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1 INTRODUCTION

1.1 General

- 1.1.1 As the Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR) and Hong Kong Boundary Crossing Facilities (HKBCF) are closely inter-related, they are presented together under the EIA Report of each, hence, the HKLR EIA Report will present descriptions and assessments not only on HKLR but also relevant aspects on HKBCF; similarly, the HKBCF EIA Report will present descriptions and assessment not only on HKBCF but also relevant aspects on HKLR.
- 1.1.2 An application (No ESB-183/2008) for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by Highways Department (the Project Proponent) on 12 March 2008 with a Project Profile (No. PP-346/2008) for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (the Project). EPD issued an EIA Study Brief (No: ESB-183/2008) in April 2008 to the Project Proponent to carry out an EIA study.
- 1.1.3 Ove Arup & Partners Hong Kong Limited (Arup) has been commissioned by the Highways Department to carry out the investigation and preliminary design study for the Project as well as an EIA according to the EIAO for identification and evaluation of the environmental impacts and the mitigation measures required.
- 1.1.4 The Project would involve reclamation works, dredging operation, extension of Automated People Mover, and road bridges. These are designated projects under Schedule 2 of the EIA Ordinance (Cap. 499) and hence Environment Permits (EPs) are required for their construction and operation.
- 1.1.5 **Figure 1.1** illustrates the proposed location and extent of Hong Kong Boundary Crossing Facilities (HKBCF) reclamation areas.

1.2 Background Information & Previous Studies

- 1.2.1 In January 2003, the National Development and Reform Commission (NDRC) and the Hong Kong Special Administrative Region (HKSAR) Government jointly commissioned the Institute of Comprehensive Transportation to conduct the study on the transport linkage between Hong Kong and Pearl River West. The study was completed in July 2003 and concluded that there is an urgent need for a land transport link connecting between Hong Kong and Pearl River West. Such a link, the Hong Kong-Zhuhai-Macao Bridge (HZMB), will be instrumental in shortening the travelling time and distance between Hong Kong and Pearl River West. It will also yield the macro socio-economic benefits contributing to the development of tourism, logistics, finance and trade in Hong Kong, reinforce Hong Kong's status as an international shipping and aviation centre, and also promote the economic integration between Hong Kong and Pearl River West.
- 1.2.2 In August 2003, a HZMB Advance Work Co-ordination Group (AWCG) was set up by the three governments of the HKSAR, Guangdong Province, and Macao Special Administrative Region (Macao SAR) to co-ordinate and to take forward the advance planning work for the HZMB. In February 2004, the AWCG appointed the China Highway Planning and Design Institute Consultants (HPDI) to conduct a feasibility study for the HZMB to examine the hydrology, environment, landscape, marine, ship impact protection, traffic, wind speed assessment and financial viability etc. In parallel with the study of HZMB, the Highways Department of HKSAR Government commissioned Arup in March 2004 to undertake a detailed investigation and preliminary design study as well as an EIA study for the Hong

Kong Section of HZMB and North Lantau Highway Connection (now renamed as HZMB HKLR).

- 1.2.3 In 2007, the NDRC also formed the HZMB Task Force to push forward the project. The Task Force was led by the NDRC, with representatives from the Ministry of Transport, the Hong Kong and Macao Affairs Office, and the governments of the HKSAR, Guangdong and Macao SAR as members. At its meeting in January 2007, the Task Force recommended and agreed by the three governments the concept of “separate locations of BCF mode” for the BCF of the HZMB. Under the “separate locations of BCF mode”, the three governments will be responsible for building their own BCF and the link road, connecting between the BCF and the HZMB Main Bridge, within their respective territories.
- 1.2.4 In May 2007, Highways Department of HKSAR Government has commissioned a site selection study to identify possible locations for the HKBCF taking account of various constraints/considerations such as environmental, planning, traffic, technical feasibility etc. The study was completed in March 2008.
- 1.2.5 Subsequent to the site selection study, Highways Department of HKSAR Government commissioned Arup in July 2008 to undertake a detailed investigation and preliminary design study as well as an EIA study for the HZMB HKBCF.

