TABLE OF CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

1.1 Background

1.1.1.1 With the growing concern on making the best use of the limited land resource, in the 2016 Policy Address (PA), the Government announced to carry out the re-planning for the development of the land at Tseung Kwan O (TKO) Area 137 (TKO 137) and examine the feasibility of using the site for residential, commercial and other development purposes.

1.1.1.2 To take forward the re-planning process, Civil Engineering and Development Department (CEDD) and Planning Department (PlanD) jointly commissioned the "Planning and Engineering Study for Re-planning of TKO 137" (the P&E Study) in December 2016, with a view to ascertaining and optimising the development potential of the available land in TKO 137.

1.1.1.3 The Government has announced in the 2022 PA that TKO 137 would be developed into a new community primarily for housing purpose providing about 50,000 residential units, to be served by the existing road network, as well as the TKO Line Southern Extension (TKLSE) and the TKO – Yau Tong Tunnel (TKO-YTT) recommended under the Strategic Studies on Railways and Major Roads beyond 2030 (RMR 2030+) by Transport and Logistics Bureau. At the same time, to make way for the housing development at TKO 137, a review has been conducted to identify suitable locations for accommodating existing facilities in TKO 137 and other location-specific facilities. Based on the findings of the P&E Study, a Preliminary Outline Development Plan (PODP) was formulated for TKO 137 and the land to be created off TKO Area 132 (TKO 132) in January 2023.

1.1.1.4 Currently, vast majority of the existing traffic on Wan Po Road south of LOHAS Park is generated by Tseung Kwan O Fill Bank (TKOFB) located at TKO 137. The heavy vehicles, such as diesel fuel dump trucks, are running through the existing road network of TKO New Town to TKOFB which cause potential fugitive dust, exhaust gas emission and noise nuisance to local residents. With TKOFB converting into a housing development, the traffic on Wan Po Road is expected to shift predominantly from heavy vehicles to mostly commercial vehicles, which are mainly electric and petroleum vehicles. Less gaseous emission and noise nuisance to the locals would be anticipated.

1.1.1.5 The Legislative Council (LegCo) Panel on Development was briefed on the PODP on 31 January 2023. Besides, during the period from February to March 2023, the project team attended two Sai Kung District Council (DC) Meetings to brief the DC and the public on the PODP and solicit participants' views on the plan. The project team also made pro-active efforts in reaching out to the local community to collect their views on the development proposal. In the course of the exercise, the project team organised twelve meetings with local stakeholders and attended two residents' forums, meeting representatives from over 30 organisations such as the owners' committees of the residential estates in TKO, estates' representatives, local personalities, villagers and concern groups, etc. Taking into account comments received from LegCo members, the public and key stakeholders on the PODP, and on-going liaison with relevant Government B/Ds, a Recommended Outline Development Plan (RODP) was formulated.

1.1.1.6 According to the P&E Study, the Project is a Designated Project under Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO). Besides, the Project also comprises of various Schedule 2 Designated Projects (DPs) under schedule 2 of the EIAO, which are essential engineering infrastructures works/ public facilities.

1.1.1.7 In November 2023, CEDD engaged AECOM Binnies (TKO 137) Joint Venture (hereafter referred to "the Consultants") to undertake Agreement No. CE 40/2023 (CE) – Development of Tseung Kwan O Area 137 and Associated Reclamation Sites –

Investigation, Design and Construction (hereafter referred to "the Project"). The proposed scope of the Project includes reclamation, slope-cutting, site formation and engineering infrastructure works for the development at TKO 137 and the formed land off TKO 132 as shown on **Figure 1.1**.

1.2 Environmental Impact Assessment (EIA) Study

1.2.1.1 The EIA study was conducted for the Project in accordance with the requirements of the EIA Study Brief (SB) (No. ESB-360/2023) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The purpose of this EIA Study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project. The information obtained in the EIA Study will contribute to decisions by Director of Environmental Protection (DEP) on:

i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project;
ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and
iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

1.3 Purpose of this Executive Summary

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

i) **Section 2** presents purpose, scope and development of the Project;
ii) **Section 3** presents the key findings of the environmental impact assessment;
iii) **Section 4** describes the proposed environmental monitoring and audit programme for the Project;
iv) **Section 5** presents a summary of environmental outcomes; and
v) **Section 6** presents the conclusion.

2. PROJECT DESCRIPTION

2.1 Appreciation of Existing Environment

2.1.1 TKO 137

2.1.1.1 TKO 137 falls within the approved TKO Outline Zoning Plan (OZP) No. S/TKO/30 and is currently zoned "Other Specified Uses" annotated Deep Waterfront Industry. It is located at the southern end of Wan Po Road and majority of development area is now a temporary fill bank. To the north of the TKO 137 is Tseung Kwan O InnoPark (TKOIP), while the hill slope areas to the northeast and the east of TKO 137 are the South East New Territories (SENT) Landfill and its extension area (SENTX) and Clear Water Bay Country Park (CWBCP) respectively. The land to the southeast of the TKO 137 is zoned "Other Specified Uses" annotated "Desalination Plant", in which there is a desalination plant. There is an explosive off-loading pier operated by Mines Division, Geotechnical Engineering Office of CEDD located on the southeast corner of TKO 137 and it will be relocated outside TKO 137 before the population intake of TKO 137. To the northwest of TKO 137 is the knoll of Fat Tong Chau is zoned as "Green Belt". To the southeast of TKO 137 is the Tit Cham Chau which is zoned as Clear Water Bay Country Park.

2.1.2 Land to be created off TKO 132

2.1.2.1 The development area boundary of the land to be created off TKO 132 covers mainly the open sea areas of Chiu Keng Wan, and Junk Bay with inclusion of limited areas of Green Belts along the seashore. To the west of the TKO 132 and further are vegetated hill slope areas and Junk Bay Chinese Permanent Cemetery. The nearest residential development is Ocean Shores which is located at around 1 kilometre (km) at the northeast of the TKO 132.

2.1.2.2 The proposed development area of TKO 132 falls within the planning scheme area of the approved TKO OZP No. S/TKO/30. Yau Tong region across the terrains of Devil's Peak falls within the planning scheme area of the approved Cha Kwo Ling, Yau Tong, Lei Yue Mun OZP No. S/K15/27.

2.2 Need for the Project

2.2.1 TKO 137

2.2.1.1 As set out in the 2022 PA, a number of initiatives to increase land and housing supply have been promulgated. The proposed development at TKO 137 is one of the major sources of land supply. TKO 137 will be developed into a new community primarily for housing purpose, providing about 50,000 residential units, to be served by the existing road network, as well as the TKO – YTT and the TKLSE recommended under the Strategic Studies on RMR 2030+.

2.2.1.2 The majority of the land at TKO 137 is currently being used as a temporary fill bank for storing public fill for reuse in reclamation and/ or other earth filling projects. In anticipation of future reclamation works that might take up the public fill from TKO 137 progressively, there is an opportunity to re-plan TKO 137 for gainful uses.

2.2.2 Land to be created off TKO 132

2.2.2.1 To make way for the development in TKO 137, two facilities serving the public at TKO 137, namely, a temporary fill bank and the temporary concrete batching plant (CBP) shall be re-provisioned. In this connection, a review has been conducted and a piece of to-be-created land off TKO 132 was identified as a suitable location for accommodating and reprovisioning the above facilities at TKO 137 (the temporary fill bank will be re-provisioned as public fill transfer facility (PFTF). The opportunity was also taken to use the to-be-

created land off TKO 132 to house a construction waste handling facility (CWHF[1]) upon the closure of SENTX in TKO, a marine refuse collection point (MRCP[2]) to be relocated from Cha Kwo Ling (CKL), electricity facilities (EFs[3]) for housing power infrastructures to receive zero-carbon energy imported from the Mainland, and a refuse transfer station (RTS) which is mainly for serving territory east (including TKO). All of the above six public facilities (hereinafter referred to as Public Facilities) are region-specific and all require marine frontage. Hence TKO 132, being away from TKO population centre and with its sea access, is considered an optimal location for the Public Facilities after extensive site search. A table showing the provision or reprovision needs of the above quoted Public Facilities is at **Table 2.1** below.

Table 2.1 Needs for Public Facilities in PODP Stage

Public Facility	Need of the facilities/ site selection consideration	Marine Frontage Requirement
PFTF	Public fill generated in the territory east is currently received and stockpiled at the TKO 137 temporary fill bank pending transfer to appropriate projects for reuse. With the plan to develop TKO 137, and while the upcoming reclamation projects in Hong Kong would reduce significantly the need for stockpiling public fill, there is still a need to retain a smaller-scale facility to receive and transfer public fill generated in the territory east (including TKO), at a location with marine frontage.	Marine frontage is required for transferring public fill received to appropriate projects through marine transport.
CBP	The temporary CBP at TKO 137 is planned to be decommissioned by 2029. A permanent site for re-provisioning the CBP in the vicinity is required to serve construction sites in East Kowloon and New Territories East (including TKO), as freshly mixed concrete must be delivered within a reasonably short time to construction sites to maintain the quality of concrete.	To facilitate the operation of the CBP, a waterfront site to allow transportation of raw materials by sea for concrete production could avoid increasing loading on road traffic.

[1] The CWHF to be provided in TKO 132 may also incorporate the function of the temporary construction waste sorting facility (temp. CWSF) currently located in TKO 137. Unlike the existing open air operation at the temp. CWSF, such future operation, if any, will be carried out in enclosed environment.
[2] The MRCP was proposed during the PODP stage and has been excluded from the RODP.
[3] The EFs are a strategic infrastructure that will account for about 30% of Hong Kong total fuel mix for electricity generation for enhancing Hong Kong's capability to import zero-carbon energy through regional cooperation and meeting the decarbonisation target of reducing Hong Kong's carbon emissions by 50% before 2035 as compared to the 2005 level, with a view to achieving carbon neutrality before 2050.

Public Facility	Need of the facilities/ site selection consideration	Marine Frontage Requirement
EFs	EFs, comprising power receiving and conversion facilities, are important strategic infrastructure for enhancing Hong Kong's capability to import zero-carbon energy through regional cooperation and meeting the decarbonisation target of reducing Hong Kong's carbon emissions by 50% before 2035 as compared to the 2005 level, with a view to achieving carbon neutrality before 2050. TKO 132 is considered as the optimal location as it is situated near the potential connection points at TKO and Island East of the two power companies' existing power grids, and their power systems can be interconnected through submarine cables with a shorter distance.	Marine frontage is necessary for the landing of submarine cables.
CWHF	There is a need to set up a CWHF to receive, handle and bulk transfer construction waste primarily generated from the territory east (including TKO) to the other waste handling facilities (e.g. landfill) upon the closure of SENTX prior to population intake at TKO 137.	Bulk transfer of mixed construction waste to other waste handling facilities would require marine frontage.
RTS	There is currently no dedicated RTS in the territory east area (including TKO). Temporary arrangement is put in place to transfer municipal solid waste (MSW) generated in this area to RTSs in Island East, West Kowloon and Shatin for handling. As these three RTSs have reached their capacity limits, there is a need to set up a RTS for serving existing and future developments in the territory east area (including TKO).	Marine frontage is necessary as MSW would be compacted and containerised in purposely built containers for onward shipment to waste management facilities via marine traffic.
MRCP	As the Cha Kwo Ling site is to be developed into part of a waterfront promenade, the MRCP thereat is proposed to be reprovisioned at a location in the territory east to serve the eastern waters. Proximity to the RTS also allows operational synergy.	Marine frontage is necessary for unloading collected refuse from the vessels.

2.2.2.2 Location-wise, the land to be created off TKO 132 is at a relatively obscure area and with a buffer distance of around 1 km from the nearest residential development in TKO. With direct access to the Tseung Lam Highway, when commuting to and from Kowloon, the traffic induced by the Public Facilities would not route through existing road network in the TKO New Town, thus minimising any possible nuisance to local residents.

2.3 Development Opportunities for Project Development

2.3.1 TKO 137

Housing and Job Opportunities

2.3.1.1 Being a rare, sizable waterfront formed land available in the metro area across the Harbour with existing and planned infrastructure and road, TKO 137 can be developed as a major source of housing supply to capitalise the assets of TKO 137 in meeting public aspirations and housing needs.

2.3.1.2 Under the policy direction of "Re-industrialisation" and the physical proximity to the TKOIP of where the Data Technology Hub (DT Hub) and Advanced Manufacturing Centre (AMC) based, TKO 137 is strategically located to synergise with the economic activities in proximity. TKO 137 may house the knowledge-based population and offer local job opportunities to reduce the need for cross-district trips.

Good Accessibility

2.3.1.3 The future TKLSE to be undertaken by other project proponent will facilitate Transit-Oriented Development (TOD). It hence enables high density mixed commercial and residential sites around the proposed railway infrastructure. Major population, economic activities and community facilities would be concentrated within walking distance (i.e. 500 metres (m)) of mass transit and public transport nodes. A convenient and fast mass transportation system would facilitate the residents of TKO 137 and the nearby employment population in using the transport network.

2.3.1.4 Furthermore, the TKO-YTT as recommended under RMR 2030+ connecting TKO Town Centre and Yau Tong area will strengthen the connection between TKO, Kowloon East and Island East. It also provides alternative route to Yau Tong and the urban area to benefit nearby residents as well as to meet the traffic demand arising from the development at TKO 137.

2.3.2 TKO 132

Obscure Location

2.3.2.1 TKO 132 is considered suitable for accommodating the Public Facilities as it is at a relatively obscure location, away from existing and planned residential development. This is to minimise any possible environmental impact on the local residents. Land use conflict will be much reduced.

Near Tseung Lam Highway

2.3.2.2 TKO 132 being close to Tseung Lam Highway enables the induced traffic to use Tseung Lam Highway to go to Kowloon East, thereby avoiding routing through the existing district road network in TKO. This would reduce the air and noise impact to the residents of TKO.

2.4 Development Constraints for Project Development

2.4.1 TKO 137

Infrastructure Constraints

Limited Development Area in TKO 137

2.4.1.1 The total development area of TKO 137 is approximately 103 hectares (ha) including about 83 ha of existing land and area available in Fat Tong Chau after site formation as well as 20 ha of proposed reclamation area. With a planned population of about 135,000, it is anticipated that TKO 137 will be a compact high-density community. To match with the policy direction of enhancing liveability, latest benchmark on open space provision and home space enhancement as advocated in the "Hong Kong 2030+ Towards a Planning

Vision and Strategy Transcending 2030" ("Hong Kong 2030+") would be adopted to further enhance the living environment of TKO 137.

Tathong Channel Traffic Separation Scheme (Tathong Channel TSS)

2.4.1.2 Eastern Sea water channel designated with TSS including inshore traffic zones on its northern and southern edge is located in the vicinity of TKO 137. A clearance of about 250m from the boundary of the Tathong Channel TSS is required for in-shore marine traffic. This limits the use of wave-like configuration of ecological enhanced seawall if developable reclaimed is to be maximised.

Avoidance and Minimisation of Industrial and Residential Interface Problems

2.4.1.3 TKOIP is located directly to the north of TKO 137 development. Potential air pollution and noise sources from TKOIP are expected to impact the northern side of TKO 137. Considerations had been made in land use planning to minimise the adverse impact to future development (e.g. separate proposed residential sites with TKOIP by open space and Government Institution and Community (G/IC) sites.)

Consideration of Permitted Burial Ground during planning

2.4.1.4 A permitted burial ground (PBG Site No. SK/1) is located at the west of Fat Tong Chau. The future development should avoid encroachment into the permitted burial ground.

Environmental Constraints

Existing Ecological, Natural and Landscape Features

2.4.1.5 TKO 137 is surrounded by areas of natural value. Various coral communities were recorded in the spot-check dive survey and REA surveys along the shoreline of eastern Junk Bay. A coral recipient site for translocated corals was identified in the southwest coast of Fat Tong Chau. TKO 137 also interfaces with natural hills to the East, along CWBCP where there are species of conservation importance. Due considerations should be given to avoid/ minimise adverse impacts of the future developments on the existing ecological, natural and landscape features.

Declared Monument/ Site of Archaeological Interest

2.4.1.6 A declared monument, Site of Chinese Customs Station, Fat Tau Chau (also known as Old Chinese Customs Station on Fat Tau Chau) and three Sites of Archaeological Interest (SAIs) are located outside the Project Boundary. These SAIs include Fat Tau Chau (SAI184), Fat Tau Chau House Ruin (SAI185), and Fat Tau Chau Qing Dynasty Gravestone (SAI186). Avoidance of encroachment on the declared monument or site of archaeological interest should be considered.

2.4.2 TKO 132

Infrastructure Constraints

Existing Government Land Licences

2.4.2.1 There are existing government land licences located uphill and along shoreline where land formation by means of reclamation and slope cutting would be carried out to house the Public Facilities. This would limit the design and extent of the site formation at TKO 132 in order not to affect the existing government land licences.

