Appendix 14.1 Summary of Environmental Impacts Associated with the Project

Air Quality Impact

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)
Construction Phase					
Existing and planned ASRs within the 500m assessment area	Air quality at ASRs may be deteriorated with the following pollution sources: • Fugitive dust caused by earth works including site clearance, excavation of the proposed drainage channel, materials handling, loading and unloading etc. for the construction of the TKL04 and TKL05; • Fugitive dust caused by earth works including site clearance, excavation and backfilling activities for the construction of the u-channel and drainage pipelines; • Fugitive dust caused by formwork and reinforcement works; • Wind erosion of open sites and stockpiling areas; • Gaseous emissions from diesel-powered construction equipment; and • Odour from the excavated stream bed materials.	• Air Quality Objectives • EIAO-TM • Air Pollution Control (Construction Dust) Regulation • Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation	None	• Implement relevant dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, and good site practices. • Regular maintenance of construction equipment deployed on-site to prevent black smoke emission. • Connect construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable. • Proper storage, handling and timely disposal of odorous excavated materials. • Non-road vehicles are required to meet the emission standards and	No adverse residual impact

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)
				smoke requirements as stipulated under the *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation*.	
Operation Phase					
Existing and planned ASRs within the 500m assessment area	No adverse air quality impact during operation	• Air Quality Objectives • EIAO-TM	None	• Temporarily stockpile odorous excavated material as far away from ASRs as possible; and • Temporary stockpiles of odorous excavated material should be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 24 hours to avoid any odour nuisance arising.	No adverse residual impact

Noise Impact

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)
Construction Phase					
Existing and planned NSRs within the 300m assessment area	• 74 to 93 dB(A)	• EIAO-TM • Leq (30 min) 75dB(A) for residential dwellings • Leq (30 min) 70dB(A) for schools during normal teaching hour • Leq (30 min) 65dB(A) for schools during examination period	Exceedance of noise criteria up to 16 dB(A) for residential dwellings	• Good site practice; • Use of quiet PME; • Adoption of temporary noise barrier or noise enclosure; and • Scheduling of PME/construction activities.	No adverse residual impact
Operation Phase					
Existing and planned NSRs within the 300m assessment area	No adverse noise impact during operation	• EIAO-TM	None	No mitigation is required	No adverse residual impact

Water Quality Impact

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)
Construction Phase					
Existing and planned WSRs, including those at the Conservation Area and along Shenzhen River (Yuen Leng Chai, Hoo Hok Wai, Ha Wan Tsuen and Sam Po Shue), Mai Po Marsh SSSI, Inner Deep Bay Ramsar Site near the Shenzhen River estuary, area of fish pond and oyster culture area in Deep Bay	• Temporary flow diversion and excavation works; • Sewage discharges from the construction work force; • Widening of Drainage Channels; • Construction runoff and drainage; and • Pollutants entering the receiving waters due to accidental spillage /uncontrolled discharge from the general construction activities.	• EIAO-TM • Water Pollution Control Ordinance (WPCO); • Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM- ICW); • Environmental Impact Assessment Ordinance (Cap. 499. S.16) and the Technical Memorandum on EIA Process (EIAO-TM), Annexes 6 and 14; • Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN1/94); • ETWB Technical Circular (Works) No. 5/2005 Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works • Drainage Services Department Practice Note No. 3/2021: Guidelines on Design for Revitalisation of River Channel; and	Exceedance of noise criteria up to 16 dB(A) for residential dwellings	• Adopt good site practices. • Implementing proper site management measures to control site runoff and drainage following the guidelines provided in ProPECC PN 1/94. • Use of less or smaller construction plants may be specified in areas close to the water courses to reduce the disturbance to the surface water. • Proper treatment of wastewater before discharge in accordance with WPCO. • Proper storage, handling and disposal of chemicals. • Response procedures for accidental spillage or leakage of chemicals • Water quality monitoring during construction.	No adverse residual impact