1.3 Project Description

1.3.1 Hong Kong Boundary Crossing Facilities

1.3.1.1 The proposed HKBCF will comprise the following:

- (i) Dredging and reclamation at the northeast waters off the Airport Island to provide land platform (about 130ha of area) for the development of the HKBCF,
- (ii) Cargo processing facilities including kiosks for clearance of goods vehicles, customs inspection platform, X-ray buildings and related supporting facilities;
- (iii) Passenger related facilities including processing kiosks and examination facilities for private cars and coaches, passengers clearance building and halls and related supporting facilities;
- (iv) Accommodation for and facilities of the Government departments providing services in connection with the HKBCF;
- (v) Provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange, transport drop-off and pick-up areas, vehicle holding areas, passenger queuing areas, road networks, footbridges, fencing, sewage and drainage systems, water supply system, utilities, electronic system, traffic control and surveillance system and related supporting facilities;
- (vi) Provision of road access for connection of the HKBCF to the HZMB HKLR, the TMCLKL and the Airport;
- (vii) Re-provisioning of the affected Airport’s facilities such as the existing FSD’s East Sea Rescue Berth; and
- (viii) Provision of other facilities for connection with the Airport such as an Automated People Mover system to connect the Airport Terminal with the HKBCF.

1.3.2 Interface with Proposed Tuen Mun-Chek Lap Kok Link

1.3.2.1 The proposed reclamation for the HKBCF at the northeast waters off the Airport Island can offer an opportunity to combine with that for the proposed Tuen Mun-Chek Lap Kok Link (TMCLKL) southern landfall. Besides, with the proximity of the two projects of HKBCF and TMCLKL, they can be planned integrally such that the configuration/layout of roads connecting-to or associated-with HKBCF are required to operate the following 6 pairs of traffic movements:

- (i) From HZMB to Lantau/Urban area of Hong Kong, and vice versa (via North Lantau Highway (NLH));
- (ii) From HZMB to CLK Airport, and vice versa;
- (iii) From HZMB to Northwest New Territories (NWNT), and vice versa (via TMCLKL);
- (iv) From NWNT to CLK Airport, and vice versa (via TMCLKL);
- (v) From NWNT to Lantau/Urban area of Hong Kong, and vice versa (via TMCLKL and NLH);
- (vi) From CLK Airport to Lantau/Urban area of Hong Kong, and vice versa (via NLH).

In addition, (i) to (iii) above must be routed through the HKBCF so that all traffic/vehicles are cleared by immigration and customs etc. before embarking onto HKSAR (for inbound) or HZMB (for outbound), whereas (iv) to (vi) must bypass the HKBCF.

1.4 EIA Study Brief

1.4.1 The HKBCF Project is a designated project (DP) under:

- (i) Item A.2, Part I, Schedule 2 of EIAO : “A railway and its associated stations”;
- (ii) Item A.7, Part I, Schedule 2 of the EIAO: “A railway tunnel more than 800m in length between portals”;
- (iii) Item A.8, Part I, Schedule 2 of the EIAO: “A road bridge more than 100m in length between abutments”; and
- (iv) Item C.1, Part 1, Schedule 2 of the EIAO: “Reclamation works (including associated dredging works) more than 5 ha in size”; and
- (v) Item C.12, Part 1, Schedule 2 of the EIAO: “A dredging operation exceeding 500,000m³”.

1.4.2 In accordance with Section 5(1)(a) of the EIAO, a person who is planning a designated project shall apply to the Director of Environmental Protection (the Director) for an EIA study brief to proceed with an EIA study for the Project.

1.4.3 Pursuant to Section 5(7)(a) of the EIAO, the Director issues this Environmental Impact Assessment (EIA) study brief to the Applicant to carry out an EIA study.

1.4.4 The purpose of this EIA study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and related activities taking place concurrently. This information will contribute to decisions by the Director on:

- (i) The overall acceptability of any adverse environmental consequences that are likely to arise as a result of the proposed project;

- (ii) The conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and
- (iii) The acceptability of residual impacts after the proposed mitigation measures are implemented.

