Airport Authority Hong Kong

# Airport Tung Chung Link Project

Project Profile

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 279398

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# 1 Basic Information

## 1.1 Project Title

1.1.1 Airport Tung Chung Link Project (hereinafter referred to as the "Project")

## 1.2 Purpose and Nature of the Project

**Strategic Context: Airport City**

1.2.1 Airport Authority Hong Kong (AAHK) first put forward its vision to transform Hong Kong International Airport (HKIA) into an Airport City in the *"From City Airport to Airport City"* report published in 2019. The Airport City vision envisage growing HKIA's position as the preeminent international aviation hub in Asia Pacific, while transforming HKIA into a new landmark and one of the key economic growth engines for Hong Kong. To realise the Airport City vision, AAHK has adopted a strategy to fully capitalise on the unique geographical advantage of HKIA and capture opportunities arising from the new infrastructures connected to the airport, such as the Hong Kong-Zhuhai-Macao Bridge (HZMB).

1.2.2 The commissioning of the HZMB in 2018 has greatly improved the connectivity between Hong Kong and cities in the Greater Bay Area (GBA), and further expand the catchment area of HKIA as the region's leading international hub. To meet the growing demand and extend the airport's reach, AAHK will continue to strengthen HKIA's capacity for passenger and cargo service, through the expansion into a Three-runway System and other capacity enhancement plans. In addition AAHK is introducing a growing cluster of functional enhancements with a view to transforming the airport into a new landmark and attracting more visitors to the Airport City from within Hong Kong, the GBA and other parts of Asia. Such functional enhancements include SKYCITY, a major integrated development that comprises retail complexes, dining areas, hotels and entertainment facilities, as well as AsiaWorld-Expo (AWE) future developments and other related plans, with complementary infrastructural support and technological innovations.

1.2.3 The infrastructural support to the airport's capacity and functional enhancements includes, among others, a series of AAHK's recommendations for land uses on the Hong Kong Port (HKP) (formerly known as Hong Kong Boundary Crossing Facilities) Island of HZMB. The proposals include providing automated car parks for transfer passengers and visitors travelling to Hong Kong via HZMB, and an autonomous transportation system for visitors to travel between the HKP Island, SKYCITY and Tung Chung Town centre. In addition, land parcels on the HKP Island have been reserved for the development of air cargo logistics. As announced in the Chief's Executive's 2020 Policy Address, the HKSAR Government has accepted these proposals. It is also noted in the 2020 Policy Address that optimising the use of the land adjacent to the airport will not only provide more job

opportunities and a better living environment for the expanding Tung Chung community, but also inject new development elements and economic impetus into the whole North Lantau.

1.2.4 Under the strategic context as discussed above, the Project is put forward to enhance the connectivity of Airport Island:

**Enhancement of Connectivity**

*Airport Tung Chung Link – Autonomous Transportation System connecting Tung Chung*

1.2.5 AAHK is taking forward the Airportcity Link (ACL) project, a purpose-built bridge on which a vehicular road and a pedestrian walkway will be provided to connect the HKP Island and SKYCITY. As an environmental initiative, ACL will only be served exclusively by AAHK's electric vehicles, such that there is no air pollutant emission during its operation. Non-AAHK vehicles are restricted from accessing the ACL. In the longer term, ACL will be served by AAHK's autonomous transportation system. As the next step, an extension of the ACL's autonomous transportation system is being planned, called Airport Tung Chung Link (ATCL). ATCL, operated by AAHK exclusively, will run along the road on the eastern coast of the Airport Island to connect Tung Chung Town Centre. With the AAHK's zero emission vehicles (i.e. electric vehicles), and ultimately AAHK's autonomous transportation system (supported by zero emission autonomous vehicles) planned to be operating on the ATCL, the Airport Island will be seamlessly connected with the HKP Island and Tung Chung Town Centre in an environmentally-friendly manner.

*Marine Facilities – SKYCITY Pier and Berthing Facilities*

1.2.6 To the east of the Airport Island along the coast of SKYCITY, marine facilities will be provided in the area including a pier and berthing facilities to put the sea area into good use. These marine facilities would provide services to general public travelling to the Airport or HKP Island. In other international airports such as the Singapore Changi Airport, there are similar sea access facilities near the airport for leisure and tourism, and transport where necessary.

1.2.7 This Project Profile is prepared to cover the related works of the Project to provide the Director of Environmental Protection (DEP) with sufficient information in determining the scope of the Environmental Impact Assessment (EIA) study together with the technical and procedural requirements that the EIA study shall meet.

## 1.3 Name of Project Proponent

1.3.1 The Project Proponent is Airport Authority Hong Kong.

## 1.4 Location and Scale of Project and History of the Site

1.4.1 The location of the Project is shown in **Figure 1.1**. A summary of the key elements for the Project is given in **Table 1.1**.

**Table 1.1 Summary of key elements for the Project**

| Key Elements | Descriptions |
|---|---|
| ATCL | 1. In total 5km (approx.)<br>- At-grade sections: 2750m (approx.)<br>- Land viaduct sections: 810m (approx.)<br>- Marine viaduct section: 220m (approx.)<br>- The spur line of approximately 1.2km connecting to the Academy Station is a provision for future extension.<br>2. Stations of ATCL (locations are shown in **Figure 1.1**)<br>- ECSA North Station (at-grade)<br>- ECSA South Station (at-grade)<br>- Tung Chung Central Station (elevated)<br>- Academy Station (at-grade) (for future extension) [1]<br>- With provision of lavatories<br>3. Other works<br>- Realignment of existing at-grade Kwo Lo Wan Road and existing airport trail<br>- Connecting works to planned ACL<br>- Walkway and footbridges<br>- Depot for maintenance, storage, charging and cleaning of zero emission vehicles<br>- Reprovision / realignment of the affected facilities, such as bus stop, cycling track, footpath, etc.<br>- Diversion / reprovision of affected utilities<br>- Plant room(s) (locations are subject to future study) |
| Marine facilities | 1. A pier<br>- Size of pier 5m(L) x 16m(W) (approx.)<br>- No. of berths: tentatively 2<br>- Seaside: floating pontoon supported by guide piles<br>2. Berthing facilities<br>- No. of berths: tentatively 73 for medium-to-small size pleasure vessels<br>- Provision of floating wave attenuator of 155m long (approx.)<br>- Seaside: floating platforms, guide piles, floating wave attenuator, fixed ramp and gangway, etc.<br>- Landside: gangs, security gates and a kiosk area, etc. |

1.4.2 As noted in **Section 1.2**, the ATCL will be extended from the planned ACL to its south and east. The southern section will run along the eastern coast of the Airport Island and across the sea channel to the southwest of North Lautau Highway for connection with the East Coast Support Area (ECSA) and Tung Chung Town

Centre. The eastern section is a provision for future extension running run along the southern coast of the HKP Island for connection with the planned Aviation Academy at the south of the HKP Island. The tentative alignment of the ATCL is shown in **Figure 1.1**.

1.4.3 Except for the short marine viaduct section, the ATCL would run on the existing reclaimed land, including the HKP Island reclaimed in 2018, the eastern coastal area on Airport Island in 2018 and Tung Chung Town Centre area in 1993. Since the formation of reclaimed land, the Project area on HKP Island and Airport Island has been mainly paved land and vegetated area, which have not been used for any purposes since reclaimed, and construction sites of 3RS project, while that on Tung Chung Town Centre area has been paved as mainly public area. The proposed works of the ATCL on existing reclaimed land along the coast will only conduct a few piling works at the existing seawall and will not involve any associated marine works that would affect the seabed permanently. Yet, temporary working platform on the seaside for the piling works at the seawall will be required that may affect the seabed temporarily.