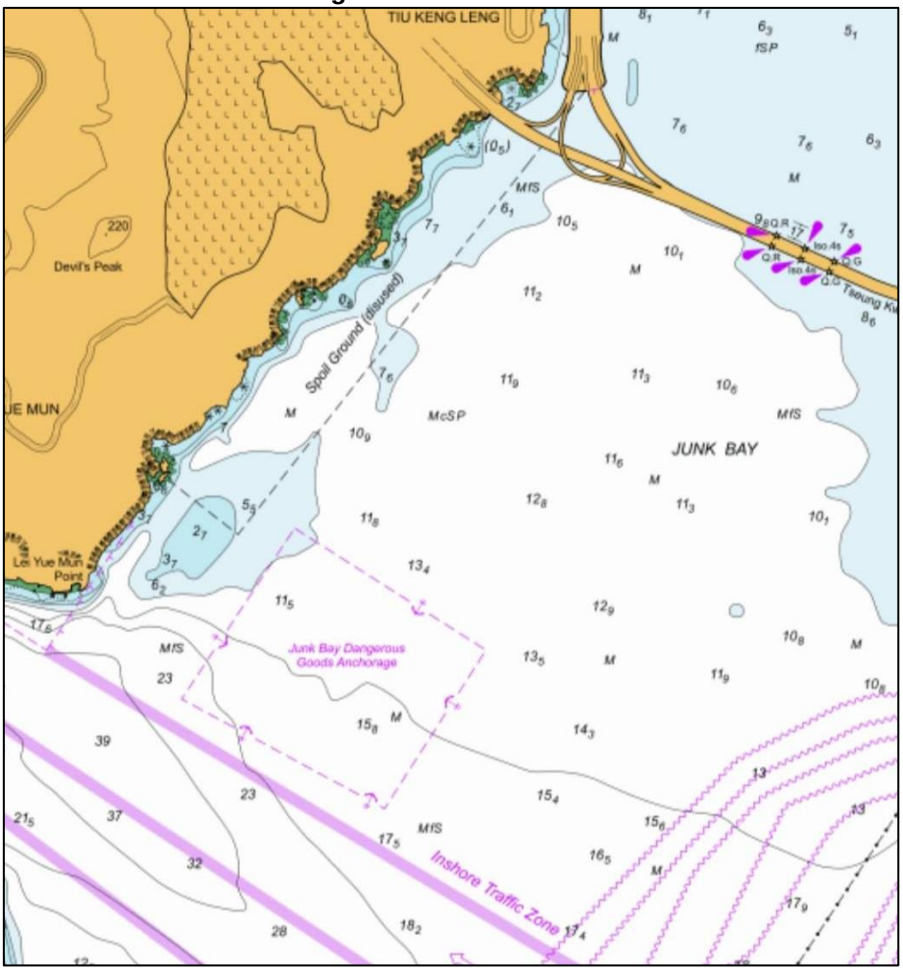
Junk Bay Chinese Permanent Cemetery (JBCPC)

2.4.2.2 JBCPC lies on the slopes of Chiu Keng Wan Shan, eastwards of Devil's Peak. Future development of TKO 132 should avoid encroachment into the JBCPC.

Junk Bay Dangerous Goods Anchorage (JBDGA)

2.4.2.3 The JBDGA is located southeast to the land to be created off TKO 132 as shown in **Diagram 2.1** below. Reclamation within the JBDGA boundary should be avoided as far as practicable.

Diagram 2.1 – Location of JBDGA[4]



Requirements for Public Facilities

2.4.2.4 The Public Facilities each has its own requirements on site area and length of marine frontages. The planning of TKO 132 needs to take into account the planning requirements as advised by relevant bureaux/departments of the Public Facilities which are set out in **Table 2.2** below. Straight seawall is required as marine frontage for berthing operation of the Public Facilities. Wave-like configuration eco-engineering seawalls will not be considered at TKO 132 in order to suit the operation of the vessels.

[4] Location of JBDGA is extracted from Marine Chart by Marine Department's "eSeaGo"

Table 2.2 Planning Requirements for Public Facilities in PODP Stage

Public Facilities	Required Footprint	Maximum Building Height	Minimum Marine Frontage Required
EFs	5.9 ha	60 m	200 m for sloping seawall for cable landing
RTS	3.0 ha	40 m (50 m for on-shore crane)	170 m
CWHF	4.5 ha	20 m	180 m
PFTF	4.0 ha	25 m	230 m
CBP	0.6 ha	28 m	80 m
MRCP	0.18 ha	14 m	30 m

Environmental Constraints

Existing Ecological, Natural and Landscape Features

2.4.2.5 TKO 132 sites are surrounded by areas of natural value. Coral communities were recorded along the shoreline of western Junk Bay. A coral recipient site for translocated corals is identified in the southwestern coast of Junk Bay. Due considerations should be given to avoid/ minimise adverse impacts of the future developments on the existing ecological, natural and landscape features.

Graded Historic Buildings

2.4.2.6 One grade 2 historic building (Fortifications at Devils' Peak (HB463)) and one grade 3 historic building (Old Quarry Site Structures, Lei Yue Mun) are identified in the vicinity of the TKO 132. Avoidance of encroachment on the graded historic buildings should be considered.

2.5 General Description of the Project

2.5.1 TKO 137

2.5.1.1 The size of the developable area at TKO 137 is approximately 103 ha and will accommodate a planned population of about 135,000 population with provision of about 22,100 jobs upon full development. The project will mainly include land for residential, and "G/IC" uses.

2.5.2 TKO 132

2.5.2.1 The size of the developable area is approximately 20 ha and will accommodate five Public Facilities namely EFs, CWHF, PFTF, RTS and CBP, and associated infrastructures including one Sewage Pumping Station (SPS) to support these Public Facilities. In view of the public aspiration to reduce the number of Public Facilities, the MRCP proposed at PODP stage will not be relocated to TKO 132.

2.5.2.2 The Project at TKO 137 and TKO 132 mainly comprises the following elements:

- **Residential sites** for high density public and private residential developments. About 50,000 new flats will be provided to accommodate about 135,000 persons upon full development.
- A wide variety of **G/IC facilities** such as schools, police station, fire station, Government Complex etc. serving the needs of the local residents and/or a wider district, region or the territory.
- A variety of **infrastructural facilities** such as an Effluent Polishing Plant (EPP), a fresh water service reservoir (FWSR), a salt water service reservoir (SWSR),

electricity substations (ESSs), Public Transport Interchanges (PTIs) and a SPS serving the needs of the local residents and/or a wider district, region or the territory.

- **Open space** including outdoor open-air public space for active and/or passive recreational uses serving the needs of both the local residents, workers, as well as the general public.
- **Amenity strips** enhancing the amenity and serving as visual buffers between existing villages and new developments.
- Eight **Local Distributor Roads** (Dual 2-lane / Single 2-lane Standard)
- A **single-2-lane carriageway road connecting carriageway bridges** for motor vehicles in the form of marine viaduct to/from TKO 132

2.6 Recommended Outline Development Plan (RODP)

2.6.1 TKO 137

2.6.1.1 An overview of the key planning elements and land uses of the RODP is provided in **Table 2.3** and the RODP adopted for this EIA study is shown in **Figure 2.1**.

Table 2.3 Land Use Budget of the RODP for Tseung Kwan O Area 137

Land Uses	Approx. Area (ha) (% of total)
Residential	51.9 (50.8%)
- Public	25.9
- Private	26.0
Government, Institution and Community Facilities	7.3 (7.2%)
- Primary Schools	2.0
- Secondary Schools	1.6
- Sports Centre and Government Reserve	0.8
- Divisional Police Station	0.4
- Sub-divisional Fire Station cum Ambulance Depot	0.5
- Government Complex (includes Swimming Pool Complex, Sports Centre, Public Market, Community Hall, Health Centre, Recycling Store, Refuse Collection Point)	2.0
Open Space	18.8 (18.4%)
Other Specified Uses –	
- Effluent Polishing Plant	6.9 (6.8%)
- Green Fuel Station	4.5
- Electricity Substation	0.4
- Fresh Water Service Reservoir / Salt Water Service Reservoir	1.0 1.0
Roads	17.2 (16.9%)
TOTAL (about)	102.2 (round to 103) (100%)

Remarks: The above Land Use Budget is based on the RODP version dated 2024.07.10. Due to rounding, the figures presented may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

2.6.2 TKO 132

2.6.2.1 An overview of the key planning elements and land uses of the RODP is provided in **Table 2.4** and the RODP adopted for this EIA study is shown in **Figure 2.2**.

Table 2.4 Land Use Budget of the RODP for the land to be created off Tseung Kwan O Area 132

Land Use	Approx. Area (ha) (% of total)
(A) EFs	5.6 (28.3%)
(B) RTS	3.0 (15.3%)
(C) CWHF	4.5 (22.7%)
(D) PFTF	4.0 (20.2%)
(E) CBP	0.6 (3.0%)
(F) Others*	2.0 (10.1%)
Total (about)	19.8 (round to 20) (100%)

Remarks: * include supporting infrastructures (i.e. sewage pumping station (approximate 0.07 ha), roads and amenity area), but exclude marine viaduct

2.7 Designated Projects

2.7.1 Schedule 3 Designated Projects

2.7.1.1 The Project covers a development area of approximately 123 ha and is classified as a Designated Project (DP) by virtue of the item 1 under Schedule 3 of the EIAO:

- 1: An urban development or redevelopment project covering an area of more than 50 ha.

2.7.2 Schedule 2 Designated Projects

2.7.2.1 In addition, the Project also comprises of various DPs in Part I, Schedule 2 of the EIAO as described in **Table 2.5** and illustrated in **Figure 2.3** and **Figure 2.4**. Details of the scope of each DP are presented in **Section 2** of the EIA Report.

Table 2.5 Schedule 2 Designated Projects in the Project

Ref. No.	Schedule 2 Designated Project		Work Component /Reference in RODP
DP1 [1]	A.8	A carriageway bridge for motor vehicles, or a railway bridge, the length between abutments for which is more than 100 m, with bridge piers over the sea supporting the bridge	Construction and operation of a carriageway bridge in form of viaduct structure for motor vehicles with a minimum length of about 700 m between abutments and supported by piers over the sea, will be constructed near

Ref. No.	Schedule 2 Designated Project		Work Component /Reference in RODP
			Tseung Kwan O-Lam Tin Tunnel to provide a direct and convenient connection to the proposed facilities at TKO 132.
DP2 [1]	C.1	Reclamation works (including associated dredging works) more than 5 ha in size	Around 20 ha of land will be formed by reclamation at TKO 137. Around 19 ha of land will be formed by reclamation at TKO 132.
	C.2	Reclamation works (including associated dredging works) that are of more than 1 ha in size, and a boundary of which is (c) less than 100 m from the nearest boundary of an existing residential area	Project Boundary of the reclamation works (around 19 ha) at TKO 132 is around 30 m from the nearest boundary of On Luen Village (location of existing government land licences).
DP3 [1]	F.1	Sewage treatment works with an installed capacity of more than 15,000m^3 per day	Construction and operation of an EPP with an installed capacity of approx. 54,000 m^3 per day at TKO 137. The EPP is around 100 m from the planned residential area and around 60 m from the planned educational institution at TKO 137.
	F.2	Sewage treatment works (a) with an installed capacity of more than 5,000m^3 per day; and (b) a boundary of which is less than 200 m from the nearest boundary of an existing or planned (i) residential area and (iii) educational institution	
DP4 [2]	G.2	A refuse transfer station	Construction and operation of a RTS at formed land off TKO 132
DP5 [2]	G.5	A facility for the treatment of construction waste (a) with a designed capacity of more than 500 tonnes per day; and (b) a boundary of which is less than 200 m from the nearest boundary of an existing or planned (i) residential area	Construction and operation of a CWHF with handling capacity of around 3,000 tonnes per day at formed land off TKO 132. The Construction Waste Handling Facility is around 140 m from On Luen Village (location of existing government land licences).
DP6 [2 3]	H.1	A 400kV electricity substation and transmission line	Construction and operation of Electricity Facilities (EFs) at formed land off TKO 132. EFs are planned to house equipment up to 400kV.

Note:

1 Application of Environmental Permit (EP) will be supported by this EIA Study.

2 Application of EP will be supported by a separate Schedule 2 EIA Study or separate Direct Application of EP to be conducted by the respective project proponent.

3 There is no design information for EFs provided from the operator at the time of assessment. The assumption of a 400 kV electricity substation, a Schedule 2 DP under EIAO, is considered in this EIA study.

2.7.2.2 Apart from the Schedule 2 DPs presented in **Table 2.5**, there are a number of non-DP elements in the RODP as summarised in **Table 2.6**. Details are presented in **Section 2** of the EIA Report.

Table 2.6 Summary of Non-Designated Projects

Non-Designated Project	Sub-Element
TKO 132	
Other Specified Uses (OU)	Public Fill Transfer Facility (OU(PFTF))
	Concrete Batching Plant (OU(CBP))
	Sewage Pumping Station (OU(SPS))
Amenity (A)	Roadside amenity
Roads	Local roads
TKO 137	
Residential Development	Public Housing Site (RSc)
	Private Housing - Zone 1 (R1)
	Private Housing - Zone 2 (R2)
	Public Transport Interchange
	Social Welfare Facilities
Government, Institutional or Community (G/IC)	Divisional Police Station
	Sub-divisional Fire Station cum Ambulance Depot
	Sports centre and Government Reserve
	Government Complex (includes Swimming Pool Complex, Sports Centre, Public Market, Community Hall, Health Centre, Recycling Store, Refuse Collection Point)
Education (E)	Schools
Open Space (O)	Recreational Facilities and Landscaping
Other Specified Uses (OU)	Electrical Substation (OU(ESS))
	Green Fuel Station (OU(GFS))
	Salt Water Service Reservoir (OU(SWSR))
	Fresh Water Service Reservoir (OU(FWSR))
Roads	Local roads

2.7.2.3 As confirmed with Fill Management Division of CEDD, control measures would be implemented to restrict the public dumping area at the PFTF at TKO 132 to within 2 ha. Hence, PFTF will not constitute a designated project under item C.11, Part I, Schedule 2 of the EIAO.

2.7.2.4 The CBP at TKO 132 would have a total silo capacity of less than 10,000 tonnes, in which cement is handled or produced. Therefore, CBP will not constitute a designated project under Item K.5, Part I, Schedule 2 of the EIAO.

2.7.2.5 If there are any future change(s) after the approval of this EIA Report, the following steps will be taken:

(a) Should the change(s) involve a DP item under Schedule 2 of the EIAO, the requirements under the EIAO will be complied with; and

(b) Should the change(s) not involve any DP items under Schedule 2 of the EIAO, prevailing planning mechanisms and standards will be followed and relevant EIA findings will be conformed to.

2.8 Benefits of the Project

2.8.1.1 The Project make use of the formed land of TKO 137 which is currently used as a temporary fill bank into a new community primarily for housing purpose. The land to be created off TKO 132 which is at a relatively obscure area, is able to accommodate the Public Facilities. The development of the Project could result in the following benefits:

Direct Benefits

2.8.1.2 **Diverse housing options to meet long-term housing needs of Hong Kong** – Different housing types will be provided to meet long-term housing needs of Hong Kong, engendering a sense of belonging for people and ultimately enhancing their quality of life. The Project will provide about 50,000 new flats.

2.8.1.3 **Provide G/IC facilities** – To support both existing and planned population, G/IC facilities including educational, social welfare, sports, cultural and recreational, healthcare, youth facilities, etc. will be provided. The provision of G/IC facilities is essential for the well-being, development, and social fabric of a community which contribute to public services, infrastructure, job and educational opportunities, and community engagement, ultimately enhancing the overall quality of life for residents.

Environmental Benefit and Initiatives

2.8.1.4 **Reduce heavy vehicles at Wan Po Road** –Currently, vast majority of the existing traffic on Wan Po Road south of LOHAS Park is generated by TKOFB. The heavy vehicles, such as diesel fuel dump trucks, are driving through the existing road network of TKO New Town to TKOFB which could cause disturbance to local residents. With TKOFB converting into a housing development, the traffic on Wan Po Road is expected to shift predominantly to electric and petroleum vehicles, which emit fewer pollutants. By locating the PFTF at TKO 132, those heavy vehicles generated could be diverted away from TKO New Town and access to Kowloon directly via Tseung Lam Highway. This would minimise any possible nuisance to local residents.

2.8.1.5 **Facilitate low-carbon energy transition** – The reclaimed land off TKO 132 creates land to accommodate the important strategic EFs for enhancing Hong Kong's capability to import zero-carbon energy through regional cooperation and meeting the decarbonisation target of reducing Hong Kong's carbon emissions by 50% before 2035 as compared to the 2005 level, with a view to achieving carbon neutrality before 2050 for the benefit of members of the public in Hong Kong.

2.8.1.6 **Co-locating public facilities** – TKO 132 houses the five location-specific public facilities that require marine frontage and rely on water transport. Co-locating these Public Facilities at TKO 132 can generate significant operational synergies by allowing shared use of access road and berthing areas.

