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Development of the Loop: Eastern Connection Road – Investigation, Design and Construction

Environmental Impact Assessment Report – Executive Summary

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Prepared and Checked by:

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Wong Chi Wah
HKIQEP EIA Expert
(Membership No. PM0075)

AECOM ASIA COMPANY LIMITED

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1. INTRODUCTION

1.1 Background

- 1.1.1 The development of the Loop was one of the ten major infrastructure projects for economic growth in Hong Kong announced in the 2007-08 Policy Address. In March 2008, the “Hong Kong-Shenzhen Joint Task Force on Boundary District Development” under the “Hong Kong/Shenzhen Co-operation Meeting” agreed to conduct a joint comprehensive study on the development of the Loop. A Planning and Engineering Study jointly undertaken by the HKSAR Government and Shenzhen Municipal People’s Government (SZMG) commenced in 2009 and completed in 2013.
- 1.1.2 In January 2017, the “Memorandum of Understanding on Jointly Developing the Lok Ma Chau Loop by Hong Kong and Shenzhen” (the MOU) was signed by the HKSAR Government and the SZMG, agreeing to jointly develop the Loop as the Hong Kong-Shenzhen Innovation and Technology Park (the Park), setting up a key base for scientific research, as well as relevant higher education, cultural and creative industries and other complementary facilities.
- 1.1.3 According to the MOU, the HKSAR Government is responsible for the construction of the infrastructure within the Loop (including site formation and infrastructural facilities) and the provision of supporting infrastructural facilities outside the Loop which are necessary to the development of the Loop and its surrounding areas. The Park will be developed in two phases. On 8 January 2021, the Finance Committee of the Legislative Council approved funding for Public Works Programme Item No. 7856CL “Development of the Loop – Main Works Package 1 (MWP1) – site formation and infrastructure works”. The site formation and construction of infrastructure works under MWP1 commenced in July 2021. The first batch of land parcels for building works of the Park was handed over to the Hong Kong Shenzhen Innovation and Technology Park Limited (HSITPL) in December 2021.
- 1.1.4 MWP1 covered the site formation and infrastructure works for substantial part of the Loop, including site formation for the entire Park, major carriageways/footpaths/cycle tracks within the Park and those connecting to the areas on the west and southwest, etc. The project of Development of the Loop – Main Works Package 2 is needed for the provision of the remaining infrastructure and facilities to support Phase 2 development of the Park and strengthening the external transport link of the Park.
- 1.1.5 The Central Government promulgated in August 2023 the “Development Plan for Shenzhen Park of Hetao Shenzhen-Hong Kong Science and Technology Innovation Co-operation Zone”, setting out the development positioning of the Shenzhen Park. The Chief Executive has set out in the 2023 Policy Address that the HKSAR Government will render its full support and work with the Shenzhen Municipal Government to foster the synergistic development of the Hong Kong Park (i.e. the Park hereinbefore) and the Shenzhen Park. The Hong Kong Park will be developed in two phases from west to east. The preliminary planning for its first phase has been completed. The HSITPL will commence relevant planning works of the Phase 2 development.
- 1.1.6 To strengthen the external transport links of the Loop, it is proposed to construct a link road between the eastern part of the Loop and the Kwu Tung North New Development Area (KTN NDA) via the Ma Tso Lung (MTL) area. The Project is also considered necessary for supporting Phase 2 development of the Loop from traffic point of view.

1.1.7 In 2023, AECOM Asia Company Limited (AECOM) was commissioned by Civil Engineering and Development Department (CEDD) to undertake the assignment of Agreement No. CE35/2023 (HY) Development of the Loop: Eastern Connection Road – Investigation, Design and Construction (hereafter called “the Project”).

1.2 Purpose of this Executive Summary

1.2.1 This Executive Summary (ES) summarises the key findings, recommendations and conclusions of the EIA Report for the Project. The ES contains the following information:

- Section 2 presents the purpose and nature of the Project, consideration of alternative options and construction methods for the Project;
- Section 3 presents the key findings of the environmental impact assessment;
- Section 4 describes the proposed environmental monitoring and audit programme for the Project; and
- Section 5 presents the conclusions

2. PROJECT DESCRIPTION

2.1 Objective and Scope of Project

2.1.1 The purpose and objective of the Project is to strength the external transport links of the Loop, with constructing a link road between the eastern part of the Loop and KTN NDA via MTL area. Road users can be benefited from this link road travelling between the Loop and other districts in New Territories north such as KTN. It is also identified as an alternative route from / to the Loop to alleviate the traffic impact for Western Connection Road (WCR) of the Loop.

2.1.2 The Project covers a section within the Loop, a section near Ping Hang, Horn Hill and Tse Koo Hang, a section at the north of Shun Yee San Tsuen at MTL and a section at the east of Ma Tso Lung San Tsuen. The Project boundary and layout plan is shown in **60722948/A10/FIGURE 2.1 to 2.5**.

2.1.3 The scope of the Project comprises the construction of connection roads (in form of depressed road, underpass and viaduct) connecting the eastern part of the Loop to KTN NDA via MTL Area, and provision of associated environmental mitigation works, noise mitigation, landscape and other ancillary works. The details are as follows:-

- (a) Construction of single 4-lane two-way carriageway, in form of at-grade road, depressed road, underpass and viaduct, of a total length of approximately 2.5km;
- (b) Provision of E&M plant room and drainage pumping room to support the operation of depressed road and underpass;
- (c) Modification of existing Border Road; and
- (d) Associated street furniture, traffic aids, drainage, water, utilities, lightings, electrical and mechanical works, slopes, retaining walls and landscaping works.

2.2 Designated Projects under Environmental Impact Assessment Ordinance

2.2.1 The Project comprises the Designated Projects (DPs) items under Part I, Schedule 2 of the EIAO:-

- Item A.9 – A carriageway for motor vehicles fully enclosed by decking above and by structure on the sides for more than 100 m;
- Item I.1 – A drainage channel or river training and diversion works located less than 300 m from the nearest boundary of an existing or planned conservation area; and
- Item Q.1 – Earthworks, dredging works and other building works partly or wholly in an existing conservation area.

2.3 Need of the Project

2.3.1 As mentioned in **Section 1.1.6**, this Project is to provide a link road connecting the Loop and the KTN NDA, and the Project is necessary for supporting Phase 2 development of the Loop from traffic point of view. Road users can be benefited from this ECR travelling between the Loop and different development areas such as MTL development, KTN, etc.

2.4 Consideration of “With” and “Without” Project Scenarios

Scenario “without” Project

- 2.4.1 Without the implementation of this Project, the WCR, which is under construction under “Development of the Loop – Main Works Package 1”, would be the only external transport link connecting the Loop and the existing road networks. With implementation of Phase 2 development of the Loop, it is anticipated that the WCR would be operated close to or above capacity. This would lead to long traffic queues to appear along the WCR, which would have the potential to worsen the air quality and noise impact to the sensitive receivers along the connection road.

Scenario “with” Project

- 2.4.2 With the Project in place, the traffic demand for WCR would be shared with the ECR and the external transport links between the Loop and the existing road networks would be strengthened by connecting the eastern part of the Loop and the KTN NDA via MTL area. In addition, this Project is also considered necessary for supporting Phase 2 development of the Loop.

2.5 The Benefits of the Project

- 2.5.1 This Project will provide a link road to connect the development within the Loop and KTN NDA. The development of the Project could result in the following benefit.
- 2.5.2 Northern Metropolis (NM) Synergy – According to Northern Metropolis Action Agenda, the Hong Kong-Shenzhen Innovation and Technology Park (the Park) in the Loop is identified as a key area in innovation and technology zone, and KTN NDA is identified as a key area for providing housing supply with more than 80,000 housing units in NM. This Project will act as a key linkage linking up these two major development nodes.
- 2.5.3 Enhance Traffic Connectivity – Currently, the WCR is the only external transport link connecting the Loop and the existing road networks. The proposed ECR can share the traffic demand for the WCR, and can strengthen the connectivity of the Loop and the road networks within KTN NDA via MTL area.
- 2.5.4 Minimised Environmental Impact – By adopting the preferred alignment of the proposed ECR which incorporates depressed roads and underpasses, the project minimises disruption to critical habitats including wetlands, fishponds, and corridors for migratory birds, as well as protected species like the Eurasian Otter. The use of natural ventilation for underpasses eliminates the need for energy-intensive mechanical systems, reducing long-term carbon emissions and visual impact. Additionally, the viaduct sections avoid direct impact to Shun Yee San Tsuen. During the operation phase, the ECR alleviates congestion on the WCR, lowering vehicular emissions from idling traffic and shortening travel times and results in further reducing fuel consumption and air quality impact.
- 2.5.5 Biodiversity Enhancement – Upon completion of the proposed ECR, on-site wetland enhancement would be implemented on the affected ponds (i.e Ponds 36 -38). Wetland associated Avifauna species, non-avifauna species of conservation species as well as Eurasian Otters would benefit from better water management compared to existing pond, and more diverse and shallower sloping edge conditions to provide suitable foraging habitat for these species. Details of the enhancement approaches,

including indicative locations and design principles, are presented in **Chapter 8** of the EIA Report.

2.6 Consideration of Alignment Options

2.6.1 The alignment of the ECR was initially investigated under the approved Environmental Impact Assessment Report for the Development of Lok Ma Chau Loop (hereinafter refer to as “LMCL”) (Register Number: AEIAR-176/2013). A total of nine alignment options, designated as Options E1 to E9, were evaluated based on key criteria including environmental impact, land resumption requirements, construction cost, and engineering feasibility. These options included of at-grade, viaduct, and tunnel configurations across the meander and fishpond areas near Ping Hang. From an environmental perspective, alignment crossing the meander via the north-eastern side of the Hoo Kok Wai fishpond was not considered due to significant disturbance to adjacent fishponds and result in construction runoff directly affecting nearby water bodies. Alignments that minimise disturbance to fishponds, wetland habitats and the flight line corridor were prioritised. Over these nine option, at-grade, tunnel, and viaduct options across the meander and fishpond near Ping Hang have been reviewed and assessed. Following the comprehensive assessment in the approved EIA Report for the Development of Lok Ma Chau Loop, Option E9 was adopted as the preferred alignment in the approved EIA report.

2.6.2 Option E9 (the shallow underpass scheme) was selected as the preferred alignment because it provides a balanced solution across environmental, engineering, and cost considerations. Environmentally, it minimises permanent operation impacts on sensitive habitats, particularly the Conservation Area near Hoo Kok Wai, by minimising direct disturbance to fishponds (e.g., Ponds 36 to 38) and the meander. Unlike tunnel options, E9 maintains a compact design that integrates seamlessly with the Loop’s internal road network, preserving flexibility for public transport arrangements and reducing land-use conflicts. From an engineering perspective, the short underpass length eliminates the need for extensive tunnel infrastructure, reducing construction complexity, energy consumption, and long-term maintenance requirements. Overall, Option E9 achieves an optimal balance between environmental protection, technical feasibility, and project cost, making it the most practical solution

2.6.3 There are two alignments for the ECR, which will be detailed in the following sections. Extensive environmental and engineering considerations have been taken into account during the evaluation of options in order to minimise impact and maximise the benefits as far as possible.

Base Scheme

2.6.4 Base Scheme (i.e. Option E9) is the road scheme studied under Development of Lok Ma Chau Loop EIA Report (Register No.: AEIAR-176/2013). It comprises the construction of depressed road, underpass, viaduct and at-graded carriageway connecting to KTN NDA.

