



土木工程拓展署  
Civil Engineering and  
Development Department

新界東拓展處  
New Territories East  
Development Office

**Agreement No. CE 43/2008 (HY)  
Cross Bay Link, Tseung Kwan O  
- Investigation**

**Environmental Impact Assessment  
Executive Summary  
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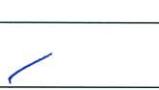
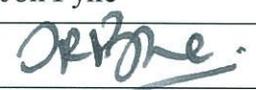
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# 1 Introduction

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## 1.1 Project Background

- 1.1.1** The “Feasibility Study for Further Development of Tseung Kwan O (TKO)”, which was commissioned by CEDD in July 2002 and substantially completed in 2005, recommended a new external road network comprising the Cross Bay Link (CBL) and Tseung Kwan O – Lam Tin Tunnel (TKO-LT Tunnel) to be completed around 2016 to meet the anticipated traffic flow.
- 1.1.2** CBL would be a dual two-lane carriageway of approximately 1.8 km long across the Junk Bay mainly on viaduct, connecting TKO-LT Tunnel to Wan Po Road at the south eastern part of TKO. The viaduct section of CBL has a cycle track and a footpath in addition to the road carriageway.
- 1.1.3** The proposed CBL is at close distance to the Northern Bridge and planned Southern Bridge, which will be located at the Eastern Channel of TKO. As suggested by the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS) in the 251<sup>st</sup> ACABAS meeting held on 21<sup>st</sup> December 2004, it is necessary to match the design of CBL, Southern Bridge and Northern Bridge in respect of their aesthetic design, appearance and structural form.
- 1.1.4** **Drawing no. 209506/EIA/IN/001** illustrates the proposed alignment of CBL.
- 1.1.5** Together with Route 6, including the Tseung Kwan O – Lam Tin Tunnel (TKO-LT Tunnel), the CBL will provide an east-west highway link between Kowloon and Tseung Kwan O South.
- 1.1.6** CBL is a Designated Project according the Environmental Impact Assessment Ordinance (Cap 499) (EIAO) and therefore required an Environmental Impact Assessment (EIA) study. The EIA study for CBL has been undertaken in accordance with the guidelines and assessment criteria provided by the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) and the requirements of EIA Study Brief No 196/2008.

## 1.2 Need for Project

**1.2.1** In July 2002, CEDD commissioned the Feasibility Study for Further Development of Tseung Kwan O (TKO Study) to formulate a comprehensive plan for further development of TKO and improvement of its overall design with a view to building TKO into a new town that can boast of its convenience, vibrancy, distinctive urban design and quality living environment. As an integral part of the TKO Study, the long-term transport need of TKO was examined.

**1.2.2** The TKO Study was substantially completed in 2005 with its recommendations endorsed. The TKO Study identified that the existing TKO Tunnel would have insufficient capacity to cater for projected traffic flow to be generated from further population intake and industrial developments in TKO. It recommended that a new external road network comprising CBL and TKO-LT Tunnel should be provided to meet the anticipated traffic flow.

**1.2.3** At present, the existing TKO Tunnel is the main connection between TKO and the urban areas of Kowloon and Hong Kong. However, it has nearly reached its capacity limit due to further development of TKO. Thus, the existing TKO Tunnel will hardly meet the anticipated future demand in terms of capacity, convenience and level of comfort. The proposed new TKO-LT Tunnel with CBL will alleviate traffic congestion and meet the long term traffic demand between TKO and the external areas.

**1.2.4** The Legislative Council, Sai Kung District Council and the local community have been urging for early construction of TKO-LT Tunnel together with CBL such that these new roads will provide the much needed additional transport capacity in step with the continuing development of TKO. Political and public pressure is expected to build up as the traffic situation continues to deteriorate, further phases of housing are announced at Area 86 Lohas Park and housing sites in TKO Town Centre South sold by the Government for development.

**1.2.5** At the time of this EIA, the CBL project is near the completion of the investigation and preliminary design stage. Sai Kung District Council and the local community pressed for early implementation of the project during the most recent public engagement meeting in January 2013. CBL is scheduled for commencement at end 2016 for completion in 2020.