1.4.4 The ATCL is about 5km. It will be operated exclusively by AAHK's zero emission vehicles (i.e. electric vehicles) at first, and ultimately AAHK's planned zero emission autonomous vehicles, and hence, there will be no air pollutant emission during its operation. Non-AAHK vehicles are restricted from accessing the ATCL. The ATCL consists of at-grade sections, marine viaduct and land viaducts, as shown in **Figure 1.1**. A land viaduct will run southward from the planned ACL at the HKP side to the southwest coast of the HKP Island for connection with the at-grade section. The eastern at-grade section, which is a spur line provision for future extension of about 1.2km, from the junction will run along the south coast of the HKP Island for connection with the Academy Station. The southern at-grade section will run along the east coast of the Airport Island adjacent to the Hong Kong Link Road. It will connect to the ECSA North and South Stations situated at the south and east of the ECSA, adjacent to the current Hong Kong Airlines Aviation Training Centre and Civil Aviation Department Headquarters Office Building, respectively. It will then connect to the marine viaduct crossing the sea channel to the southwest of North Lautau Highway and terminate at the Tung Chung Town Centre at the north of One Citygate.

1.4.5 The construction of the marine viaduct will not involve open sea dredging. Construction of the marine viaduct's foundation will generally involve the use of in-situ bored piles founded on bedrock. The pile construction will be carried out through placing a steel pile casing within the silt curtain. Mechanical Grab and Reverse Circulation Drill will be used for excavation of soil, sediment and rock socket respectively. Pre-fixed steel reinforcement cage with permanent steel pile casing will be installed for concreting. The marine pile caps will be installed through construction of cofferdams. The bridge pier columns will be constructed by traditional means with formworks and falseworks on pile caps above seawater

level. Similarly, in-situ bored piles will be adopted for the foundation of the land viaducts and elevated platform for Tung Chung Central Station.

1.4.6 For the construction of the viaduct decks (land and marine sections) and elevated platform for the station in Tung Chung Town Centre, either precast construction method or in-situ construction method will be adopted. For precast construction method, the deck segments will be precast in off-site casting yard outside Hong Kong. The precast deck segments will then be transported to the site and erected by balanced cantilever method or span-by-span method. For in-situ construction method, the deck segments will be cast within form-travellers and constructed by the balanced cantilever method or by falsework

1.4.7 Under the Project, AAHK also proposes to provide marine facilities including a pier and berthing facilities at the marine area between the Airport Island and the HKP Island, also at the south of the SkyPier Terminal Bonded Bridge (formerly known as Intermodal Transfer Terminal – Bonded Vehicular Bridge and Associated Roads (ITT-BVB)) and ACL. The Airport Island was put into service in 1998, while the HKP Island was in 2018. The marine area for the marine facilities was formed after the reclamation of HKP Island. The tentative layout plan is shown in **Figure 1.2**.

1.4.8 The proposed marine facilities comprise the following:

- A pier, adjacent to the ACL
- Berthing facilities

1.4.9 The pier is proposed at the seaside adjacent to the SkyPier Terminal Bonded Bridge and the south of the planned ACL, and also in the vicinity of SKYCITY. It will be at the northern tip of the berthing facilities. The pier will be equipped to provide marine transport services associated with tourism, under the management by AAHK and/or its agent. The marine transport services will adopt fuel-powered marine vessels in the first place, and zero emission vessels in the future subject to the maturity and market availability. The pier consists of floating pontoon supported by guide piles.

1.4.10 The construction of the pier will not involve open sea dredging. The guide piles for the pier, which are made out of steel with open-ended pile toe, will be driven to the required depth by a piling rig and equipment installed on working barges /platforms until pile toe level is reached. Once the pile toe level is reached, in-situ soil, including marine-based sediments will be remained in place and no excavation will be needed. The pile would then be filled with non-shrink grout. Therefore, the construction of guide piles would only lead to limited displacement of marine-based sediment, which will not cause a significant increase in suspended solids.

1.4.11 Another construction method of guide piles would be adopted for locations of guide piles where pile embedment length in granular soil is not sufficient because of shallow rock head. The pile is required to be socketed into the rock or alternatively

tension anchor will be required such that the pile is properly fixed in position with adequate tensile capacity and bending moment rigidity. The installation of tension anchor will require excavation of marine-based sediment. Steel casing will be advanced below rock head level or such other depths as required to avoid caving of soil at the interface of soil and sound bedrock during cleaning of the rock socket whilst maintaining in vertical position. Sediments in the excavated hole would be crushed into smaller fragments and will be cleaned by air lifting method. After the construction of guide piles, the precast floating pontoons will be installed above-water level, followed by installation of utilities.

1.4.12 For the fixed ramp of the berthing facilities, the pile foundations will be socketed into rock such that the pile would have sufficient bearing capacity. After construction of pile foundation, pre-fixed steel reinforcement cage with permanent steel pile casing will be installed for concreting. After curing of concrete structural elements, a steel gangway will be post-installed.

1.4.13 The berthing facilities will have four main docks to provide the general public tentatively 73 berths for medium-to-small size pleasure vessels. The walkways and fingers of the floating platforms will consist of concrete floating pontoons supported by guide piles. The most northern section of the floating platforms will consist of floating wave attenuator using concrete floating pontoons with wave attenuation function to reduce the wave condition inside the bay area. A gangway is proposed to connect the landside and seaside facilities. To accommodate the daily tidal water level difference, the last section of the gangway will be designed with a hinged joint. For the landside facilities, a security gate and a kiosk area will be located on the landside to control the entrance and departure to the berthing facilities. Waiting areas will be allocated on the landside to provide space for the users to transit to airport.

1.4.14 The construction of the berthing facilities will not involve open sea dredging. Same construction methodology for the guide piles installation as discussed in **Section 1.4.10** and **Section 1.4.11** will be adopted.

## 1.5 Number and Types of Designated Projects to be Covered by the Project Profile

1.5.1 The Project is classified as the following Designated Projects (DPs) under Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO):

- *Part I, Item A. 6(c) - A transport depot located less than 200 m from the nearest boundary of an existing or planned educational institution;* Ⓐ
- *Part I, Item A.8 – A road or railway bridge more than 100 m in length between abutments;* Ⓑ
- *Part I, Item C.3(a) – Reclamation works resulting in 5% decrease in cross sectional area calculated on the basis of 0.0mPD in a sea channel;* Ⓒ *and*

- *Part I, Item O.2 – A marina designed to provide moorings or dry storage for not less than 30 vessels used primarily for pleasure or recreation.* Ⓓ

1.5.2 The locations of the DPs are shown in **Figure 1.1**.

## 1.6 Name and Telephone Number of Contact Person

1.6.1 All enquiries regarding the Project can be addressed to:

HKIA Tower, 1 Sky Plaza Road,
Hong Kong International Airport
Lantau, Hong Kong

Mr. Collin Chan [Authority's Representatives]
Tel.: 5723 3258
Fax: 2182 1773
Email: aclinfo@hkairport.com

# 2 Outline of Planning and Implementation Programme

## 2.1 Project Implementation

2.1.1 The Project Proponent has engaged the Consultant to develop the Scheme Design and provide required Engineering Services for the Project while the Consultant will be recruited to conduct the EIA. The Project will be implemented by relevant professionals throughout the planning design, construction and implementation stages, while the construction works will be carried out by qualified contractors to be appointed under works contracts.