2.8.1.7 **Optimisation of ecological resources** – The design of infrastructure can integrate more features that benefit nature. An Eco-shoreline fuses robust seawall and marine infrastructure with design that creates the ecological environments required by marine habitats. A variation of the shoreline that coheres three ecological strata—sub-tidal, inter-tidal, and terrestrial—is proposed for the Project. The terrestrial layer integrates vibrant programming for the community.

2.8.1.8 **Walkability and cycling** – Walkability and cycling are the key elements for the Project. A comprehensive and attractive pedestrian walkway and cycle track network is planned throughout the TKO 137. Key destinations, such as key public transport nodes, major employment nodes and residential communities, would be linked up by pedestrian walkways, cycle track and open spaces. This would allow a safe, convenient and comfortable movement within the Project area and create local communities with easily accessible daily necessities to promote an active and healthy lifestyle to reduce mechanised vehicular trips and hence carbon emissions.

- **Comprehensive pedestrian network** – Comprehensive pedestrian network of TKO 137 connects residential and employment nodes to provide continuous walkways for pedestrians. It could promote walking from homes to workplaces, retail and services for various purposes.

- **Open space network / green linkages** – A series of open space corridors branching off the main comprehensive pedestrian network, including the open spaces along drainage channel and linear parks along major road. They shall provide additional pedestrian connections to the surrounding residential communities and employment areas, and further to the green and natural areas.
- **Robust cycling network** – TKO 137 provides a robust cycling network which link effectively to the existing and planned cycling tracks within and outside TKO 137. The proposed cycling network would connect to the existing tracks from Wan Po Road to create a continuous cycling environment that extends to other destinations beyond the TKO 137. Routes within TKO 137 would be provided parallel to the major roadways to serve commuting needs, as well as to provide some other routes within the proposed open space areas for leisure.

2.8.1.9 **Preserve and promote cultural heritage resources** – For TKO 137, no declared monument, proposed monument or graded historic building is identified within the Project Boundary of TKO 137. For TKO 132, no declared monument, proposed monument or graded historic building is identified within the Project Boundary of TKO 132. Adverse impacts to the existing cultural heritage resources have been avoided.

Promoting Biodiversity

2.8.1.10 **Create liveable environment** - The landscape framework should be formulated based on the findings of the ecological survey. Following principles applied in the landscape framework: (i) Optimise key existing ecological capital where possible. (ii) Maximise green space coverage for habitat creation and leisure activities; (iii) Diversify landscape typologies through a rich mix of landscape characters and activities for both people and wildlife; and (iv) Create a mutual respect culture between people and nature through design.

2.9 Development Programme for the Project

2.9.1.1 To optimise the provision schedule of the proposed public facilities and supply of housing units, phased population intake would necessary. Site formation, reclamation and key engineering infrastructure works will be implemented in stages while associated drainage, sewerage, water supply and utilities will process alongside road construction in respective development stages. The Project would be commissioned in phases with the targeted first population intake in Year 2030.

Initial Phase Development

2.9.1.2 Initial Phase Development comprises mainly Phase 1 Reclamation for TKO 137 primarily for the land to be formed to handover to Railway Development Office of Highways Department (HyD/RDO) by Q3 2028 for the railway construction works at TKO 137 and the site development works at the North of the project area of TKO 137 for the first population intake in Year 2030.

2.9.1.3 The major works in TKO 137 will include:

- Phase 1 Reclamation including associate seawall works, site formation, box culvert and seawall outfall works for the middle portion along the southwest shoreline and the existing barging basin at the north of TKO 137.
- Site development works for two “Public Housing” (“PU”) sites at north of the Project area, including associated local roads and the interchange/junction works connecting with Wan Po Road, pedestrian connectivity, drainage, waterworks, sewerage (including construction of advance SPS), utilities, electrical and mechanical, M, paving, road marking and street furniture works to support the first population intake.

2.9.1.4 Initial Phase Development also includes the reclamation, slope-cutting, site formation, construction of marine viaduct and infrastructure works at TKO 132 for development of the proposed Public Facilities, so that the phase 2 reclamation at TKO 137 can then be commenced after the facilities relocated to TKO 132.

2.9.1.5 The major works for TKO 132 will include:

- Reclamation, seawall construction, slope-cutting, site formation, box culvert(s) and seawall outfall(s) to form about 20 ha for the proposed development.
- Construct of marine viaducts and road network to connect the land to be created off TKO 132 to existing Tseung Lam Highway.
- Other engineering infrastructure works including roads, interchange/junction, pedestrian connectivity, drainage, sewerage including construction of SPS, waterworks, landscape to support the development

Main Phase Development

2.9.1.6 Main Phase Development comprises mainly Phase 2 Reclamation for TKO 137 and the development works at the east and north of the Project area of TKO 137 (excluding the areas reserved by HyD/RDO for the construction of TKLSE). The development works in this phase is to support the targeted population intake in Year 2033 and the targeted mass population intake in Year 2035 respectively at TKO 137.

2.9.1.7 The remaining reclamation, major site development works to support TKO 137 in this development will include:

- Phase 2 Reclamation including associated seawall works, site formation, box culvert(s) and seawall outfall(s) for the southern portion along the southwest shoreline.
- Site development works for four “Public Housing” (“RSc”) sites at east of the Project area.
- Site development works for one ‘Private Housing” (“R1”) site at northwest of the Project area.
- Site development works for “Government, Institution or Community” (“G”) sties.
- Site development works for “Education” (“E”) sites.
- Site development works for “Other Specified Uses” (“OU”) sites for key infrastructures, including EPP, FWSR and SWSR.
- Associated local roads, interchange/junction, pedestrian connectivity, drainage, waterworks, sewerage, UU, E&M, paving, road marking and street furniture works.

2.9.1.8 The major works for TKO 132 will include:

- Upon completion of the reclamation and site formation works at TKO 132, respective formed land will be handed over to the operators of the Public Facilities for their building construction and other facilities within their sites.

Remaining Phase Development

2.9.1.9 Remaining Phase Development is the last phase of the development for TKO 137, mainly including development works at the land area that was occupied by HyD/RDO for TKLSE construction at initial phase (subject to HyD/RDO’s later formulation of the railway construction works), as well as any remaining infrastructure and interfacing works from the last development phase. The development works in this phase is to support the targeted population intake in Year 2038 and the targeted mass population intake in Year 2041 respectively at TKO 137.

2.9.1.10 The major development works in this development phase will include:

- Site development works for two ‘Private Housing” (“R1”) sites and two ‘Private Housing” (“R2”) sites at west of the Project area.
- Associated local roads, interchange/junction, pedestrian connectivity, drainage, waterworks, sewerage, UU, E&M, paving, road marking and street furniture.
- Interfacing works from the last development phase.

3. KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Approach to the EIA

3.1.1.1 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. It is an iterative process that has been undertaken in parallel with the formulation of the RODP to identify 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. Public views obtained from the various public engagement exercise have been considered and incorporated into the EIA process, where appropriate. Mitigation measures have been recommended, where required, to avoid some potential environmental impacts, or to minimise/mitigate impacts to acceptable levels.

3.1.1.2 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
- Sewerage and Sewage Treatment Implications
- Waste Management Implications
- Land Contamination
- Ecological Impact
- Fisheries Impact
- Landscape and Visual Impact
- Cultural Heritage Impact
- Hazard to Life
- Landfill Gas Hazard
- Electric and Magnetic Fields

3.2 Air Quality Impact

3.2.1.1 Potential air quality impacts associated with the construction and operation phases of the Project have been assessed in accordance with the criteria and guidelines as stated in Annexes 4 and 12 of EIAO-TM as well as the requirements given in Section 3.4.4 and Appendix B of the EIA SB. The assessment area for air quality impact assessment is within 500 m from the Project boundary.

Construction Phase

3.2.1.2 Potential air quality impact from the construction works of the Project would mainly be related to construction dust from excavation, material handling, spoil removal and wind erosion. Construction activities of the concurrent projects within 500 m assessment area would also pose cumulative dust impact. With the implementation of mitigation measures specified in the Air Pollution Control (Construction Dust) Regulation together with the recommended dust suppression measures including frequent watering on active works areas, exposed areas and unpaved haul roads and other site management measures such as good site practices, and environmental monitoring and audit (EM&A) programme, no adverse air quality impact on the air sensitive receivers (ASRs) in the vicinity of the work sites would be anticipated during the construction stage.

Operation Phase

3.2.1.3 Cumulative air quality impacts arising from the proposed EPP, CWHF, PFTF, and CBP and the traffic emissions associated with the development at TKO 132 and TKO 137, as well as existing industrial emission sources, existing portal, vehicular emission and marine emission within 500 m assessment area, and flares and LFG generator of SENTX has been evaluated. The predicted results concluded that the cumulative hourly and annual average Nitrogen Dioxide (NO_2), daily and annual average Respirable Suspended Particulates (RSP) and Fine Suspended Particulates (FSP), 10-minute and daily average Sulphur Dioxide (SO_2) and hourly and 8-hour average Carbon Monoxide (CO) concentrations at all existing and planned ASRs would comply with AQOs. The predicted Methane, Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Formaldehyde, Vinyl Chloride, Acetaldehyde and Benzene concentrations would be well below the respective international standards.

3.2.1.4 Cumulative odour impact arising from proposed EPP, RTS, SPS, and existing ASB Biodiesel (Hong Kong) Limited and SENTX (aftercare phase) within 500 m assessment area have been evaluated. The predicted odour impact on existing and planned ASRs would comply with the criterion stipulated in EIAO-TM.

3.3 Noise Impact

3.3.1.1 Potential noise impacts associated with the construction and operation phases of the Project have been assessed in accordance with the criteria and guidelines as stated in Annexes 5 and 13 of the EIAO-TM as well as the requirements given in Section 3.4.5 and Appendix C of the EIA SB. The assessment areas for construction noise, fixed noise, rail noise, road traffic noise impact assessment were defined by a distance of 300 m from the boundary of the proposed development and works of the Project, while the marine traffic noise assessment area was agreed with Environmental Protection Department (EPD) to cover an area of 300 m from the boundary of the proposed development and works of the Project and marine vessel manoeuvring in the area of Junk Bay (west ending at Lei Yue Mun and east ending at Cape Collinson/TKO 137).

Construction Phase

3.3.1.2 Assessment on the potential noise impact generated from the powered mechanical equipment (PME) during construction of the Project has been conducted. Mitigation measures including good site practices, adoption of quieter construction methods and use of quality PME (such as use of press-in method for sheet piling; large diameter bored piling to replace percussive piling; use of hydraulic splitter / hydraulic crusher / bursting system / quieter type saw / chemical expansion agent for demolition, concrete breaking, site formation, filling and slope cutting works and removal activities; use of fully enclosed conveyor for material handling; use of mini-breaker for small boulder removal and infrastructural works; pipe jacking using tunnel boring machine for large diameter pipe laying; use of quiet type saw, robot-type hydraulic crusher or handheld concrete crusher for building works; use of pre-casting and prefabrication technology for building superstructure works; and use of self-compacting concrete or rubber head poker vibrator), use of movable noise barriers and full enclosures, grouping of PMEs and careful schedule of use of PME among nearby construction work site have been reviewed and are considered feasible and practicable. With the implementation of these mitigation measures, no adverse construction noise impact arising from the Project would be anticipated. Regular site environmental audit during construction phase is recommended to ensure proper implementation of mitigation measures and good site practices.

3.3.1.3 Construction Noise Management Plan (CNMP) containing a quantitative construction noise impact assessment should be prepared and submitted to EPD based on the best available

information before the tender invitation and commencement of the construction works, with details on the construction method, plant inventory, recommended noise mitigation measures and implementation details of the mitigation measures in order to minimise the construction noise impact to comply with the EIAO-TM criteria.

Operational phase

3.3.1.4 Assessment on the potential fixed noise impact from proposed facilities at TKO 132 and existing facilities in the vicinity of TKO 137 and proposed facilities at TKO 137 during operation phase was conducted. A review has been considered on the design of these fixed noise sources. It is considered that no adverse operational phase fixed noise impact from these proposed facilities with the implementation of good design and mitigation measures such as quieter plant, locating/enclosing the plant inside reinforced concrete building/enclosure/acoustic plant room with openings directed away from noise sensitive uses, provision of designated area for fixed noise sources, installation of high speed roller shutter doors at openings, installation of silencer and/or acoustic louvre, and use of acoustic mat, erecting noise barriers and enclosures, etc. For various DPs within the assessment area, Fixed Noise Source Management Plan (FNMP) containing the quantitative fixed noise sources impact assessment, recommended noise mitigation measures, implementation details of the noise mitigation measures, commissioning test requirements and fixed noise sources impact monitoring and audit programme will be submitted by the proponent of the DP to EPD with reference to the updated plant inventories and utilisation schedule once available and in any case before tendering and commencement of implementation of the DP. For planned/proposed fixed noise sources of non-DPs within the Project area and existing noise sources within the assessment area affecting the planned/proposed NSRs under this Project, separate quantitative fixed noise impact assessment would be carried out via various planning/funding/land lease mechanism in accordance with the requirements of the HKPSG.

3.3.1.5 Rail noise impact assessment has been conducted. No airborne rail noise impact would be anticipated as the planned TKLSE would be located underground. Given insufficient design and operational information of TKLSE at the time of this EIA, ground-borne rail noise impact assessment was conducted qualitatively, having regard to other existing railway systems with similarities based on best available information. As TKLSE would be extension of existing Tseung Kwan O Line (TKL), assessment was conducted with reference to operational information of TKL. The assessment results indicated that no adverse ground-borne railway noise would be anticipated. Nevertheless, the project proponent of TKLSE would conduct a separate Environmental Impact Assessment study for the TKLSE.

3.3.1.6 Road traffic noise impact assessment has been conducted. The predicted overall road traffic noise level at all representative existing noise sensitive receivers (NSRs) would comply with relevant noise criteria under unmitigated scenario in year 2041 that no further mitigation measures would be required.

3.3.1.7 For planned residential sites, the predicted overall road traffic noise levels at the representative NSRs at TKO 137 would be up to 72 A-weighted decibel (dB(A)) which would exceed the respective noise criteria by up to 2 dB(A) in the unmitigated scenario during the assessment year 2041. Direct noise mitigation at-source measures, low noise road surfacing (LNRS) has been considered to alleviate the potential road traffic noise impact. At-receiver noise mitigation measures such as acoustic window are recommended for those planned NSRs with noise exceedances under the scenario with the proposed direct noise mitigation at-source measures. With the proposed noise mitigation measures in place, predicted noise levels of all planned residential NSRs proposed in this Project

would comply with noise criteria stipulated in the EIAO-TM and no adverse road traffic noise impact would be anticipated.

3.3.1.8 Noise impact assessment for the planned residential sites is proposed to be conducted by future developers / proponents to review the detailed design of the development with a view to avoid and reduce the potential exposure to road traffic noise so as to minimise the scale/extent of the proposed noise mitigation measures. The requirement of noise impact assessment would be included in the lease condition or planning briefs of the sites.

3.3.1.9 Besides, for planned schools at TKO 137, the predicted overall road traffic noise levels under unmitigated scenario in 2041 would be up to 73 dB(A) that would exceed the noise criterion by 8 dB(A) in maximum. Noise insulation with suitable window type and air-conditioning is recommended for the affected noise sensitive rooms. The project proponent of planned schools shall conduct and submit their Class Assessment Documents for agreement by DEP.

3.3.1.10 With implementation of above recommended mitigation measures, no adverse road traffic noise impact would be anticipated.

3.3.1.11 Marine traffic noise impact assessment has been conducted. The predicted cumulative marine traffic noise levels at all existing and planned NSRs would comply with the noise criteria, i.e. the prevailing noise level during peak marine traffic hour. No adverse marine traffic noise impact would be anticipated.

3.4 Water Quality Impact

3.4.1.1 The water quality impact assessment has been conducted in accordance with the requirements in Annexes 6 and 14 of the EIAO-TM and the requirements in Section 3.4.6, Appendix D and Appendix D-1 of the EIA SB. The water quality impact assessment area mainly covered the Junk Bay Water Control Zone (WCZ) and Eastern Buffer WCZ as designated under Water Pollution Control Ordinance (WPCO), including inland water bodies within 500 m from the boundary of the Project.

Construction Phase

3.4.1.2 Land-based Construction

3.4.1.3 The key sources of water quality impact arising during the land-based construction of the Project include the construction site runoff, wastewater generated from general construction activities, accidental chemical spillage, general refuse and sewage from the workforce. The impacts could be mitigated and controlled by implementing the recommended mitigation measures. No adverse water quality impact is expected. Regular site inspections should be undertaken to inspect the construction activities and works area to ensure the recommended mitigation measures are properly implemented.

3.4.1.4 Marine-based Impact

3.4.1.5 Marine-based water quality impact may arise from the proposed marine construction works at TKO 137 and TKO 132. Non-dredged DCM treatment method is proposed for construction of the foundation of the reclamation to minimise the potential water quality impact.