- 1.2.6** Traffic studies have identified that if the TKO-LT Tunnel and CBL project does not proceed, the existing road network in Kowloon East and Tseung Kwan O will experience serious congestion as the population increases along with continued commercial and industrial development in the TKO area. The CBL and TKO-LT Tunnel projects would meet demand from previously approved development projects and the expected future development.
- 1.2.7** The consequence of not proceeding with the Project would have been a constraining factor upon the planning and development of Area 86 Lohas Park and Area 137 due to traffic congestion along Wan Po Road and at the existing TKO tunnel. Development of these areas has since begun and parts have been completed in the knowledge that CBL and TKO-LT Tunnel would be provided in the future to meet the anticipated traffic demand.
- 1.2.8** In the absence of CBL, there would therefore be increased traffic through TKO Town Centre overloading its road network and causing heavy congestion. Higher traffic flows through TKO Town Centre will result in greater levels of air and noise impacts. There is no viable alternative to CBL since local junction improvement works would be substantial and could not be accommodated owing to the proximity of adjacent developments.
- 1.2.9** The EIA Study for Further Development of Tseung Kwan O Feasibility Study concluded in 2005 that a route option without CBL would be environmentally undesirable and was not suitable for further consideration. Hence, CBL and TKO-LT Tunnel are necessary to alleviate undesirable environmental consequences that would result in TKO Town Centre from committed and future development.
- 1.2.10** In around 2021 when other components of the Route 6 (TKO-LT Tunnel, Central Kowloon Route and Trunk Road T2) are assumed to be in place, CBL will enable external heavy traffic to and from the southeast industrial area to by-pass the TKO town centre, thus minimizing adverse traffic and environmental impacts on the residential areas of TKO.
- 1.2.11** With the CBL and Route 6, including TKO-LT Tunnel, the journey time between TKO Area 86 and Kowloon would be significantly reduced. Currently, from the junction of Wan Po Road and Wan O Road, the journey to Gascoigne Road, Yau Ma Tei, is approximately

35 minutes. After completion of these projects, it is estimated the journey time will be reduced by 20 minutes.

**1.2.12** According to the traffic improvement proposals under the TKO-LT Tunnel and CBL projects, all the existing public transport facilities including bus, green minibus, red minibus, taxi and ferry will be retained. As such, there will not be any adverse impact on these provisions: in fact, the TKO-LT Tunnel and CBL projects, together with the proposed Trunk Road T2 and Central Kowloon Route will provide new roads and junction improvements which will improve the existing public transport network.

**1.2.13** Overall, CBL will alleviate the traffic congestion and meet the long-term traffic demand of TKO. In particular, CBL will divert heavy vehicles away from the TKO Tunnel – Wan Po Road route which cuts across the densely populated areas of TKO. In this way, CBL will bring the nuisances (noise, air, dust) of the heavy trucks away from the city centre sensitive receivers. The situation for Lohas Park will also be improved as noise mitigation will be provided along Road D9, unlike Wan Po Road which has no noise barrier. The shortening of journey time particularly the alleviation of traffic congestion will reduce the generation of vehicle pollutants in the region.

### **1.3 Alternative Options & Preferred Scheme**

**1.3.1** Four alternative route alignment options with different structural form were identified and appraised in terms of traffic performance, land use impact and potential environmental impacts. The route to south of Area 86 was selected as being suitable to take forward the further preliminary appraisal, leading to the selection of a recommended CBL scheme.

**1.3.2** The feasible structural forms of CBL have been developed into two alignment schemes, Scheme A (Bridge Arrangement) and Scheme B (Tunnel Arrangement), and were subjected to preliminary appraisal to confirm their feasibility. Scheme A was identified as the preferred option as it is compatible with the land use planning for TKO and meets the necessary functional requirements for the road link and also performs best in terms of technical criteria.