## 2.2 Project Timetable

2.2.1 The construction works of the Project will tentatively commence in 2024/2025 and be completed in 2027/2028. The spur line connecting to the Academy Station is a provision for future extension, of which there is no implementation programme yet.

## 2.3 Potential Interface with Other Projects

2.3.1 Major potential projects that would have interface with the Project have been identified and are listed below:

- Expansion of Hong Kong International Airport into a Three-Runway System (3RS);
- Tung Chung New Town Extension (TCNTE);
- Tung Chung Line Extension;
- Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Port (HKP) (formerly known as Hong Kong Boundary Crossing Facilities);
- Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR);
- SKYCITY;
- SkyPier Terminal (formerly known as Intermodal Transfer Terminal (ITT));
- SkyPier Terminal Bonded Bridge (formerly known as Intermodal Transfer Terminal - Bonded Vehicular Bridge and Associated Roads (ITT-BVB));
- Airportcity Link (ACL) (formerly known as Airport City Link);
- East Coast Support Area (ECSA); and
- Developments at HKP Island.

2.3.2 This list should be re-visited during the EIA study to ensure all the latest projects available from the respective stakeholders are incorporated. Any cumulative impacts from these concurrent projects during both construction and operational phases of the Project, would need to be identified and addressed as appropriate.

# 3 Possible Impacts on the Environment

## 3.1 General

3.1.1 It is anticipated that the construction of the Project would involve both marine-based and land-based construction works including site clearance, minor excavation with limited backfilling, substructure/superstructure works, stockpiling of materials, loading and unloading dusty materials and wind erosion of open area, etc.

3.1.2 The potential impacts arising from the construction and operation of the Project are discussed in following sections. Relevant prevailing legislations and guidelines will be considered in the EIA study to assess potential environmental impacts.

## 3.2 Air Quality

**Construction Impacts**

3.2.1 Potential dust impacts generated from land-based construction activities such as site clearance, minor excavation with limited backfilling, stockpiling of materials, loading and unloading dusty materials and wind erosion of open area, would not be significant. Also, marine-based construction activities are unlikely to generate fugitive dust. Compared to the construction dust, emissions from Non-road Mobile Machinery (NRMM) and construction trucks are expected to be insignificant with good site practices. Implementation of suitable practice and mitigation measures (see **Section 5**) should be considered to control the potential impacts on Air Sensitive Receivers (ASRs) in the vicinity of the Project within relevant standards.

**Operational Impacts**

3.2.2 Given that zero emission vehicles will be adopted for the autonomous transportation system of the Project, there will be no emission from the vehicles on the entire ATCL, the proposed depots and stations. However, at the marine facilities, potential air quality impacts from marine vessel emission are anticipated. While the use of the pier will be managed by AAHK and/or its agent under pre-booking and pre-approval of service, the mooring spaces of the berthing facilities aims to provide a parking area for the public and marine vessels are expected be parked at a relatively long duration, indicating the limited frequency of marine traffic. In addition, the marine vessels will be required to turn off the engines when they are parked at the berthing facilities. Significant marine vessel emission is not expected within the water channel, and the marine facilities would only generate limited air quality impact on the ASRs in its vicinity. Appropriate mitigation measures could be considered to minimize the potential impacts on ASRs in the vicinity of the marine facilities.

## 3.3 Noise

**Construction Impacts**

3.3.1 There is neither existing nor planned NSRs which rely on opened windows for ventilation identified within 300m assessment area of the Project, except its viaduct section and Tung Chung Central Station in Tung Chung New Town. During the construction phase, construction noise would be generated by various construction activities, such as operation and use of powered mechanical equipment (PME). The extent and significance of construction noise impact would depend on the scale of construction activities, number of PME in operation, duration of construction activities, etc. Mitigation measures could be considered where necessary to minimise the noise impact during construction phase. With the proper implementation of mitigation measures, adverse construction noise impact is not expected.

**Operational Impacts**

3.3.2 There is neither existing nor planned NSRs which rely on opened windows for ventilation identified within 300m assessment area of the Project, except its viaduct section and Tung Chung Central Station in Tung Chung New Town. The NSRs in Tung Chung New Town are about 2.5km away from the marine facilities. Operational noise impact from vessels are not expected. For ATCL, given the adoption of electric vehicles, the operation of zero emission vehicles along ATCL is expected to be relatively quiet. The proposed depots, stations and plant rooms could be potential fixed noise sources. Nonetheless, the proposed depot is mainly for charging, fixing and washing. The noise impact from the propose depot is expected to be low. In addition, there is no NSRs in the vicinity of the depot. For the stations and plant rooms, only minor fixed noise sources, such as exhaust fans, are involved. Potential fixed noise sources impact is not anticipated. Nevertheless, mitigation measures could be considered where necessary to further minimise the fixed noise sources impact during operational phase.

## 3.4 Water Quality

**Construction Impacts**

3.4.1 As discussed in **Section 1.4**, no open sea dredging will be involved. It is anticipated that the installation of marine piles for the marine viaduct and the formation of temporary working platform for the piling works would only cause minor displacement of marine sediment, which will quickly settle without significant increase in suspended solids. Any excavation of marine-based sediment will be carried out within a steel casing. Potential land-based water quality impacts from construction site runoff, sewage arising from on-site construction workforce, wastewater from general construction activities or accidental spillage of chemicals would be minor. Guidelines and good site practices (see **Section 5**) should be adopted to minimise the potential impacts from general construction activities on

any nearby Water Sensitive Receivers (WSRs) so as to comply with the relevant standards.

**Operational Impacts**

3.4.2 Potential hydrodynamic impacts are mainly from the formation of marine bridge piers of the ATCL. The formation of marine bridge piers of the ATCL may cause potential changes in flow regime in the sea channel between the Airport Island and Tung Chung. The location, number and size of the piles and pile caps of the marine bridge piers of the ATCL will be similar to / close to that of the North Lantau Highway running to the northeast of the ATCL. It is anticipated that the proposed marine bridge piles and pile caps of the ATCL would not cause significant changes on the flow regime along the channel. The marine facilities will adopt floating platforms, floating wave attenuator and guide piles (approximately 180 numbers distributed in different rows, subject to further study in EIA stage) with small diameter and thus would not cause significant changes on the flow regime along the channel.

3.4.3 The major potential water quality impacts during the operational phase would be the effluent from the lavatories and the vehicles washing activities of the proposed depots and the lavatories of stations which are expected to be discharged to the sewage treatment plant via the public sewerage system. There will be no lavatories for the waiting areas of the berthing facilities. Potential water quality impacts due to road surface runoff with vehicle dust and tyre scrap during the operation of the ATCL is expected to be limited. Despite the above, suitable practice and mitigation measures (see **Section 5**) should be implemented to minimise the potential water quality impacts from the ATCL during the operational phase.

3.4.4 Potential hydrodynamic and water quality impacts are mainly from the berthing facilities. Given the close proximity to the North Lantau Marine Park (formerly known as the Proposed Marine Park under 3RS) and the Brothers Marine Park, the berthing facilities will serve strictly for berthing purposes only. Facilities for de-sludging blackwater tanks and lavatories will not be provided, while cleaning, maintenance and repair of vessels will also be prohibited. Hence, the berthing facilities is not expected to generate any sewage. Potential oil leakage from the operation of the vessels, nonetheless, may occur. Emergency plans and clean up procedures shall be established to minimise the impact to the water quality. In addition, there are four existing culverts at the existing seawall on the southern side of the berthing facilities. These culverts would allow water circulation between the bay area and Tung Chung. Therefore, pollutants within the bay area will not be accumulated. For the small scale of land facilities of the berthing facilities such as waiting areas, surface runoff would also be limited. In addition, the operation of the pier is unlikely to induce any adverse water impact. Potential water quality impacts from the Project during the operational phase should be mitigated by suitable practice and mitigation measures (see **Section 5**).