1.4.5 The key objectives of the HKBCF EIA are as follows:

- (i) Describe the Project and associated works together with the requirements for carrying out the Project;
- (ii) Identify and describe the elements of the community and environment likely to be affected by the Project and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment;
- (iii) Provide information on the consideration of alternatives/options for site locations and layouts of the Project to avoid and minimise potential environmental impacts to environmentally sensitive areas and other sensitive uses; to compare the environmental benefits and dis-benefits of each of the different options; to provide reasons for selecting the preferred option(s) and to describe the part of environmental factors played in the selection of the preferred option(s);
- (iv) Identify and assess air quality impact, noise impact, water quality impact, waste management implication, marine ecological impact, fisheries impact, cultural heritage impact and landscape and visual impact; and determine the significance of impacts on sensitive receivers and potential affected uses;
- (v) Propose the provision of infrastructure or mitigation measures so as to minimize pollution, environmental disturbance and nuisance during construction and operation of the Project;
- (vi) Identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;
- (vii) Identify, assesses and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these environmental impacts and reducing them to acceptable levels;
- (viii) Investigate the extent of the secondary environmental impacts that may arise from the proposed mitigation measures, and to identify constraints associated with the mitigation measures recommended in the EIA study as well as the provision of any necessary modification;
- (ix) Identify any individual project element(s) and associated works of the Project that fall under Schedule 2 of the EIA Ordinance; to ascertain whether the findings of this EIA study have adequately addressed the environmental impacts of those projects; and, where necessary, to identify the outstanding issues that need to be addressed in any further detailed EIA study; and
- (x) Design and specify the environmental monitoring and audit requirements to ensure the effective implementation of the recommended environmental protection and pollution control measures.

1.5 Need for the Project

- 1.5.1 The proposed HZMB will straddle the waters of Lingdingyang of the Pearl River Estuary. It is not only a large sea crossing linking the Hong Kong Special Administrative Region, Zhuhai City of Guangdong Province and the Macao Special Administrative Region, but also an essential transport construction project included in “National High Speed Road Network Planning” (國家高速公路網規劃). Its scope includes the HZMB Main Bridge, Hong Kong BCF, Zhuhai BCF, Macao BCF, and the link roads connection between the HZMB Main Bridge and the respective BCFs, in accordance with the agreement made by the three governments on the concept of “separate locations of BCF mode”.
- 1.5.2 In connection with the above, the HKSAR Government is required to set up the (HKBCF) within the Hong Kong territory, which is proposed to be located at the northeast waters off the Airport Island.
- 1.5.3 Besides, a link road (HKLR) is required so as to provide the necessary linkage between the HZMB Main Bridge and the HKBCF for the completion of the HZMB project.

1.6 Implementation Programme

- 1.6.1 The HZMB is targeted to be commissioned by 2015. To meet this target:
- (a) Construction of the HKLR will start in 2011, for completion in 2015, with a construction period of 4 years; (At this stage, there is still some flexibility on the exact timing within 2011 for starting the construction of HKLR. However, it is patently desirable to start construction earlier, say in early 2011, so as to alleviate the acuteness of criticality of construction works.)
 - (b) Construction of the HKBCF will start in the 3rd quarter of 2010, for first phase completion by End 2015, and second (final) phase completion by End 2016. *[The construction of HKBCF will involve reclamation, including lengthy surcharge-periods, followed by land-works including buildings and infrastructures etc. It is anticipated that the overall construction period for HKBCF will be at least 6 years. Even if construction (reclamation work) can start as early as 2010 3rd quarter, overall completion of HKBCF cannot be achieved by 2015. The reclamation and the landworks for HKBCF will therefore need to be completed in phases, such that at least a part ie. the first-phase of HKBCF (the extent of which and the facilities within which are adequate to handle the initial stage of the commissioned HZMB) will be completed by End 2015.]*
- 1.6.2 The attached **Figure 1.2** shows the phasing extent of HKBCF, as well as the interim layout for the first phase and the overall layout for the second phase (ie. the final phase).