2.6.5 Base Scheme starts to descend and become a depressed road in the front of the ecological area in the Loop. It then changes to underpass underneath and cross the ecological area in the Loop. Then the Base Scheme changes to depressed road, underpass, depressed road and viaduct crossing the stream near Horn Hill. Finally, the Base Scheme changes to at-grade carriageway near Lok Ma Chau Operation

Base Lok Ma Chau Division Hong Kong Police Force and connects to KTN NDA via MTL area. The alignment of Base Scheme is shown in **60722948/A10/FIGURE 2.6**.

Option 1 – Depressed Road and Underpass

2.6.6 Option 1 comprises depressed road, underpass, at-graded carriageway and viaduct, which connecting the Loop and the KTN NDA via the MTL area. Option 1 starts to descend and become a depressed road in the front of the ecological area in the Loop. It then changes to underpass underneath and crosses the ecological area in the Loop, existing meander and the ponds. Then the underpass ascends and connects with depressed road near Lok Ma Chau Operation Base Lok Ma Chau Division Hong Kong Police Force. Permanent above-ground structures, such as at-grade roads or viaducts within the ecological area, flight line corridor and fishponds, are avoided to minimise environmental impacts. Unlike the Base Scheme, this option adopts a full underpass across the ecological area, meander, and fishponds rather than a mixed depressed road and underpass configuration. This approach significantly reduces permanent fishpond loss and prevents habitat fragmentation.

2.6.7 Option 1 then connects to the proposed at-grade road near Horn Hill and Tse Koo Hang. After crossing Tse Koo Hang, Option 1 alignment starts to ascends in front of MTL Stream in form of viaduct and cross MTL Stream without modification. At-grade road with slope formation works and viaduct is proposed at the north of Shun Yee San Tsuen. The ECR finally turns south in the form of viaduct and connects to the at-grade road networks of MTL development and KTN NDA. Option 1 also modify the section of existing Border Road near Tse Koo Hang so as to maintain the traffic connection between Border Road and nearby villages. The alignment of Option 1 is shown in **60722948/A10/FIGURE 2.1 to 2.5 and 2.7**.

2.6.8 Consideration had been taken to avoid affecting the compensatory wetlands established under the LMCL project (i.e. Ecological Area (EA) within the Loop and the Offsite Wetland Compensation Area (OWCA) Area 2) during the road planning and option selection processes. While direct impacts on OWCA Area 2 are fully avoided, the impacts on the LMCL EA are minimised to the maximum practicable extent and any unavoidable impacts resulting from the construction of the ECR will be mitigated during both the construction and operational stages. A reinstatement and monitoring plan for the EA with reference to the approved Ecological Mitigation / Habitat Creation and Management Plan under the LMCL project would be prepared by the Contractor and submitted to Agriculture, Fisheries and Conservation Department (AFCD) and Environmental Protection Department (EPD) for agreement at least three months prior to commencement of construction works to ensure effectiveness under the Project.

Consideration for Each Alignment Options

2.6.9 The environmental and engineering consideration for the alignment options have been compared and presented in **Table 2.1** below.

Table 2.1 Summary of Environmental and Engineering Consideration of Alignment Options

| Alignment Options | Considerations | |
|-------------------|---|---|
| | Benefits | Disbenefits |
| Base Scheme | <ul style="list-style-type: none"> The adoption of an open sunken road and a permanent | <ul style="list-style-type: none"> Depressed road section near Horn Hill has direct impact to the existing |

| Alignment Options | Considerations | |
|---|--|---|
| | Benefits | Disbenefits |
| | <p>aboveground corridor in the design helps to minimise disturbance to Eurasian Otter and the bird flight line corridor during operation phase to a certain extent.</p> <ul style="list-style-type: none"> • Natural ventilation for the underpass to reduce air quality, noise and visual impacts as well as reduce the use of mechanical ventilation. • The alignment has been carefully planned to minimise encroachment into the Conservation Area (CA) Zone, with particular attention given to reducing impacts on the Hoo Hok Wai area. | <p>ponds during construction and operation phase.</p> <ul style="list-style-type: none"> • The at-grade carriageway will affect the natural streams and wetland of the Ma Tso Lung area, the habitat of the Three-banded Box Terrapin during construction phase. • Existing ponds near Ma Tso Lung Blue House will be directly and indirectly affected during construction and operation phase. • Extensive site formation works and road works within the Ma Tso Lung area which are existing wet grassland, watercourses and farmland. • The viaduct may affect the seasonal flight path of night roost during the operation phase. • Have ecological impact during construction phase, more mitigation measures are required. • Cutting is required and result in habitat loss of orchard and shrubland during construction. • During construction, there will be temporary loss of wetland habitats (e.g. ecological area, the meander, fishpond area) and woodland on Horn Hill and Tse Koo Hang, while the road section near Ma Tso Lung will have direct and indirect impact on the stream and wetland. • Potential air and noise impacts on local village such as Shun Yee San Tsuen associated with vehicular traffic. • Presence of junction / run-in along the alignment. |
| Option 1 – Depressed Road and Underpass Alignment | <ul style="list-style-type: none"> • The impacts on the sensitive area (e.g., LMCL ecological area (EA)) are minimised to the maximum practicable extent and the affected EA would be reinstated, enhanced and maintained upon completion of the road works. | <ul style="list-style-type: none"> • Have ecological impact during construction phase, mitigation measures are required. • Cutting is required and result in habitat loss of orchard and shrubland. |

| Alignment Options | Considerations | |
|-------------------|--|--|
| | Benefits | Disbenefits |
| | <ul style="list-style-type: none"> • Key permanent impacts on pond habitats and fragmentation impacts at the western end of the alignment now largely avoided through the adoption of an underpass. • Minimised disturbance to Eurasian Otter and the bird flight line corridor during operation phase to the maximum extent possible. • Natural ventilation for the underpass to reduce air quality, noise and visual impacts as well as reduce the use of mechanical ventilation. • Construction of two ventilation openings to further minimise the loss of fishponds and reduce the fragmentation effect. • Less land required within the Loop when compared with Base Scheme. • Minimise the loss of existing fishponds near Tse Koo Hang when compare with Base Scheme. • Reduce the impact to the woodland / grassland / shrubland at Ma Tso Lung area. • Lower recurrent / maintenance cost compared with Base Scheme. • Shorter construction time compared with Base Scheme. • The alignment has been carefully planned to minimise encroachment into the Conservation Area (CA) Zone, with particular attention given to reducing impacts on the Hoo Hok Wai area. | <ul style="list-style-type: none"> • During construction, there will be a temporary loss of wetland habitats (e.g. ecological area, the meander, fishpond area) and woodland on Horn Hill, while the road section near Ma Tso Lung will have an indirect impact on the wetland. • Potential air and noise impacts on local village such as Shun Yee San Tsuen associated with vehicular traffic. • More natural terrain hazard mitigation works is required. • Extensive site formation works and road works at the north and at the south of Shun Yee Sun Tsuen which are existing wet grassland. • Presence of junction / run-in along the alignment. |

2.6.10 Having considered the factors as mentioned in **Table 2.1** above and striking the balance between the benefits and disbenefits of each alignment option, Option 1 – Option with Depressed Road and Underpass is concluded to be the most preferred option.

2.7 Construction Methodologies for Key Design Elements

2.7.1 This Project comprises carriageways (in the form of (i) at-grade section; (ii) depressed road and underpass crossing the ecological area in the Loop, existing meander and

existing ponds; and (iii) viaducts near Shun Yee San Tsuen and Ma Tso Lung San Tsuen).

Construction of Depressed Road and Underpass

- 2.7.2 The ECR starts to descend and become a depressed road in the front of the ecological area in the Loop. In order to minimise the loss of fishponds and reduce the fragmentation effect, it then changes to underpass underneath and cross the ecological area in the Loop, existing meander and existing ponds. Then the underpass ascends and connects with depressed road and at-grade road near Lok Ma Chau Operation Base Lok Ma Chau Division Hong Kong Police Force.
- 2.7.3 In order to avoid having ventilation buildings for the underpass, two reinforced concrete ventilation openings (about 0.13 ha each) will be provided on the rooftop of the underpass such that natural ventilation can be adopted for the underpass as far as possible to reduce air quality, noise and visual impact and amount of electricity consumed for mechanical ventilation. A ventilation opening including maintenance access (about 0.25 ha) will be created at Pond 38, which can be constructed by backfilling and utilising partial of existing pond bund. The subsequent maintenance of the ventilation opening structures are expected to be managed by the Highway Department.
- 2.7.4 In exploring construction methods, both cut-and-cover and Tunnel Boring Machine (TBM) were considered to minimise encroachment and direct impacts on the ecological area within the Loop, the existing meander, and adjacent fishponds. TBM was initially reviewed as an alternative to reduce surface disturbance. However, based on available ground investigation records, the alignment of the underpass consists of soft ground without hard rock with high groundwater levels. Implementing TBM would require large launching and retrieval shafts, extensive ground treatment (e.g., grouting or bentonite), and additional land take, which would impose significant impacts on the ecological area and adjacent natural terrain. From a safety perspective, TBM operations in soft ground with high groundwater levels pose risks of ground settlement and potential flooding during construction, requiring extensive mitigation measures. Given these geotechnical condition, drill-and-break/drill-and-blast method would not be adopted in this Project and thus the use of explosives for construction is not required.
- 2.7.5 Considering the alignment geometry, geotechnical conditions, and the need to minimise environmental impacts on the existing meander and ponds, cut-and-cover construction method is considered as a more reliable and controllable approach and recommended to be adopted.
- 2.7.6 Excavation and Lateral Support (ELS) is an essential component of the cut-and-cover method, as the trench must be stabilised to ensure safe construction of the underpass and depressed roads. This approach manages the stability of excavation walls created during the “cut” phase of cut-and-cover process. In addition, ELS can be created to form a watertight barrier, effectively mitigating groundwater ingress, a particularly valuable feature in areas with high water tables. This dual functionality enhances both safety and construction efficiency.
- 2.7.7 The cut-and-cover method involves excavating from the ground surface down to the required depth until the base of the tunnel structure is reached. Although there is no direct precedent in adopting the full cut-and-cover method in ecologically sensitive areas, excavation works, which are the major component of cut-and-cover method,

have been successfully implemented in similar environments. For instance, excavation works were carried out in ecologically sensitive areas such as the Ecological Area within the Loop, the Shenzhen Meander, and adjacent fishponds under the *Ecological Mitigation/Habitat Creation and Management Plan of Agreement No. CE 5/2014 (CE) – Development of the Loop: Land Decontamination and Advance Engineering Works – Design and Construction*. Excavation was undertaken to establish the EA zone, which comprises of reedbeds and freshwater marshes within the Loop. Concurrently, stone columns were installed to enhance ground stability. Following the completion of stone column installation, embankments were constructed using excavated materials sourced from within the Loop. In addition, the construction of the *Western Connection Road* and *Lok Ma Chau Spur Line* involved excavation and piling work, and installation of column for viaduct section adjacent to ecologically sensitive areas such as Shenzhen Meander and fishponds. These examples demonstrate that excavation and lateral support techniques, which form the basis of the cut-and-cover method, can be effectively implemented in ecologically sensitive areas, provided that appropriate mitigation and management measures are in place.