3.4.5 The potential hydrodynamic and water quality impacts will be reviewed in the EIA study.

## 3.5 Waste Management

**Construction Impacts**

3.5.1 Land-based construction works including site clearance, soil excavation and piling works will still generate construction and demolition (C&D) materials, land-based sediment, chemical wastes and general refuse. As mentioned in **Section 3.4**, excavation of marine-based sediment will be required for the marine bridge piling works for the ATCL and the installation of tension anchor for the guide piles for the marine facilities. Good site practice should be adopted to avoid or minimise potential environmental impacts associated with handling, collection and disposal of wastes.

**Operational Impacts**

3.5.2 Potential waste types generated during operational phase would include chemical wastes from maintenance activities in the depot and municipal solid waste from passengers and staff. The amount of municipal solid waste from the marine facilities is expected to be small given the short stay activity of passengers and limited number of staff. With the implementation of good site practices, adverse environmental impacts from waste management are not anticipated.

## 3.6 Ecology

**Construction Impacts**

3.6.1 The majority of the ATCL is located on the reclaimed lands of the Airport Island, HKP Island and Tung Chung Town Centre. The current land uses are mainly paved land with no natural habitats, except for the eastern tip of Scenic Hill where the elevated section of the ATCL would be slightly encroached. The landside facilities of the marine facilities would be located within developed areas of the Airport Island with no natural habitats. No terrestrial ecological impact is expected during construction phase.

3.6.2 With reference to the approved EIA of Tuen Mun Chek Lap Kok Link (Register No.: AEIAR-146/2009), a remnant population of Romer's Tree Frog is extant on Scenic Hill where a total of 2.86ha of secondary woodland is present. Yet, it is noted that Romer's Tree Frog from Chek Lap Kok were bred in captivity and released at selected sites in the New Territories in the early 1990s. The latest available report regarding Romer's Tree frog on Scenic Hill (survey conducted between May 2014 – Apr 2015) suggested that there were fewer adult's frogs, tadpoles and eggs on Scenic Hill in comparison with the 1992 survey before the

construction of the Airport[1]. The breeding areas indicated in **Figure 3.1** would also be in sufficient distance from the construction works of the ATCL such that there would be no habitat loss of Romer's Tree Frog during construction phase.

3.6.3 Sufficient disturbance screening in the form of hoarding, temporary noise barrier, protective sheet pile, proper site drainage etc. shall be considered as appropriate.

3.6.4 For potential marine ecological impact, the construction of marine viaduct's foundation of the ATCL would lead to direct loss of seabed at the bridge piers and indirect marine water quality impact to the sea channel between Scenic Hill and Tung Chung, while the construction of marine facilities at the water channel may include direct impact on coral colonies, intertidal habitats, soft and hard bottom subtidal habitats and associated fauna, and indirect water quality impacts during marine-based construction activities. Although the 500m assessment area of the marine facilities is not a preferred habitat of both Chinese White Dolphin and Finless Porpoises as discussed in **Section 4.5**, construction method(s) with relatively lower disturbance shall be considered to avoid indirect disturbance. Mitigation measures should be considered to avoid, minimise or mitigate the potential impacts to an acceptable level.

**Operational Impacts**

3.6.5 The ATCL is an autonomous transportation system adopting zero emission vehicles; hence, transient ecological disturbance on Romer's Tree Frog from Scenic Hill is expected to be insignificant. Due to the encroachment of the ATCL, some permanent loss of plantation, shrubland and grassland on Scenic Hill is expected. No adverse marine ecological impact is anticipated during operational phase of the ATCL. Where necessary, mitigation measures should be adopted to avoid, minimise or mitigate the potential impacts to an acceptable level.

3.6.6 The land-based work areas for the marine facilities would be located within developed areas of the Airport Island with no natural habitats. No terrestrial ecological impact is expected during operational phase. The induced marine traffic from the marine facilities, however, may cause transient marine ecological disturbance on the North Lantau Marine Park and the Brothers Marine Park at the north and east of the marine facilities respectively as well as the Chinese White Dolphins in North Western Water Control Zone. Yet, the use of pier will be managed by AAHK and/or its agent under pre-booking or pre-approval of services, whereas most marine vessels of the berthing facilities are expected to stay overnight mainly given the parking nature of the berthing facilities. The marine traffic to and from the berthing facilities will not be comparable to those in typical marinas. Transient marine ecological disturbance due to induced marine traffic from the marine facilities will be addressed in the EIA.

[1] Fung (2015) Romer's Tree Frog on Scenic Hill, Chek Lap Kok – A Dissertation Submitted for the Master of Science in Environmental Management – The University of Hong Kong

## 3.7 Fisheries

**Construction Impacts**

3.7.1 The major direct impact associated with the Project would be the potential loss of fishing ground at the bridge piers and guide piles footprint. The marine works would also have a potential impact on marine water quality affecting the nearby fisheries. It will be evaluated in the EIA study.

3.7.2 Temporary loss of fishing ground is anticipated during the construction phase along the proposed viaduct alignment at the cross-bay section as fishing vessels would not be able to operate at the marine works area(s) during the construction phase. However, the marine works area would be limited, and the effect would be temporary only. The fishing area would be resumed upon the completion of construction works. All potential impacts to fisheries will be addressed in more detail in the EIA study.

**Operational Impacts**

3.7.3 The operation of the Project would likely impose indirect impacts on the fisheries resources during the operational phase, such as the potential hydrodynamic impacts due to formation of marine bridge piers, water quality impacts due to surface runoff and disturbance from the induced marine traffic from the marine facilities. It will be evaluated in the EIA study.

## 3.8 Land Contamination

**Construction Impacts**

3.8.1 The majority of the Project is located on the reclaimed lands of the Airport Island, HKP Island and Tung Chung Town Centre. The Project area at the Tung Chung Town Centre and southern Airport Island was formed in 1993 and has been a paved land without potentially land contamination activities since then. The Project area at the remaining area of the Airport Island and HKP Island was formed in 2008 and has been paved land and vegetated area. The current land uses are mainly paved land, vegetated area and construction sites of other projects, which did not involve any potentially land contamination activities. Significant land contamination due to current land uses are considered unlikely.

**Operational Impacts**

3.8.2 Potential land contamination activities are anticipated within the proposed depot of the Project. Good practices for land contamination prevention should be considered to avoid the potential land contamination.

## 3.9 Potential Hazard

3.9.1 The potentially hazardous sources include the Liquefied Petroleum Gas (LPG) filling stations operated by Shell and Sinopec HK, the Aviation Fuel Tank Farm

operated by AFSC Operations Limited, the potential fire on sea due to release through drainage from Airport Fuel Tank Farm and the existing intermediate pressure underground town gas transmission pipeline.

3.9.2 The two LPG filling stations situated at 6 Cheong King Road and HKIA Airside Filling Station No.2 are located approximately 130m and 350m to the alignment of ATCL and more than 500m and 740m to the southwest of the marine facilities respectively. As stipulated in Section 3.7 of HKPSG Chapter 12, the maximum separation distance from land use is 55m which is far shorter than the mentioned distances. Hence, potential risk from these two LPG filling stations is not anticipated, and the Project is also unlikely to induce any further potential risk from the two LPG filling station. Despite the above, precautionary measures (see **Section 5**) should be implemented to minimise any potential risk from the nearest (~130m) LPG filling station at 6 Cheong King Road.