1.7 Scenario With or Without the Project

- 1.7.1 The HZMB will be strategically important to the further economic development of Hong Kong, Macao and the Western Pearl River Delta (PRD) region. It will significantly reduce transportation costs and time for travellers and goods on the road. Together with the HZMB Main Bridge and the Hong Kong Link Road as well as the Tuen Mun-Chek Lap Kok Link, the proposed HKBCF site enables the formation of a strategic road network linking Hong Kong, Zhuhai and Macao,

thereby further enhancing the transportation and aviation hub status of Hong Kong.

- 1.7.2 With its proximity to the Hong Kong International Airport, the HKBCF will serve a strategic multi-modal transportation hub. The Project may provide opportunities to increase tourists and to strengthen the social and economical co-operation between Hong Kong, Zhuhai and Macao. The increases in economic activities would have an advantage to widen the economic base of Hong Kong and may create new job opportunities.
- 1.7.3 Without the Project, the economic integration of the PRD and its neighbouring provinces could not be assembled. This may slow down the socio-economic linkages between the HKSAR and the Mainland. Further developments of the Hong Kong economical activities may also be limited.
- 1.7.4 The scenario with the Project would involve construction activities that may cause environmental impacts to the existing environment in north Lantau. The operation of the HKBCF may also cause impacts to the environment to a certain extent. The key environmental issues may cover air quality, noise, water quality, waste, ecology and fisheries, cultural heritage, and landscape and visual. The construction phase impacts are temporary and the operational phase impacts are permanent. If the potential environmental impacts can be minimised through implementation of suitable mitigation measures leading to minimal residual impacts, the scenario with the Project would still be environmentally acceptable. Unmitigated scenarios are likely to cause unacceptable environmental impacts. The environmental conditions for the scenario without the Project would remain natural.

1.8 Concurrent Projects – Construction Phase

- 1.8.1 General
 - 1.8.1.1 Liaison has been made with various project proponents to identify concurrent projects in the vicinity of the HZMB HKLR and HKBCF. **Figures 1.3** and **1.4** illustrates the locations of these concurrent projects during construction and operational phases, which are described in more details as follows.
- 1.8.2 Lantau Logistic Park (LLP)
 - 1.8.2.1 Under the steering of the Lantau Development Task Force, a Concept Plan for Lantau (ref: <http://www.pland.gov.hk/lantau/index.html>) has been formulated in 2004 and updated in 2007 to Revised Concept Plan for Lantau. It sets out the overall planning concept and some proposals for individual areas as a basis for further detailed planning. The plan includes conceptual proposals for Logistics Park at Siu Ho Wan together with proposals for possible Logistics Park extension or other compatible uses. It proposed to provide 72ha of land for logistics uses and the remaining 40ha for possible logistics park extension or other compatible uses (including recreational uses).
 - 1.8.2.2 LLP is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
 - 1.8.2.3 According to the latest available information from the project proponent of LLP, the construction of 72ha development would tentatively commence in 2010 for completion in 2012. This would overlay with the construction period of both HKLR and HKBCF. Hence, the LLP 72ha development is considered as a concurrent project and any cumulative impacts would be considered.