2.7.8 Comparison of the merits and demerits between the construction methods is shown in **Table 2.2** as below.

Table 2.2 Comparison of Different Construction Methods for Underpass

| Construction Methods | Cut-and-Cover | Tunnel Boring Machine (TBM) |
|----------------------|--|--|
| <p>Merits</p> | <ul style="list-style-type: none"> • Conventional construction method and require relatively less special skilled labour force and specialists when comparing with other construction method. • Facilitate construction of complex underpass geometry. • Better control complex geotechnical condition. • More flexible for dividing works area within the Site, thus allow flexibility for the contractor to coordinate with other concurrent projects in the vicinity for arrangement of respective construction programme and to minimise cumulative environmental impact. • The impacts on the LMCL EA are minimised to the maximum practicable extent and the affected EA would be reinstated, enhanced and maintained upon completion of the road works | <ul style="list-style-type: none"> • Less labour required for construction. • TBM is usually non-stop working which can speed up construction programme. • Construction works mainly carried out at underground which can avoid working above ground. • Minimise construction noise and air quality impact during construction by using TBM. |

| Construction Methods | Cut-and-Cover | Tunnel Boring Machine (TBM) |
|------------------------|---|---|
| <p>Demerits</p> | <ul style="list-style-type: none"> • Construction works would be affected by adverse weather conditions. • Temporary occupy of existing meander and ponds would be required, though the affected area will be reinstated. | <ul style="list-style-type: none"> • Ground treatment by using grouting / bentonite to control adverse effect (adverse effect such as excessive ground settlement, groundwater ingress to the TBM, excessive groundwater drawdown) is required for soft ground tunnelling by using TBM, which would contaminate the existing meander and ponds. • Extra land is required for set up of launching shaft and retrieval shaft. This will impose significant impact to the Loop as the land usage within the Loop is well planned. This will impose significant impact to natural terrain at the other end of the underpass. • Require another trade of skilled workers and additional construction equipment for launching the TBM. • Delivery of TBM would have traffic impact/limitation (such as widening existing road may be required for TBM delivery) to the surrounded road network. • Not suitable for underpass with shallow ground cover. • Not cost effective for short underpass. |

Construction of Viaduct

2.7.9 The carriageway section of the ECR near Shun Yee San Tsuen and Ma Tso Lung San Tsuen will be in form of viaduct structure. This is due to the preservation of Shun Yee San Tsuen and Ma Tso Lung San Tsuen and connection to the proposed road networks by concurrent project “Ma Tso Lung Area and Other Sites in Kwu Tung North New Development Area and North District – Zone 1 Ma Tso Lung Area”.

2.7.10 The viaduct section near Shun Yee San Tsuen and Ma Tso Lung San Tsuen can be erected by cast in-place concrete construction method, prefabricated steel structure construction method and precast concrete construction method. Having considered the site condition of the proposed viaduct, it is recommended to adopt precast concrete construction method which is a more effective and environmentally friendly approach.

2.7.11 Comparison of the merits and demerits between the construction methods is shown in **Table 2.3** as below

Table 2.3 Comparison of Different Construction Methods for Viaducts

| Construction Methods | Cast In-place concrete | Prefabricated Steel Structure | Precast Concrete |
|----------------------|--|--|--|
| <p>Merits</p> | <ul style="list-style-type: none"> • Conventional construction method and require relatively less special skilled labour force and specialists when comparing with other construction method. • Durable and less maintenance cost. | <ul style="list-style-type: none"> • Carry out prefabrication works in fabrication yard away from the site. • Better control of quality and workmanship for works in fabrication yard. • Fabricate the whole bridge deck structure by steel plates / members which does not require formwork, thus less C&D waste / materials will be generated. • Minimise concrete mixing truck travelling in site area, thus minimise potential air and noise impact to the surrounding environment. • More efficient construction works as the deck structure can be fabricated off-site concurrently with the substructure works (i.e. allow time overlap of construction activities). • Relatively shorten construction time, bridge deck construction can be non-linear (multiple work fronts), with minimising on-site potential environmental impacts and | <ul style="list-style-type: none"> • Carry out precasting works in fabrication yard away from the Site. • Better control of quality and workmanship for works in fabrication yard. • Use steel mould as formwork to maximise the reuse of formworks, thus less C&D waste / C&D materials will be generated. • Minimise concrete mixing truck travelling in site area, thus minimise potential air and noise impact to the surrounding environmental. • More efficient construction works as the deck segments can be casted off-site concurrently with substructure works (i.e. allow time overlap of construction activities). • Shorten construction time, bridge deck construction can be non-linear (multiple work fronts), with minimising on-site potential environmental impacts and cumulative environmental |

| Construction Methods | Cast In-place concrete | Prefabricated Steel Structure | Precast Concrete |
|------------------------|--|--|---|
| | | <p>cumulative environmental impacts with concurrent projects.</p> <ul style="list-style-type: none"> Requires relatively less temporary steel platforms, for construction of light weight steel structure. | <p>impacts with concurrent projects.</p> <ul style="list-style-type: none"> Durable and less maintenance cost. Relatively requires less temporary steel platform for construction of precast structure. |
| <p>Demerits</p> | <ul style="list-style-type: none"> Prepare concrete mix at a central concrete batching plant, where control of the materials should be monitored much carefully. For transporting concrete to the Site, proper mixing in truck, discharging from the truck and depositing in the forms, and handling for placement, finishing and curing are all subject to the level of responsibility and craft exercised by the workers involved. Site conditions in terms of accessibility and wealth can be highly critical to the work, requirement of extreme measures in some situations to control all stages in the production process. Possibility of site run-off might be higher under bad weather conditions. Use of timber formwork, thus more C&D waste / C&D materials will be generated. | <ul style="list-style-type: none"> Subject to high risk of steel corrosion. High maintenance cost. Less durable. Require another trade of skilled workers and additional construction equipment for erecting steelwork structures. | <ul style="list-style-type: none"> Require another trade of skilled workers and additional construction equipment for erecting precast segments. |

| Construction Methods | Cast In-place concrete | Prefabricated Steel Structure | Precast Concrete |
|----------------------|--|-------------------------------|------------------|
| | <ul style="list-style-type: none"> • Longer construction time – carry out bridge deck construction only (1) after substructure works is completed; and (2) after completion of previous span for cast in-place span by span. • Require substantial temporary steel platform / falsework for construction of the bridge deck section over river channel (i.e. Ma Tso Lung channel). | | |

2.7.12 Based on the considerations as listed in **Table 2.3** above, precast concrete construction method is the preferred construction method. The viaduct deck section will be designed to allow for the use of precast concrete construction method. The deck will be formed from precast concrete sections which will be manufactured at a casting yard offsite and stitched together at their final positions on-site. This approach will minimise the quantities of C&D waste / C&D materials to be generated on-site, and also minimise the extent and duration of construction activities required on-site and hence the potential environmental impacts on nearby sensitive receivers during construction.

2.8 Updates of the Alignment near Ma Tso Lung San Tsuen

2.8.1 Since the issue of EIA Study Brief (No. ESB-375/2025), existing Water Supplies Department (WSD) water tunnel portal and associated washout chamber are identified at the side of Ma Tso Lung Road near Ma Tso Lung San Tsuen. In order to minimise the impact to WSD's facilities and the risk of water supply, this section of ECR is revised from at-grade carriageway to viaduct.

2.9 Project Programme

2.9.1 The construction works of the Project will tentatively commence in Q1 / Q2 2027 and completed by Q4 2031.

3. KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Approach to the EIA

3.1.1 The EIA process provides a means of identifying, assessing and reporting the environmental impacts associated with the construction and operation of the Project based on the engineering design information available at this stage. Throughout the EIA process the potential environmental effects of various design options and develop alternatives as well as mitigation measures to be incorporated into the design, construction and operation of the Project are identified. Mitigation measures have been recommended to avoid some potential environmental impacts, or to minimise/mitigate impacts to acceptable levels.

3.1.2 The findings of this EIA Study have determined the likely nature and extent of the following environmental impacts predicted to arise from the construction and operation of the Project:

- Air Quality Impact
- Noise Impact
- Water Quality Impact
- Waste Management Implications
- Land Contamination
- Ecological Impact
- Fisheries Impact
- Cultural Heritage Impact
- Landscape and Visual Impact

3.2 Air Quality Impact

3.2.1 Potential air quality impacts associated with the construction and operational phases of the Project have been assessed in accordance with the requirements given in Clause 3.5.3 and Appendix B of the EIA Study Brief, as well as the criteria and guidelines as stated in Annexes 4 and 12 of EIAO-TM. The assessment area for air quality impact assessment is defined by a distance of 500 m from the boundary of the Project and its associated works as identified in the EIA study.

3.2.2 Potential air quality impact from the construction works of the Project would mainly be related to various construction activities including site clearance, site formation work, use of construction plant equipment and construction trucks, slopeworks, construction of shallow underpass section, construction of viaduct and at-grade road sections, and wind erosion of exposed work area.

3.2.3 Construction activities of the concurrent projects within 500m assessment area would also contribute to cumulative air quality impact. With the implementation of mitigation measures specified in the Air Pollution Control (Construction Dust) Regulation, together with the recommended control measures, including frequent watering on active works areas, exposed areas and unpaved haul roads, and other site management measures, such as good site practices, covering and proper storage of dredged materials, use of electric vehicles, and Environmental Monitoring and Audit

(EM&A) programme, no adverse air quality impact on the air sensitive receivers (ASRs) would be anticipated during the construction stage.

- 3.2.4 Cumulative air quality impacts during the operational phase were assessed by considering the project-induced emissions, all relevant emission sources within the 500 m assessment area of the Project, as well as background contributions. The quantitative modelling prediction results concluded that the cumulative NO₂, RSP and FSP concentrations at all existing and planned ASRs would comply with the prevailing Air Quality Objectives (AQOs). Thus, no adverse air quality impact during the operation phase of the project on the ASRs would be anticipated.

3.3 Noise Impact

- 3.3.1 Potential noise impacts associated with the construction and operation phases of the Project have been assessed in accordance with the requirements given in Clause 3.5.4 and Appendix C of the EIA Study Brief, as well as the criteria and guidelines as stated in Annexes 5 and 13 of the EIAO-TM. The assessment area for construction noise, fixed noise, and road traffic noise impact assessments was defined by a distance of 300 m from the boundary of the Project.
- 3.3.2 Qualitative construction noise assessment of the Project has been conducted. With the adoption of proposed noise mitigation measures, including use of Quality Powered Mechanical Equipment (QPME), use of quieter equipment / method, use of higher surface density site-hoarding, use of noise barrier / enclosure, etc., adverse noise impact arising from construction works of the Project is not anticipated.
- 3.3.3 Construction Noise Management Plan (CNMP), which contains a quantitative construction noise impact assessment, mitigation measures and monitoring and audit programme, will be submitted to EPD before the tender invitation and commencement of construction works, with details on the construction method, plant inventory, recommended noise mitigation and implementation details of the mitigation measures in order to minimise the construction noise impact to comply with the EIAO-TM criteria.
- 3.3.4 A quantitative assessment of road traffic noise impacts has been conducted in accordance with the requirements outlined in the EIA Study Brief. Under the unmitigated scenario, the overall predicted noise levels at some of the representative noise-sensitive receivers (NSRs) would exceed the noise criteria. To mitigate potential road traffic noise impacts, direct at-source measures such as Low Noise Road Surfacing (LNRS) have been considered, while at-receiver mitigation measures, including acoustic windows and acoustic balconies, are recommended for the planned NSRs. Future developers or proponents should also conduct a noise impact assessment for the planned residential sites to review design and minimise potential exposure to road traffic noise. With the proposed noise mitigation measures in place, the Project roads noise levels at all these NSRs would comply with the relevant noise criteria and the Project roads contributions to the overall noise levels would be insignificant, i.e. less than 1.0 dB(A). As such, no adverse road traffic noise residual impact arising from the Project is anticipated and no further mitigation measures would be required.
- 3.3.5 As there is no existing fixed noise sources identified within 300m assessment area, while a pumping station is proposed as part of the Project. At this stage, the design of pumping station is fully enclosed with the exhaust louver oriented to the north, facing Hoo Hok Wai. This configuration is intended to minimise the impact of potential fixed noise sources. Fixed Noise Sources Management Plan (FNMP) would be

submitted separately to EPD for agreement prior to issuance of tender and commencement of construction of the proposed fixed noise source to recommend detailed fixed noise mitigation measures and ensure noise compliance. The FNMP would also include the prevailing background noise survey, the quantitative fixed noise source impact assessment, and monitoring and audit programme.