**1.3.3** Six initial design options were shortlisted in the Design Options Review Report following a preliminary evaluation. Consultations with

the relevant government departments and the Sai Kung District Council in November 2009 confirmed that these Initial Design Options would be considered further. Design Option 5, the Eternity Arch, was the recommendation of the project team and received strong public and district council support. The preferred design option has excellent aesthetics appropriate to the site and a unique structure, which offer the best opportunity to create sympathy of form between the Northern and Southern Bridges.

## 2 Project Description

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### 2.1 Project Scope

2.1.1 The scope of the Project will comprise the following:

- Construction of an approximately 1.8 km long dual two-lane road mainly on viaduct with a footpath and a cycle track.
- The associated civil, structural, marine, ship impact protection, geotechnical, landscape, and environmental protection and mitigation works.

2.1.2 The construction of a 900mm diameter salt water main to link up the trunk salt water supply system along Wan Po Road to those in TKO Town Centre and Tiu Keng Leng was previously considered to be mounted along the bridge structure of CBL. However, due to serious concern on the structural integrity and future maintenance for the inclusion of the salt water main in the bridge structure of CBL, an alternative route is proposed for the construction of the salt water main, which is now no longer mounted on CBL. The construction of the salt water main is therefore excluded from the scope of the Project.

2.1.3 The alternative route of the salt water main would not be within any country park nor any conservation area, site of cultural heritage, marine park, marine reserve or SSSI. The pipe laying works would not involve dredging operation within 100m from the seawater intake point at TKO Area 86. Hence, the proposed salt water main is considered not a designated Project.

2.1.4 Given that the construction of 900mm diameter salt water main is no longer within the scope of CBL and its construction programme is uncertain at this stage, the environment impact due to the salt water main will not be addressed in this EIA report for the CBL project.

### 2.2 Implementation Programme

2.2.1 CBL is targeted to be commissioned by 2020. To meet this target the tentative commencement year for the construction of CBL would be end 2016 and would take approximately 4 years for completion.

## 2.3 Construction Method

- 2.3.1** The major marine construction works will comprise installation of concrete marine piles within a temporary cofferdam and subsequent construction of piles caps and piers. A silt curtain will be placed around the works area prior to the temporary sheet piling and will be maintained until the cofferdam is removed.
- 2.3.2** The foundation design and method of construction avoids the need for dredging of the seabed and hence minimises potential environmental impact to the marine environment. Sediment will be excavated from steel pile casings driven within the cofferdam and loaded onto barge for disposal.
- 2.3.3** The bridge substructure and superstructure will comprise concrete deck segments of the approaches and the main bridge and side spans, including the cycle track ramp. These elements will be prefabricated and brought to site by barge for installation. The majority of the elements will be erected from barge, while lifting frames will be used in the Eastern Approach where the water level is shallow.
- 2.3.4** Foundations for the cycle track ramp will be built on land at the eastern landfall. The track will ramp up from ground to the deck level of Road D9, which will be built on columns of varying heights.
- 2.3.5** The seawall will be modified and earthworks here will be protected from high water pressure by sheet piles. The works will include excavation and backfilling of general fill material, quarry spall and rubble.
- 2.3.6** Other major construction activities will include extension and strengthening of the sea wall, ground improvement works and foundations for the cycle track and a proposed noise barrier close to Tseung Kwan O Area 86.

## 3 Key Findings of the Environmental Impact Assessment

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### 3.1 Air Quality

#### 3.1.1 Construction Phase

3.1.1.1 Air quality impacts from the landside construction works of Road D9 would mainly be due to construction dust from soil excavation, backfilling, transportation of the excavated materials and wind erosion of all open sites. Dust suppression measures have been recommended, which include watering worksite areas **once per hour** during working hours and mitigation measures specified in the *Air Pollution Control (Construction Dust) Regulation*. With the implementation of recommended mitigation measures, no adverse air quality impact is anticipated during the construction phase.

#### 3.1.2 Operational Phase

3.1.2.1 Upon completion of the Project, additional traffic would likely be generated and carried by the CBL and existing road network. The associated air quality impact from vehicular emission, including NO<sub>2</sub> and RSP, via the CBL and induced traffic would be unavoidable. Furthermore, the Tseung Kwan O Industrial Estate is an existing source of industrial emissions.