3.9.3 The Aviation Fuel Tank Farm are located approximately 450m to the alignment of the ATCL and 2.5km to the southwest of the marine facilities. Potential risk from the Aviation Fuel Tank Farm is not anticipated, for the maximum $1x10^{-8}$/yr and $1x10^{-9}$/yr individual risk contour indicated in the approved 3RS EIA (Register No.: AEIAR-185/2014) is approximately 100m away from the source and would not encroach onto the ATCL. In addition, the Scenic Hill provides screening between the Aviation Fuel Tank Farm and ATCL. Nonetheless, it is possible that jet A1 fuel from the Aviation Fuel Tank Farm could release to the sea via the drainage system of which outfall location is approximately 100m away from the ATCL**.** With reference to the approved HZMB Hong Kong Link Road EIA report (AEIAR-144/2009), fire due to the release of spilled Jet A1 fuel to the sea would give an overall frequency of $2.6x10^{-6}$/year (for $23m^3$ spilled Jet A1 fuel release) and 2.6 x $10^{-7}$/year (for $137m^3$ spilled Jet A1 fuel release). In view of the close proximity of the drainage outfall to the ATCL, construction should be prohibited in case of the release of spilled Jet A1 via the drainage outfall.

3.9.4 An intermediate pressure underground town gas transmission pipeline running along Tung Chung Waterfront Road is in the vicinity of the Project. For the sake of public safety and ensuring the continuity of town gas supply, the exact locations of existing or planned gas pipes/gas installations in the vicinity of the proposed work areas and any required minimum set back distance away from them during the design and construction stages of work shall be verified with the Hong Kong and China Gas Company Limited. Construction works should be conducted according to the required distance stipulated in Table 1 of the Electrical and Mechanical Services Department's Code of Practice on “Avoidance of Damage to Gas Pipes”.

## 3.10 Landscape and Visual

**Construction Impacts**

3.10.1 Eight Landscape Resources (LRs) are identified within 500m assessment area, which are the "Woodland, Shrubland & Grassland in Scenic Hill"; "Seawater in Tung Chung Bay"; Rocky Coastline along Tung Chung Bay"; "Artificial Seawall Coastline along Tung Chung Bay"; Amenity Landscape Areas along Airport Road and Chek Lap Kok Road"; "Roads & Urban infrastructures"; "Airport Island & HKBCF Facilities" and "Urbanised Development in Tung Chung Town". The sensitivity rating of most of the identified LRs are in low to medium level, except Woodland, Shrubland & Grassland in Scenic Hill which considered its sensitivity as high due to its natural character. No Registerable Old & Valuable Tree is recorded within the assessment area.

3.10.2 The majority of the ATCL and its depot is located on the reclaimed lands of the Airport Island, HKP Island and Tung Chung Town Centre. The current land uses are mainly paved land with man-made landscape elements, except for the eastern tip of Scenic Hill where the elevated section of the ATCL would be slightly encroached. Hence, site survey shall be carried out to verify any rare and protected species within the natural resources. To minimise the impacts, the extent of works areas should also be carefully reviewed to minimise vegetation loss on the Scenic Hill. In addition, construction method(s) with relatively lower disturbance shall also be considered to avoid any indirect impacts to the vegetated areas. Given the above, substantial adverse impact is not anticipated. Although the landscape impacts would be slight, some good practices shall be adopted to minimise any potential impacts during the construction phase. The land-based work areas for the marine facilities would be located within developed areas of the Airport Island with no natural resources, hence, no adverse landscape impact is expected during construction phase.

3.10.3 For visual, potential Visually Sensitive Receivers (VSRs) within the Visual Envelope (VE) include residential users at Tung Chung Town and Tung Chung New Town Extension (East) (TCNTE (East)), recreational users at the future Cultural Complex and a church in the vicinity, visitors at the TCNTE (East) promenade and Ngong Ping 360, hikers at Scenic Hill, workers at Air Traffic Centre Building and travellers at Chep Lap Kok Road. The high sensitivity type users (residents in Tung Chung Town and (TCNTE (East)) are located about 300m away from the Project, since the Project will be visually compatible with the surrounding urban environment, the visual impact will be considered as minimal. Given the planned church at the existing Tung Chung Temporary Bus Terminus has a closer viewing distance (about 130m) to the ATCL, the proposed viaduct/ elevated section may induce slight visual impact during construction, some good practices such as site hording, screen planting and construction light control will be adopted to minimise the impacts during the construction phase.

**Operational Impacts**

3.10.4 Given the Project would not induce any significant changes to the existing Landscape Character Area (LCA) – Transport Corridor Landscape, adverse impact on this landscape character is not anticipated. However, due to the encroachment of the ATCL, some permanent vegetation loss on Scenic Hill is expected. Hence, slight changes to the Coastal Upland & Hillside Landscape is anticipated.

3.10.5 For visual, no raised building will be constructed in the Project, adverse visual impact is not anticipated for most VSRs. However, given the planned church will have a close viewing distance to the proposed viaduct/ elevated section of the ATCL, slight visual impact is anticipated during operation stage.

## 3.11 Cultural Heritage

3.11.1 Based on the approved ITT-BVB EIA Report (Register No.: AEIAR-216/2018), the approved Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highways Connection EIA Report (Register No.: AEIAR-144/2009) and the approved Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities EIA Report (Register No.: AEIAR-145/2009), there are neither terrestrial archaeological potential, marine archaeological potential nor built heritage resources (i.e. declared monument, proposed monument, graded historic building and Government historic sites identified by the Antiques and Monuments Office (AMO)) within the Project area. Nonetheless, the above EIA reports have not fully covered Marine Archaeological Investigation (MAI) of the marine viaduct section of the Project. In addition, complex of Yuan period kilns (i.e. Ancient Kiln Park) has been preserved by the Project Proponent on the northern lower slope of Scenic Hill which is within the Ha Law Wan Site of Archaeological Interest. It is located at 290m away from the Project. No impact of cultural heritage on the Yuan Period kilns is anticipated during both construction and operational phases.

# 4 Major Elements of the Surrounding Environment

## 4.1 General

4.1.1 The existing environment of the site and its surroundings have been reviewed. The sensitive receivers are discussed below. Any other sensitive receivers to be identified during the EIA study will also be considered.

## 4.2 Air Quality

4.2.1 The air quality assessment will consider potential Air Sensitive Receivers (ASRs) that may be affected by the Project within 500m from the Project boundary. The nearest ASRs identified in the vicinity include offices at Passenger Clearance Building of HKP, offices at SkyPier, Hong Kong SkyCity Marriott Hotel, East Sea Rescue Berth Airport Fire Contingent, AsiaWorld-Expo, offices at planned SkyPier Terminal, planned commercial developments at SKYCITY, planned Aviation Academy, planned commercial developments at ECSA, One Citygate, Novotel Citygate Hong Kong, Tung Chung Community Garden, Man Tung Road Park, Seaview Crescent and Tung Chung Crescent.

## 4.3 Noise

4.3.1 The noise assessment will consider potential Noise Sensitive Receivers (NSRs) that may be affected by the Project within 300m from the Project boundary. According to the latest information available, there are neither existing nor planned NSRs which rely on opened windows for ventilation identified within the 300m assessment area of the Project, except the viaduct section and Tung Chung Central Station of ATCL in Tung Chung New Town. The nearest NSRs identified in the vicinity include Seaview Crescent, Tung Chung Crescent, Fu Tung Estate, Po On Commercial Association Wan Ho Kan Primary School, Ching Chung Hau Po Woon Primary School, planned Cultural Complex and a church at the existing Tung Chung Temporary Bus Terminus.