3.4 Water Quality Impact

3.4.1 The water quality impact assessment (WQIA) was conducted in accordance with the requirements given in Clause 3.5.5 and Appendix D of the EIA Study Brief as well as the criteria and guidelines as stated in Annexes 6 and 14 of the EIAO-TM. The assessment area for this water quality impact assessment includes areas within 500 m from the boundary of the Project and covers Deep Bay Water Control Zone (WCZ) as designated under the Water Pollution Control Ordinance (WPCO).

3.4.2 The potential water quality impacts associated with the land-based construction works include construction works in LMC Meander, wastewater generated from general construction activities, construction site runoff, construction works near watercourses, diversion of watercourse, removal of ponds and wet areas, accidental spillage of chemicals, sewage from construction workforce, and groundwater infiltration arising from formation of underpass/depressed road. Given these impacts could be mitigated and controlled by implementing the recommended mitigation measures, no adverse water quality impact during construction phase is anticipated. Regular site inspections and water quality monitoring should be undertaken routinely to inspect the construction activities and works area to ensure the recommended mitigation measures are properly implemented.

3.4.3 The key issues of the operation phase are the surface runoff generated from the new paved areas. Provided that the recommended mitigation measures for the drainage system are properly implemented, the associated water quality impacts are expected to be minimal and acceptable. No adverse water quality impact during operation phase is therefore anticipated.

3.5 Waste Management Implications

3.5.1 The waste impact assessment was conducted in accordance with the requirements given in Clause 3.5.6 and Appendix E of the EIA Study Brief, as well as the criteria and guidelines as stated in Annexes 7 and 15 of the EIAO-TM.

3.5.2 The main waste types generated during the construction of the Project would be Construction & Demolition (C&D) materials (from site clearance, excavation/foundation works, slope works, piling works, superstructure works, etc.), excavated sediment, chemical waste from plant operation and maintenance and general refuse from workforce. Provided that these wastes are handled, reused, transported and disposed of using approved methods and that the recommended good site practices are strictly followed, no adverse environmental impacts are anticipated.

3.5.3 During the construction of the Project, the quantity of C&D materials generated during the construction phase is estimated to be 313,100 m³ with 5,900 m³ of non-inert materials and 307,200 m³ of inert materials. It is estimated that of the inert C&D materials generated, approximately 15,700 m³ would be reused on site as backfill materials. Surplus inert C&D material will be exported off site or delivered to Public Fill Reception Facility (PFRF) (Tuen Mun Area 38 Fill Bank). A minimal amount (in the

order of a few hundred litres per month) of chemical waste and 65 kg of general refuse are estimated to be generated daily. Chemical waste would be recycled at an appropriate facility as far as possible, while chemical waste that cannot be recycled should be disposed of at Chemical Waste Treatment Centre (CWTC), or another licensed facility. General refuse would be disposed of at WENT / NENT Landfill.

- 3.5.4 It is estimated that 100,700 m³ of excavated sediment will be generated from the Project during underpass/depressed road excavation. Excavated sediment will be treated by cement stabilisation / solidification (S/S) to improve its strength characteristics and following confirmatory Unconfined Compressive Strength (UCS) and Toxicity Characteristic Leaching Procedure (TCLP) testing, will be reused on site (e.g. as backfilling materials).
- 3.5.5 No adverse environmental impact (including potential hazard, air and odour emissions, noise, wastewater discharge and public transport) is anticipated by the handling, collection, transportation and disposal of the different types of waste.
- 3.5.6 During operation of the Project, minimal amount of chemical waste and general refuse are estimated to be generated during each maintenance event.

3.6 Land Contamination

- 3.6.1 The land contamination assessment is conducted in accordance with the requirements given in Clause 3.5.7 and Appendix F of the EIA Study Brief, as well as the criteria and guidelines as stated in Annex 19 of the EIAO-TM.
- 3.6.2 Based on the findings from desktop review (e.g. review of historical aerial photographs and relevant information from EPD and FSD, examination of previous EIA reports and site investigation records) and a site walkover; no land use with potential to give rise to land contamination is identified within site boundary or at off-site areas immediately adjacent to the Project Site except for Site MTL-001. Site MTL-001 was inaccessible during site visit. The site walkover was conducted through peripheral inspection and drone reconnaissance. The site was a construction company storage yard which is identified as a potentially contaminated site. Possible contaminating activities may have resulted from release of oils and fuels and lubricants from vehicles/plant during storage, maintenance or refuelling as well as storage and use of chemicals and solvents required for maintenance activities and possible waste arisings.
- 3.6.3 It is recommended to re-appraise the whole area within the Project boundary once the Project Site is resumed and fully accessible prior to development. Further works, including site re-appraisal, SI works as well as submission of a Contamination Assessment Plan (CAP) and Contamination Assessment Report (CAR) for EPD's endorsement are recommended to be carried out after the Project site is handed over to the Project Proponent (PP) for development. If contaminated soil and/or groundwater is identified; remediation should be carried out according to the EPD approved Remediation Action Plan (RAP) and a Remediation Report (RR) should be submitted to EPD for agreement after completion of the remediation works. No construction or development works should be carried out on potentially contaminated sites prior to EPD approval of the CAP, and CAR and/or RR, if necessary.
- 3.6.4 With reference to the *Preliminary Feasibility Study on Developing the New Territories North*, the *Geochemical Atlas of Hong Kong* published by the Geotechnical Engineering Office of Civil Engineering and Development Department in 1999 and the Hong Kong Environmental Database (HKED) by EPD, natural occurrences of

elevated level of arsenic exist over broad areas of the northern New Territories. A separate arsenic assessment and remediation plan should be prepared and submitted to EPD for endorsement.

- 3.6.5 With the implementation of the recommended further works, any soil/groundwater contamination would be identified and properly treated prior to the construction works. No insurmountable land contamination impacts to the Project are therefore anticipated.

3.7 Ecological Impact

- 3.7.1 The ecological impact assessment for the Project was undertaken in accordance with the requirements of Clause 3.5.8 and Appendix G of the EIA Study Brief, as well as the criteria and guidelines as stated in Annexes 8 and 16 of the EIAO-TM. The assessment area for terrestrial ecological impact assessment includes areas within 500 m of the Project boundary, as well as other areas likely to be impacted by the Project.
- 3.7.2 Through a combination of literature review and ecological surveys undertaken from July 2022 to December 2023, a total of 13 habitat types were identified within the Assessment Area, with wetland habitats comprising compensatory wetland, pond, marsh, reedbed, modified watercourse, semi-natural and natural watercourse, seasonally wet grassland; and non-wetland habitats comprising woodland, grassland / shrubland, orchard, plantation, agricultural land and developed land. Wetland habitats were mostly concentrated in the northeastern portion of the Assessment Area around Hoo Hok Wai, comprising high ecological value pond habitats, moderate to high ecological value compensatory wetland (the EA) and semi-natural and natural watercourse (LMC Meander), moderate ecological value marsh habitats, and low to moderate ecological value seasonally wet grassland. While wooded habitats were mainly found in Horn Hill, Tse Koo Hang and Crest Hill, and are considered to be of moderate ecological value.
- 3.7.3 Several sites of conservation importance were identified within the Assessment Area, including the Proposed HHW WCP, WCA, WBA, "CA", Priority Site for Enhanced Conservation, IBA, the EA, OWCA Area 2, off-site compensation woodland and Key Dragonfly Site in Ma Tso Lung. Direct impacts on these sites of conservation importance and associated wetland / woodland habitats and species would arise from the construction works of the Project. The ECR Alignment has been designed to avoid and minimise permanent impacts on sites of conservation importance. Of the 2.09 ha of permanent wetland habitat loss, only 0.74 ha occurs within the WCA and 1.35 ha within the WBA. In addition, all woodland habitat loss associated with the Project is confined to the WBA.
- 3.7.4 Flora species of conservation importance, including Incense Tree, *Aralia chinensis* and Tongue Habenaria, were recorded within the Assessment Area. Sensitive wetland habitats (i.e., compensatory wetland and ponds) in the HHW area supported high diversity and abundance of waterbirds and wetland-dependent species. Mammal species of conservation importance, such as Leopard Cat, Small Indian Civet, and several bat species were also recorded. While not recorded in surveys conducted specifically for this EIA, long-term and recent records confirming the presence of Eurasian Otter in wetland habitats at HHW area. Other fauna of conservation importance recorded within the Assessment Area include herpetofauna such as Chinese Bullfrog and Four-clawed Gecko; common and widespread butterfly species of conservation concern such as Metallic Cerulean, Red-breast Jezebel and Paintbrush Swift; odonate species such as Blue Chaser and Coastal Glider; firefly

species including Motschulsky's Starworm; and freshwater fish *Somanniathelphusa zanklon* and other freshwater crab species *Gobiopterus macrolepis*.

3.7.5 The assessment concluded that direct impacts, including the loss of wetland and woodland habitats and the potential for habitat fragmentation, as well as indirect impacts such as mortality risk and disturbance from noise and lighting, may arise during both the construction and operational phases of the Project. With full implementation of the recommended mitigation measures, no significant residual impacts are expected to arise from the Project. Key ecological mitigation measures accruing from the Project will include:

- Compared to the design of the ECR presented in the previously approved LMC Loop EIA (2013a), the latest design proposed in this EIA has been developed to avoid and minimise ecological impacts as far as practicable. In particular, key permanent impacts to the pond habitats as well as fragmentation impacts at the western end of the alignment now largely avoided through adoption of an underpass rather than open sunken road design. By adopting this design, the total affected wetland habitats would be reduced by over 46% (from 3.94 ha to 2.09 ha). Permanent direct impacts on high value pond habitats are almost wholly avoided, with the affected pond area would be reduced by over 87% (from 1.99 ha to 0.25 ha). The OWCAs and a majority of the EA are avoided while the ecological characteristics and function of a small portion of the EA (0.38ha) unavoidably affected during the construction of the underpass will be reinstated following the completion of works, and enhanced and maintained to a condition no less than the existing conditions.
- The provision of wetland compensation at the OWCAs already constructed as part of the LMC Loop EIA will more than sufficiently offset unavoidable wetland impacts arising from the construction and operation of the Project, ensuring "no net loss" in the overall ecological function of the affected wetland habitats, in accordance with the requirements of the EIAO-TM. Additional enhancement works of 4.38 ha of pond habitats will be implemented at Area 4 over and above the required compensation to further strengthen ecological functionality upon the completion of the Project. The enhancement of Area 4 (approximately 4.38 ha) will serve to improve local ecological performance as well as strengthen ecological linkage within the Deep Bay Wetland System, maintaining habitat connectivity and supporting the movement of wetland-dependent fauna through the corridor. Wetland associated avifauna species, non-avifauna species of conservation species as well as Eurasian Otters would benefit from better water management compared to existing abandoned and poor condition of ponds, and more diverse and shallower sloping edge conditions to provide suitable foraging habitat for these species. The enhanced ponds will also improve connectivity by reinforcing the major avifaunal flight corridor traversing from Mai Po to the Loop and HHW. In addition, the enhanced habitats would support the movement of Eurasian Otters and other terrestrial mammals between these areas.
- Aside from wetland habitats, approximately 1.68 ha of woodland will be directly affected within the Construction Area of the Project. To comply with the requirements of the EIAO-TM, equivalent woodland compensation will be provided on a 1:1 basis. The location of the proposed compensatory woodland was preliminarily identified to the southwest of the ECR Alignment. A woodland compensation plan will be formulated and submitted prior to the commencement of construction at the woodland habitat. With the proposed compensation

measures, no unacceptable ecological impact is anticipated to arise from the loss of habitats under the proposed development.