3.1.2.2 Cumulative air quality impacts arising from the vehicular emissions from the operational phase of CBL and existing roads in the future, chimney emissions from various industries located at the Tseung Kwan O Industrial Estate and background future air quality have been assessed quantitatively. The results concluded that for the worst case future year, all 1-hour, 24-hour and annual NO<sub>2</sub> and RSP concentrations at sensitive receivers will comply with the relevant Air Quality Objectives.

3.1.2.3 Overall, it was concluded that during the both the construction and operational phases of CBL, Annex 12 of the TM-EIAO would be fully complied with.

## **3.2 Noise**

### **3.2.1 Construction Phase**

**3.2.1.1** Assessment of construction noise, including cumulative impact with the ongoing development of Tseung Kwan O Area 86 (Lohas Park) revealed that mitigation measures will be necessary to avoid adverse impact to existing and to be completed Noise Sensitive Receivers (NSRs) of Lohas Park.

**3.2.1.2** With the implementation of good practices, the use of quiet plant, site hoarding and shroud/temporary noise barriers, etc., it was predicted that noise levels including cumulative impacts would not be adverse for the residential NSRs.

**3.2.1.3** For the two planned schools, the construction noise levels from CBL would be within the noise criterion during normal and examination periods, however, depending on the development programmes of the schools and the Lohas Park, there might be potential of an exceedance of 1 - 2 dB(A) due to cumulative impacts with other projects. Should the schools being occupied before CBL works, the CBL contractor is advised to liaise with the schools to avoid noisy working during the more sensitive time when examinations are held.

### **3.2.2 Operational Phase**

**3.2.2.1** Adverse road traffic noise impact to Lohas Park was anticipated in the absence of mitigation measures for CBL and Road D9.

**3.2.2.2** Noise mitigation measures were therefore proposed and comprise of partial enclosure of Road D9 close to Lohas Park and low noise surfacing on CBL and Road D9. It was predicted that the residential premises and schools at Lohas Park will be adequately protected by these measures and mitigation already committed to by the proponent of the Lohas Park development.

**3.2.2.3** For the planned schools, they will be protected by the proposed mitigation measures to within the noise criterion.

**3.2.2.4** Overall, in respect of both the construction and operational phases of CBL, Annex 5 of the TM-EIAO would be complied with.

### **3.3 Sediment Quality**

**3.3.1** Sediment would be excavated from pile casings during the construction of the pier foundations for the CBL bridge. The quantity of sediment to be excavated has been minimised in the design of the bridge piers and estimated to be approximately 4,300m<sup>3</sup>. Chemical and biological tests on the marine deposits were conducted in accordance with ETWBTC (Works) No. 34/2002. From this, 96.7% is Category L sediment, while Category Mp (Type 1 open sea disposal at dedicated sites), Mf (Type 2 confined marine disposal) and H (Type 2 confined marine disposal) sediments contribute to about 3.3% of the total volume.

**3.3.2** Overall, it was concluded that in respect of the marine sediment to be excavated and disposed at sea during the construction of the CBL Annex 7 of the TM-EIAO would be complied with.

### **3.4 Water Quality**

#### **3.4.1 Construction Phase**

**3.4.1.1** Water quality impact during the construction phase could primarily result from excavation and filling activities, sediment deposition rate, construction site runoff, wastewater and sewage generated from construction activities, litter from packaging materials and waste construction materials and construction workforce sewage.

**3.4.1.2** The water quality assessment predicted that suspended solid elevation, sedimentation rate and dissolved oxygen depletion due to the marine works of CBL and construction of the concurrent TKO-LT Tunnel would, however, be well within acceptable limits.

**3.4.1.3** With the implementation of proposed mitigation measures, which included the use of silt curtain and cofferdam around marine pier foundation work, no residual water quality impact was predicted.

#### **3.4.2 Operational Phase**

**3.4.2.1** Potential long term impacts on hydrodynamic and water quality conditions were identified due to the bridge pier and reclamation of TKO-LT Tunnel.