- 1.8.2.4 There is however no confirmed uses and implementation programme for the remaining 40ha possible LLP Extension or compatible uses. Hence, the 40ha possible LLP Extension or compatible uses would not be taken as a concurrent project for the construction phase in this EIA.
- 1.8.3 Future Tung Chung East and West Developments
- 1.8.3.1 According to the Revised Concept Plan for Lantau (ref http://www.pland.gov.hk/lantau/en/images/digest/Digest_E.pdf), the Tung Chung East Future Development comprises of the New Town Extension and the Possible Theme Park Recreational Uses, and the Future Tung Chung West Development would be for New Town Extension.
- 1.8.3.2 Future Tung Chung East and West Developments are separate DPs under the EIAO and hence separate EIA Studies would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.3.3 According to the latest available information from the project proponent of Future Tung Chung East and West Developments, its construction would commence by either end 2015 or early 2016 and the construction would be completed beyond 2017, in phases. Development details are still yet to be established / identified.
- 1.8.3.4 Since most of the marine work and site formation works for HKLR and HKBCF should have been completed at the time of construction period of the Tung Chung East and West Developments, there would not be any cumulative environmental impacts. They are therefore not taken as a concurrent project for the construction phase in this EIA.
- 1.8.4 Airport Master Plan (AMP) 2030
- 1.8.4.1 According to the latest information from Airport Authority, there are no confirmed development plan and implementation programme for the Airport Master Plan 2030. They are therefore not taken as a concurrent project for the construction phase in this EIA.
- 1.8.4.2 The Airport Master Plan 2030 is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.5 LNG Receiving Terminal
- 1.8.5.1 CLP had conducted an EIA for the Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities in Dec 2006. There are two potential sites : Black Point in the western New Territories, and South Soko Island to the south of Lantau Island. The report was approved under the EIAO in Apr 2007 (ref EIA-125/2006).
- 1.8.5.2 According to the Memorandum of Understanding (MoU) signed between the National Energy Administration and the HKSAR on Supply of Natural Gas and Electricity to Hong Kong in Aug 2008, the central government supports supplying natural gas to Hong Kong, including China National Offshore Oil Corporation's renewal of its supply agreement with Hong Kong for another 20 years. In a related commitment, the National Energy Administration (NEA) also agreed in principle that Hong Kong and mainland companies could jointly build a LNG terminal in the mainland for supplying natural gas to Hong Kong. It is agreed in principle that the feasibility of supplying natural gas to Hong Kong will be established via the Second West-East Natural Gas Pipeline. CLP subsequently decided to not to proceed its original plan for LNG terminal.

- 1.8.5.3 Hence, the LNG receiving terminal will not be considered as a concurrent project for construction phase of this EIA.
- 1.8.6 Tonggu Channel
- 1.8.6.1 Tonggu Channel lies in the southeast region of the Pearl River Estuary, connecting the Urmston Road to the north and the Lantau Channel to the south, and straddles the HK / Mainland boundary. The portion of the Channel within the HK waters is estimated to be about 4.5 km in length.
- 1.8.6.2 According to the formal web-site of Shenzhen Transport Bureau, this project has been completed and hence it will not be considered as a concurrent project for the construction phase of this EIA.
- 1.8.7 Permanent Aviation Fuel Facility (PAFF) Project
- 1.8.7.1 The Permanent Aviation Fuel Facility (PAFF) is a depot supplying fuel for the flights that takeoff and land at HKIA each day. It will replace the temporary fuel facility at Sha Chau that will reach its design capacity in 2009. The PAFF stores aviation fuel which arrives by ship and is transported to HKIA by undersea pipelines.
- 1.8.7.2 The project is a DP under the EIAO and its EIA Report was approved under the EIAO. According to the information provided by the project proponent, this project would be completed by Jun 2009 and hence is not considered as a concurrent project for the construction phase of this EIA.
- 1.8.8 SkyPier II
- 1.8.8.1 SkyPier is a terminal at the north eastern end of the airport island. It provides cross-boundary ferry services to sea-air transit passengers after landing or before taking a flight at Hong Kong International Airport (HKIA).
- 1.8.8.2 In view of the continuing growth in the transit passenger throughput at the SkyPier, Airport Authority (AA) has commenced building a permanent and cross-boundary ferry terminal, known as SkyPier II, to replace the existing SkyPier. According to the information provided by AA, the piers for SkyPier II would be in the form of detachable pontoons and would be completed by 2009. Hence, it is not considered as a concurrent project for the construction of this EIA.
- 1.8.9 New Contaminated Mud Disposal Facilities at South of Brothers / East of Sha Chau
- 1.8.9.1 An EIA Report for New Contaminated Mud Marine Disposal Facility at Airport East / East Sha Chau Area had been conducted and approved under the EIAO (ref EIA-106/2005) in 2005. The mud pits would be used to accommodate contaminated sediment (as classified in the ETWB TC 34/2002) that may result from various construction projects.
- 1.8.9.2 According to the information provided by the project proponent, the timing of the new pits at South of Brothers is not yet decided. To plan for the worst scenario on water quality impact assessment, it would be considered as concurrent with the construction of the HKLR and HKBCF. The EIAs for HKLR and HKBCF shall therefore consider any cumulative impacts (mainly due to water quality) from these new contaminated mud disposal facilities.

