7.3 Impacts on the landscape character of the landscape will vary dramatically. The indirect impacts on the natural and tranquil qualities of the Whitehead Peninsula Coast and on Starfish Bay will be substantial during the construction and early years of the development reducing to moderate at Year 10.
- 7.4 In contrast to this, the impacts on the currently degraded landscape of the former Whitehead Detention Centre and on the existing Wu Kai Sha Station site will be negligible due to the incoherent and degraded character of these landscapes. With successful and diligent implementation of landscape mitigation measures, it is possible that impacts could be negligible when they mature at Year 10.
- 7.5 Direct and indirect impacts on the landscape of surrounding villages will be moderate during the construction period and early years of operation, reducing to slight at Year 10.

Visual Impacts

- 7.6 There would be substantial impacts on views to north and east of the villages of To Tau and Wu Kai Sha, resulting in considerable permanent change to the views. Visual impacts would be reduced by architectural treatment of the buildings and proposed mass planting to moderate levels in the long term operational phase.
- 7.7 There would also be a considerable permanent change in views of residents of high-rise developments in eastern Ma On Shan, resulting in a moderate visual impact after construction, reducing to slight in the long term. Recreational users of Ma On Shan Country Park would be similarly affected.

- 7.8 There will be substantial visual impact on visual receivers at Monte Vista. Residents in Lee On Estate/Kam Lung Court, Villa Athena, Saddle Ridge Garden and Bayshore Towers will experience moderate to slight impacts after Year 10 of operation.
- 7.9 Views of residents of medium and low rise blocks at Cheung Muk Tau, Sai O, Tseung Kwan Lei, Kwun Hang, Nai Chung to the east of the site, and users of medium rise educational blocks at Li Po Chun United World College, will similarly be affected with moderate level impacts after construction, being reduced in the long term by planting along the site boundary to slight impacts in the long term. The new high-rise buildings will be seen from Sham Chung across Three Fathoms Cove, in silhouette and against the sky and a backdrop of distant hills, resulting in a slight permanent change in their extensive views. Recreational users of Chinese YMCA of HK Wu Kai Sha Youth Village and Ma On Shan Town Park / Swimming Pool to the west will also be affected.
- 7.10 The development will be visible in long range views of the development across Tolo Harbour from the low and medium rise residential settlements at the hills above Tolo Harbour, at Ma Liu Shui / Kon Hang / Tsiu Hang / Tai Po Kau San Wai / Tai Po Kau Lo Wai / Lai Chi Hang / Ha Wong Yi Au, buildings at the Chinese University, and recreational users of the Plover Cove / Plover Cove Reservoir. As it is seen in the context of the surrounding urban development, the change in view is likely to be negligible.
- 7.11 Given its scale, the proposed development and the associated site formation and infrastructure will have relatively modest landscape and visual impacts, which can be considered as acceptable with mitigation measures. Most of the impacts could be effectively reduced by the proposed landscape mitigation measures, however it is recognised that there will be permanent changes in the extent and quality of existing landscape resources, landscape character and visually sensitive receivers.

8. ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REQUIREMENTS

- 8.1 The EIA Report has identified the likely environmental impacts associated with the Project. It has demonstrated that these impacts can be minimised to acceptable levels with the implementation of the recommended mitigation measures. An EM&A programme has been recommended to ensure compliance with relevant environmental standards, to check the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action. Details of the EM&A programme is provided in a stand alone EM&A Manual.

9. CONCLUSION

- 9.1 The findings of the EIA Study has provided information on the nature and extent of environmental impacts arising from the construction and operation of the proposed

development in the Study Area. Appropriate mitigation measures have been recommended, where environmental impacts are identified, in accordance with the Technical Memorandum on EIA Process.

9.2 In summary, the proposed development have achieved the following environmental benefits:

- to minimize visual impacts of future development by applying visual corridor and gradation concepts with development intensities decreasing from the south at the Wu Kai Sha Station site to the north at the headland;
- to give full respect to the high ecological values of Starfish Bay and the existing woodlands and plantations in the Study Area. They have been preserved as much as possible in the layout;
- to improve the water quality impacts of the Tolo Harbour and Channel Water Control Zone by installation of sewerage and drainage networks;
- to incorporate environmentally-friendly concept in the layout e.g. a comprehensive pedestrian system to the railway station, so as to encourage the use of non-polluting transportation mode;
- to preserve the archaeological/cultural/heritage resources (including the pre-historic and historic site, fung shui woodland, shrines and well) identified within the Study Area in the layout design; and
- to minimize any potential environmental impacts arising from the surrounding road networks and drainage networks.

9.3 The findings of the EIA Study indicate that the proposed development will unlikely cause any insurmountable environmental impacts.

END OF TEXT