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)
		• Hong Kong Planning Standards and Guidelines (HKPSG)			
Operation Phase					
Existing and planned WSRs, including those at the Conservation Area and along Shenzhen River (Yuen Leng Chai, Hoo Hok Wai, Ha Wan Tsuen and Sam Po Shue), Mai Po Marsh SSSI, Inner Deep Bay Ramsar Site near the Shenzhen River estuary, area of fish pond and oyster culture area in Deep Bay	• Maintenance and desilting works within the proposed drainage channel to remove excessive silt, vegetation, debris and obstructions within the drainage channel which may lead to disturbance and re-suspension of river sediments and thereby affecting water quality; • Changes in hydrodynamic conditions, water quality and local erosion and sedimentation patterns during the operation of the drainage channel; and • Potential effect of brackish tidal influence from Inner Deep Bay or Lower Ping Yuen River.	• EIAO-TM • Water Pollution Control Ordinance (WPCO); • Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM- ICW); • Environmental Impact Assessment Ordinance (Cap. 499. S.16) and the Technical Memorandum on EIA Process (EIAO-TM), Annexes 6 and 14; • Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN1/94); • ETWB Technical Circular (Works) No. 5/2005 Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works • Drainage Services Department Practice Note No. 3/2021: Guidelines on	None	• Good site practice for removal of excessive silt, vegetation, debris and obstruction	No adverse residual impact

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)
		Design for Revitalisation of River Channel; and • Hong Kong Planning Standards and Guidelines (HKPSG)			

Waste Management

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)
Construction Phase					
C&D materials, sediment, general refuse, and chemical waste	• Approximately 217,130 m3 of C&D material will be generated, of which 119,520 m3 will be reused on-site and 86,291 m3 will be disposed off-site • Approximately 11,319 m3 of C&D waste • Approximately 39 kg/day of general refuse • Chemical waste dependent on the contractor's on-site maintenance programme and the number of equipment and vehicles used on-site	• EIAO-TM • Waste Disposal Ordinance (Cap 354); • Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C); • Land (Miscellaneous Provisions) Ordinance (Cap 28); and • Public Health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisances Regulation.	None	• Avoidance, minimization, recycling, treatment and safe disposal of waste. • Good waste management and control practices to avoid generation of excessive amount of waste. • Sediment should be excavated, transported and disposed of in a manner to minimize adverse environmental impacts. • Proper storage, handling and disposal of chemicals. • Proper storage, recycling and disposal of general refuse	No adverse residual impact
Operation Phase					
Sediment and vegetation growth	No adverse impact during operation	• EIAO-TM • Waste Disposal Ordinance (Cap 354); • Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C);	None	• Good site practice for handling generated wastes during maintenance	No adverse residual impact

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)
		• Land (Miscellaneous Provisions) Ordinance (Cap 28); and • Public Health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisances Regulation.			

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)
Construction Phase					
Potential contamination hotspots in the Area A, B1 and B2 were used as open storage, container storage, warehouses and temporary offices	• Chemicals of Concerns (COCs) include metals, VOCs, SVOCs and PCRs	• EIAO-TM • Dangerous Goods Ordinance (Cap 295); • Water Pollution Control Ordinance (WPCO) (Cap 358); • Waste Disposal Ordinance (WDO) (Cap 354); • Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C); and • Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	None	• Re-appraisal after land resumption at Area A, Area B1 and Area B2, submission of CAP(s), SI works and Contamination Assessment Report (CAR(s)) / Remediation Action Plan (RAP(s)) • Biological treatment and physical / chemical treatment.	No adverse residual impact
Operation Phase					
Potential contamination hotspots in the Area A, B1 and B2 were used as open storage, container storage, warehouses and temporary offices	No land contamination during operation	• EIAO-TM • Dangerous Goods Ordinance (Cap 295); • Water Pollution Control Ordinance (WPCO) (Cap 358); • Waste Disposal Ordinance (WDO) (Cap 354); • Waste Disposal	None	• Good site practice for handling generated wastes during maintenance	No adverse residual impact

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)
		(Chemical Waste) (General) Regulation (Cap 354C); and • Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.			