3.4.1.6 Water quality impact due to marine construction activities (such as the underwater filling works for reclamation and dredging works for new berthing facility) have been quantitatively assessed by mathematical modelling. Suspended solid (SS) and sediment depositions are identified as the key parameters of concern. Mitigation measures including the deployment of silt curtains and undertaking the underwater filling works behind the leading seawall are recommended to mitigate the water quality impact. With the recommended mitigation

measures in place, full compliances with assessment criteria were predicted at all representative Water Sensitive Receivers (WSRs) during the marine construction works. A water quality monitoring and audit programme will be implemented for the marine construction work.

Operation Phase

3.4.1.7 Sewage and wastewater generated from the Project development would be either diverted to the existing public sewerage system in TKO or to the proposed EPP for proper treatment and disposal.

3.4.1.8 The proposed reclamations at TKO 137 and TKO 132 together with the EPP discharges at TKO 137 are predicted to cause no significant change in the hydrodynamics and water quality regime in the assessment area. Emergency discharges from the EPP are also predicted to cause no significant water quality effect except only for the *E.coli* levels at the closest WSR (i.e. coral recipient site at Fat Tong Chau), which would be temporarily elevated. The *E.coli* elevations caused by the emergency discharge are predicted to be transient and reversible.

3.4.1.9 Preventive design measures and an Emergency Contingency Plan would be implemented to avoid emergency discharge from the EPP and SPS of the Project and to prevent accidental marine spillage from operation of the TKO 132 development. Storm pollution control measures and best management practices for storm water management should be implemented to minimise the water quality impact due to non-point source surface runoff. With proper implementation of all the recommended water quality mitigation measures, no adverse water quality impact would arise from the Project operation.

3.5 Sewerage and Sewage Treatment Implications

3.5.1.1 The assessment on potential sewerage and sewage treatment impacts on the downstream public sewerage, sewage treatment and disposal facilities arising from the Project has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.7 and Appendix E of the EIA SB, as well as Annex 14 of the EIAO-TM.

3.5.1.2 As the spare capacity of the existing sewerage system is unable to cater for the full intake for TKO 137 development, it is proposed to construct new sewerage network and an EPP in TKO 137 to cater for the sewage discharge from the new development. To strike for a balance between population intake programme and the implementation programme of the EPP, an advance sewerage provision is provided prior to the commissioning of the EPP to temporarily facilitate the 1st and 2nd population intake of TKO 137 development.

3.5.1.3 For the development at TKO 132, the existing sewerage system in Tiu Keng Leng has been assessed to have sufficient capacity to cater for the sewage discharge from the new Public Facilities at TKO 132, and thus a SPS with twin rising mains is proposed at TKO 132 to convey the sewage to the existing sewerage system in Tiu Keng Leng.

3.5.1.4 Based on the sewerage impact assessment, it can be concluded that the proposed development is sustainable from sewage collection, treatment and disposal prospective. There is no identified insurmountable sewerage and sewage treatment implications arising from the Project.

3.6 Waste Management Implications

3.6.1.1 The waste management implication assessment has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.8 and Appendix F of the EIA SB, as well as Annexes 7 and 15 of the EIAO-TM.

Construction Phase

3.6.1.2 Construction and demolition (C&D) materials, chemical waste, general refuse, sediment and floating refuse would be generated from the construction of the Project. Reduction measures have been recommended to minimise the amount of materials generated by the Project by reusing C&D materials before off-site disposal. Provided that the waste is handled, transported and disposed of according to the recommended mitigation measures, adverse waste management implications, including potential hazards, air and odour emissions, noise, wastewater discharge, ecology and public transport, associated with handling, storage and disposal of wastes during the construction phase of the Project are not expected.

3.6.1.3 It is estimated that around 117,000 m^3 of non-inert C&D materials and 1,158,770 m^3 of inert C&D materials will be generated from reclamation, site clearance and site formation works at TKO 137 and TKO 132, and construction of viaducts at TKO 132 during the construction phase of the Project. Some non-inert C&D materials generated from the Project will be suitable for reuse on-site. Disposal at the SENTX / North East New Territories (NENT) / West New Territories (WENT) Landfills, or their extensions should only be considered as the last resort. Approximately 488,770 m^3 of inert C&D materials generated from the Project are assumed to be suitable for reuse on-site and around 670,000 m^3 of inert C&D materials generated from reclamation, site clearance and site formation works at TKO 137 and TKO 132, and construction of viaducts at TKO 132 will be transported to other concurrent projects for reuse or to the Public Fill Reception Facilities (PFRFs) subject to the designation from the Public Fill Committee (PFC). Potential concurrent projects shall be sourced for reuse of inert C&D materials. It is estimated that around 7,799,000 m^3 of fill materials will need to be imported for these construction works under the Project. For construction of buildings and infrastructures, it is estimated that around 6,500 m^3 and 4,006,200 m^3 of non-inert and inert C&D materials will be generated respectively. It is estimated that approximately 1,691,970 m^3 of inert C&D materials generated from the construction of buildings and infrastructures will be reused on-site, and approximately 192,310 m^3 of imported fill will be acquired from other concurrent projects. However, as the construction of new buildings is carried out by different entities based on land use, the reuse of construction and demolition materials on-site is subject to further coordination with the respective parties involved. With proper implementation of good construction site practice and mitigation measures, the on-site handling and reuse of C&D materials would not cause adverse environmental impacts.

3.6.1.4 Based on the current estimation, approximately 9,951 m^3 of sediment from TKO 137 and 184,601 m^3 of sediment from TKO 132 will be disposed of at the marine disposal areas. In accordance with paragraph 4.2.1 of Chapter 4 of the PAH, for Type 1 – Open Sea Disposal, approximately 90,517 m^3 of sediment from TKO 132 will be disposed. For Type 2 – Confined Marine Disposal, approximately 9,951 m^3 (marine-based) of sediment from TKO 137 and 94,084 m^3 of sediment from TKO 132 will be disposed.

3.6.1.5 With the implementation of the recommended mitigation measures and the requirements of paragraph 4.2.1 of Chapter 4 of the Project Administration Handbook for Civil Engineering Works (PAH), no unacceptable environment impacts would be expected from sediment excavation / removal, transportation and disposal of sediment.

Operation phase

3.6.1.6 The main waste types to be generated during the operation phase of the Project will include municipal solid waste (MSW), chemical waste, concrete waste, floating refuse, screenings, grits and sewage sludge. A new RTS will be included in preparation for the increased quantity of waste in the district. The proposed waste infrastructure will provide convenient

collection of recyclables from the local community, and to provide synergy to achieve better operational efficiency and environmental sustainability. Provided that the waste is handled, transported and disposed of according to recommended mitigation measures, adverse waste management implications, including potential hazards, air and odour emissions, noise, wastewater discharge, ecology and public transport, associated with handling, storage and disposal of wastes during the operation phase of the Project are not expected.

3.7 Land Contamination

3.7.1.1 The land contamination assessment has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.9 and Appendix G of the EIA SB, as well as Sections 3.1 and 3.2 of Annex 19 of the EIAO-TM.

3.7.1.2 A site appraisal, in the form of desktop review and site walkover, was conducted from November 2023 to October 2024 to identify the past and current potentially contaminating land uses within the Project area. Based on the site appraisal, a total of 2 areas with potential land contamination concerns (i.e. an oil stain at the skips storage and skip lorries parking area (Site S1) and the future concrete batching plant and transformer room (Site S2)) were identified at TKO 137 within the Project area. No potentially contaminating land uses / activities were identified in TKO 132.

3.7.1.3 A sampling and testing programme, targeting the hotspot identified within Site S1 had been proposed. A total of 1 location was proposed for soil sample collection. The collected samples will be tested for the chemicals of concern (COCs) including metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and petroleum carbon ranges (PCRs).

3.7.1.4 As Site S1 is still in operation and Site S2 is still under construction, and that site clearance at these two sites will not commence until 2029 based on the tentative construction programme, there could be changes in the operation or changes in land use within these areas which may cause further contamination issues. Further site appraisal should be carried out for these two sites when site operation has ceased / after site handover in order to assess the latest site conditions / to identify the presence of any potential land contamination sources, and to address any new contamination issues caused by any changes in site operation and/or land use within these two sites. Any necessary site investigation (SI) works and remediation action are recommended to be carried out after the site operation has ceased / decommissioning of the facility but prior to the commencement of construction works at the concerned sites / areas.

3.7.1.5 The recommended further assessment and remediation works, including the submission of Contamination Assessment Plan(s) (CAP(s)), Contamination Assessment Report(s) (CAR(s)) / Remediation Action Plan(s) (RAP(s)) and Remediation Report(s) (RR(s)) would follow relevant Guidance Manual, Guidance Note and Practice Guide.

3.7.1.6 With the implementation of the recommended follow up works for the Project and the possible remediation measures reviewed and recommended, 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.

3.8 Ecological Impact (Terrestrial and Marine)

3.8.1.1 The ecological impact assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.10 and Appendix H of the EIA SB, as well as Annexes 8 and 16 of the EIAO-TM.

3.8.1.2 Comprehensive literature review and ecological field surveys have been conducted to gather and establish ecological baseline within the assessment area. The CWBCP,

Coastal Protection Area (CPA) and coral recipient sites are recognised as sites of conservation importance / ecologically sensitive sites which fall within the assessment area. A total of nine terrestrial and three marine habitat types were identified within the assessment area, including mixed woodland, plantation, shrubby grassland / grassland, shrubland, developed area, natural watercourse, modified watercourse, rocky shore and soft shore, water column and subtidal hard substrata and soft substrata. All habitats within the assessment area were considered as having low or low to moderate ecological value, except for shrubby grassland / grassland within CWBCP, which was considered as having moderate ecological value.

3.8.1.3 The flora and fauna communities recorded within the assessment area were mostly in low or low to moderate diversity and abundance, and generally consisted of locally common and widespread species and/or generalist species. Some species of conservation importance were also recorded within the assessment area, including three floral species, 20 bird species, 13 mammal species, seven butterfly species and two reptile species from the terrestrial survey, and 32 hard coral species, three black coral species and one amphioxus species from the marine survey.

3.8.1.4 The Project area in TKO 137 is primarily comprised of developed area and sea area including subtidal hard and soft substrata in the reclamation area, while the Project area in TKO 132 will mainly be formed by reclamation, thus largely comprised of sea area including subtidal hard and soft substrata. Taking into account the ecological conditions of the assessment area, the Project has been designed to avoid direct encroachment on any sites of conservation importance and ecologically sensitive sites, such as the CWBCP and coral recipient sites. Furthermore, several adjustments and engineering options have been made, including the reduction of the extent of the land-based works and the footprint of reclamation, to avoid and minimise the potential impact on terrestrial and marine habitats and associated wildlife, such as avoidance of direct impact on natural watercourse, and reduction of the loss of mixed woodland, natural rocky shore, and soft shore at TKO 132.

3.8.1.5 Based on the Project design, it is estimated that there would be a total of about 90 ha of permanent loss and 5 ha of temporary loss of terrestrial habitats arising from the Project, primarily affecting urbanised habitats (about 90%) such as developed area and modified watercourses. Amongst the permanent loss, there would be about 7 ha and 2 ha of natural habitat loss in TKO 137 (shrubland and shrubby grassland/grassland) and TKO 132 (mixed woodland, rocky shore and soft shore), respectively. Temporary loss of natural terrestrial habitats would be about 1 ha in TKO 137 (shrubland) and about 4 ha in TKO 132 (mixed woodland, rocky shore and soft shore). Given the low to moderate ecological values of the affected natural terrestrial habitats, the direct impact is expected to be low. As the affected artificial habitats (developed area, plantation and modified watercourses) only supported limited floral and faunal diversity and abundance and having low ecological value, the direct impact on these habitats is also expected to be low. With the current project design, one floral species of conservation importance, *Diospyros vaccinioides,* was recorded with low abundance in shrubland habitats within the Project boundary of TKO 137 (in Fat Tong Chau), and identified from previous studies near the shoreline within the Project boundary of TKO 132 (at a location currently considered as mixed woodland). These individuals would be potentially directly affected by the construction works. The direct impact on this floral species of conservation importance would be moderate, if unmitigated.

3.8.1.6 For marine habitats, the marine works of the Project would result in the permanent loss of about 0.1 ha of artificial seawall (developed area), about 20 ha of sea surface (water column), and with about 25 ha of subtidal habitats (hard and soft substrata) in TKO 137. Temporary loss of about 0.4 ha of subtidal soft substrata would also anticipate in TKO 137. In TKO 132, it is estimated that it would result in the permanent loss of about 0.3 ha of

intertidal habitats (rocky shore), about 20 ha of sea surface (water column), and with about 22 ha of subtidal habitats (hard and soft substrata). Temporary loss of about 8 ha of sea area (soft substrata and water column) would also anticipated. Low to moderate coverage of hard coral communities and low coverage of sparse black corals were recorded within the footprint of marine works in TKO 132. Nonetheless, these recorded coral species were generally common and abundant in Hong Kong waters, with no rare coral species or species with restricted distribution recorded. Thus, the ecological impact of the loss of this subtidal hard substrata habitat in TKO 132 is expected to be low to moderate if unmitigated. For other affected marine habitats, given the low and low to moderate ecological value and the commonness of these habitats and associated wildlife, the ecological impact of the loss of these marine habitats is expected to be low.

3.8.1.7 Indirect impact including disturbance (e.g. noise, human disturbance, light and glare, etc.) and water quality impact, especially on marine water, are also expected. These impacts were assessed to have magnitude ranged between low and low to moderate.

3.8.1.8 Mitigation measures were recommended to avoid and minimise for any identified ecological impacts rated with an impact severity of low to moderate and above. For instance, transplantation / translocation of floral / coral species of conservation importance was proposed. Translocation / transplantation proposal shall be prepared which includes pre-construction survey, detailed methodologies of transplantation / translocation, identification of suitable receptor site, implementation programme and post-transplantation / translocation monitoring and maintenance programme. Other mitigation measures to further minimise the indirect ecological impacts include adopting good site practices to minimise noise and dust impact, restricting excessive lighting, utilising non-dredged reclamation methods like Deep Cement Mixing (DCM), and implementing adequate water quality mitigation measures such as installing silt curtains and conducting water quality monitoring. Some recommendations of precautionary measures (e.g. pre-construction survey on floral and faunal species of conservation importance) and enhancement opportunities (e.g. establishment of eco-shoreline and green planting within the development) were also provided to further alleviate any potential ecological impacts, and promote the urban biodiversity upon completion of the Project.

3.8.1.9 With full implementation of the recommended mitigation measures along with the environmental monitoring and audit activities, the level of the ecological impacts from the Project would be low. No unacceptable residual ecological impacts are expected to arise from the Project.

3.9 Fisheries Impact

3.9.1.1 The fisheries impact assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.11 and Appendix I of the EIA SB, as well as Annex 9 and 17 of the EIAO-TM.

3.9.1.2 The fisheries impact assessment has been conducted based on the information gathered from literature review and the field surveys. Fisheries sensitive receivers identified include Fish Culture Zones (FCZs) in Tung Lung Chau and Po Toi O, spawning grounds of commercial fisheries resources at eastern waters, nursery area of commercial fisheries resources at Port Shelter, and Artificial Reefs (ARs) at Outer Port Shelter. These sensitive sites were situated within the assessment area, yet away from the Project site of TKO 137 and TKO 132.

3.9.1.3 As suggested by the results from literature review and the field surveys, fishing activities within the assessment area, in particular the Junk Bay area, is utilised by moderate number of fishing vessels, predominantly sampans, with a fisheries production of low to moderate

level. The production mainly comprises non-commercially targeted and low-valued species, including *Mugil cephalus*, *Charybdis* (Charybdis) *helleri* and *Podophthalmus vigil*.

3.9.1.4 During the construction phase of the Project, the proposed works for the Project would result in permanent loss (about 47 ha) and temporary loss (about 82 ha) of fishing ground and fisheries habitats. Since the loss only constitute an insignificant proportion of fishing ground and fisheries habitats in Hong Kong, impacts to capture fisheries due to loss of fishing ground and disruption of fisheries operation are expected to be minor. Changes in water quality associated with construction activities are not expected to result in unacceptable impacts on fisheries resources and habitats. Potential impacts of elevated level of underwater sound as a result of construction activities are also not expected to be unacceptable.

3.9.1.5 During the operational phase, about 47 ha of fishing ground and fisheries habitat would be lost upon the completion of the proposed land formation and marine viaducts. No further loss would be expected during the operational phase. Indirect impacts related to changes in water quality from sewage / wastewater generation, effluent discharge, surface runoff, accidental marine spillage from barges, and maintenance sediment removal are expected to be of minor significance. The Project would not significantly alter the local hydrodynamics regime and hence impact of the change in hydrodynamics on fisheries is considered minor. Potential impacts of underwater sound due to vessel operation are not expected to be unacceptable.