- 3.4.2.2** The coastline with and without CBL and the TKO-LT Tunnel reclamation was modelled and tidal flow simulations with and without these projects revealed there would be an insignificant change in the hydrodynamic regime. No change of water quality regime, which is associated with the hydrodynamic impact, was predicted.
- 3.4.2.3** Possible water quality impact due to road surface runoff was identified, but with the implementation of a proper drainage system with silt traps and oil interceptors, no adverse water quality impact would be likely.
- 3.4.2.4** Overall, it was concluded that water quality impacts would comply with Annex 6 of the TM-EIAO during both the construction and operational phases of CBL.

## **3.5 Waste Management**

- 3.5.1** The typical wastes generated during the construction phase would include include excavated marine sediment, Construction and Demolition (C&D) materials, chemical waste, general refuse and sewage from workers. In addition to 4,300m<sup>3</sup> of excavated marine sediment, the quantity of C&D materials expected to be generated from CBL and the seawall upgrading works at Road D9 was estimated at 99,000m<sup>3</sup>. Approximately 65,000m<sup>3</sup> would be reused onsite, while the remaining 34,000m<sup>3</sup> delivered to public fill facilities.
- 3.5.2** For other waste such as chemical waste, general refuse and sewage from workers, mitigation measures including good site practices, on-site reuse, recycling, proper storage, collection and transportation of wastes, etc. were recommended.
- 3.5.3** During the operational phase of CBL, waste from cyclists and other uses would be collected in bins for recycling and disposal.
- 3.5.4** With the implementation of all the proposed mitigation measures, no adverse residual waste management implications were anticipated during both the construction and operational phases. Overall, it was concluded that the waste management implications of CBL would comply with Annex 7 of the TM-EIAO.

## 3.6 Marine Ecology

- 3.6.1.1** There are no recognised sites of conservation importance, such as SSSIs, Country Park and Marine Park, inside Junk Bay and no ecological sensitive areas (e.g. high value coral communities) within or close to the CBL alignment.
- 3.6.1.2** CBL would cause only limited (< 0.3ha) soft substrate seabed and marine water loss. The loss of habitat was considered insignificant to minor due to the small size and low ecological value of the habitats. It was also confirmed that no direct encroachment would be caused by the 450m vertical artificial seawall located on the eastern shore of Junk Bay and no improvement is need for supporting CBL, thus, there would be no direct impact or loss on the intertidal fauna and the corals colonising the vertical seawalls. It was also considered that the new seawalls at the landing points would provide artificial intertidal and subtidal hard substrate habitat for intertidal fauna and coral colonisation after the construction work finishes.
- 3.6.1.3** Only limited marine water quality impact is anticipated as only 12 pier sites are needed for the project and no reclamation will be undertaken. The residual ecological impact resulting from habitat loss was considered acceptable and no specific ecological monitoring programme found to be necessary. Overall, it was concluded that ecological impact due to CBL would comply with Annex 8 of the TM-EIAO.

## 3.7 Fisheries

- 3.7.1.1** There is no fish culture zone or spawning and nursery grounds for fisheries species inside Junk Bay, or within or close to the CBL alignment. The CBL would result in only limited (< 1ha) loss of fishing ground of low to moderate production. This loss of fishing ground ranked as insignificant to minor due to the small size and low importance of the fishing ground.
- 3.7.1.2** The residual impact of fishing ground loss is considered acceptable and no specific fisheries monitoring programme was found to be necessary. Overall, it was concluded that CBL would comply fully with Annex 9 of the TM-EIAO.

## 3.8 Cultural Heritage

3.8.1.1 A comprehensive Marine Archaeological Investigation was undertaken and did not identify any cultural heritage resources. Further, dive surveys indicated that in many areas the seabed had been disturbed by previous construction work. Consequently, no further action or mitigation measures were found necessary and overall, the CBL would comply fully with Annex 10 of the TM-EIAO.