Ecological Impact

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)
Construction Phase					
The works area within the Project site and 500m study area. Key ecological sensitive receivers include • Kan Tau Wai Fung Shui Wood • Ping Che Egretry • Aquatic habitats, including mudflats, marshes, mangroves and streams outside 500m Study Area • 38 species of conservation importance for fauna and flora communities • Four vascular plant species, two mammal species, 29 bird species and three herpetofauna species of conservation importance	Direct Impact • None of the flora species of conservation importance are significantly affected by the drainage improvement works. • Majority of the fauna species of conservation importance are not significantly affected by the drainage improvement works. • Chinese Bullfrog may be directly affected by the construction works Indirect Impact • Dust generation, waste dumping, water pollution from uncontrolled site runoff, construction noise and increased human activities. • Barrier hindering the breeding herons from travelling between their breeding and foraging sites would require them habituating the barrier by adjusting their flight altitude, distance or direction, which would demand higher energy consumption and may indirectly affect the breeding successful rate.	• EIAO-TM • Forests and Countryside Ordinance (Cap 96); • Wild Animals Protection Ordinance (Cap 170); • Country Parks Ordinance (Cap. 208) • Protection of Endangered Species of Animals and Plants Ordinance (Cap 586); • Development Bureau Technical Circular (Works) No. 4/2020, Tree Preservation • Development Bureau Technical Circular (Works) No. 6/2015, Maintenance of Vegetation and Hard Landscape Features • Hong Kong Plant Database of Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department • Hong Kong Biodiversity Database of Agriculture, Fisheries and Conservation Department	None	• Avoidance of tree felling as far as possible. If avoidable, trees should be transplanted to the receptor site or compensated with a minimum ratio of 1:1. • Site rehabilitation by planting native trees and vegetation that occur in adjacent woodland. • Pre-construction survey to identify species of conservation importance for preservation (e.g. Chinese Bullfrag) • Avoidance of construction works within 100m radius from the egretry during breeding season. • Monthly egretry survey to be conducted during breeding months in construction period. • Careful phasing of construction activities. • Good site practice and noise management	No adverse residual impact

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 Phase					
The works area within the Project site and 500m study area. Key ecological sensitive receivers include • Kan Tau Wai Fung Shui Wood • Ping Che Egretry • Aquatic habitats, including mudflats, marshes, mangroves and streams outside 500m Study Area • 38 species of conservation importance for fauna and flora communities • Four vascular plant species, two mammal species, 29 bird species and three herpetofauna species of conservation importance	No ecological impact during operation	• EIAO-TM • Forests and Countryside Ordinance (Cap 96); • Wild Animals Protection Ordinance (Cap 170); • Country Parks Ordinance (Cap. 208) • Protection of Endangered Species of Animals and Plants Ordinance (Cap 586); • Development Bureau Technical Circular (Works) No. 4/2020, Tree Preservation • Development Bureau Technical Circular (Works) No. 6/2015, Maintenance of Vegetation and Hard Landscape Features • Hong Kong Plant Database of Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department • Hong Kong Biodiversity Database of Agriculture, Fisheries and Conservation Department	None	• Good site practice for handling generated wastes during maintenance • Only well-maintained plant to be operated on-site	No adverse residual impact

Fisheries Impact

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)
Construction Phase					
Fisheries resources within 500m study area	Indirect Impact Effluent with high concentrations of suspended solids and elevated pH indirectly affect the pond fish culture activities in the NWNT area	• EIAO-TM • Fisheries Protection Ordinance (Cap. 171) • Water Pollution Control Ordinance (Cap. 358)	None	Implement water quality mitigation measures	No adverse residual impact
Operation Phase					
Fisheries resources within 500m study area	No adverse impact anticipated.	• EIAO-TM • Fisheries Protection Ordinance (Cap. 171) • Water Pollution Control Ordinance (Cap. 358)	None	No mitigation is required	No adverse residual impact

Cultural Heritage Impact

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)
Construction Phase					
Cultural heritage resources within 300m study area	Direct Impact • Direct impact is not anticipated. Indirect Impact • Potential construction vibration impact, settlement and tilting may be a concern for HB14, HB15, HB16. HB43, HB44, HB46, HB48, HB49, HB50 & HB72 • Rituals held at the shrine may be affected for HB40, HB51, HB53, HB54, HB55 & HB56	• EIAO-TM • Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and the associated Technical Memorandum on the EIA Process (EIAO TM); • Antiquities and Monuments Ordinance (Cap 53) (A&M Ordinance); • Guideline for Cultural Heritage Impact Assessment; and • Hong Kong Planning Standards and Guidelines (HKPSG).	None	Implement mitigation measures such as condition survey and vibration monitoring	No adverse residual impact
Operation Phase					
Cultural heritage resources within 300m study area	No adverse impact anticipated.	• EIAO-TM • Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and the associated Technical Memorandum on the EIA Process (EIAO TM); • Antiquities and Monuments Ordinance (Cap 53) (A&M Ordinance); • Guideline for Cultural	None	No mitigation is required	No adverse residual impact

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)
		Heritage Impact Assessment; and • Hong Kong Planning Standards and Guidelines (HKPSG).			