3.9.1.6 Furthermore, through the adoption of non-dredged reclamation such as DCM as far as practicable, and the implementation of adequate water quality mitigation measures such as installation of silt curtain, good site practices and best management practice (BMP), alongside ecological enhancement measures such as eco-shoreline, as well as implementation of water quality monitoring during construction and operational phase, no unacceptable fisheries impacts are expected to occur and hence no fisheries-specific mitigation measures and monitoring is necessary.

3.10 Landscape and Visual Impacts

3.10.1 Assessment Scope and Key Criteria

3.10.1.1 The landscape and visual impact assessment has been carried out according to EIAO GN 8/2023 and the criteria and guidelines stated in the Annexes 10 and 18 of EIAO-TM respectively, and the requirements given in Clause 3.4.12 and Appendix J of the EIA SB.

3.10.2 Construction and Operational Phases

3.10.2.1 Among the approximate 5,497 nos. existing trees within the assessment boundary, approximately 1,250 existing trees would be directly affected by the proposed works which would be proposed to be removed or transplanted as far as practicable. The trees surveyed within the assessment boundary that would not be affected by the proposed development would be retained in-situ. None of these are Registered Old and Valuable Trees (OVTs), rare or endangered tree species and no trees with DBH over 1m which are considered as Tree of Particular Interest were identified.

3.10.2.2 Within the Project boundary, as far as practicable, compensation tree planting would be provided at a 1:1 ratio where appropriate and applicable to compensate for tree loss due to the proposed development. Compensatory planting would be implemented following the prevailing mechanism (e.g. DEVB TC(W) No. 4/2020), with due regard to the planting guidelines promulgated by the Greening, Landscape and Tree Management Section of DEVB and other relevant greenery and tree planting guidelines. No off-site compensatory tree planting is proposed. Exact number of trees to be retained, transplanted and felled and associated compensation proposal would therefore be further explored with the

consideration of available areas for tree planting and operation constraints during the preparation of detailed Tree Preservation and Removal Proposals (TPRPs) in accordance with DEVB TC(W) No. 4/2020.

3.10.2.3 Among the identified landscape resources (LRs), vegetation within TKO 137 (LR1), hillside vegetation at Devil's Peak (LR2), shrubland at Tit Cham Chau and Fat Tong Chau (LR3), coastal water (LR6), rocky shore along western coastline of Junk Bay (LR9), hillside vegetation at Chiu Keng Wan Shan (LR11) and sandy shore along western coastline of Junk Bay (LR13) would have moderate impact significance. With appropriate mitigation measures, it is considered that the residual impacts on most of these LRs would be reduced to moderate to sight in Day 1, and slight to negligible in Year 10 of operation. However, the loss of water body of coastal water (LR6) is irreversible and the residual impacts would maintain as moderate in Year 10 of the operation. Meanwhile, vegetation along drainage channel (LR4), roadside planting (LR8) and orchard/ vegetation near rural settlement (LR12) would have slight impact significance due to the proposed development. Considered that impacts caused by the proposed development to these LRs would be considered as slight, hence it is assumed that residual impacts on these LRs would be slight in Day 1 and reduced to negligible in Year 10 of operation after the implementation of mitigation measures.

3.10.2.4 For the landscape character area (LCA), the most permanent works such as reclamation and building of the Public Facilities and roadworks would be located within Fat Tong O Reclamation (LCA1), Fat Tong Chau and Tin Ha Au upland and hillside landscape (LCA2), Chiu Keng Wan upland and hillside landscape (LCA3), water body of Tathong Channel and Joss House Bay (LCA4) and Junk Bay (LCA5). Hence, it is anticipated that the impact significance before mitigation would be moderate. With the implementation of mitigation measures, the residual impact of most of these LCAs would be reduced from moderate to slight in Day 1 and negligible in Year 10 of operational phase. However, the loss of water body of Tathong Channel and Joss House Bay (LCA4) and Junk Bay (LCA5) are irreversible and the residual impacts would maintain as moderate in Year 10 of the operation. Some proposed works such as constructing EPP within Fat Tong O industrial urban landscape (LCA8) and provision of marine viaduct connecting to the existing TKO transportation corridor (LCA9) would slightly alter the existing landscape character. It is assumed that there would be slight impact significance to these LCAs. With the implementation of mitigation measures, the residual impact would be slight in Day 1 and reduced to negligible in Year 10 of operational phase. The present barren reclamation landscape character in Fat Tong O (LCA1) would be substantially changed and replaced by a new residential urban landscape character of TKO 137, while a portion of western coastline of Junk Bay bay landscape character (LCA5) would be altered to TKO transportation corridor landscape character (LCA9) and a new reclamation landscape character of TKO 132 to accommodate Public Facilities away from existing and planned residential developments. The resultant new landscape character would provide a community incorporating environmental and biodiversity initiatives which enhancing the overall quality of life for residents.

3.10.2.5 In terms of the visual impact, considered that the proposed development of TKO 132 and TKO 137 are relatively extensive in terms of development scale, it is anticipated that the existing visual context of the selected VPs would be affected inevitably in various levels.

3.10.2.6 For VPs that viewing to TKO 137, the impact significance would be substantial to VP8 (view from Tin Ha Shan) and VP10 (view from traveller along the ferry route of Tathong Channel) due to the close proximity to the proposed development while alternating the existing visual context in a substantial degree. The impact significance would be moderate to slight to VP1, VP3 and VP9 due to far viewing distance and slight degree of change in the existing

visual context and character. With implementation of the mitigation measures, the residual impact of VP1, VP3 and VP9 would be reduced from sight to moderate in Day 1 and negligible to slight in Year 10 of operational phase, while VP8 and VP10 would be substantial in Day 1 and still be moderate residual impact in Year 10 of operational phase.

3.10.2.7 For VPs that viewing proposed development of TKO 132, the impact significance would generally be slight to moderate for VP4, VP5, VP6 and VP12 due to its relatively small in scale development and low in building profile. Existing visual context such as ridgeline of Devil hill or Chiu Keng Wan Shan could still be maintained. Hence, the residual impact would reduce from slight in Day 1 to negligible in Year 10 of operational phase after the implementation of mitigation measures.

3.10.2.8 For VPs that viewing both the proposed development of TKO 132 and TKO 137, the impact significance would be ranging from moderate to substantial to VP2, VP7 and VP11 due to its extensive development scale and visual blockage to existing natural elements such as foothill of Chiu Keng Wan Shan and ridgeline of Tin Ha Shan. Since the nature of development is similar to existing urbanised area of Tiu Keng Leng, TKO and LOHAS Park, the proposed developments of both TKO 132 and TKO 137 would consider as an extension of existing urbanised area. With implementation of the mitigation measures, it is anticipated that the residual impact of VP2 and VP11 would be moderate in Day 1 and reduced to slight in Year 10 of operational phase, while VP7 (View from Lookout of the Devil's Peak) would be substantial in Day 1 and still be moderate residual impact in Year 10 of operational phase.

3.10.2.9 With the aims to improve the overall quality of development within the Project, mitigation against adverse impacts would be adopted as far as practicable. Key planning, urban design and landscape design framework would be developed and proposed in RODP, Master Urban Design Plan and Landscape Master plan. With this guiding principle set out in early stage, these mitigation measures during construction stage could optimise their effect by avoidance of significant change in the existing landscape and visual context, creating visual outlook and landscape characters of the proposed development, ensuring ample green space and initiative are considered during the design stage and together with the preservation, protection and compensatory planting of trees / vegetation.

3.10.2.10 Considering the scale and nature of the Project, it would inevitably result in certain levels of residual landscape and visual impacts in relation to the loss of water body, loss of natural shorelines and the views from hilltop and from sea level. Nevertheless, the residual landscape impacts are localized and limited to the reclamation extent only without affecting existing community, while the residual visual impacts are confined within the visual envelope either involving few numbers of public viewers along hiking trail and ferry route, or relatively large numbers of public viewers along promenade but viewing at long distance. With the implementation of the proposed landscape and visual mitigation measures, the overall landscape residual impacts would be from negligible to moderate in Day 1 and Year 10 of operational phase, and the overall visual residual impacts would be from slight to substantial in Day 1 and from negligible to moderate in Year 10 of operational phase. With full implementation of the recommended mitigation measures, unacceptable adverse residual landscape and visual impacts are not expected.

3.11 Impact on Cultural Heritage

3.11.1.1 The cultural heritage impact assessment (CHIA), which covers Built Heritage Assessment (BHIA), Archaeological Impact Assessment (AIA) and Marine Archaeology Investigation (MAI), has been conducted in accordance with the requirements given in Clause 3.4.13, Appendix K and Appendix K-1 of the EIA SB (No. ESB-360/2023).

Built Heritage

3.11.1.2 No declared monument, proposed monument, graded historic building or government historic sites were identified within the Project boundary of TKO 137 or TKO 132. No direct impact on built heritage would therefore be anticipated during both the construction and operational phases.

3.11.1.3 No declared monument, proposed monument, graded historic building or government historic sites were identified outside the Project boundary but within the 300 m assessment area of TKO 137. For TKO 132, there are two (2) graded historic buildings (i.e. Fortifications at Devil's Peak (grade 2 historic building, HB463) and Old Quarry Site Structures, Lei Yue Mun (grade 3 historic building, HBN86) identified within the 300 m assessment area but outside the Project boundary of TKO 132. Given the considerable distance between the identified graded historic buildings and the Project boundary, no adverse impact on these graded historic buildings would be anticipated during the construction and operational phases.

3.11.1.4 Four (4) other identified items with no status are located within the 300 m assessment area but outside the Project boundary of TKO 132. Due to the considerable distance between these other identified items and the Project boundary of TKO 132, no direct or indirect impact would be anticipated during the construction and operational phases.

Archaeology

3.11.1.5 There is no Site of Archaeological Interest (SAI) identified within the Project boundary of TKO 132 or the corresponding 300 m assessment area. For TKO 137, there are one (1) declared monument, namely Site of Chinese Customs Station, Fat Tau Chau (DM18) and three (3) Sites of Archaeological Interest (SAIs) identified within the 300 m assessment area but outside the Project boundary, including Fat Tau Chau SAI (SAI184), Fat Tau Chau House Ruin SAI (SAI185), and Fat Tau Chau Qing Dynasty Gravestone SAI (SAI186).

3.11.1.6 The coastal lowlands at the Fat Tau Chau SAI, located to the northwest of the island but outside the Project boundary of TKO 137, may hold archaeological potential for having environment settings that are favourable to prehistoric settlements. For areas of Fat Tau Chau within the Project boundary of TKO 137, are considered to have low archaeological potential based on desktop review while site visits were hindered by lack of safe access and thick vegetation coverage over the steep slopes. However, while it is unlikely to have any prominent and noticeable remains located within the Project boundary of TKO 137, it is not possible to confirm whether archaeological remains or features of the Fat Tau Chau Customs Station and other facilities below ground, would exist within the Project boundary of TKO 137 at the time of the writing of this report.

3.11.1.7 Since no declared monument and SAI within the Project boundary of TKO 137 and TKO 132, no direct impact on them is anticipated during the construction phase or operational phase.

3.11.1.8 Also, no works under this Project are in close proximity to the Site of Chinese Customs Station, Fat Tau Chau (DM18), Fat Tau Chau SAI (SAI184) and Fat Tau Chau Qing Dynasty Gravestone SAI (SAI186), no impact is anticipated on these three heritage sites during construction phase or operational phase. Hence no mitigation measure is required.

3.11.1.9 For the areas within the Project boundary of TKO 132, they are considered to have no terrestrial archaeological potential based on both desktop review and site visits results. Therefore, no direct or indirect impact is anticipated on terrestrial archaeology during the construction phase or operational phase.

3.11.1.10 For the areas within the Project boundary of TKO 137, they possess low terrestrial archaeological potential. Due to the importance of Fat Tau Chau in relation to the history of Customs Station, but the detailed design on the proposed development within the Project

boundary of TKO 137 on Fat Tau Chau has not been available, the extent of impact to the areas of low archaeological potential could not be assessed. To ensure the preservation of archaeological heritage within the Project boundary of TKO 137 on Fat Tau Chau, this assessment would consider there would possibly be potential impact during the construction phase from the archaeological preservation perspective.

3.11.1.11 To ensure no archaeological resources related to the Customs Station on Fat Tau Chau would be affected by the Project, an Archaeological Impact Assessment should be undertaken during the detailed design phase when the details of the proposed works on Fat Tau Chau are available. This Archaeological Impact Assessment at the detailed design phase shall assess the archaeological potential concerning the existence of remains or features in relations to the Customs Stations or other facilities within the Project boundary of TKO 137 on Fat Tau Chau, particularly in areas that would be affected by the proposed works. Based on the details and extent of proposed works to be carried out on Fat Tau Chau, the Archaeological Impact Assessment at the detailed design phase would propose appropriate measures if any impact on archaeological heritage is identified, for consideration and agreement by AMO. The Archaeological Impact Assessment at the detailed design phase shall be conducted by an archaeologist. It shall incorporate desktop information, site inspection results and recommendation of appropriate mitigation measures if necessary, namely change of work design, preservation of archaeological heritage *in-situ*, preservation by relocation, archaeological survey cum excavation or rescue excavation, archaeological watching brief or preservation by record subject to the level of potential impacts to be confirmed in the Archaeological Impact Assessment upon availability of the details and extent of the proposed works to be carried out on Fat Tau Chau, as necessary for consideration and agreement by AMO. This Archaeological Impact Assessment at the detailed design phase should be conducted by the project proponent. In the light of the above considerations, no adverse impact would be anticipated with mitigation measures agreed by AMO and implemented to the satisfaction of AMO to ensure preservation of the archaeological heritage within the Project boundary of TKO 137 on Fat Tau Chau.

3.11.1.12 Furthermore, if antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the construction works within the Project boundary of TKO 137 and TKO 132, the project proponent is required to inform Antiquities and Monuments Office (AMO) immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.

3.11.1.13 In addition, Fat Tau Chau House Ruin SAI (SAI185) is an above-ground structures situated in close proximity to the Project boundary of TKO 137. While no direct impact is anticipated to the site, indirect impacts of ground borne vibration, tilting and settlement would be anticipated for during the construction phase, subject to the details of the construction works of future development in the proximity.

3.11.1.14 Condition and structural survey should be carried out for Fat Tau Chau House Ruin SAI (SAI185) both before and after all construction works to inspect its physical condition and structural integrity. The baseline vibration review before the construction phase shall evaluate if monitoring of ground-borne vibration, tilting, and ground settlement is required for Fat Tau Chau House Ruin SAI during construction phase based on the pre-construction condition and structural survey results and construction details. The baseline vibration review should be submitted to AMO for comment and agreement before implementation. If affirmative, monitoring of ground-borne vibration, tilting and ground settlement should be conducted during the construction phase. Also, a buffer zone shall be set up for Fat Tau Chau House Ruin SAI (SAI185) during the proposed construction works to separate the

works areas from the structure. No works shall be allowed within the protective zone. No worker or any construction related equipment(s) and material(s) should trespass the protective zone. Meanwhile, Air Pollution Control (Construction Dust) Regulation shall be followed. Dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid dust accumulation on Fat Tau Chau House Ruin SAI (SAI185).

Marine Archaeology

3.11.1.15 A Marine Archaeological Investigation (MAI) has been conducted for the Project. The baseline conditions have been established by reviewing the previous geophysical surveys and MAI studies, available archaeological and historical sources. The baseline review shows that while the Project would be undertaken in an area with high marine archaeological potential due to the considerable maritime activity in the past, the area has undergone significant modification in the more recent time due to land reclamation, dredging and construction activities that might have a significant negative effect on any marine archaeological resources, if present. The previous MAIs have also highlighted that the chance of finding well-preserved archaeological material on the seabed has been reduced due to the extensive seabed disturbance within Junk Bay caused by activities such as anchoring and construction.

3.11.1.16 The marine archaeological assessment of project-specific geophysical survey data identified a total of 57 anomalies, comprising 38 sidescan sonar and 19 magnetic contacts, for further inspection by diver survey. The diver survey results showed that none of the targets were considered to be of archaeological or historical significance, and no further investigations are required. No impact on marine archaeology is anticipated from the Project during both the construction and operational phases. Therefore, no mitigation measures are required.

3.11.1.17 Following the geophysical and diver surveys, adjustments to the Project boundary have resulted in minor data gaps and one uninvestigated anomaly within the assessment area. Given that the areas with data gaps and the uninvestigated anomaly are located at least approximately 225 m outside the marine works boundary of the Project, no marine archaeological impact is anticipated. No mitigation measures are therefore considered necessary. Nevertheless, as a precautionary measure, it is recommended to designate the areas with data gaps and the uninvestigated anomaly as archaeological exclusion zones during the marine works of the Project to ensure no impact on the seabed from anchoring of work vessels during the marine works of the Project in these locations.

3.12 Hazard to Life

3.12.1.1 Hazard assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.14 and Appendix L of the EIA SB, as well as Annex 4 of the EIAO-TM.