- Direct encroachment on a seasonally active night roost identified at a strip a mixed woodland at the northern end of Ma Tso Lung Road would be avoided, and only minor indirect impacts anticipated. Pre-construction site checks for the night roost are also proposed to update the status of the roost and minimise potential impacts.
- Several individuals of a plant species of conservation importance (Incense Tree) were recorded within the Construction Area of the Project. A detailed vegetation survey should be conducted prior to the commencement of construction works to identify potentially affected plant individuals. All identified individuals would be labelled and fenced off on-site for better preservation, or in the case of unavoidable direct impacts, for transplantation or seedling planting according to the Protection and Transplantation / Seedling Planting Proposal.
- Fauna species of conservation importance (comprising one herpetofauna species, Chinese bullfrog; one freshwater crab species, *Somanniathelphusa zanklon*; and one freshwater fish species, *Gobiopterus macrolepis*) were recorded within or close to Construction Area of the Project, as well as actual / suspected breeding of three avifauna species of conservation importance (White-throated Kingfisher, Chinese Francolin and Eurasian Eagle Owl). Due to the low mobility of these species and/or potential breeding individuals, translocation or pre-construction site check for nesting activities should be implemented to minimise impacts to these species. Detailed pre-construction surveys should be conducted for these species, followed by translocation of the low mobility species, or nest control measures for the potential breeding / nesting avifauna, in accordance with the Translocation Proposal.
- While no records of Eurasian Otter were made during surveys conducted for this project, there are recent records of this species from within/adjacent to the Construction Area of the Project. Pre-construction surveys for otter holts or natal dens should be carried out in wetland habitats located within 150m of the Construction Area of the Project before the commencement of construction works to minimise potential impact on the species' holts and natal dens.
- Movement corridors for wildlife (including non-flying mammal species) have also been considered and would be maintained during the project construction and operation. During the construction phase, works would be divided into three large sections (Sections 1,2,3), to be completed in two phases (Sections 1 and 3 and Sections 2 and 3). All works would be completed at Section 1 before any works commence at Section 2, minimising disturbance and fragmentation impacts. Within the most sensitive wetland area (i.e., the EA, LMC Meander and ponds 36 - 38), works would be further phased to ensure some areas of intact habitat are maintained at all times, and a temporary aboveground wildlife crossing (approximately 40m) would be installed to ensure connectivity is maintained during construction phase. Habitats in this area would be reinstated following completion of construction works, avoiding long-term fragmentation impacts. Two permanent wildlife underpasses would be incorporated in the at-grade section of ECR Alignment, linking the wooded habitat at Tse Koo Hang to the south with wetland habitats at Hoo Hok Wai to the north. These wildlife underpasses would

facilitate ecological linkage, allowing movement of non-flying mammals and terrestrial herpetofauna.

- Major flight paths for wetland avifauna were observed along the Hoo Hok Wai Flight Corridor, which lies above pond habitats between LMC Meander and the Border Road. Construction activities within sensitive areas used by Eurasian otters or intersecting the bird flight line will be largely confined to restricted areas (i.e. Zones 1–3), and with the implementation of appropriate mitigation and precautionary measures, no overlap with major flight lines or core otter activity areas is anticipated outside the restricted zones. In addition, impacts to these flight paths during the construction phase are expected to be minimal considering no above-ground structures exceeding 15m above the existing ground level will be established in this area. No operation phase impacts are expected.
- Restriction of construction hours of works would be implemented to reduce potential impacts on existing seasonal night roost, flight lines and Eurasian Otters during construction phase. Any noisy construction activities (with the use of PME) within 100 meters of the existing seasonal active night roost would be subject to timing restriction from October to April, permitted only between 0900h to 1700h to avoid period of night roost utilisation. Whereas no aboveground noisy construction activities (with the use of PME) are to be carried out in the sensitive wetland area that fall within the Construction Area of the project before 0900h and after 1700h throughout the year, avoiding the time of day when flight lines and otters are most active in the region during construction phase.
- A range of mitigation measures as well as general good site practises have been proposed to reduce the disturbance impacts (e.g. noise, glare and dust) and water quality impacts on habitats, sites of conservation importance and wildlife during the construction phase. The operational impact would be largely avoided through the design of the ECR Alignment, and the proposed underpasses with solid parapet, as well as noise and lighting management as precautionary measures, which further reduce habitat fragmentation associated with the at-grade sections of the ECR and other potential indirect impacts during the operation phase.

3.7.6 Regular inspection and monitoring of the implementation of mitigation measures have been recommended as part of the ecological monitoring programme. Procedures and requirements for the implementation of measures for impacts on species of conservation importance were described.

3.7.7 With the implementation of the aforementioned mitigation measures, no unacceptable impacts are anticipated to arise from the construction or operation of the Project on ecological resources recorded within the Project Assessment Area.

3.8 Fisheries Impact

3.8.1 Potential impacts on fisheries have been assessed in accordance with the requirements given in Clause 3.5.9 and Appendix H of the EIA Study Brief as well as the criteria and guidelines as stated in Annexes 9 and 17 of the EIAO-TM.

3.8.2 The fisheries impact assessment has been conducted based on the information gathered from literature review and the site checks. The results showed that the assessment area contains a mixture of active, inactive, and abandoned fishponds, with active aquaculture mainly concentrated in Hoo Hok Wai. Construction works will

involve the temporary occupation of several ponds and the permanent loss of 4.63 ha of fishpond. This comprises 0.25 ha of fishpond permanent loss due to the footprint of the ventilation opening and associated maintenance access required for the underpass section of the ECR Alignment, and 4.38 ha loss of fishpond from conversion of fishpond into ecological enhanced pond in Area 4. Nevertheless, no adverse impacts on fisheries production are anticipated.

- 3.8.3 Potential indirect impacts, such as deterioration of water quality, bund instability, or access blockage during construction, may temporarily affect pond operations. However, with the implementation of standard site practices and mitigation measures including bund protection, runoff control, and provision of alternative access, no unacceptable impact is anticipated. During operation, the design of the ECR Alignment ensures that access to fishponds will be maintained. Overall, the Project is not expected to cause significant impacts to fisheries resources or activities and hence no fisheries-specific monitoring is necessary.

3.9 Impact of Cultural Heritage

- 3.9.1 The cultural heritage impact assessment (CHIA) has been conducted in accordance with the relevant requirements as specified in Clause 3.5.11 and Appendix J of the EIA Study Brief, as well as the criteria and guidelines as stated in Annexes 10 and 19 of the EIAO-TM. The assessment area for the CHIA of this EIA Study covers the area within 300 m from the Project boundary.
- 3.9.2 There is no built heritage within the Project Boundary. However, within the 300m assessment area of the site boundary, there is one grade 2 historic building, namely MacIntosh Fort (Ma Tso Lung) (HB303). Potential indirect impacts, such as ground borne vibration, tilting and settlement, are anticipated during the construction phase, would affecting MacIntosh Fort (Ma Tso Lung) (HB303). Monitoring of ground-borne vibration, tilting and ground settlement is proposed during construction phase. Meanwhile, pre and post condition survey in construction phase is required. Condition survey and structural assessment should be carried out by an Authorized Person (AP) to inspect the physical condition and structural integrity of the building and provide advice on the subsequent mitigation measures based on the assessment result.
- 3.9.3 There is no site of archaeological interest within the Site Boundary or 300m assessment area. Meanwhile, no archaeological impact is anticipated from the Project and no mitigation measure is required. As a precautionary measure, pursuant to the Antiquities and Monuments Ordinance (Cap. 53), the project proponent is required to inform the Antiquities and Monuments Office (AMO) immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with and to the satisfaction of AMO.

3.10 Landscape and Visual Impacts

- 3.10.1 A landscape and visual impacts assessment has been carried out in accordance with the requirements given in Clause 3.5.10 and Appendix I of the EIA Study Brief (No. ESB-375/2025), as well as the criteria and guidelines as stated in Annexes 10 and 18 of the EIAO-TM, and EIAO Guidance Note (GN) No.8/2023. The assessment area for the landscape impact assessment includes all areas within 100 m from the Project boundary while the assessment area for the visual impact assessment is defined by the visual envelope of the Project.

- 3.10.2 Due to the proposed works, a portion of vegetation areas would be unavoidably affected. Based on the findings of broad brush tree and vegetation survey, approximately 2,642 nos. of existing trees identified within the 100m assessment area, in which approx. 2,315 nos. of existing trees would not be affected by the proposed works would be retained. Among the approx. 1,019 nos. of existing trees within the Project Site Boundary, approx. 32% of existing trees (i.e. approx. 327 nos. of trees, including 4 nos. of Trees of Particular Interests (TPIs) (i.e. *Aquilaria sinensis*) and approx. 5 nos. of undesirable species (i.e. *Leucaena leucocephala*)) would be unavoidably affected by the proposed works. Transplantation of all 4 nos. of affected TPIs (*Aquilaria sinensis* (土沉香)) is recommended. Tree compensation within site in a form of woodland mix tree planting on slopes or heavy standard tree planting in amenity area would be explored. Tree compensation requirement of 1:1 in terms of number should be carried out as far as practicable. Exact number of trees to be retained, transplanted and removed to be determined under the *Tree Preservation and Removal Proposals* (TPRPs) in accordance with DEVB TC(W) – No. 4/2020.
- 3.10.3 Under this Project, the existing landscape resources, including vegetation, marsh or wetland and fishpond would be affected in multiple scale subject to the proposed works. Vegetation found within the LRs and LCAs would either be temporarily or permanently loss. After the completion of works, landscape mitigation measures such as tree compensation where space is available, reinstatement of affected landscaping area or fishpond in like for like basis and provision of buffer screen planting would be implemented. With the implementation of these mitigation measures, it is considered that residual impacts of the LRs and LCAs would be reduced to **Negligible to Slight** in the operational phase.
- 3.10.4 In terms of the landscape impact, a number of LRs would be preserved in total (i.e. LR1, LR2, LR5 and LR8). Among the remaining LRs, fishponds (LR3), marsh / wetland (LR4), mixed woodland (LR6) and grassland / shrubland (LR7) would have moderate impact significance before mitigation. Nevertheless, after the completion of works, landscape mitigation measures such as tree compensation where space is available, reinstatement of affected landscaping area or fishpond in like-for-like basis and provision of buffer screen planting would be implemented as appropriate. With the implementation of these mitigation measures, it is considered that residual impacts on most of these LRs would be reduced to **Slight** in operational phase.
- 3.10.5 Meanwhile, vegetation in village settlements (LR9), vegetation in developed area and roads (LR10) and roadside planting (LR11) would have slight impact significance before mitigation due to the proposed development. It is anticipated that residual impacts on these LRs would be reduced to **Negligible** in operational phase after the implementation of mitigation measures.
- 3.10.6 For LCAs, the most permanent works such as construction at-grade carriageway, associated structure and ancillary work, e.g. slope works, would be located within hillside landscape of Lok Ma Chau (LCA3), lowland rural landscape of Hoo Hok Wai (LCA4) and hillside landscape of Ma Tso Lung (LCA6). Hence, it is anticipated that the impact significance before mitigation would be moderate due to their high sensitivity. With the implementation of mitigation measures, the residual impact of these LCAs would be reduced to **Slight** in operational phase.
- 3.10.7 The proposed works within lowland rural landscape of Lok Ma Chau (LCA2) and lowland rural landscape of Ma Tso Lung (LCA5) would slightly alter the existing landscape character. It is assumed that there would be slight impact significance before mitigation to these LCAs. With the implementation of mitigation measures, the