## 3.9 Landscape and Visual

3.9.1.1 The proposed development and associated works follow in principle the planning intentions from the Tseung Kwan O – Outline Zoning Plan (S/TKO/20). However, the scale of CBL together with concurrent projects, namely TKO-LT Tunnel, was found to inevitably result in some landscape and visual impacts.

3.9.1.2 With the proposed mitigation measures including the compensatory planting and aesthetic treatments, the Junk Bay Landscape (LCA 1) will still suffer from slight landscape impact during construction and operation due to the artificial engineering structure which is incompatible with the natural Junk Bay character. The cumulative visual impacts can only be slightly mitigated by minimizing area, avoidance of excessive height and bulk of buildings and structures and construction period. Therefore, Visual Sensitive Receivers (R2, R7, CDA1, O1, and O2) located in close proximity to CBL will still suffer from moderate to slight residual visual impact. The implementation of screening and amenity planting along the waterfront promenade is proposed to soften the appearance of the engineering structure built in Junk Bay.

3.9.1.3 LCA2 - There will be slight impact on Reclamation / ongoing major development landscape due to the operation of CBL. However, with the proposed mitigation measures including the aesthetic design of the built structures and soft landscape treatment works, it is considered that the residual impact on this LCA is insubstantial.

3.9.1.4 LCA3 – Tseung Kwan O Industrial Urban Landscape will be subject to insubstantial impact as this LCA is relatively far away from the CBL.

- 3.9.1.5** LCA4 – Chiu Keng Wan Coastal Upland and Hillside Landscape will be subject to insubstantial impact as this LCA is relatively far away from the CBL. However, this LCA will definitely be affected by the interface project :TKO-LTT.
- 3.9.1.6** LCA5 – Tseung Kwan O Landfill Landscape (Stage II and III) will be subject to insubstantial impact as this LCA is relatively far away from the CBL and will not be affected.
- 3.9.1.7** LCA6 – Tseung Kwan O Miscellaneous Urban Fringe Landscapewill be subject to insubstantial impact as this LCA is relatively far away from the CBL and will not be affected.
- 3.9.1.8** LCA7 – High Junk Peak Coastal Upland and Hillside Landscape will be subject to insubstantial impact as this LCA is relatively far away from the CBL and will not be affected.
- 3.9.1.9** LCA8 – Residential Urban Fringe Landscape will be subject to insubstantial impact as this LCA is relatively far away from the CBL and will not be affected.
- 3.9.1.10** Based on the tree survey report on CBL, approximately 308 no. of trees will be affected (LR3), of which approximately 58 no. are proposed to be transplanted, and approximately 250 no. trees are proposed to be felled (including 190 no. *Leucaena leucocephala* and 60 no. common trees). Due to construction of the CBL, it is unavoidably considered to remove the affected trees. Affected trees with high to medium amenity value and medium survival rate are proposed to be transplanted. Trees surveyed within the proposed works boundary are primarily common species. There are no LCSD Champion Trees, Registered Old and Valuable Trees and Protected Species under Cap 586 Protection of Endangered Species of Animals and Plants Ordinance. It is expected approx. 67 heavy standard sized trees shall be planted as compensatory tree planting. The overall residual impact on trees is considered as acceptable with mitigation measures.
- 3.9.1.11** There is expected to be some minor impact upon the sea waterbody in Junk Bay (LR1). The sea water body will be permanent lost due to the construction of the piers for CBL bridge. Residual impacts after 10 years of operation are expected to be slight.