3.12.1.2 The risks associated with the planned desalination plant, existing SNG production plant, proposed EPP, existing explosives off-loading pier and proposed green fuel station (assumed as liquified petroleum gas station) during both construction and operation phases of the Project have been assessed. The results showed that both the individual risks and societal risks, taking into account the population induced by the Project, would be in compliance with the risk criteria stipulated in Annex 4 of the EIAO-TM. Risk mitigation measures are therefore not required.

3.12.1.3 Regarding the potential risk impact associated with the explosives delivery from the pier during construction of the Project, it is recommended that the contractors to keep close liaison with CEDD on the schedule and routing of explosives delivery, and maintain the

buffer distances (i.e. 90 m for indoor population and 35 m for outdoor population) from the delivery route accordingly. With the provision of sufficient buffer distance, negligible risk impact on the construction workers is expected.

3.13 Landfill Gas Hazard

3.13.1.1 The landfill gas hazard assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.15 and Appendix M of the EIA SB, as well as Section 1.1(f) in Annex 7 and Section 3.3 in Annex 19 of the EIAO-TM.

3.13.1.2 Landfill gas hazard assessment for TKO 132 is not required as the development resides beyond 250 m of any landfill. The northeastern quadrant of TKO 137 lies within the Consultation Zone for the SENT and SENTX, therefore landfill gas hazard assessment has been conducted for those development areas of TKO 137 situated within the 250 m landfill Consultation Zone.

3.13.1.3 The overall risk for the construction phase for the Development ranges from Low to Medium. Safety requirements stated in Chapter 8 - Hazards Arising During Construction of the Landfill Gas Hazard Assessment Guidance Note should be implemented properly during construction phase.

3.13.1.4 For the operational phase, dependent upon the actual design and usage of buildings, the overall risk levels for the operational phase in Open Spaces ranges from “Very Low” to “Low”. For developments where landfill gas risk is categorised as “Low”, some precautionary measures may be required to ensure that the planned development is safe, however the measures which depend on the actual design of indoor facilities if any (such as toilets).

3.13.1.5 The overall risk levels for the operational phase for Government, Institution or Community, Public Housing Sites, Education and Other Specified Uses ranges such as the EPP from “Low” to “High”. “Passive” or “Active” control measures should be considered for development areas categorised as “Medium” or “High” Risk respectively.

3.13.1.6 Detailed landfill gas hazard assessment (LFGHA), shall be conducted in accordance with the Landfill Gas Hazard Assessment Guidance Note, during the detailed design stage of the Development with appropriate control measures recommended based on the type of buildings/structures proposed, however potential hazard(s) posed by landfill gas are considered to be surmountable and numerous feasible engineering options exists to mitigate any unacceptable risk identified to acceptable levels.

3.13.1.7 EM&A requirements during construction within the consultation zone should be carried out in the form of regular site inspection to ensure the recommended mitigation measures are properly implemented. The overall monitoring programme for construction and operation phases and detailed actions should be submitted to EPD for approval in a detailed LFGHA during the detailed design stage.

3.13.1.8 Monitoring for landfill gases shall be conducted during operation phases of the Project. The monitoring programme (e.g. proposed parameters, locations and frequency of landfill gas monitoring) should be submitted in the detailed LFGHA to EPD for approval in the detailed design stage.

3.13.1.9 Provided that the construction and operational phase protection controls are appropriately designed and properly implemented, safety will be safeguarded and risk associated with landfill gas migration and potential hazard will be adequately controlled.

3.14 Impact from Electric and Magnetic Fields

3.14.1.1 Electric and magnetic fields impact assessment has been carried out in accordance with Section 3.4.16 of the EIA SB.

3.14.1.2 The proposed 132 kV ESSs at TKO 137 would be of the similar nature and design as existing 132 kV substations. The EMF due to the proposed ESSs would be expected similar to existing 132 kV substations. With reference to EMF measurement inside the existing Tuen Mun 132 kV Substation, the electric field strength and the magnetic flux density were respectively measured at 10 V/m and 4.7 μT, which complied with the ICNIRP limit by huge margin of over 99% and over 95%, respectively. EMF outside the proposed ESSs would be lower than that inside the ESSs, since EMF would decrease rapidly with increasing distance. Hence, it is expected that the EMF from the proposed ESSs at sensitive receivers would comply to the ICNIRP limit. No adverse EMF impact would be anticipated from the proposed ESSs.

3.14.1.3 The proposed 400 kV EFs at TKO 132 would be of the similar nature and design of existing 400 kV substations. The EMF due to the proposed EFs would be expected similar to existing 400 kV substations. With reference to EMF measurement inside the existing Tsz Wan Shan 400 kV Substation, the electric field strength and the magnetic flux density were respectively measured at 10 V/m and 59 μT, which complied with the ICNIRP limit by large margin of over 99% and over 40%, respectively. With reference to EMF measurement in the vicinity of the existing Shatin 400 kV Substation, the electric field strength and the magnetic flux density were respectively measured up to 7 V/m and 6.52 μT, which complied with the ICNIRP limit by huge margin of over 99% and over 90%, respectively. Hence, it is expected that the EMF from the proposed EFs at sensitive receivers would comply to the ICNIRP limit. No adverse EMF impact would be anticipated from the proposed EFs, based on latest available information.

3.14.1.4 Cumulative EMF impact would be expected from concurrent projects, i.e. underground and submarine power cables connecting to the proposed EFs and the proposed ESSs. With reference to previous EMF measurement result at existing underground power cables, measured electric field strength and magnetic flux complied with the ICNIRP limit by huge margin of over 99% and over 90%, respectively. For submarine power cables, referenced literature indicated electric field should be well contained within the submarine power cable as an industrial standard, while magnetic field generated from a submarine power cable at 2 m from the cable could be up to 72 μT, which complied with the ICNIRP limit by large margin of over 25%. Sensitive receivers would be expected to be located on land which are well beyond 2 m separation from a submarine power cable, and EMF would decrease rapidly with increasing distance, the EMF due to a submarine cable at any sensitive receivers on land would be expected much lower than that under water within 2m from a submarine cable. EMF compliance to ICNIRP limit at the sensitive receivers would be expected. Hence, it is expected that no adverse EMF impact to sensitive receivers from submarine power cables.

3.14.1.5 Nevertheless, the design of the EFs would be subject to further review by the proponent of the EFs. Therefore, in view of the uncertainty, the operator would apply for an EP separately when the design information is available, following the EIAO mechanism for the construction and operation of the proposed EFs to ensure that no adverse impact from the exposure of EMF generated from the proposed EFs would be anticipated.

4. ENVIRONMENTAL MONITORING AND AUDIT

4.1.1.1 An Environmental Monitoring and Audit (EM&A) programme is recommended to be implemented throughout the entire construction period to regularly monitor the environmental impacts on the neighbouring sensitive receivers. Some of environmental aspects would extend the EM&A programme to the operation period to ensure no adverse environmental impacts arising from the Project.

4.1.1.2 The EM&A requirements including site inspection/audit and monitoring for air quality, noise, water quality, waste management, land contamination, ecology, fisheries, landscape and visual, cultural heritage, hazard to life and landfill gas have been recommended during construction phase, whilst operation phase EM&A requirements for odour impact from proposed EPP, road traffic noise impact, water quality impact, landfill gas, landscape and visual, as well as commissioning test for planned fixed noise sources have been proposed to ensure that the recommended mitigation measures are properly implemented. The EM&A requirements are specified and detailed in the EM&A Manual.

5. SUMMARY OF ENVIRONMENTAL OUTCOMES

5.1.1.1 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. This has also included specific assessment for the three Schedule 2 DPs subject to environmental permit application under this EIA Study. The key outcomes are summarised in **Table 5.1**.

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

Design Approaches	Environmental Problems Avoided and Environmental Options
Avoidance of encroachment into CWBCP	• The proposed natural terrain mitigation works (i.e. flexible barrier) has been re-located to be within the EPP site to avoid any works encroaching into CWBCP
Preservation of natural shoreline	• Reclamation extent of TKO 132 has been optimised to minimise the impact to the natural shoreline. Approximately 1 km of natural shoreline can be maintained
Minimise direct impact to hard and black corals colonies and coral recipient site at western Junk Bay	• Reclamation extent of TKO 132 has been optimised to avoid encroachment into the coral recipient sites at Junk Bay and minimise direct impact to hard and black corals colonies and coral recipient site at western Junk Bay
Minimise direct impact to subtidal habitats and associated coral colonies in Western Junk Bay	• Reclamation extent of TKO 132 has been optimised to minimise direct impact to subtidal habitats and associated coral colonies in Western Junk Bay
Avoidance of encroachment on the existing government land licences at On Luen Village	• Site formation at TKO 132 has been designed to avoid encroachment into the existing government land licences at On Luen Village.
Avoidance of direct impacts on natural water course	• Pier locations of the marine viaduct has been designed to avoid direct impact on the natural watercourse near TKO 132.
Minimise impact to the terrestrial ecology at Devil's Peak	• The natural terrain mitigation works have been optimised to ensure that the works area is limited to the toe of Devil's Peak as far as possible in order to minimise the terrestrial ecology impact.
Minimise potential odour impact	• The EPP emission points are designed to be located away from the sensitive receivers to minimise the potential odour impact
Providing sustainable transport infrastructure to promote low-carbon living	• Pedestrian-friendly environment and robust cycling network are proposed to promote walkability and cycling for low-carbon living
Appropriate Planning of Building Configuration and Setback, and application of acoustic windows and/or enhanced acoustic balcony	• With appropriate planning on building configuration and setback from roads, potential road traffic noise impact on future noise sensitive uses within the development would be minimised. The potential noise impacts could be alleviated by the use of low-noise road surfacing, acoustic

Design Approaches	Environmental Problems Avoided and Environmental Options
	windows and / enhanced acoustic balcony, blank wall, fixed window, architectural fin, etc., thereby avoiding the use of roadside noise barriers or enclosures. Without roadside noise barriers or enclosures, the associated visual impacts and bird collisions would also be avoided / minimised.
Create buffer distance between TKOIP and sensitive receivers/uses in TKO 137	• To minimise the impact from the TKOIP to the sensitive receivers/uses in TKO 137, G/IC and open spaces have been positioned between TKOIP and residential sites to sufficient buffer distance
Adoption of Non-dredged Reclamation	• Non-dredged reclamation with in-situ ground treatment methods (including marine-based deep cement mixing and land-based jet grouting) would be adopted to minimise the associated water quality impacts, the waste management implications from sediment disposal and the secondary environmental impacts from induced marine traffic.
Adoption of Environmentally Friendly Construction Method	• The precast method would be adopted for the construction of the proposed marine viaduct to reduce the overall C&D materials to be generated on-site, shorten construction duration and minimise on-site environmental impacts (e.g. dust and noise) on nearby sensitive receivers.

6. CONCLUSIONS

6.1.1.1 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**.

6.1.1.2 Overall, the EIA concluded that the Project would comply with the requirements of the EIA SB and EIAO-TM with the implementation of the proposed mitigation measures during the construction and operation 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 Predicted (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 500 m from the boundary of the Project site	The potential sources of air quality impact associated with the construction works would include site formation, excavation, backfilling, stockpiling, material handling, spoil removal, vehicle movement and wind erosion, as well as construction activities of other concurrent projects within 500 m assessment area.	• Annexes 4 and 12 of the EIAO-TM • Prevailing Air Quality Objectives (AQO) RSP ○ 24-hr average conc.: 100 µg/m^3 (Number of exceedances allowed: 9) ○ Annual average conc.: 50 µg/m^3 FSP ○ 24-hr average conc.: 50 µg/m^3 (Number of exceedances allowed: 18) ○ Annual average conc.: 25 µg/m^3	• N/A	Regular watering on construction work areas, exposed surface and paved haul roads to dust suppression. Dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation and good site practices listed below should be carried out to further minimise construction dust impact. • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering	• No residual impacts anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		• Proposed Air Quality Objectives (AQO) RSP ○ 24-hr average conc.: 75 µg/m^3 (Number of exceedances allowed: 9) ○ Annual average conc.: 30 µg/m^3 FSP ○ 24-hr average conc.: 37.5 µg/m^3 (Number of exceedances allowed: 18) ○ Annual average conc.: 15 µg/m^3		shall be applied to aggregate fines. • For the work sites close to the ASR with a separation distance less than 5m, provide hoardings of not less than 5m high from ground level along the project boundary; for the work sites close to the ASRs with a separation distance less than 10 m, provide hoardings of not less than 3.5 m high from ground level along the project boundary; for the other work sites, provide hoarding not less than 2.4m high from ground level along project boundary except for site entrance or exit. • Avoid position of material stockpiling areas, major haul roads and dusty works within the construction site close to concerned ASRs. • Avoid unnecessary exposed earth.	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				• Locate all the dusty activities away from any nearby ASRs as far as practicable. • 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. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. Imposition of speed controls for vehicles on site haul roads. • Instigation of an environmental monitoring and auditing program to	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	
Operation Impact					
• Existing and planned residential, commercial developments and government uses within 500m from the boundary of the Project site	Air Quality Impact NO_2 • 19th highest 1-hr average conc.: 66 – 175 µg/m³ • 10th highest 24-hr average conc: 25 – 92 µg/m³ • Annual average conc.: 12 – 36 µg/m³ SO_2 • 4th highest 10-min average conc: 22 –47 µg/m³ • 4th highest 24-hr average: 7 – 9 µg/m³ RSP • 10th highest 24-hr average conc: 49 – 56 µg/m³ • Annual average: 19 – 22 µg/m³ FSP • 19th highest 24-hr average conc: 28 – 33 µg/m³ • Annual average: 11 – 13 µg/m³ CO	• Prevailing AQO NO_2 ○ 1-hr average conc.: 200 µg/m³ (Number of exceedances allowed: 18) ○ Annual average conc.: 40 µg/m³ SO_2 ○ 10-min average conc.: 500 µg/m³ (Number of exceedances allowed: 3) ○ 24-hr average conc.: 50 µg/m³ (Number of exceedances allowed: 3)	NO_2, SO_2, RSP, FSP and CO • No exceedance was predicted Methane, HCl, HF, Formaldehyde, Vinyl Chloride, Benzene and Acetaldehyde • No exceedance was predicted	• No mitigation measure is required. • Specific site considerations are recommended to be implemented in order to avoid any potential air quality impact. Air sensitive at Site G3 (P05) use should locate at 5mAG or above. Long-term air sensitive use at Site O5 which is a proposed open space should be avoided. Air sensitive use within the exceedance zones in the proposed RTS, PFTF and CWHF of TKO 132 should be avoided	• No residual impacts anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	• Highest 1-hr average conc: 510 – 648 µg/m^3 • Highest 8-hr average: 478 – 576 µg/m^3 • Highest 24-hr average: 444 – 474 µg/m^3 <u>Methane</u> • Highest 1-hr average conc: 4468 – 4485 µg/m^3 <u>HCl</u> • Highest 1-hr average conc: 1.04 – 2.19 µg/m^3 • Annual average: 1.00 – 1.10 µg/m^3 <u>HF</u> • Highest 1-hr average conc: 0.00 – 0.12 µg/m^3 • Annual average: 0.00 – 0.01 µg/m^3 <u>Formaldehyde</u> • Highest 30-min average conc: 3.35 – 4.96 µg/m^3 • Annual average: 1.51 – 1.65 µg/m^3 <u>Vinyl Chloride</u> • Highest 1-hr average conc: 0.40 – 0.40 µg/m^3 • Annual average: 0.33 – 0.33 µg/m^3	<u>RSP</u> ○ 24-hr average conc.: 100 µg/m^3 (Number of exceedances allowed: 9) ○ Annual average conc.: 50 µg/m^3 <u>FSP</u> ○ 24-hr average conc.: 50 µg/m^3 (Number of exceedances allowed: 18) ○ Annual average conc.: 25 µg/m^3 <u>CO</u> ○ 1-hr average conc.: 30000 µg/m^3 (Number of exceedances allowed: 0) ○ 8-hr average conc.: 10000 µg/m^3 (Number of exceedances			

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	Benzene • Highest 1-hr average conc: 2.0 – 2.0 µg/m^3 • Highest 8-hr average conc: 2.0 – 2.0 µg/m^3 • Annual average: 1.1 – 1.1 µg/m^3 Acetaldehyde • Highest 1-hr average conc: 6.75 – 12.47 µg/m^3 • Highest 8-hr average conc: 6.63 – 8.10 µg/m^3 • Annual average: 1.32 – 1.36 µg/m^3	allowed: 0) • Proposed AQO NO_2 ○ 1-hr average conc.: 200 µg/m^3 (Number of exceedances allowed: 18) ○ 24-hr average conc.: 120 µg/m^3 (Number of exceedances allowed: 9) ○ Annual average conc.: 40 µg/m^3 SO_2 ○ 10-min average conc.: 500 µg/m^3 (Number of exceedances allowed: 3) ○ 24-hr average conc.: 40 µg/m^3 (Number of exceedances allowed: 3) RSP			