residual impact would be reduced to **Negligible** in operational phase. For miscellaneous urban fringe landscape of Lok Ma Chau Loop (LCA1), the existing landscape character is similar to the proposed works, and it is assumed that there would be slight impact significance before mitigation. Hence, the residual impacts on this LCA would be reduced to **Negligible** in both construction phase and operational phase after the implementation of mitigation measures.

- 3.10.8 In terms of the visual impact, considered that the proposed works would have similar alignment to the existing infrastructures (i.e. Border Road) and minimal structural mass, the visual impact to the identified key public viewers would be ranging from **Negligible** to **Moderate**.
- 3.10.9 For VPs (i.e. VP1 and VP6) that viewing to Lok Ma Chau and Hoo Hok Wai, the proposed works are relatively minimal and with no significant visual blockages to existing visual elements. The anticipated visual impact of operational phase would be **Negligible**.
- 3.10.10 For VP (i.e. VP3) that viewing to She Leng and adjacent natural hillside landscape, As most of the proposed works are located at the foothill of Tai Shek Mo with blockage of existing visual elements, visual change would not be noticeable by viewers. The anticipated visual impact of operational phase would be **Slight**.
- 3.10.11 For VPs (i.e. VP2, VP4 and VP5) that viewing to Lei Yue Shan and adjacent natural hillside landscape, despite the proposed works would consider as new visual elements to the existing view, no significant visual blockages to existing key visual elements such as open sky and ridgeline of Lei Yue Shan. With the mitigation measures such as provision of greenery on slope and roadside area and aesthetically pleasing design of road and associated structures, the anticipated visual impact of operational phase for VP4 would be **Slight**, while the anticipated visual impacts operational phase for VP2 and VP5 would be **Moderate** in view of the medium to high sensitivity of these VPs.
- 3.10.12 Considering the scale and nature of the Project, it would inevitably result in certain levels of residual landscape impacts and visual impacts in relation to the loss of hillside vegetation from hilltop and from ground level. Nevertheless, the residual landscape impacts are localised and limited to the project extent only without affecting existing community, while the visual impacts are confined within the visual envelope either involving few to medium numbers of public viewers along hiking trail and paths. With the implementation of the proposed landscape and visual mitigation measures, the overall landscape residual impacts would be from **Negligible** to **Slight** in operational phase, and the overall visual impacts would be from **Negligible** to **Moderate** in operational phase.
- 3.10.13 The design, construction and operation of ECR would also fully comply with relevant ordinances, regulations, standards and guidelines. Hence, with full implementation of the recommended mitigation measures, unacceptable adverse residual landscape impacts and visual impacts are not expected, as evaluated based on the factors in Section 4.4.3 of the EIAO-TM.

4. ENVIRONMENTAL MONITORING AND AUDIT (EM&A)

- 4.1.1 The EIA Study of the Project has demonstrated its compliance with the EIAO-TM requirements. Actual impacts during the construction and operational phases of the Project will be monitored through a detailed EM&A programme. Full details of the programme are presented in a separate EM&A Manual associated with the EIA Report. The EM&A programme will provide management actions and detail the recommended mitigation measures to check the effectiveness of the recommended mitigation measures and compliance with relevant statutory criteria, thereby ensuring the environmental acceptability of the construction and operation of the Project.

5. SUMMARY OF ENVIRONMENTAL OUTCOMES

5.1.1 The EIA has provided an assessment of the potential environmental impacts associated with the construction and operation of the Project, based on the engineering design information available at this stage. The key outcomes are summarised in **Table 5.1**.

Table 5.1 Summary of Key Environmental Problems Avoided and Sensitive Areas Protected

| Design Approach | Environmental Problems Avoided and Sensitive Areas Protected |
|--|--|
| Adoption of environmentally friendly construction methods (refer to Section 2 of EIA report for details) | <ul style="list-style-type: none"> Adoption of off-site precast structures / modular integrated construction method for viaduct section to minimise the impacts on air quality, noise, water quality and waste during construction. |
| Adoption of wildlife friendly design to avoid potential wildlife injuries/mortality (refer to Section 8 of EIA report for details) | <ul style="list-style-type: none"> Provision of wildlife underpasses, and parapet along at-grade road and viaduct to minimise habitat fragmentation disturbance and reduce wildlife injuries/mortality (e.g. roadkill). |
| Provision of wetland and woodland compensation area (refer to Section 8 of EIA report for details) | <ul style="list-style-type: none"> Provision of wetland and woodland compensation area to compensate for habitat loss and enhance existing habitats to provide ecological functions to wildlife. |

6. CONCLUSION

- 6.1.1 The findings of the EIA provided information on the nature and extent of the environmental impacts likely to arise from the construction and operation of the Project. The EIA has, where appropriate, identified mitigation measures to ensure compliance with environmental legislation and standards. The summary of the environmental impacts arising from the Project is presented in **Table 6.1**.
- 6.1.2 Overall, the EIA concluded that the Project would comply with the requirements of the EIA Study Brief and EIAO-TM with the implementation of the proposed mitigation measures during the construction and operational phases. The schedule of implementation of the proposed mitigation measures has been provided in the EIA Report. An EM&A programme has also been recommended to check the effectiveness of the proposed mitigation measures.