- 1.8.10 Existing Mud Disposal Facilities at North of Brothers and East of Sha Chau
 - 1.8.10.1 According to the information provided by their project proponent, the existing mud disposal facilities at East Sha Chau are currently in use, whereas the North Brothers' is scheduled to be re-opened. These projects would be concurrent with HKLR and HKBCF. This would need to be considered in the cumulative water quality impact assessment. The EIAs for HKLR and HKBCF shall therefore consider any cumulative impacts (mainly due to water quality) from these new contaminated mud disposal facilities.
- 1.8.11 Container Terminal No 10 (CT10)
 - 1.8.11.1 A Project Profile for CT10 was submitted to EPD under the EIAO in Jul 2008 (ref ESB-194/2008). This Project Profile indicates the original plan to develop a new container terminal (about 300 ha) at the southwest of Tsing Yi.
 - 1.8.11.2 Further discussion with the project proponent reveals that their study is still underway. Only conceptual layout option is available and no decision has yet been made on the preferred site location at Tsing Yi. It is therefore considered not practicable to take account of this project, as the proposed layout of CT10 has not yet been adequately developed.
 - 1.8.11.3 Hence, it is not considered as a concurrent project for the construction of this EIA.
 - 1.8.11.4 The CT10 is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.12 Integrated Waste Management Facilities (IWMF)
 - 1.8.12.1 A Project Profile for IWMF has been submitted to EPD under the EIAO in Mar 2008 (ref PP- 348/2008). An EIA Study Brief has also been issued by EPD to the project proponent on May 2008 (ref ESB-184/2008).
 - 1.8.12.2 The IWMF would have an initial treatment capacity of 3,000 tpd and would employ incineration as the core technology to reduce waste volume and to recover energy. There are 2 possible sites for IWMF, including Tsang Tsui in Tuen Mun or Shek Kwu Chau to the south of Lantau Island.
 - 1.8.12.3 According to the information from the project proponent, there is no available information on implementation programme, preferred site location and construction arrangement. Hence, it is not considered as a concurrent project for the construction phase of this EIA.
 - 1.8.12.4 The IWMF is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.13 Kwai Tsing Container Basin & Approach Channel
 - 1.8.13.1 An application (No. ESB-198/2008) for an EIA Study Brief under the EIAO was submitted by the project proponent October 2008 with a project profile (No. PP-369/2008).