## 4.4 Water Quality

4.4.1 The water quality impact assessment will include Water Sensitive Receivers (WSRs) in the vicinity of the Project that may be affected by the construction and operation of the Project. The key WSRs would be the North Lantau Marine Park, the Brothers Marine Park, the cooling water intakes from HKIA and HKP, flushing water intakes from Tung Chung and coral habitat in Tung Chung. As discussed in **Section 3.4**, there are four existing culverts at the existing seawall on the southern side of the marine facilities, which would allow water circulation between the marine facilities and Tung Chung.

## 4.5 Ecology

4.5.1 Majority of the ATCL would be located within developed areas of Airport Island, HKP Island and Tung Chung Town Centre with no natural habitats. The elevated alignment of ATCL would encroach a small extent of Scenic Hill, which may lead to indirect ecological impact on Romer's Tree Frog and some permanent loss of plantation, shrubland and grassland.

4.5.2 Since the land-based work areas for the marine facilities would be located within developed areas of the Airport Island with no natural habitats, no terrestrial ecological impact identified near the marine facilities. The nearest marine sites of conservation significance would be the North Lantau Marine Park and the Brothers Marine Park which are approximately 820m and approximately 1.7km to the northeast of the marine facilities. Common coral species could also be present along the shoreline of Airport Island, with reference to the coral survey conducted under the approved ITT-BVB EIA (Register no.: AEIAR: 216/2018). In addition, Chinese White Dolphins occur in the Pearl River Estuary and are mostly found in the western waters of Hong Kong. Finless Porpoises are mostly found in more oceanic environment including southern and eastern waters. The marine mammal sighting was very low in recent years (2012 – 2019) within the 500m assessment area[2] suggesting that the assessment area was not a preferred habitat of both Chinese White Dolphins and Finless Porpoises in recent years.

## 4.6 Fisheries

4.6.1 The Project will occupy two sea channels. The ATCL will cross the sea channel to the southwest of North Lantau Highway, whereas the marine facilities would occupy approximately half of the 420m sea channel between the HKP Island and Airport Island. According to AFCD Port Survey 2016/17, the channel between the Airport Island and Lantau supported low fisheries production (>50 – 100 kg/ha) as compared to other areas in Hong Kong. While the channel between the Airport Island and HKP Island supported moderate fisheries production (>100 – 200 kg/ha) as compared to other areas in Hong Kong. Ma Wan Fish Culture Zone (FCZ), the nearest FCZ from the Project, is located more than 12km to the east, while the southern boundary of recognised spawning grounds of commercial fisheries resources, is located about 770m to the north of the Project.

## 4.7 Potential Hazard

4.7.1 There are potential hazardous sources in the vicinity of the Project, including the LPG filling stations operated by Shell and Sinopec, the Aviation Fuel Tank Farm operated by AFSC Operations Limited. In addition, there is an existing

[2] Agriculture, Fisheries and Conservation Department (AFCD) (2020). Monitoring of Marine Mammals in Hong Kong Waters (2019 – 2020) Final Report (Survey Period: 1 April 2019 to 31 March 2020)

intermediate pressure underground town gas transmission pipeline running along Tung Chung Waterfront Road in the vicinity of the Project.

## 4.8 Landscape and Visual

4.8.1 Majority of the ATCL would be located within developed areas of Airport Island, HKP and Tung Chung Town Centre with no natural resources. The elevated alignment of ATCL would encroach a small extent of Scenic Hill, which may lead to some permanent loss of vegetation. Site surveys shall be carried out to verify the plant species in Scenic Hill.

4.8.2 Since the land-based work for the marine facilities would be located within the urbanised areas of the Airport Island with no high value natural resources, no adverse landscape & visual impact identified near the marine facilities. The nearest conservation importance site in the vicinity would be the North Lantau Marine Park and the Brothers Marine Park which are approximately 820m and approximately 1.7km to the northeast of the marine facilities.

4.8.3 For visual, the proposed development is visually compatible with the urban landscape. However, given visitors at the planned church and Cultural Complex would have close and direct view to the ATCL, the proposed viaduct/ elevated section near North Lantau Highway may induce visual impact during construction and operation phase.

## 4.9 Cultural Heritage

4.9.1 As discussed in **Section 3.11**, several EIA reports concludes that there are neither terrestrial archaeological potential, marine archaeological potential nor built heritage resources within the Project area. Nonetheless, these EIA reports have not fully covered MAI study area of the marine viaduct section of the Project. In addition, the complex of Yuen period kilns (i.e. Ancient Kiln Park) within the Ha Law Wan Site of Archaeological Interest is located at 290m away from the Project.

# 5 Environmental Protection Measures to be Incorporated in the Design and Further Environmental Implications

## 5.1 General

5.1.1 The EIA study will determine the significance of environmental impacts (both cumulative impacts and those arising from the Project) and any avoidance or mitigation measures to ensure that all development and infrastructure proposals recommended by the Project would be environmentally acceptable. Reference would be made to the relevant legislation and other requirements including but not limited to the EIAO, Hong Kong Planning Standards and Guidelines (HKPSG) etc. The residual impacts, if any, would be confined within the allowable limits. Environmental monitoring and auditing of potential impacts that may arise from implementation of the works proposed by the Project will be provided for the construction and operational phases. Subject to the findings of the EIA study, the following mitigation measures would be incorporated in the design and construction of the Project.

## 5.2 Air Quality

**Construction Phase**

5.2.1 All applicable dust control measures as recommended in the Air Pollution Control (Construction Dust) Regulation should be implemented to minimise dust emissions during construction phase. Typical dust control measures include:

- Water spraying on any dusty materials before loading and uploading, stockpile of dusty materials, area where demolition work is carried out, area where excavation or earth moving activities are carried out;
- Adoption of 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 shall be used to aggregate fines;
- Use of regular watering to reduce dust emissions from exposed site surfaces, unpaved roads, dusty construction areas;
- Provide effective dust screens, sheeting, or netting to enclose any scaffolding built around the perimeter of a building;
- Prevent placing dusty material storage piles near ASRs;
- Cover or shelter any stockpile of dusty materials;
- Provide vehicle washing facilities at all site exits to wash away any dusty materials from vehicle body and wheels before they leave the site;
- Cover any dusty load on vehicles before they leave the site; and
- Loading, unloading, transfer, handling, or storage of bulk cement or dry pulverized fuel ash shall be carried out in a totally enclosed system or facility,

and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system.

5.2.2 Requirements stipulated in the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation will also be followed to control potential emissions from non-road mobile machinery during construction phase where appropriate.

**Operational Phase**

5.2.3 As there is no emission from the transportation system of ATCL, no mitigation measure is required. Possible suitable mitigation measures at the mooring spaces of the berthing facilities such as pre-booking system and prohibition of idling engine would be implemented. Whilst the pre-booking system would control the frequency of marine traffic and thus limit the running emission from those marine vessels, the prohibition of idling engine would reduce the idling emission in the mooring spaces of the berthing facilities. For the marine transport services, zero emission vessels would be adopted subject to the maturity and market availability, which could further reduce marine emission.

## 5.3 Noise

**Construction Phase**

5.3.1 The following good site practices should be implemented to limit noise emissions during construction phase:

- Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;
- Material, site office and other structures should be effectively utilised, where practicable, to screen noise from nearby sensitive uses;
- Quality powered mechanical equipment (QPME) should be used; and
- Temporary noise barriers, noise enclosure and acoustic mats should be used to screen noise from relatively static PMEs.