Table 6.1 Summary of Environmental Impacts

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|--|---|--|--|
| Air Quality Impact | | | | | |
| Construction Impact | | | | | |
| Representative existing residential, commercial developments and government uses within 500m from the boundary of the Project Site. | <ul style="list-style-type: none"> With the implementation of the mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation and the mentioned air quality and odour mitigation measures, adverse construction air quality impact and odour impact would not be anticipated. | <ul style="list-style-type: none"> Annexes 4 and 12 of the EIAO-TM Air Quality Objectives (AQOs) | <ul style="list-style-type: none"> N/A | To minimise the exhaust emission from NRMMs during the construction phase, DEVB TC(W) No. 1/2015 (Emissions Control of NRMM in Capital Works Contracts of Public Works) shall be followed, and the following measures should be applied as far as practicable: <ul style="list-style-type: none"> Connect construction plant and equipment to main electricity supply and avoid use of diesel generators and diesel-powered equipment; Avoid exempted NRMMs; and Deploy electrified NRMMs Air quality mitigation measures stipulated in the | <ul style="list-style-type: none"> No residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>Air Pollution Control (Construction Dust) Regulation and good site practices listed below should be carried out to further minimise construction air quality impact.</p> <ul style="list-style-type: none"> • Regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • The construction will be carried out in sections or phases to minimise the impact on air quality for nearby air-sensitive receivers (ASRs). • Frequent watering for particularly dusty construction areas and areas close to ASRs. • Provide side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>owing to frequent usage, watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • The engine of the PMEs during idling shall be switched off. • Provision of not less than 3m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. Not less than 3.5m high hoarding should be used at the site boundary close to the ASRs with close proximity (e.g. A02, A12, A21). • Where possible, routing of vehicles and | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>positioning of construction plant should be at the maximum possible distance from ASRs.</p> <ul style="list-style-type: none"> • Locate all the dusty activities away from any nearby ASRs as far as practicable. • Close liaison with the contractors of the concurrent projects to avoid overlapping of heavy/dusty construction works as far as practicable. • All malodorous materials shall be placed as far as possible from any ASRs. • The stockpiled malodorous materials shall be covered entirely by plastic tarpaulin sheets. • The malodorous materials shall be removed from site as soon as possible and shall not be stockpiled | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>overnight at the site.</p> <ul style="list-style-type: none"> • Loading of the malodorous materials onto the dump trucks shall be controlled to avoid spillage. • Limiting the scale of excavation works at a time. • Containing the odorous excavated materials in airtight/watertight containers on-site. • A continuous dust monitoring programme will be implemented during the construction stage to enforce controls and modify method of work if dusty conditions arise and to ensure no adverse air quality impact during Construction phase and all nearby ASRs will not be subject to adverse construction air quality impact. <p>Guidelines stipulated in EPD's Recommended Pollution Control Clauses</p> | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|--|--|
| | | | | <p>for Construction Contracts should be incorporated in the contract document to abate construction air quality impacts. These clauses include:</p> <ul style="list-style-type: none"> The Contractor shall observe and comply with the Air Pollution Control Ordinance and its subsidiary regulations, particularly the Air Pollution Control (Open Burning) Regulation, Air Pollution Control (Construction Dust) Regulation, Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, Air Pollution Control (Fuel Restriction) Regulations and Air Pollution Control (Smoke) Regulations; In addition to the statutory requirements of the Regulations, the Contractor of the public works contracts shall also observe the | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|--|--|
| | | | | <p>requirements as set out in the government circulars, including DEVB's TC No, 13/2020 (Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts) and DEVB's TC No. 1/2015 (Emissions Control of NRMM in Capital Works Contracts of Public Works);</p> <ul style="list-style-type: none"> The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of his activities, and minimise the emission of air pollutants from construction plant and equipment; The Contractor shall ensure that there will be adequate water supply/storage for dust suppression; | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <ul style="list-style-type: none"> • The Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented; • For better smoke control, the Contractor shall not use diesel hammer for percussive piling; and • Before the commencement of any work, the Engineer may require the methods of working, plant, equipment and air pollution control system to be used on the site to be made available for inspection and approval to ensure that they are suitable for the project. | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|---|--|---|--|--|
| | | | | In order to help reduce carbon emission and pollution, timely application of temporary electricity and water supply should be made and electric vehicles should be adopted as far as practicable in accordance with DEVB TC(W) No. 13/2020 – Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts. | |
| Operation Impact | | | | | |
| Existing and planned residential, commercial developments and government uses within 500m from the boundary of the Project Site. | <p>NO₂</p> <ul style="list-style-type: none"> The 19th highest 1-hr average conc: 71.5 – 138.3 µg/m³. The 10th highest 24-hr average conc: 22.5 – 62.9 µg/m³. Annual average conc: 11.1 – 32.8 µg/m³. <p>RSP</p> <ul style="list-style-type: none"> The 10th highest 24-hr average conc: 53.6 – 56.7 µg/m³. | <p>NO₂</p> <ul style="list-style-type: none"> 1-hr average conc: 200 µg/m³ (Number of exceedances allowed: 18). 24-hr average conc: 120 µg/m³ (Number of exceedances allowed: 9). Annual average conc: 40 µg/m³. <p>RSP</p> | <ul style="list-style-type: none"> N/A | No adverse air quality impact during the operation of the Project is anticipated. Mitigation measures are thus considered not necessary during the operation phase. | <ul style="list-style-type: none"> No residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|--|--|---|---|--|
| | <ul style="list-style-type: none"> Annual average conc: 20.5 – 22.3 µg/m³. <p>FSP</p> <ul style="list-style-type: none"> The 19th highest 24-hr average conc: 31 – 33.3 µg/m³. Annual average conc: 12.6 – 13.8 µg/m³. | <ul style="list-style-type: none"> 24-hr average conc: 75 µg/m³ (Number of exceedances allowed: 9). Annual average conc: 30 µg/m³. <p>FSP</p> <ul style="list-style-type: none"> 24-hr average conc: 37.5 µg/m³ (Number of exceedances allowed: 18). Annual average conc: 15 µg/m³. | | | |
| Noise Impact | | | | | |
| Construction Impact | | | | | |
| Representative existing noise sensitive developments (e.g. residential and educational) within 300m from the boundary of the Project Site. | <ul style="list-style-type: none"> Potential construction noise impact would arise from the use of PME during construction phase of the Project. CNMP to be required. | <ul style="list-style-type: none"> Annexes 5 and 13 of the EIAO-TM NCO | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> The good site practices listed below would be followed during construction works:- - Only well-maintained plant would be operated on-site and would be serviced regularly during the construction period; - Silencers or mufflers on construction equipment would be utilised and properly maintained | <ul style="list-style-type: none"> No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>during the construction period as practicable;</p> <ul style="list-style-type: none"> - Mobile PME would be sited as far from NSRs as possible; - PME (such as trucks) that may be in intermittent use would be shut down between work periods or would be throttled down to minimum; - Materials stockpiles and other structures would be effectively utilised, wherever practicable, in screening noise from on-site construction activities. • Quieter construction method, such as silent piling by “Press-in” Method, to carry out sheet piling works. • Carry out the precasting works in the fabrication yard away from the site, reduce the amount of mechanical equipment used on site such as | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|---|--|
| | | | | <p>concrete mixing trucks, and allowing non-linear bridge deck construction across multiple work fronts within the shorter duration.</p> <ul style="list-style-type: none"> • Use of non-percussive equipment and method, such as hydraulic crusher, chemical expansion agent, quieter type blade saw and bursting system to carry out demolition/concrete breaking/removal activities as far as practicable. • Adopting Quality Powered Mechanical Equipment (QPME) is recommended. The use of QPME associated with the construction works is prescribed in EPD's QPME database, which contains the sound power levels (SWLs) for quality/quiet PME of various types, brands and models. • Select appropriate | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|--|---|--|---|--|
| | | | | quieter construction method / equipment to minimise any potential construction noise impact <ul style="list-style-type: none"> • Use of movable temporary noise barriers close to noisy plant, and full enclosure to shelter relatively static plant including air compressor and generator. • Use of full enclosure to shelter relatively static plant including air compressor and generator. | |
| Operation Impact (Road Traffic Noise) | | | | | |
| Representative existing and planned residential developments, educational institutions, etc. within 300m from the boundary of the Project Site | <ul style="list-style-type: none"> • Predicted overall noise levels: <ul style="list-style-type: none"> • For existing NSR: 54 – 73 dB(A) • For planned NSR: 67- 78 • Predicted noise levels of the Project roads: <ul style="list-style-type: none"> • For existing NSR: 41 – 73 dB(A) • For planned NSR: 54 - | <ul style="list-style-type: none"> • Annexes 5 and 13 of the EIAO-TM • EIAO-GN 12/2023 • L_{10(1 hour)} 70dB(A) at 1m from the façade of residential dwellings | <ul style="list-style-type: none"> • Exceedance of the noise criteria:- <ul style="list-style-type: none"> • For existing NSR: up to 3 dB(A) • For planned NSR: up to 8.0 dB(A) • The exceedances are dominantly contributed by the | Low Noise Road Surfacing (for “Project Roads near Ma Tso Lung Development” Option): <ul style="list-style-type: none"> • Approx. 530m at Project Roads near Ma Tso Lung Development • Approx 320m at Project Roads near Ma Tso Lung Road | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|--|--|--|--|--|
| | 70 • Contribution from Project roads: • For existing NSR: 18.2 dB(A) • For planned NSR: up to 2.0 dB(A). | | other roads at the representative NSRs | Provision of at-receiver mitigation measures such as acoustic windows/balconies. | |
| Operation Impact (Fixed Noise) | | | | | |
| Representative existing and planned residential developments, educational institutions, etc. within 300m from the boundary of the Project Site | • Adverse fixed noise impact is not anticipated due to proposed fixed noise sources with good design and mitigation measures, and environmental monitoring and audit • FNMP to be required. | • EIAO-TM Annex 5 and Annex 13 • IND-TM | • No exceedance predicted | • Direct mitigation measures include using quieter fixed plant, use of silencer, installation of acoustic louvre, installation of noise barrier, and installation of noise enclosure, etc. would be recommended to minimise the potential fixed noise sources impact from the proposed fixed noise sources | • No adverse residual impacts anticipated. |
| Water Quality Impact | | | | | |
| Construction Impact | | | | | |
| Representative WSRs within 500m from the boundary of the Project Site | The potential sources of water quality impact associated with the construction works include: | • Annexes 6 and 14 of the EIAO-TM • Water Quality Objectives for Deep Bay WCZ | • N/A | • Construction of underpass road across the LMC Meander would require installation of cofferdam to enclose the | • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|--|--|---|--|
| | <ul style="list-style-type: none"> • Construction works in LMC Meander; • Wastewater from general construction activities; • Construction site run-off; • Construction works near watercourses; • Diversion of watercourse; • Removal of ponds and wet areas; • Accidental spillage of chemicals; • Sewage from construction workforce; and • Groundwater infiltration arising from formation of underpass/depressed road | <ul style="list-style-type: none"> • Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) • Practical Note for Professional Persons (ProPECC) PN 2/24 • Environmental, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 5/2005 | | <p>excavation works. The construction should be conducted by phases and only one cofferdam should be installed in each stage. Cofferdams should be designed by the Contractor which fulfil the requirements in DSD Technical Circular No. 1/2017 "<i>Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater System</i>".</p> <ul style="list-style-type: none"> • Water pumps should be used to collect any construction site runoff and ingress/seepage water within the cofferdam to the on-site wastewater treatment facilities for treatment to satisfactory levels before discharge. • Silt curtain should be deployed to completely enclose the cofferdam prior to conduct cut-and-cover construction works in the LMC Meander, and | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|--|--|
| | | | | installation and removal of cofferdams. <ul style="list-style-type: none"> • Mitigation measures and good site practices in ProPECCPN 2/24 "Construction Site Drainage" • Practices in ETWB TC (Works) No. 5/2005 "Protection of natural streams / rivers from adverse impacts arising from construction works" • Waste Disposal Regulation • Provision of interim treatment facilities, such as chemical toilets, for construction workforce | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|--|---|---|--|
| Operation Impact | | | | | |
| Representative WSRs within 500m from the boundary of the Project Site | Potential water quality impacts associated with the operation phase include: <ul style="list-style-type: none"> • Non-point source surface run-off from new paved areas | <ul style="list-style-type: none"> • Annexes 6 and 14 of the EIAO-TM • Water Quality Objectives for Deep Bay WCZ • Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) • ProPECC PN 1/23 | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Stormwater Management Practices and Stormwater Pollution Control Plan to reduce non-point source pollution. • Adequate design in silt trap for the new road drainage which take into account the guidelines in ProPECC PN 1/23 "Drainage Plan subject to Comments by the EPD". | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |
| Waste Management Implications | | | | | |
| Construction Impact | | | | | |
| C&D materials, excavated sediment, chemical wastes and general refuse | <ul style="list-style-type: none"> • 5,900 m³ of non-inert materials and 307,200 m³ (15,700 m³ will be reused) of inert materials will be generated from construction works of the Project such as site clearance, excavation/foundation/piling works, slope works and other construction activities. | <ul style="list-style-type: none"> • Annexes 7 and 15 of the EIAO-TM. • Waste Disposal Ordinance (Cap. 354) • Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Implementation of waste management hierarchy, good site practices, waste reduction measures and proper storage, collection and transportation of waste. | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|--|---|---|--|