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		○ 24-hr average conc.: 75 µg/m^3 (Number of exceedances allowed: 9) ○ Annual average conc.: 30 µg/m^3 FSP ○ 24-hr average conc.: 37.5 µg/m^3 (Number of exceedances allowed: 18) ○ Annual average conc.: 15 µg/m^3 CO ○ 1-hr average conc.: 30000 µg/m^3 (Number of exceedances allowed: 0) ○ 8-hr average conc.: 10000 µg/m^3 (Number of exceedances allowed: 0) ○ 24-hr average			

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		conc.: 4000 µg/m^3 (Number of exceedances allowed: 0) • Non-AQO <u>Methane</u> ○ 1-hr average conc.: 600,000 µg/m^3 (Number of exceedances allowed: 0) <u>HCl</u> ○ 1-hr average conc.: 2100 µg/m^3 (Number of exceedances allowed: 0) ○ Annual average conc.: 20 µg/m^3 <u>HF</u> ○ 1-hr average conc.: 240 µg/m^3 (Number of exceedances allowed: 0)			

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		○ Annual average conc.: 14 µg/m^3 Formaldehyde ○ 30-min average conc.: 100 µg/m^3 (Number of exceedances allowed: 0) ○ Annual average conc.: 9 µg/m^3 Vinyl Chloride ○ 1-hr average conc.: 180000 µg/m^3 (Number of exceedances allowed: 0) ○ Annual average conc.: 100 µg/m^3 Benzene ○ 1-hr average conc.: 27 µg/m^3 (Number of exceedances allowed: 0) ○ 8-hr average conc.: 3 µg/m^3			

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		(Number of exceedances allowed: 0) ○ Annual average conc.: 3 µg/m^3 <u>Acetaldehyde</u> ○ 1-hr average conc.: 470 µg/m^3 (Number of exceedances allowed: 0) ○ 8-hr average conc.: 300 µg/m^3 (Number of exceedances allowed: 0) ○ Annual average conc.: 9 µg/m^3			
• Existing and planned residential, commercial developments and government uses within 500m from the boundary of the Project site	<u>Odour Impact</u> 5-second average odour concentration: 0.12 – 2.20 OU/m^3	• Annex 4 of EIAO-TM • 5 odour units based on an averaging time of 5 seconds	<u>Odour</u> • No exceedance was predicted	• No mitigation measure is required.	• No residual impacts anticipated
Noise Impact					

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Construction Airborne Noise Impact					
• Representative existing residential uses, planned residential developments, and planned educational institutions within 300m from the boundary of the Project Site	• Potential adverse construction noise impact due to construction works within the project boundary	• Annexes 5 and 13 of the EIAO-TM • $Leq_{(30\ min)}$ 75dB(A) at 1m from the façade of residential dwellings • $Leq_{(30\ min)}$ 70dB(A) at 1m from the façade of Educational Institutions and 65 dB(A) during examinations • Professional Persons Environmental Consultative Committee Practice Notes (ProPECC PN1/24)	• N/A	• Use of Quieter Construction Methods and Quality Powered Mechanical Equipment such as use of press-in method for sheet piling; large diameter bored piling to replace percussive piling; use of hydraulic splitter / hydraulic crusher / bursting system / quieter type saw / chemical expansion agent for demolition, concrete breaking, site formation, filling and slope cutting works and removal activities; use of fully enclosed conveyor for material handling; use of mini-breaker for small boulder removal and infrastructural works; pipe jacking using tunnel boring machine for large diameter pipe laying; use of quiet type saw, robot-type hydraulic crusher or handheld concrete crusher for building works; use of pre-casting and prefabrication technology for building superstructure works; and use of self-compacting concrete or rubber head poker vibrator • Use of Noise Barrier and Noise Enclosure • Careful Scheduling of Construction Activities	• No residual impacts anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				• Good site practices - Only well-maintained plant should be operated on site and plant should be serviced regularly. - Silencers or mufflers on construction plant should be utilised and should be properly maintained. - Mobile plant should be sited as far away from sensitive uses as possible. - Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. - Plant known to emit noise strongly in one direction should, where possible, be orientated so that noise is directed away from the nearby sensitive uses. - Material stockpiles and other structures should be effectively utilised to screen noise from on-site construction activities. • Submission of Construction Noise Management Plans (CNMPs) to EPD for agreement before tender invitation and before construction works	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				commencement	
Operation Phase Impact					
• Representative existing residential uses, place of public worship, planned residential developments and planned educational institutions within 300 m from the boundary of the Project Site	<u>Fixed Noise</u> • Adverse fixed noise impact is not anticipated due to proposed fixed noise sources with good design and mitigation measures, and environmental monitoring and audit • Potential noise impact due to existing fixed noise source (SNG Plant) •	<u>Fixed Noise</u> • Annexes 5 and 13 of the EIAO-TM • Appropriate ANL - 5 dB(A) as shown in Table 2 of IND-TM or the prevailing background noise level for planned/proposed fixed noise sources • Appropriate ANL as shown in Table 2 of IND-TM for cumulative fixed noise impact from planned and existing noise sources • EIAO-GN 16/2023 • HKPSG	<u>Fixed Noise</u> • N/A	<u>Fixed Noise</u> • Mitigation measure required at existing SNG Plant to alleviate any potential fixed noise impact. • For proposed fixed noise sources, use of quiet plant, enclosing plant inside buildings with opening facing away from existing/proposed/planned NSRs, install acoustic silencers, noise barrier to ensure the noise compliance of the fixed noise source. Noise commissioning test for fixed noise sources will be carried out by relevant government departments/ future operators before operation of fixed noise sources. • For various DP fixed noise sources, Fixed Noise Management Plan (FNMP) should be submitted to EPD by each of the proponent of the proposed/planned fixed noise	• No residual impacts anticipated.

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				sources • For non-DPs fixed noise sources within the Project area and existing noise sources within the assessment area affecting the proposed/planned NSRs under this Project, quantitative fixed noise impact assessment should be carried out via various planning/funding/land lease mechanism.	
	Rail Noise • No adverse impact anticipated	Rail Noise • Annexes 5 and 13 of the EIAO-TM	Rail Noise N/A	Rail Noise • Floating slab trackform, and high attenuation baseplate etc., subject to findings of a separate EIA	• No residual impacts anticipated.
	Road Traffic Noise • Predicted overall noise levels: up to 73 dB(A) • Predicted road traffic noise levels of the Project roads: up to 73 dB(A)	Road Traffic Noise • 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 / noise sensitive temporary structures • $L_{10(1\ hour)}$ 65dB(A) at 1m from the façade of educational	Road Traffic Noise • Exceedance of the noise criteria by up to 2 dB(A) for planned residential uses and up to 8 dB(A) for planned schools	Road Traffic Noise • Provision of low noise road surfacing (LNRS) on Local Roads L1 and L8. • Provision of at-receiver mitigation measures such as acoustic window for residential uses • Provision of noise insulation with suitable window type and air-conditioning for schools.	Road Traffic Noise • No residual impacts anticipated.

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		institute			
	Marine Traffic Noise • Predicted cumulative peak marine traffic hour $L_{eq(1-hr)}$ of 49 to 63 dB(A) • Predicted peak marine traffic hour $L_{eq(1-hr)}$ of 40 to 58 dB(A) due to Project-related vessels	Marine Traffic Noise • Measured Prevailing noise level ($L_{eq(1-hr)}$) during peak marine traffic hour (ranged from 54 to 64 dB(A))	Marine Traffic Noise • No exceedance predicted	Marine Traffic Noise • No mitigation measure required	Marine Traffic Noise • No residual impacts anticipated.
Water Quality Impact					
Construction Impact					
• Seawater intakes, secondary contact recreation subzone, ecological and fisheries sensitive receivers such as coral communities and fish culture zones	• Full compliances with water quality assessment criteria were predicted except for suspended solids (up to 15.8 mg/L) and sedimentation rates (up to 650g/m^2/day)	• EIAO-TM Annexes 6 and 14 • Water Quality Objectives (WQOs) stipulated under Water Pollution Control Ordinance (WPCO) • Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems,	• Exceedance of the assessment criteria for suspended solids elevations by up to 12 mg/L for coral communities near TKO 132 • Exceedance of the sedimentation criteria by up to 550 g/m^2/day for coral communities near TKO 132	• Deployment of silt curtains around marine construction works • Mitigation measures and good site practices in ProPECC PN 2/23 • Precautionary measures in ETWB Technical Circular (Works) No. 5/2005 • Waste Disposal (Chemical Waste) (General) Regulation • Provision of interim treatment facilities, such as chemical toilets, for construction workforce • Use of non-dredged reclamation	• No residual water quality impact

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		Inland and Coastal Waters (TM-DSS) • Water Supplies Department (WSD) Water Quality Criteria for Flushing Water Intakes • Raw water quality design basis values for the first stage of TKO desalination plant		method • Carrying out underwater filling behind leading seawall • Control of production rates for reclamation / sediment removal works	
Operation Impact					
• Seawater intakes, secondary contact recreation subzone, ecological and fisheries sensitive receivers such as coral communities and fish culture zones	• Full compliances with water quality assessment criteria were predicted at all representative WSRs except for 10 WSRs where the predicted TIN level exceeded the WQO and 1 WSR where the predicted *E. coli* level exceeded the WQO.	• EIAO-TM Annexes 6 and 14 • WQOs stipulated under WPCO • TM-DSS • WSD Water Quality Criteria for Flushing Water Intakes • Raw water quality design basis values for the first stage of TKO desalination plant	• For the 10 WSRs with WQO exceedances for TIN (including bathing beaches, coral sites, Shek O headland SSSI, important spawning/nursery ground of commercial fisheries resources), there is no noticeable difference in the predicted TIN levels between all the modelling scenarios (i.e., with or without the Project). These exceedances are not	• Precautionary design measures to prevent emergency discharges from EPP and SPS • Emergency Contingency Plan to deal with power / treatment failure at EPP and SPS • Design measures and practices in ProPECC PN 1/23 • Develop and implement Environmental Management Plan for Public Facilities at TKO 132 • Best management practices for storm water management • DSD's "Sewerage Manual (Part 2) Pumping Stations and Rising Mains"	• No residual water quality impact

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
			caused by this Project. • For the 1 WSR with WQO exceedance for *E.coli* (Po Toi O FCZ), there is no noticeable difference in the predicted *E.coli* levels between all the modelling scenarios (i.e., with or without the Project). These exceedances are not caused by this Project.		
Sewerage and Sewage Treatment Implications					
• Existing and planned sewerage system, sewage treatment and disposal facilities	• Increase in sewage discharge arising from the population and potential waterborne pollution	• DSD's Sewerage Manual, Drainage Record Plan and standard drawings; • EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF) Version 1.0; and • Annex 14 of the EIAO-TM	• N/A	• Precautionary design measures to prevent emergency discharges from EPP and SPS • Emergency Contingency Plan to deal with power / treatment failure at EPP and SPS	• N/A
Waste Management Implications					

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Construction Impact					
• N/A	• Around 123,500 m^3 of non-inert C&D materials and 5,164,970 m^3 of inert C&D materials will be generated from reclamation, site clearance, site formation works, construction of viaducts, buildings and infrastructures. • Chemical wastes will be generated from plant operation and maintenance of mechanical equipment, at a few hundred litres per month. • Around 2,535 kg per day and 585 kg per day of general refuse will be generated from construction works and site-based staff and workers at TKO 137 and TKO 132 respectively. • Approximately 9,951m^3 of sediment from TKO 137 and 184,601 m^3 of sediment from TKO 132 will be disposed of at the marine disposal areas. • Around 6.8 m^3 per year at TKO 137 and 4.4 m^3 per year at TKO 132 of floating refuse will be generated from construction activities at / near the sea and accumulation along seawall.	• Annexes 7 and 15 of the EIAO-TM • Waste Disposal Ordinance (Cap. 354) • Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) • Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N) • Land (Miscellaneous Provisions) Ordinance (Cap. 28) • Public Health and Municipal Services Ordinance (Cap. 132BK) – Public Cleansing and Prevention of Nuisances Regulation • Dumping at Sea Ordinance (DASO)	• N/A	• Implementation of good site practices, waste reduction measures and proper storage, collection and transport of waste • Careful design, planning and good site management to reduce generation of C&D materials • Monitoring of disposal of C&D waste with trip-ticket system and installing CCTV on site	• No residual impact anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		(Cap.466) • Project Administration Handbook for Civil Engineering Works (PAH)			
Operation Impact					
• N/A	• Around 350 tonnes per day of municipal solid waste will be generated from TKO 137 and TKO 132 • Small quantity of chemical wastes in the order of a few cubic metres per month will be generated from maintenance and service activities and laboratories in education institutions at TKO 137. • Around 40 tonnes per day of concrete waste and sludge will be generated from operation of the concrete batching plant and construction waste handling facility at TKO 132 • About 27 m^3/day of sewage sludge and 26 m^3/day of screening and grits will be generated from TKO 137 EPP and TKO 132 SPS. • Around 6.8 m^3 per year at TKO 137 and 4.4 m^3 per year at TKO 132 of floating refuse will be	• Annexes 7 and 15 of the EIAO-TM • Waste Disposal Ordinance (Cap. 354) • Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C) • Public Health and Municipal Services Ordinance (Cap. 132BK) – Public Cleansing and Prevention of Nuisances Regulation	• N/A	• Implementation of waste reduction measures and proper storage, collection and transport of waste	• No residual impact anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	generated from accumulation along seawall.				
Land Contamination					
• Onsite construction workers and future occupants	• A total of 2 areas with potential land contamination concerns (i.e. an oil stain at the skips storage and skip lorries parking area (Site S1) and the future concrete batching plant and transformer room (Site S2)) were identified at TKO 137 within the Project area.	• Annex 19 of the EIAO-TM • Guidance Note for Contaminated Land Assessment and Remediation (EPD, April 2023) • Practice Guide for Investigation and Remediation of Contaminated Land (EPD, April 2023) • Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (EPD, April 2023)	• N/A	• A sampling and testing programme, targeting the hotspot identified within Site S1 had been proposed. • Further site appraisal should be carried out for the two concerned sites when site operation has ceased / after site handover in order to assess the latest site conditions / to identify the presence of any potential land contamination sources, and to address any new contamination issues caused by any changes in site operation and/or land use within the two concerned sites. Any necessary site investigation SI works and remediation action are recommended to be carried out after the site operation has ceased / decommissioning of the facility but prior to the commencement of construction works at the concerned sites / areas. • The further works including	• No residual impact anticipated.

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				further site appraisal, associated SI works, any necessary remediation works and submission of CAP, CAR / RAP / RR would follow the relevant Guidance Manual, Guidance Note and Practice Guide.	
Landfill Gas Hazard					
Construction Impact					
• Onsite construction workers	• Quantitative landfill gas hazard is conservatively assessed as "Medium" or "Low" risk for construction phase based on the source, pathway and target risk categories for the proposed development located within the Consultation Zone for the SENT and SENTX.	• Annex 7 & 19 of the EIAO-TM • Landfill Gas Hazard Assessment Guidance Note	• N/A	• Safety requirements stated in Chapter 8 - Hazards Arising During Construction of the Landfill Gas Hazard Assessment Guidance Note should be implemented properly during construction phase.	• No residual impact anticipated.
Operation Impact					
• Future occupants	• Quantitative landfill gas hazard is conservatively assessed as "High", "Medium" or "Low", for operation phase based on the source, pathway and target risk categories for the proposed development located within the Consultation Zone for the SENT and SENTX.	• Annex 7 & 19 of the EIAO-TM • Landfill Gas Hazard Assessment Guidance Note	• N/A	• "Passive" and "Active" control measures should be considered for developments categorised as "Medium" or "High" Risk respectively. • For developments of which the landfill gas risk is categorised as "Low", some precautionary measures may be required to ensure that the planned development is safe, however the	• No residual impact anticipated.