- 3.9.1.12** There is expected to be negligible impact upon the Landscaped Area and Plantation within High-rise residential development in CDA 86 (LOHAS Park) (LR2). It is considered that the residual impact is expected to be insubstantial.
- 3.9.1.13** There is expected to be negligible impact upon the Plantation within Vacant land (LR4), It is considered that the residual impact is expected to be insubstantial after year 10.
- 3.9.1.14** There is expected to be negligible impact upon Plantation within Industrial Building (LR5). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.15** There is expected to be negligible impact upon Woodland at Foothill and Hillside (LR6). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.16** There is expected to be negligible impact upon Grassland and Scrubland at Hillside in Chiu Keng Wan (LR7). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.17** There is expected to be negligible impact upon Vegetation of clustered newly planted trees and shrubs scattered on Tseung Kwan O Stage II and III Landfill Area (LR8). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.18** There is expected to be negligible impact upon Nature Rocky and Sand Shoreline in Chiu Keng Wan (LR9) and Plantation at Wasteland / Construction Area in Chiu Keng Wan (LR10) . Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.19** There is expected to be negligible impact upon Vegetation along the Coastline Adjacent to Lohas Park Road (LR11). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.20** There is expected to be negligible impact upon Roadside Planting in Lohas Park Road (LR12). Residual impact after Year 10 is expected to be insubstantial.
- 3.9.1.21** There is expected to be negligible impact upon Seawall in Tseung Kwan O Industrial Estate (LR13). Residual impact after Year 10 is expected to be insubstantial.

- 3.9.1.22** The Planned proposed “Central Avenue” user in Town Centre South near the promenade in open space of TKO Area 68 and the promenade user in the former TKO Stage I Landfill site (O1), the Planned waterfront near the Eastern Channel in open space of TKO Area 68 (O2), and Planned Residential area of TKO Area 65, 66 and 68 (R7) will have direct and close range views to the CBL and TKO-LT Tunnel. The cumulative visual impacts can only be mitigated by using visually unobtrusive building material and refinement of engineering design. Screening planting/amenity planting in the open space itself is expected to have minor screening effect to these views because the CBL are elevated. Therefore, the VSRs (O1 and O2) will still suffer from moderate residual visual impact of the CBL and TKO-LT Tunnel.
- 3.9.1.23** The proposed Open Space in Area 74 (O3), and Planned recreational users in TKO Stage I Landfill (REC1), the residual impact would be slight due to screening/amenity planting along the waterfront promenade will be fully established and is expected to have screening effect on the CBL and TKO-LT Tunnel. Residents of Ocean Shores (R2) will have direct, close views to the new CBL and TKO-LT Tunnel which is immediately adjacent or very close to the VSRs. Mitigation in the form of screening planting, refinement of structure and architectural design of road structures will help in reducing these visual impacts. However, the VSRs will still be subject to the partial blockage of views and permanent loss of open seaview. Therefore, the VSRs (R2) will still suffer from moderate residual visual impact of CBL and TKO-LT Tunnel.
- 3.9.1.24** Overall, was concluded that the residual landscape and visual impacts of the proposed CBL would comply with the requirements of Annex 10 of the TM-EIAO with the implementation of proposed mitigation measures during the construction and operational phases.

## **3.10 Landfill Gas Hazard**

- 3.10.1** A Landfill Gas (LFG) Hazard Assessment was undertaken in respect of the nearby Tseung Kwan O landfill disposal sites. Analysis of the potential source-pathway-target indicated that the overall risks to the receivers within the 250m Consultation Zone for the landfill during both construction and operational phases would be categorised as “Low to Medium”.

**3.10.2** Precautionary measures and monitoring were recommended to minimise the potential risk of LFG migration to the respective targets and requirements of Annex 7 of the TM-EIAO.

## **3.11 Environmental Monitoring & Audit**

**3.11.1** Environmental monitoring and audit (EM&A) requirements have been specified in an EM&A Manual. The EM&A Manual contains full details of proposed baseline and compliance monitoring programmes, as well as performance specifications, audit requirements and monitoring procedures. The EM&A programme will be implemented throughout the entire construction period to regularly monitor the environmental impacts on the neighbouring sensitive receivers.