**Operational Phase**

5.3.2 Noise barrier or enclosure may be considered to minimise the potential noise impact due to the movement of zero emission vehicles on the ATCL. For proposed depots, plant rooms and stations, at-source mitigation measures, such as acoustic louvres, could be considered to minimise the potential noise impact.

## 5.4 Water Quality

**Construction Phase**

5.4.1 In order to prevent adverse impacts on water quality, the following general mitigation measures would be put in place.

- Silt curtains should be deployed for marine works below seawater level (e.g. marine piling works and cofferdam construction of ATCL and guide piles installation works in the pier and berthing facilities);
- Where excavation of marine sediment is required during the installation of tension anchor at shallow rock head, steel pile casing will be installed for the marine-based sediment excavation works with the trapped seawater being pumped out to minimize the release of suspended solid;
- Size of vessels should be limited to maintain adequate clearance between vessels and the seabed to avoid undue turbidity generation from turbulence of vessel movement or propeller wash; and
- Good site practice in accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), good site practices should be implemented as far as practicable.

**Operational Phase**

5.4.2 The following mitigation measures are to be considered:

- To prohibit cleaning, maintenance and repair of marine vessels;
- To provide sand/silt traps at suitable locations to prevent ingress of pollutants to the stormwater system; and
- To establish emergency plans and clean up procedures to deal with accidental oil leakage of operating vessels.

## 5.5 Waste Management

5.5.1 The following measures will be considered to reduce the quantities of C&D materials, chemical waste, general refuse, etc. for offsite disposal and to handle the sediment include:

**C&D Materials, Chemical Waste and General Refuse**

- All C&D materials will be sorted and re-used wherever possible;
- Waste haulier should obtain the necessary registration and licences under the Waste Disposal Ordinance and the Waste Disposal (Chemical Waste) (General) Regulation from the Environmental Protection Department;
- Nomination of an approved person to be responsible for good site practice, arrangements for collection and effective disposal to an appropriate facility, of all waste generated at the site;
- Separation of chemical wastes for special handling and appropriate treatment at a licensed facility;
- The Contractors should follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*;
- A recording system for the amount of wastes generated recycled and disposed of (including the disposal sites);

- In order to monitor the management of C&D materials and disposal solid wastes at public filling facilities and landfills, and control fly-tipping, a trip-ticket system shall be implemented by the Contractor, in accordance with the contract and the requirements of Development Bureau Technical Circular (Works) (DEVB TC(W)) No. 6/2010 "Trip Ticket System for Disposal of Construction & Demolition Materials". Additional control measures would be further considered during the EIA;
- A Waste Management Plan (WMP) shall be prepared in accordance with Environment, Transport and Works Bureau Technical Circular (Works) (ETWB TC(W)) No. 19/2005 "Environmental Management on Construction Sites";
- Segregation and storage of different types of waste in different containers, skips or stockpiles;
- A systematic site management system to be implemented by the resident engineers;
- To enhance reuse of recycling of materials and their proper disposal;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Use of reusable non-timber formwork to reduce the amount of C&D materials; and
- Proper storage and site practices to minimize the potential for damage or contamination of construction materials.

**Land-based and Marine-based Excavated Sediment**

5.5.2 To deal with the land-based and marine-based excavated sediment caused by construction of the Project, the following measures are proposed:

- All construction plant and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location;
- All vessels transporting material shall be monitored to ensure that no dumping outside the approved location takes place. Logs and other records shall be kept and produced to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted;
- Conditions in the dumping licence shall be complied;
- Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action;
- Any treatment area for the contaminated sediment should be confined for carrying out the cement stabilisation / solidification process and any temporary stockpiling. The area should be designed to prevent leachate from entering the ground. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO);
- All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material;

- The material shall be placed into the disposal pit by bottom dumping; and
- Contaminated marine mud shall be transported by split barge of not less than 750m$^3$ capacity and capable of rapid opening and discharge at the disposal site.

## 5.6 Ecology

**Construction Phase**

5.6.1 Major ecological impact from the construction of the ATCL would be the potential disturbance on Romer's Tree Frog in Scenic Hill which is in close proximity to the elevated section of the ATCL. The nearest distance between record of Romer's Tree Frog breeding site and the proposed road alignment is about 170m (**Figure 3.1** refers). Construction method(s) with relatively lower disturbance shall be considered to avoid indirect disturbance.

5.6.2 The extent of works areas should also be carefully reviewed to minimise vegetation and habitat loss on the Scenic Hill. Sufficient disturbance screening in the form of hoarding, temporary noise barrier, protective sheet pile, proper site drainage etc. might also be considered as appropriate.

5.6.3 For the marine facilities, direct impact on coral colonies, intertidal habitats, soft and hard bottom subtidal habitats and associated fauna, and indirect water quality impacts from raised sediments would be the major ecological impact during construction owing to the construction of marine facilities at water channel. Appropriate mitigation measures will be considered where necessary. Despite the limited ecological disturbance on Chinese White Dolphins and Finless Porpoise, construction method(s) with relatively lower disturbance (e.g. bored piling and/or acoustic decoupling) will be considered.

5.6.4 Potential impact on marine ecological resources shall be avoided where practicable. Should the direct impacts to marine ecological resources be inevitable, scheduling of works, alternative design/construction methods, sensitive temporary drainage design, good site practices and water quality mitigation measures should be considered to minimize the impacts to marine ecological sensitive receivers.

**Operational Phase**

5.6.5 The silent nature of zero emission vehicles adopted in the ATCL would create lower level of disturbance to the natural/semi natural habitats nearby compared with traditional traffic. The potential indirect impact to the Romer's Tree Frog previously recorded in the Scenic Hill would need to be assessed after detailed survey to confirm the latest condition and status of this species in the Scenic Hill. Some permanent loss of plantation, shrubland and grassland on Scenic Hill is expected for the establishment of the ATCL. The induced marine traffic from the marine facilities may cause potential marine ecological disturbance on the North Lantau Marine Park and the Brothers Marine Park at the east of the marine facilities as well as the sea channel approaching the marine facilities. In addition to the

statutory speed limit of 10 knots for vessels within the designated marine parks, speed limit of 10 knots will be set for vessels approaching the sea channel to the marine facilities, which would cause the minimum disturbance to marine ecology, especially in the vicinity of the North Lantau Marine Park and the Brothers Marine Park. Some mechanisms e.g. a pre-booking system for the users of the marine facilities and/or other potential speed limiting mechanisms will be further reviewed and explored during the subsequent EIA study. Due diligence shall be given in the design stage to avoid the potential impact on ecological resources.

## 5.7 Fisheries

5.7.1 The fisheries impacts will be assessed, and the need of any mitigation measures will be identified in the EIA study. The water quality impact mitigation measures mentioned in **Section 5.4** would be adopted to minimise any potential impact on fisheries.

## 5.8 Land Contamination

5.8.1 Since land contamination during construction phase is not anticipated, mitigation measures to cope with land contamination issue are not required. The area of depot of ATCL will be paved, and other good site practices, such as proper storage and proper cleaning for any spillage / leakage of chemical, will be implemented.