Landscape and Visual Impact

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)
Construction Phase					
Existing Landscape Resources (LRs) and Landscape Character Areas (LCAs) and Visually Sensitive Receivers (VSRs) within the assessment area	**Key Affected LRs:** Moderately Adverse: • LR 4 – Woodland • LR 7 – Agricultural Land Substantially Adverse: • LR 2 Water Course **Key Affected LCAs:** Moderately Adverse: • LCA 3 - Lowland Agricultural Landscape Substantially Adverse: • None **Key Affected VSRs:** Moderately Adverse: • R-01 Residents of Fung Wong Wu • R-02 Residents of Tong Fong • R-04 Residents of Sing Ping Village • R-05 Residents of Village between Tai Po Tin and Ping Che • R-06 Residents of Tai Po Tin • R-10 Residents of Ping Yeung • O-01 Caritas Nursery School	• EIAO-TM • EIAO Guidance Note 8/2010; • EIA Study Brief No. ESB-322/2019; • Hong Kong Planning Standards and Guidelines; • Town Planning Ordinance (Cap 131); • Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislation the Forestry Regulations; • Country Parks Ordinance (Cap 208); • Territorial Development Strategy Review: 1995; • DEVB TCW No.04/2020 – Tree Preservation; and • DEVB TCW No. 05/2020 – Registration and Preservation of Old and Valuable Trees (OVT); • DEVB TCW No. 6/2015 – Maintenance of Vegetation and Hard Landscape Features; and • ETWB TCW No. 5/2005 –	None	• MM1 Minimise Disturbance • MM2 Colours of Structures • MM3 Tree Protection and Preservation • MM4 Tree Transplantation • MM5 Compensatory Tree Planting • MM6 Buffer Planting • MM7 Natural Bedding Substrate • MM8 Use of Gabion Mattress at River Bed • MM9 Screening • MM10 Light Control • MM11 Enhanced Meander	**Key Affected LRs:** Moderately Adverse: • LR 2 Water Course **Key Affected VSRs:** Moderately Adverse: • R-03 Residents of Lei Uk

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)
	• O-03 Workers at Industry • LC-03 Strawberry Farm <u>Substantially Adverse:</u> • R-03 Residents of Lei Uk	Protection of Natural Streams / Rivers from Adverse Impacts Arising from Construction Works			
Operation Phase					
Existing Landscape Resources (LRs) and Landscape Character Areas (LCAs) and Visually Sensitive Receivers (VSRs) within the assessment area	**Key Affected LRs:** <u>Moderately Adverse:</u> • LR 4 – Woodland • LR 7 – Agricultural Land <u>Substantially Adverse:</u> • LR 2 Water Course **Key Affected LCAs:** <u>Moderately Adverse:</u> • LCA 3 Lowland Agricultural <u>Substantially Adverse:</u> • None **Key Affected VSRs:** <u>Moderately Adverse:</u> • R-03 Residents of Lei Uk <u>Substantially Adverse:</u> • None	• EIAO-TM • EIAO Guidance Note 8/2010; • EIA Study Brief No. ESB-322/2019; • Hong Kong Planning Standards and Guidelines; • Town Planning Ordinance (Cap 131); • Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislation the Forestry Regulations; • Country Parks Ordinance (Cap 208); • Territorial Development Strategy Review: 1995; • DEVB TCW No.04/2020 – Tree Preservation; and • DEVB TCW No. 05/2020 – Registration and Preservation of Old and Valuable Trees (OVT); • DEVB TCW No. 6/2015 –	None	• MM1 Minimise Disturbance • MM10 Light Control	No adverse residual impact

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)
		Maintenance of Vegetation and Hard Landscape Features; and • ETWB TCW No. 5/2005 – Protection of Natural Streams / Rivers from Adverse Impacts Arising from Construction Works			