- 1.8.13.2 The Kwai Tsing Container Terminals (KTCT) are located in the north-western part of the harbour which have 9 container terminals with 24 berths of deep sea frontage. This project involves the deepening of the existing seabed to facilitate safe navigation of new generation of ultra large containerships to KCTC.
- 1.8.13.3 The Kwai Tsing Container Basin & Approach Channel will tentatively commence construction in 2010 and for completion in 2013. Hence, it is considered as a concurrent project for the construction of this EIA. The cumulative water quality impacts during the construction phase would need to be considered in the EIA for HKLR and HKBCF.
- 1.8.13.4 The Kwai Tsing Container Basin & Approach Channel is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.14 Organic Waste Facilities
- 1.8.14.1 As part of the multi-technology waste management strategy, the Government proposes to develop an Organic Waste Treatment Facility (OWTF) to treat source-separated organic waste from the commercial and industrial sectors. The first phase of the OWTF, with a design capacity of 200 tonnes per day (tpd) is planned to be built in Siu Ho Wan of Lantau Island. The second phase will be of similar capacity to be built in Sha Ling of the North District (Integrated Waste Management Facilities – Site Selection Report, EPD, January 2008).
- 1.8.14.2 According to the information provided by the respective project proponent, there is no available information on implementation programme and construction arrangement of OWTF. Hence, it is not considered as a concurrent project for the construction phase of this EIA.
- 1.8.14.3 The OWTF is a separate DP under the EIAO and hence a separate EIA Study would be conducted by the respective project proponent to address all the impacts (including cumulative impacts) during both the construction and operational phases.
- 1.8.15 Sludge Treatment Facilities
- 1.8.15.1 The EIA for the construction and operation of Sludge Treatment Facilities (STF) has been completed and approved under the EIAO (EIA-155/2008) in Feb 2009. The STF would be located at the ash lagoon area at Tsang Tsui near Nim Wan, Tuen Mun. It would adopt advanced incineration technology and will be designed to treat sludge from various sewage treatment plant in HK.
- 1.8.15.2 The STF will tentatively commence construction in 2010 and for completion in 2012. Though this project would be concurrent with the HKBCF, given the large separation distance between Tuen Mun and north Lantau, their cumulative environmental impacts are unlikely to be significant. Only emission from the incinerator would be included to estimate the background air quality contribution. Other environmental impacts are likely to have insignificant impacts and hence would not be included in the cumulative impacts during the construction phase of this EIA.
- 1.8.16 The 132kV Overhead Pole and Underground Cables from Tung Chung Town Substation to Cheung Sha Substation
- 1.8.16.1 Given its large separation distance from HKLR and HKBCF, no cumulative environmental impacts are anticipated.

- 1.8.17 Road P1 in Lantau (Sham Shui Kok to Sunny Bay)
- 1.8.17.1 Road P1 (Sham Shui Kok to Sunny Bay) in Lantau is one of the possible road projects in the Revised Concept Plan for Lantau (http://www.pland.gov.hk/lantau/en/images/digest/Digest_E.pdf).
- 1.8.17.2 Road P1 (Sham Shui Kok to Sunny Bay) will be completed by 2026, after completion of the Works for HKLR and HKBCF. Hence, it is not considered as a concurrent project for the construction phase of this EIA. This however has been included in the operational phase assessment.
- 1.8.17.3 Since Road P1 is a primary distributor and is a separate DP under the EIAO, the project proponent of Road P1 would need to conduct a separate EIA under the EIAO to address all the impacts (including cumulative impacts) during both the construction and operational phases. It is also necessary to identify and implement all necessary mitigation measures to fulfill the requirements in the EIAO.
- 1.8.18 Proposed Submarine Gas Pipeline System from Tuen Mun to Tung Chung and Associated Offtake and Pigging Station at Chek Lap Kok
- 1.8.18.1 This project is to construct and operate a gas supply pipeline system from Tuen Mun to Chek Lap Kok and Tung Chung. According to its EIA Study Brief (ref <http://www.epd.gov.hk/eia/register/study/latest/esb-109.htm>), it comprises of the following:-
- A 500 mm diameter steel gas pipeline from Tuen Mun to Chek Lap Kok Island. The length of submarine part and land part is about 9 km and 0.5 km respectively;
 - An offtake and pigging station at Chek Lap Kok Island;
 - A 500 mm diameter steel gas pipeline across Tung Chung Channel. The length of the crossing is about 0.4 km; and
 - A fibre optic cable to be placed next to the gas pipeline.
- 1.8.18.2 According to the information from its respective project proponent, there is no programme for this proposed submarine gas main. Hence the cumulative environmental impacts would not be considered in this EIA.
- 1.8.19 Tuen Mun-Chek Lap Kok Link (TMCLKL)
- 1.8.19.1 TMCLKL is a separate DP and the project proponent is conducting a separate EIA to confirm its environmental acceptability. TMCLKL is a dual-two-lane carriageway about 9km long connecting Tuen Mun Western Bypass in the north and with the proposed HKBCF and North Lantau in the south. About 5km of the TMCLKL is in the form of tunnel under the Urmston Road. To allow access to the tunnel from the local road system at a reasonable gradient, reclamations are required at both ends of the tunnel to protect the transitional portion where the tunnel emerges above the seabed. In particular, the southern landfall lies alongside the eastern side of the HKBCF, with a reclamation area of 19.1 ha. From the southern landfall, TMCLKL is connected to the North Lantau Highway through viaducts of about 1.6 km.
- 1.8.19.2 The TMCLKL will be constructed concurrently with the HKLR and HKBCF. Their cumulative environmental impacts would therefore need to be assessed in the construction phase of this EIA.