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				measures which depend on the actual design of indoor facilities if any (such as toilets).	
Ecological Impact (Terrestrial and Marine)					
Construction Impact					
• Recognised sites of conservation importance and other ecologically sensitive sites • Terrestrial and marine habitats • Wildlife (including flora and fauna species of conservation importance)	• Major permanent loss of sea area (subtidal hard substrata habitat) • Permanent and temporary loss of natural habitats including terrestrial habitat (mixed woodland, shrubland, shrubby grassland/grassland), intertidal habitat (rocky shore and soft shore), and sea area (subtidal soft substrata habitats) • Direct impact on floral species of conservation importance and hard and black coral communities • Potential direct injury / mortality of wildlife species • Indirect disturbance impact (e.g. air quality, noise, light pollution, water quality, traffic and visual) on natural habitats and associated wildlife in the vicinity	• Annexes 8 and 16 of the EIAO-TM • EIAO Guidance Notes Nos. 3/2010, 6/2010, 7/2023 and 10/2023	• N/A	• Avoided loss of site of conservation importance and other ecologically sensitive sites • Avoided direct impact on nesting Black Kite and potential movement corridor of Philippine Neon Goby, as well as the stream (i.e. S2) which the Goby was previously recorded. • Minimisation of adverse impact to recognised site of conservation importance and natural habitats • Minimisation on the direct loss of terrestrial and marine natural habitats and associated wildlife through careful design of the Project layout • Translocation of affected coral colonies with high ecological value • Protection / transplantation of floral species of conservation importance • Minimisation of direct mortality of wildlife • Pre-construction survey to identify the presence of faunal species of	• No unacceptable residual impact anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				conservation importance within the Project area, esp. breeding site and low mobility species • Good site practices with mitigation measures for noise, dust, light and glare and water quality (esp. marine water) impacts	
Operation Impact					
• Recognised Sites of Conservation Importance and Other Ecologically Sensitive Sites • Terrestrial and Marine Habitats • Wildlife (including flora and fauna species of conservation importance)	• Temporary loss of subtidal soft substrata due to maintenance sediment removal in TKO 132 • Indirect disturbance impact (e.g. air quality, noise, light pollution, water quality, traffic and visual) on natural habitats and associated wildlife in the vicinity • Changes in hydrodynamic properties and water quality pattern	• Same as construction phase	• N/A	• Minimisation of direct impact on hard coral communities through careful consideration on the extend of maintenance sediment removal (i.e. conduct only in area with water depth >8m) • Adoption of planning design subject to its feasibility (e.g. vegetation buffer) to minimise potential injury / mortality of wildlife • Good site practices with mitigation measures for noise, dust, light and glare and water quality (esp. marine water) impacts • Enhancement measures including eco-shoreline / ecological enhanced seawall to provide additional hard substrata for the recolonisation of intertidal fauna and corals • Greening opportunity on buildings	• No unacceptable residual impact anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				such as green façades and green roofs	
Fisheries Impact					
• Fish Culture Zones in Tung Lung Chau and Po Toi O, spawning grounds of commercial fisheries resources at eastern waters, nursery area of commercial fisheries resources at Port Shelter, Artificial Reefs at Outer Port Shelter	• Direct loss of fishing ground and fisheries habitat • Changes in water quality • Change in hydrodynamics • Underwater sound	• EIAO-TM Annexes 9 & 17 • Water Pollution Control Ordinance (Cap. 358)	• N/A	• Mitigation measures and good site practices as proposed in Water Quality section would further minimise fisheries impacts.	• No residual impact anticipated
Cultural Heritage Impact					
Construction Impact					
• Built heritage and other identified items	• No adverse impact on built heritages and other identified items would be anticipated.	• EIAO-TM Annexes 10 and 19	• N/A	• No mitigation measures would be required.	• No residual impact anticipated
• Terrestrial archaeological heritage	• No direct impact on terrestrial archaeological heritage is anticipated except the areas on Fat Tau Chau within the Project boundary of TKO137 on which there would possibly be potential impact during the construction phase. • Indirect impacts of ground-borne vibration, tilting and ground settlement are	• EIAO-TM Annexes 10 and 19 • Antiquities and Monuments Ordinance (A&MO) (Cap.53)	• N/A	<u>Monitoring of vibration, settlement and tilting</u> • A condition and structural survey, as well as a baseline vibration review shall be conducted for construction works located in close proximity to the Fat Tau Chau House Ruin SAI (SAI185). • Condition and structural survey should be carried out for Fat Tau Chau House Ruin SAI (SAI185)	• No residual impact anticipated

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	anticipated on Fat Tau Chau House Ruin SAI (SAI185)			both before and after all construction works to inspect its physical condition and structural integrity. The pre- and post-condition survey reports should be submitted for AMO's record. • Based on the pre-construction condition and structural survey results and construction details, the baseline vibration review before the construction phase shall evaluate if monitoring of ground-borne vibration, tilting and ground settlement is required for Fat Tau Chau House Ruin SAI during the construction phase. The baseline vibration review should be submitted to AMO for comment and agreement before implementation. • Any vibration and building movement induced from the construction works should be strictly monitored to ensure no disturbance and physical damages made to the heritage sites during the course of works. If monitoring of ground-borne vibration is required, a monitoring proposal, including vibration limit, type of monitoring, checkpoint locations, installation details and frequency of monitoring should be submitted by contractor to AMO	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				for agreement before commencement of the works. Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the archaeological heritage before commencement of the works. • Should the monitoring data be approaching to the vibration limit, the contractor shall propose measures to mitigate movement situation at the heritage site for consideration by AMO and implement on site, with examples, not limited to, increasing monitoring frequency, additional condition surveys, amendment / review of design of the construction, etc., so that the concerned archaeological heritage would be protected and preserved. • AMO should be informed immediately should irregularities be observed. <u>Dust Suppression</u> • Due to the close proximity of the Fat Tau Chau House Ruin SAI (SAI185) to the Project Boundary,	

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				dust from the works area might have potential impact. Air Pollution Control (Construction Dust) Regulation shall be followed. • Dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid dust accumulation on Fat Tau Chau House Ruin SAI (SAI185). <u>Buffer Zone</u> • A buffer zone should be reserved during the construction phase of the Project to safeguard Fat Tau Chau House Ruin SAI (SAI185). • The buffer zone should be established in the form of physical barrier to separate the works area from the concerned structures. • No works shall be allowed within the buffer zone. No workers or any construction related equipment and materials should trespass the buffer zone to avoid direct contact with Fat Tau Chau House Ruin SAI (SAI185). • It is suggested that the buffer zone should be of 10m from the concerned SAI or as practical as possible. Considering the	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				challenging terrain of the environment nearby, implementation details shall be proposed by the contractor and agreed with AMO prior to commencement of the proposed works. <u>Archaeological Impact Assessment at the detailed design phase</u> • To ensure no archaeological resources related to the Customs Station or other facilities on Fat Tau Chau would be affected by the Project, an Archaeological Impact Assessment should be undertaken during the detailed design phase when the details of the proposed works on Fat Tau Chau are available. This Archaeological Impact Assessment at the detailed design phase shall assess the archaeological potential concerning the existence of remains or features in relations to the Customs Stations or other facilities within the Project boundary of TKO 137 on Fat Tau Chau, particularly in areas that would be affected by the proposed works. Based on the details and extent of proposed works to be carried out on Fat Tau Chau, the Archaeological Impact	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				Assessment at the detailed design phase would propose appropriate measures if any impact on archaeological heritage is identified, for consideration and agreement by AMO. The Archaeological Impact Assessment at the detailed design phase shall be conducted by an archaeologist. It shall incorporate desktop information, site inspection results and recommendation of appropriate mitigation measures if necessary, namely change of work design, preservation of archaeological heritage *in-situ*, preservation by relocation, archaeological survey cum excavation or rescue excavation, archaeological watching brief or preservation by record subject to the level of potential impacts to be confirmed in the Archaeological Impact Assessment upon availability of the details and extent of the proposed works to be carried out on Fat Tau Chau, as necessary for consideration and agreement by AMO. This Archaeological Impact Assessment at the detailed design phase should be conducted by the project proponent. In the light of the above considerations, no adverse impact would be	

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				anticipated with mitigation measures agreed by AMO and implemented to the satisfaction of AMO to ensure preservation of the archaeological heritage within the Project boundary of TKO 137 on Fat Tau Chau. <u>Precautionary Measure</u> • If antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the construction works within the Project boundary of TKO 137 and TKO 132, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO.	
• Marine archaeological heritage	• No impact on marine archaeology is anticipated from this project.	• EIAO-TM Annexes 10 and 19 • Guidelines for Marine Archaeological Investigation	• N/A	• As a precautionary measure, it is recommended to designate the locations with data gaps and the uninvestigated anomaly as archaeological exclusion zones during the marine works of the Project to ensure no impact on the seabed from anchoring of work vessels during the marine	• No residual impact anticipated.

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				works of the Project in these locations.	
Operation Impact					
• Built heritage and other identified items	• No adverse impact would be anticipated on built heritages and other identified items during the operational phase.	• EIAO-TM Annexes 10 and 19	• N/A	• No mitigation measure would be required.	• No residual impact anticipated.
• Terrestrial archaeological heritage	• No adverse impact would be anticipated on terrestrial archaeology during the operational phase.	• EIAO-TM Annexes 10 and 19	• N/A	• No mitigation measure would be required.	• No residual impact anticipated.
• Marine archaeological heritage	• No impact on marine archaeology is anticipated from this project.	• EIAO-TM Annexes 10 and 19 • Guidelines for Marine Archaeological Investigation	• N/A	• No mitigation measure would be required.	• No residual impact anticipated.
Landscape and Visual Impacts					
Construction Impact					
• Landscape Resources (LRs)	• Negligible impact on hillside vegetation along Eastern Boundary of TKO 137 (LR5), SENT Landfill (LR7), vegetation on modified slope and amenity planting (LR10) and vegetation in developed area (LR14) • Slight impact on the vegetation along drainage channel (LR4), roadside planting (LR8) and orchard/ vegetation near rural	• Annexes 10 and 18 of the EIAO – TM • EIAO – GN 8/2023	• NA	• Tree Preservation and Transplantation • Preservation of Natural Coastline • Erection of Decorative Screen Hoarding • Management of Construction Activities and Facilities	• Negligible residual impact on LR5, LR7, LR10 and LR14 • Slight residual impact on LR4, LR8 and LR12 • Moderate residual impact on LR1, LR2, LR3, LR6, LR9, LR11 and LR13

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	settlement (LR12) • Moderate impact on the vegetation within TKO 137 (LR1), hillside vegetation at Devil's Peak (LR2), shrubland at Tit Cham Chau and Fat Tong Chau (LR3), portion of coastal water (LR6), rocky shore along western coastline of Junk Bay (LR9), hillside vegetation at Chiu Keng Wan Shan (LR11) and sandy shore along western coastline of Junk Bay (LR13)			• Reinstatement of the affected landscaped area	
• Landscape Character Areas (LCAs)	• Negligible impact on SENT Landfill and Ongoing Major Development Landscape (LCA6), TKO Industrial Urban Landscape (LCA7), Junk Bay Cemetery Landscape (LCA10), Tiu Keng Leng Urban Residential Landscape (LCA11) • Slight impact on Fat Tong O Industrial Urban Landscape (LCA8), TKO Transportation Corridor Landscape (LCA9) • Moderate impact on Fat Tong O Reclamation Landscape (LCA1), Fat Tong Chau and Tin Ha Au Upland and Hillside Landscape (LCA2), Chiu King Wan Upland and Hillside Landscape (LCA3), Tathong Channel and Joss House Bay Inshore Water	• Annexes 10 and 18 of the EIAO – TM • EIAO – GN 8/2023	• NA	• Tree Preservation and Transplantation • Preservation of Natural Coastline • Erection of Decorative Screen Hoarding • Management of Construction Activities and Facilities • Reinstatement of the affected landscaped area	• Negligible residual impact on LCA6, LCA7, LCA10 and LCA11 • Slight residual impact LCA8 and LCA9 • Moderate residual impact LCA1, LCA2, LCA3, LCA4 and LCA5

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	Landscape (LCA4), Junk Bay Bay Landscape (LCA5)				
Operation Impact					
• Landscape Resources (LRs)	• Negligible impact on hillside vegetation along Eastern Boundary (LR5) of TKO 137, SENT Landfill (LR7), vegetation on modified slope and amenity planting (LR10), vegetation in developed area (LR14) • Slight impact on vegetation along drainage channel (LR4), roadside planting (LR8), orchard/ vegetation near rural settlement (LR12) • Moderate impact on the vegetation within TKO 137 (LR1), hillside vegetation at Devil's Peak (LR2), shrubland at Tit Cham Chau and Fat Tong Chau (LR3), coastal water (LR6), rocky shore along western coastline of Junk Bay (LR9), hillside vegetation at Chiu Keng Wan Shan (LR11), sandy shore along western coastline of Junk Bay (LR13)	• Annexes 10 and 18 of the EIAO – TM • EIAO – GN 8/2023		• Aesthetically pleasing design of Aboveground Structures • Buffer Screen Planting • Roof Greening • Roadside Greening • Open Space provision • Compensatory Tree Planting • Landscape Treatments on Slope or Retaining Structure • Shoreline Treatment	Upon Day 1 of operation: • Negligible residual impact on LR5, LR7, LR10 and LR14 • Slight residual impact on LR1, LR2, LR3, LR4, LR8, LR11 and LR12 • Moderate residual impact on LR6, LR9 and LR13 <u>Upon Year 10 of operation</u> • Negligible residual impact on LR1, LR2, LR3, LR4, LR5, LR7, LR8, LR10, LR11, LR12 and LR14 • Slight residual impact on LR9 and LR13 • Moderate residual impact on LR6
• Landscape Character Areas (LCAs)	• Negligible impact on SENT Landfill and Ongoing Major Development Landscape (LCA6), TKO Industrial Urban Landscape (LCA7), Junk Bay	• Annexes 10 and 18 of the EIAO – TM • EIAO – GN 8/2023		• Aesthetically pleasing design of Aboveground Structures • Buffer Screen Planting	Upon Day 1 of operation: • Negligible residual impact on LCA6, LCA7, LCA10 and LCA11

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	Cemetery Landscape (LCA10), Tiu Keng Leng Urban Residential Landscape (LCA11) • Slight impact Fat Tong O Industrial Urban Landscape (LCA8), TKO Transportation Corridor Landscape (LCA9) • Moderate to substantial impact on Fat Tong O Reclamation Landscape (LCA1), Fat Tong Chau and Tin Ha Au Upland and Hillside Landscape (LCA2), Chiu King Wan Upland and Hillside Landscape (LCA3), Tathong Channel and Joss House Bay Inshore Water Landscape (LCA4), Junk Bay Bay Landscape (LCA5)			• Roof Greening • Roadside Greening • Open Space provision • Compensatory Tree Planting • Landscape Treatments on Slope or Retaining Structure • Shoreline Treatment	• Slight residual impact LCA1, LCA2, LCA3, LCA8 and LCA9 • Moderate residual impact on LCA4 and LCA5 Upon Year 10 of operation: • Negligible residual impact on LCA1, LCA2, LCA3, LCA6, LCA7, LCA8, LCA9, LCA10 and LCA11 • Moderate residual impact LCA4 and LCA5
• Key Public Viewpoint (VPs)	• Slight impact on view from Waterfront of LOHAS Park (VP3), view from TKO InnoPark (VP6) and view from Tseung Lam Highway Garden (VP12) • Moderate impact on view from view from dragon's Back Trail (VP1), Siu Sai Wan Promenade (VP2), view from TKO Waterfront Park (VP4), view from LOHAS Park (VP5), view from Tung Lung Chau Lookout (VP9) and view from the Heng Fa Chuen Promenade (VP11) • Substantial impact on view from	• Annexes 10 and 18 of the EIAO – TM • EIAO – GN 8/2023		• Aesthetically pleasing design of Aboveground Structures • Buffer Screen Planting • Roof Greening • Roadside Greening • Open Space provision • Compensatory Tree Planting • Landscape Treatments on Slope or Retaining Structure	Upon Day 1 of operation: • Sight residual impact on VP1, VP3, VP4, VP5, VP6 and VP12 • Moderate residual impact on VP2, VP9 and VP11 • Substantial residual impact on VP7, VP8 and VP10 Upon Year 10 of operation: • Negligible residual impact on VP1, VP3,

Sensitive Receivers / Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/Criteria	Extents of Exceedance Predicted (Without Mitigation)	Impact Avoidance Measures / Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	lookout of the Devil's Peak (VP7), view from Tin Ha Shan (VP8), view from the traveller along the ferry route along the Tathong Channel (VP10)			• Shoreline Treatment	VP4, VP5, VP6 and VP12 • Sight residual impact on VP2, VP9 and VP11 • Moderate residual impact on VP7, VP8 and VP10
Hazard to Life					
• Existing and planned population in the vicinity of the planned desalination plant, existing SNG production plant, proposed EPP, explosive off-loading pier and proposed green fuel station (GFS)	• The off-site individual risk level is far below 1×10^{-5} per year for the planned desalination plant and proposed EPP, while the 1×10^{-5} per year is confined within the plant boundary for the existing SNG production plant and proposed GFS. Thus, it is considered acceptable and in compliance with the relevant criterion in Annex 4 of EIAO-TM • The societal risks fall within the "Acceptable" region in both assessment years • No foreseeable risk implication on the Project as the explosive off-loading pier will be decommissioned before commencement of construction activities within 500m from the pier	• Annex 4 of the EIAO-TM	• N/A	• No adverse impact is anticipated.	• No residual impact anticipated

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Electric and Magnetic Field					
• Proposed EFs and Electricity Substation	• Maximum electric field strength anticipated to be up to 10 V/m • Maximum magnetic flux anticipated to be up to 72 μT • Both electric field strength and magnetic flux density comply with criteria. No adverse electric and magnetic field impact would be anticipated.	• International Commission on Non-ionizing Radiation Protection 1998 (Standard for General Public Exposure: 5,000 V/m & 100 μT; Standard for Occupational Exposure 10,000 V/m & 500 μT) • Hong Kong Planning Standards and Guidelines	• N/A	• Not necessary	• No residual impact anticipated