| | <ul style="list-style-type: none"> • Around 100,700 m³ of excavated sediment expected to be generated from construction of underpass/depressed road section. • Small quantity of chemical wastes in the order of a few cubic meters per month. • Around 65kg per day of general refuse will be generated from construction works and on-site staff and workers. | <ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance (Cap. 28) • Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK) | | | |
| Operation Impact | | | | | |
| Chemical wastes and general refuse | <ul style="list-style-type: none"> • A few cubic meters per month of chemical waste will be anticipated. • Amount of general refuse will be insignificant and will be removed during maintenance works | <ul style="list-style-type: none"> • Waste Disposal Ordinance (Cap. 354) | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • No mitigation measures to be provided as the Project would not cause adverse impacts. | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |
| Land Contamination | | | | | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|---|--|---|--|--|
| <p>Onsite construction workers and future user</p> | <ul style="list-style-type: none"> Potential land contaminating land use was identified at Site MTL-001. | <ul style="list-style-type: none"> Annex 19 of the EIAO-TM Guidance Note for Contaminated Land Assessment and Remediation (EPD, 2023) Practice Guide for Investigation and Remediation of Contaminated Land (EPD, 2023) Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (EPD, 2023) | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> It is recommended to re-appraise the whole area within the Project boundary once the Project Site is resumed and fully accessible prior to development. Further works, including site re-appraisal, SI works as well as submission of a CAP and CAR for EPD's endorsement are recommended to be carried out after the Project site is handed over to the PP for development. If contaminated soil and/or groundwater is identified; remediation should be carried out according to the EPD approved RAP and a RR should be submitted to EPD for agreement after completion of the remediation works. No construction or development works should be carried out on potentially contaminated site prior to EPD approval | <ul style="list-style-type: none"> No adverse residual impact is anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|--|---|--|--|
| | | | | of the CAP, and CAR and/or RR, if necessary. | |
| Ecological impacts | | | | | |
| Construction Impact | | | | | |
| Ecological resources likely to be impacted by the Project | <ul style="list-style-type: none"> • Permanent loss of wetland habitats (pond and other freshwater habitats). • Permanent loss of woodland habitat. • Temporary loss of wetland habitats (pond and other freshwater habitats). • Fragmentation of wetland and terrestrial habitats. • Potential obstruction of major flight paths. • Direct impact on species of conservation importance and associated habitats. • Potential direct injury / mortality of wildlife species. • Indirect disturbance impact (e.g. air quality, noise, light pollution, traffic and visual) on sites of conservation importance, natural habitats and associated wildlife in the vicinity. | <ul style="list-style-type: none"> • Annex 8 and Annex 16 of EIAO-TM • EIAO Guidance Notes Nos. 3/2010, 6/2010, 7/2010 and 10/2010 | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Phased construction in wetland sensitive area (Zone 1, Zone 2 and Zone 3 as illustrated in 60722948/A10/Figure 3.2b). • Wetland compensation in OWCA, and enhancement in remaining area of Pond 36-38. • Off-site woodland compensation. • Pre-construction survey to confirm the boundary of Seasonal Active Night Roost. • Pre-construction survey and transplantation / translocation, and nest control measures for species of conservation importance. • Pre-construction surveys for otter holts or | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---------------------------------|--|--|--|
| | | | | <p>natal dens.</p> <ul style="list-style-type: none"> • Time control (before 0900h and after 1700h during October to April of the following year) of noisy construction activities (with the use of PME) of 100m buffer from the Seasonal Active Night Roost. • Time control (before 0900h and after 1700h throughout the year) of aboveground noisy construction activities (with the use of PME) of wetland sensitive area (Zone 1, Zone 2 and Zone 3 as illustrated in 60722948/A10/Figure 3.2b), unless fully enclosed conditions are provided through the provision of an appropriate cover or enclosure. • During construction, no above-ground structures exceeding 15m above the existing ground level | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|--|
| | | | | <p>are allowed in Zone 1, Zone 2, and Zone 3 as illustrated in 60722948/A10/Figure 3.2b during the period from October to March of the following year. The maximum existing ground level in these zones is +5.5mPD; therefore, no above-ground structure may exceed +20.5mPD (i.e., +5.5mPD + 15m).</p> <ul style="list-style-type: none"> • Provision of a temporary aboveground wildlife crossing to facilitate movement of non-flying animals in impacted wetland area. • Good site practices with mitigation measures for noise, dust, water quality and lighting impacts. | |
| Operation Impact | | | | | |
| Ecological resources likely to be impacted by the Project | <ul style="list-style-type: none"> • Disturbance impacts (e.g. air quality, noise, light pollution, traffic and visual) to the site of conservation importance, natural habitats and | <ul style="list-style-type: none"> • Annex 8 and Annex 16 of EIAO-TM • EIAO Guidance Notes Nos. 3/2010, | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Wetland compensation in OWCA's, and wetland enhancement in Area 4 (the reinstated Pond 36-38). | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---|--|--|--|
| | associated wildlife in the vicinity. • Fragmentation of terrestrial habitats. | 6/2010, 7/2010 and 10/2010 | | <ul style="list-style-type: none"> • Off-site woodland compensation. • Provision of wildlife underpasses with solid parapet along the ECR. These underpasses would allow movement of non-flying mammals, reducing the risk of road collisions. • Incorporation of bird-friendly features such as patterned stickers on fixed noise barriers at the proposed E&M plant room and drainage pumping room to minimise the risk of bird collisions. | |
| Fisheries Impact | | | | | |
| Fisheries resources and habitats likely to be impacted by the Project | <ul style="list-style-type: none"> • Negligible impacts from loss of fishponds. • Deterioration of water quality and hydrological condition. • Bund stability. • Blockage of access. | <ul style="list-style-type: none"> • Annex 9 and Annex 17 of EIAO-TM • Water Pollution Control Ordinance (Cap. 358) | N/A | <ul style="list-style-type: none"> • Maintaining bund stability. • Minimisation of potential water quality impacts. • Control of construction site run-off. • Control of construction-related activities. • Implementation of good | <ul style="list-style-type: none"> • No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|--|---|---|--|--|
| | | | | site practices. | |
| Impact of Cultural Heritage | | | | | |
| Construction Impact | | | | | |
| Cultural heritage resources | <ul style="list-style-type: none"> Potential indirect impacts or ground borne vibration, tilting and settlement would be anticipated to MacIntosh Fort (Ma Tso Lung) (HB303) (grade 2 historic building) during the construction phase. No archaeological impact is anticipated. | <ul style="list-style-type: none"> Antiquities and Monuments Ordinance (Cap.53); Environmental Impact Assessment Ordinance (EIAO) (Cap.499) and EIAO-TM Annexes 10 and 19 | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> The monitoring for HB303 should be incorporated with a set of Alert, Alarm and Action (3As) system following AMO's monitoring requirements for grade 2 historic building, as well as vibration-sensitive and dilapidated buildings against continuous vibration. An Authorized Person (AP) should be employed to carry out the condition survey and structural assessment to inspect the physical condition and structural integrity of the building and provide advice on the subsequent mitigation measures based on the assessment result. | <ul style="list-style-type: none"> No adverse residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| Operation Impact | | | | | |
| Cultural heritage resources | <ul style="list-style-type: none"> No impact would be anticipated during the operation phase. | <ul style="list-style-type: none"> Antiquities and Monuments Ordinance (Cap.53); Environmental Impact Assessment Ordinance (EIAO) (Cap.499) and EIAO-TM Annexes 10 and 19 | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> No mitigation measure would be required. | <ul style="list-style-type: none"> No adverse residual impacts anticipated. |
| Landscape and Visual | | | | | |
| Construction Impact | | | | | |
| Existing Landscape Resources (LRs) within the assessment area | <ul style="list-style-type: none"> Moderate landscape impact on LR3 (Fishponds), LR4 (Marsh / Wetland), LR6 (Mixed Woodland), LR7 (Grassland / Shrubland). Slight landscape impact on LR9 (Vegetation in Village Settlement), LR10 (Vegetation in Developed Area), LR11 (Roadside Planting). Negligible landscape impact on LR1 (Natural Stream / River Course), LR2 (Engineered River Channel), LR5 (Man-made Marsh / | <ul style="list-style-type: none"> Annexes 10 and 18 of the EIAO-TM Environmental Impact Ordinance Guidance Note No. 8/2023 | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> CM1 - Trees without impact from the proposed works should be retained and any existing trees unavoidably affected by the works should be transplanted as far as possible in accordance with DEVB TC(W) No. 4/2020. CM2 - Erection of decorative screen hoarding or hoarding compatible with the surrounding setting. CM3 - Construction | <ul style="list-style-type: none"> Moderate landscape impact on LR6. Slight landscape impact on LR3, LR4, LR7, LR9. Negligible landscape impact on LR1, LR2, LR5, LR8, LR10, LR11. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|--|---|---|--|--|
| Existing Landscape Character Areas (LCAs) within the assessment area | <p>Wetland), LR8 (Agricultural Fields).</p> <ul style="list-style-type: none"> Moderate landscape impact on LCA3 (Hillside Landscape of Lok Ma Chau), LCA4 (Lowland Rural Landscape of Hoo Hok Wai), LCA6 (Hillside Landscape of Ma Tso Lung). Slight landscape impact on LCA1 (Miscellaneous Urban Fringe Landscape of the Loop), LCA2 (Lowland Rural Landscape of Lok Ma Chau), LCA5 (Lowland Rural Landscape of Ma Tso Lung). | <ul style="list-style-type: none"> Annexes 10 and 18 of the EIAO-TM Environmental Impact Ordinance Guidance Note No. 8/2023 | <ul style="list-style-type: none"> N/A | <p>facilities and activities on work sites and areas should be carefully managed and controlled, including height and disposition /arrangement to minimise any potential adverse landscape impacts.</p> <ul style="list-style-type: none"> CM4 - Reinstatement of the temporarily affected landscaped area within assessment area in like-for-like basis would be implemented to restore the existing natural environment as far as possible. CM5 - Coordinated implementation programme with concurrent projects to minimise impacts and where possible reduce the period of disturbance. | <ul style="list-style-type: none"> Moderate landscape impact on LCA6. Slight landscape impact on LCA2, LCA3, LCA4, LCA5. Negligible landscape impact on LCA1. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|--|---|---|--|---|
| Existing Landscape Resources (LRs) within the assessment area | <ul style="list-style-type: none"> Moderate landscape impact on LR3 (Fishponds), LR4 (Marsh / Wetland), LR6 (Mixed Woodland), LR7 (Grassland / Shrubland). Slight landscape impact on LR9 (Vegetation in Village Settlement), LR10 (Vegetation in Developed Area), LR11 (Roadside Planting). Negligible landscape impact on LR1 (Natural Stream / River Course), LR2 (Engineered River Channel), LR5 (Man-made Marsh / Wetland), LR8 (Agricultural Fields). | <ul style="list-style-type: none"> Annexes 10 and 18 of the EIAO-TM Environmental Impact Ordinance Guidance Note No. 8/2023 | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> OM1 - Aesthetically pleasing design as regard to the form, material and finishes should be incorporated into all aboveground structures, roads, viaducts, ancillary buildings and other associated engineering facilities so as to blend in the structures with the adjacent landscape and visual context. OM2 - Buffer screen planting, including shrubs to provide screening. OM3 - As far as practicable, compensatory tree planting requirement of 1:1 in terms of number in accordance with DEVB TC(W) No. 4/2020 for compensation of felled trees subject to the availability of space and agreement made with relevant departmental parties. OM4 - Temporary loss of | <ul style="list-style-type: none"> Slight landscape impact on LR3, LR4, LR6, LR7. Negligible landscape impact on LR1, LR2, LR5, LR8, LR9, LR10, LR11. |
| Existing Landscape Character Areas (LCAs) within the assessment area | <ul style="list-style-type: none"> Moderate landscape impact on LCA3 (Hillside Landscape of Lok Ma Chau), LCA4 (Lowland Rural Landscape of Hoo Hok Wai), LCA6 (Hillside Landscape of Ma Tso Lung). Slight landscape impact on LCA1 (Miscellaneous Urban Fringe Landscape of the Loop), LCA2 (Lowland Rural | <ul style="list-style-type: none"> Annexes 10 and 18 of the EIAO-TM Environmental Impact Ordinance Guidance Note No. 8/2023 | <ul style="list-style-type: none"> N/A | <ul style="list-style-type: none"> OM1 - Aesthetically pleasing design as regard to the form, material and finishes should be incorporated into all aboveground structures, roads, viaducts, ancillary buildings and other associated engineering facilities so as to blend in the structures with the adjacent landscape and visual context. OM2 - Buffer screen planting, including shrubs to provide screening. OM3 - As far as practicable, compensatory tree planting requirement of 1:1 in terms of number in accordance with DEVB TC(W) No. 4/2020 for compensation of felled trees subject to the availability of space and agreement made with relevant departmental parties. OM4 - Temporary loss of | <ul style="list-style-type: none"> Slight landscape impact on LCA3, LCA4, LCA6. Negligible landscape impact on LCA1, LCA2, LCA5. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|--|---|---|---|--|---|
| | Landscape of Lok Ma Chau), LCA5 (Lowland Rural Landscape of Ma Tso Lung). | | | fishponds along ECR by the road widening and improvement works will be largely reinstated. These ponds will be used for both functional or amenity purposes to enhance the existing landscape and visual context. | |
| Existing Key Public Viewers / VPs within the assessment area | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Annexes 10 and 18 of the EIAO-TM • Environmental Impact Ordinance Guidance Note 8/2023 | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • OM5 - Landscape treatments on slope or retaining structure in accordance with GEO Publication No. 1/2011 – Technical Guidelines on Landscape Treatment for Slopes shall be adopted subject to the availability of space and agreement made with relevant departmental parties. | <ul style="list-style-type: none"> • Moderate visual impact on VP2 (View from Ma Tso Lung Eco Park), VP5 (View from She Leng towards Ma Tso Lung). • Slight visual impact on VP3 (View from Macintosh Fort (Ma Tso Lung), VP4 (View from footpath of Ma Tso Lung San Tsuen). • Negligible visual impact on VP1 (View from Ma Tso Lung Fishpond), VP6 (View from She Leng towards Hoo Hok Wai). |