## 5.9 Potential Hazard

5.9.1 Standard site practices are proposed to reduce the potential hazard from the LPG filling station operated by Shell which is approximately 130m to the Project, the fire on the sea due to release through drainage from the Aviation Fuel Tank Farm and the intermediate pressure underground town gas transmission pipeline:

- All activities that create ignition source(s) should be placed/carried out as far as possible from the filling station;
- Adequate firefighting measure(s) should be placed in the concerned areas;
- Precautionary measure(s) should be well in place to avoid any ignition source(s), e.g. flames from impacting the filling station;
- Construction works should be prohibited in case of the release of spilled Jet A1 fuel from the Aviation Fuel Tank Farm via the drainage outfall;
- Construction works near the town gas pipeline along Tung Chung Waterfront Road should be conducted according to the requirements and required distance of the Electrical and Mechanical Services Department's Code of Practice on “Avoidance of Damage to Gas Pipes" 2nd Edition;
- Adequate emergency response / evacuation plans for the project works areas and the future staff should be established; and

- Emergency training /drills for all relevant personnel should be conducted at regular intervals.

## 5.10 Landscape and Visual

5.10.1 Possible good practices to reduce potential landscape and visual impacts include:

**Construction Phase**

- Minimising disturbance to significant landscape resources as part of the design,
- Tree preservation and transplanting proposal in accordance with Development Bureau Technical Circular (Works) No. 4/2020;
- Optimize construction activities, e.g. minimizing extent of temporary works area;
- Erection of decorative mesh screen or construction hoardings;
- Temporary vertical greening, screen / buffer at-grade planting to soften the engineering structure of construction works; and
- Construction light control to minimize light pollution and night-time glare to nearby users.

**Operational Phase**

- Compensatory Tree Planting Proposal; and
- Provision of aesthetic architectural design of aboveground structures.

## 5.11 Cultural Heritage

5.11.1 While there is no built heritage and archaeological impact due to the Project, no mitigation measures shall be required. As the previous EIA reports have not fully covered MAI study area of the marine viaduct section of the Project, MAI shall be carried out under the EIA study. Impacts on cultural heritage sites will be avoided as far as practicable. If unavoidable, mitigation measures to the direct and indirect impacts on the marine archaeological resources will be implemented.

5.11.2 MAI will be conducted by qualified marine archaeologists to identify the impacts on any known and unknown site(s) of archaeological interest nearby the Project site. Investigation where necessary will include geophysical survey and diver inspection. Preservation in-situ should be considered to avoid the impact on archaeological deposits as far as practicable. If unavoidable, appropriate mitigation will be designed and implemented.

## 5.12 Severity, Distribution and Duration of Environmental Effects and Further Implications

5.12.1 Subject to the findings of assessments, effective control and mitigation measures will be identified to ensure the impacts are within acceptable levels. The possible

severity, distribution and duration of environmental effects such as beneficial and adverse effects; short and long term effects; secondary and induced effects; cumulative effects and transboundary effects will be considered and addressed in the EIA, where applicable. The key results from public consultation etc should also be documented in the EIA.

# 6 Use of Previously Approved EIA Reports and Approved Project Profile

6.1.1 The approved EIA reports and approved Project Profile below are made references to during the preparation of this Project Profile:

- Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (formerly known as Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highways Connection) (EIA Report – Register No.: AEIAR-144/2009) approved on 23 October 2009
- Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities (EIA Report – Register No.: AEIAR-145/2009) approved on 23 October 2009
- Tuen Mun Chek Lap Kok Link (EIA Report – Register No.: AEIAR-146/2009) approved on 23 October 2009
- Expansion of Hong International Airport into a Three-Runway System (EIA Report – Register No.: AEIAR-185/2014) approved on 7 November 2014
- Intermodal Transfer Terminal – Bonded Vehicular Bridge and Associated Roads (EIA Report – Register No.: AEIAR-216/2018) approved on 23 August 2018
- Airport City Link (Project Profile – Register No.: PP-606/2020) permitted AAHK to apply directly for environmental permit on 31 August 2020

# Figures

LEGEND

PROPOSED MARINE FACILITIES

TENTATIVE ALIGNMENT OF AIRPORT TUNG CHUNG LINK

DESIGNATED PROJECTS

(A) PART I, ITEM A. 6(C) - A TRANSPORT DEPOT LOCATED LESS THAN 200 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED EDUCATIONAL INSTITUTION

(B) PART I, ITEM A.8 - A ROAD OR RAILWAY BRIDGE MORE THAN 100m IN LENGTH BETWEEN ABUTMENTS

(C) PART I, ITEM C.3(a) - RECLAMATION WORKS RESULTING IN 5% DECREASE IN CROSS SECTIONAL AREA CALCULATED ON THE BASIS OF 0.0mPD IN A SEA CHANNEL

(D) PART I, ITEM O.2 - A MARINA DESIGNED TO PROVIDE MOORINGS OR DRY STORAGE FOR NOT LESS THAN 30 VESSELS USED PRIMARILY FOR PLEASURE OR RECREATION

| Rev. | Date | Description | Checked |
|---|---|---|---|
| G | 06/09/2021 | SEVENTH ISSUE | TL |

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

Hong Kong International Airport

Consultant

ARUP

| Consultant's Signatures for Approval | Date |
|---|---|
| Design Supervisor GL | 06/2021 |
| Checkers TL | 06/2021 |
| Authorised Representative FC | 06/2021 |

Key Plan

Title

AIRPORT TUNG CHUNG LINK PROJECT
PROJECT PROFILE
PROJECT LOCATION

Drawing No.

FIGURE 1.1

| Originator | Location | Discipline | Type | Dwg Sequence No. |
|---|---|---|---|---|
| | | | | |

| Status | Scale | Rev. |
|---|---|---|
| DESIGN | 1:30000 (A3) | G |

File Name : G:\env\project\279398\13 Drawing Deliverables\report\01 D0 Project Profile\REV G\Figure 1.1 - Project Location.dgn

User Name : Richard Lau KH

Plot Date : 6/9/2021

LEGEND

PROPOSED MARINE FACILITIES

| Rev. | Date | Description | Checked |
|---|---|---|---|
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ARUP

| Consultant's Signatures for Approval | Date |
|---|---|
| Design Supervisor GL | 06/2021 |
| Checkers TL | 06/2021 |
| Authorised Representative FC | 06/2021 |

Key Plan

Title

AIRPORT TUNG CHUNG LINK PROJECT
PROJECT PROFILE
TENTATIVE LAYOUT OF PROPOSED MARINE FACILITIES

Drawing No.

FIGURE 1.2

| Originator | Location | Discipline | Type | Dwg Sequence No. |
|---|---|---|---|---|
| | | | | |

| Status | Scale | Rev. |
|---|---|---|
| DESIGN | AS SHOWN | E |

File Name : G:\env\project\279398\13 Drawing Deliverables\report\01 D0 Project Profile\REV G\Figure 1.2 - Tentative Layout of Proposed Marine Facilities.dgn

User Name : Richard Lau KH

Plot Date : 6/9/2021

N

LEGEND

- PROPOSED MARINE FACILITIES
- TENTATIVE ALIGNMENT OF AIRPORT TUNG CHUNG LINK
- PREVIOUS RECORD OF ROMER'S TREE FROG BREEDING SITE (FUNG, 2015)

| Rev. | Date | Description | Checked |
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Key Plan

Title

AIRPORT TUNG CHUNG LINK PROJECT
PROJECT PROFILE
BREEDING AREA OF ROMER'S TREE FROG ON SCENIC HILL

Drawing No.

FIGURE 3.1

| Originator | Location | Discipline | Type | Dwg Sequence No. |
|---|---|---|---|---|
| Status DESIGN | | Scale 1:30000 (A3) | | Rev. G |

File Name : G:\env\project\279398\13 Drawing Deliverables\report\01 D0 Project Profile\REV G\Figure 3.1 - Breeding Area of Romer's Tree Frog on Scenic Hill.dgn

User Name : Richard Lau KH

Plot Date : 6/9/2021