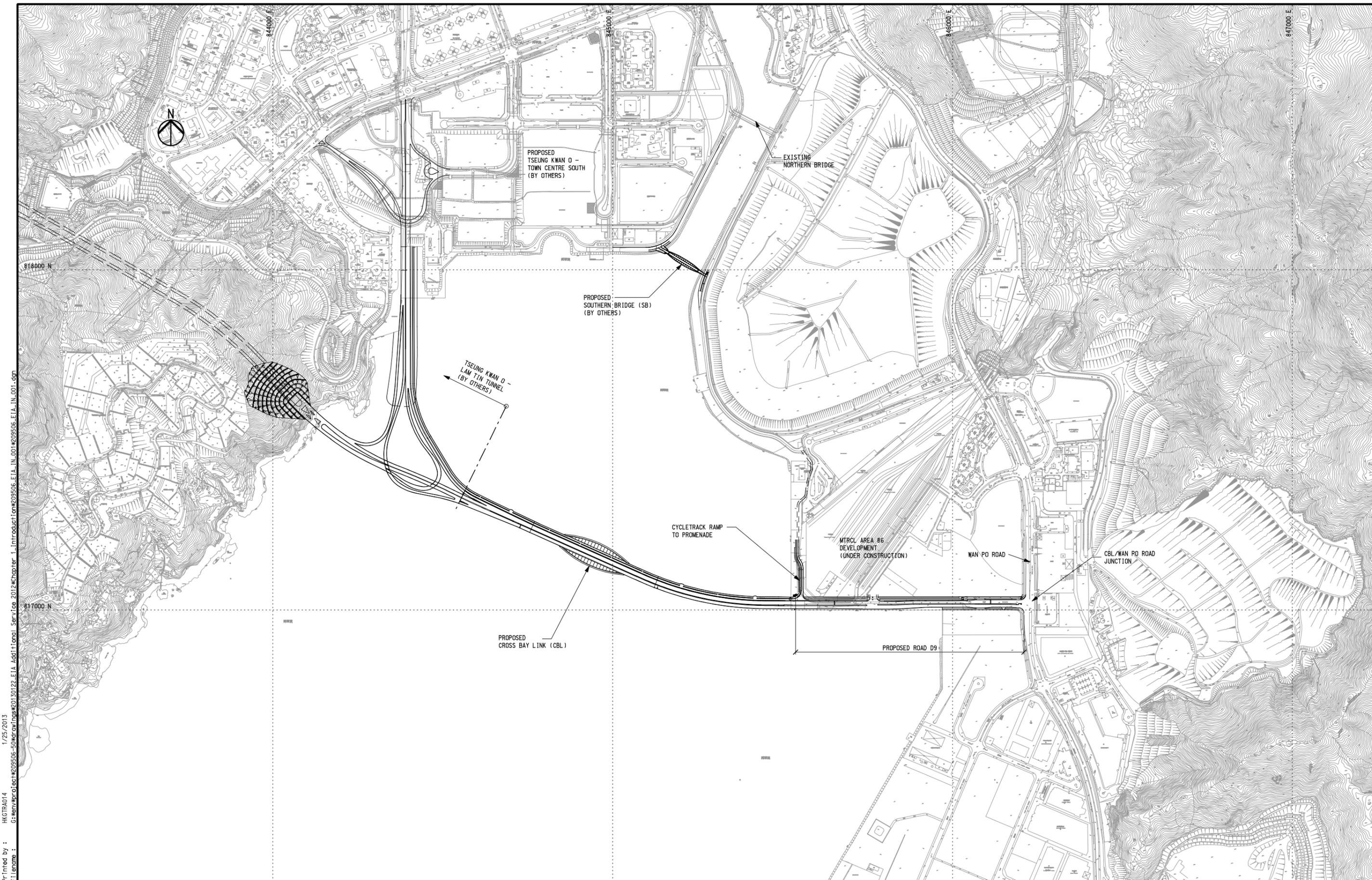
## 4 Overall Conclusion

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- 4.1.1.1 The findings of the EIA provided information on the nature and extent of environmental impacts likely to arise from the construction and operation of CBL. The EIA has, where appropriate, identified mitigation measures to ensure compliance with environmental legislation and standards.
- 4.1.1.2 Overall, the EIA Report has predicted that CBL would comply with the requirements of the EIAO and TM-EIAO with the implementation of proposed mitigation measures for construction and operational phases. An environmental monitoring and audit programme has been recommended to check the effectiveness of the proposed mitigation measures.

## **Drawing**

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