- 1.8.20 Hong Kong-Zhuhai-Macao Bridge Main Bridge
- 1.8.20.1 The HZMB Main Bridge will be constructed concurrently with the HKLR and HKBCF. Their cumulative environmental impacts would therefore need to be assessed in the construction phase of this EIA.
- 1.8.21 Summary of Concurrent Projects – During Construction Stage
- 1.8.21.1 The information collected for various concurrent projects during the construction of the HKLR and HKBCF has been discussed in **Sections 1.8.2 to 1.8.20**. The following table summaries the concurrent projects that would be considered in the cumulative construction phase impacts.

Table 1-1 Summary of Concurrent Projects that would be considered for Cumulative Construction Phase (see Figure 1.3)

Project	Construction Programme	Possible Cumulative Impacts	Remarks
Lantau Logistics Park (LLP) – 72 ha	Commence in 2010, for completion in 2012	Water quality during dredging Dust emission during reclamation and site formation Construction noise during reclamation and site formation Construction water quality during reclamation and site formation Ecological, LVIA impacts and waste management implications	A separate DP subject to approval under EIAO
New Contaminated Mud Disposal Facilities at South of Brothers / East of Sha Chau	Earliest possible dredging date by mid 2009	Water quality impacts during pit forming	Approved under EIAO
Existing East Sha Chau Confined Marine Sediment Disposal Area	In operation already	Water quality impacts from daily operation	Existing facilities
Suspended North Brothers Open Sea Sediment Disposal Area	To be re-opened	Water quality impact from daily operation	Existing facilities
Kwai Tsing Container Basin & Approach Channel	Commence in 2010, for completion in 2013	Dredging activities of the basin	A separate DP subject to approval under EIAO
Tuen Mun-Chek Lap Kok Link (TMCLKL)	Commence in 2010, for completion in 2016	Noise, air, water quality, ecology, waste management and LVIA	A separate DP subject to approval under EIAO EIA being conducted by the respective project

Project	Construction Programme	Possible Cumulative Impacts	Remarks
			proponent
HZMB Main Bridge	Commence in 2010, for completion in 2014	Water quality during marine works Air quality impacts during road construction	A separate EIA has been conducted by the Mainland EIA Consultants in accordance with the Mainland EIA Law

1.9 Concurrent Projects – Operational Phase

1.9.1 During the operational phase of HKLR and HKBCF, a number of projects would also have contributions to the cumulative environmental projects. These projects include the following:

Table 1-2 Concurrent Projects considered for the Operational Phase (see Figure 1.4)

Concurrent Projects	Cumulative Impacts to be included
Lantau Logistics Park (LLP) – 72 ha	<ul style="list-style-type: none"> • Vehicular emissions from induced traffic • Road traffic noise from induced traffic • Water quality • Ecology and fisheries • Waste • Landscape and visual impacts
Possible Lantau Logistics Park (LLP) Extension or other compatible uses – 40 ha	<ul style="list-style-type: none"> • Vehicular emissions from induced traffic • Road traffic noise from induced traffic • Water quality • Ecology and fisheries • Waste • Landscape and visual impacts
Future Tung Chung East and West Developments	<ul style="list-style-type: none"> • Vehicular emissions from induced traffic • Road traffic noise from induced traffic • Water quality • Ecology and fisheries • Waste • Landscape and visual
Tonggu Channel	<ul style="list-style-type: none"> • Water quality impacts from maintenance dredging
New Contaminated Mud Disposal Facilities at South of Brothers / East of Sha Chau	<ul style="list-style-type: none"> • Water quality impacts from daily operation

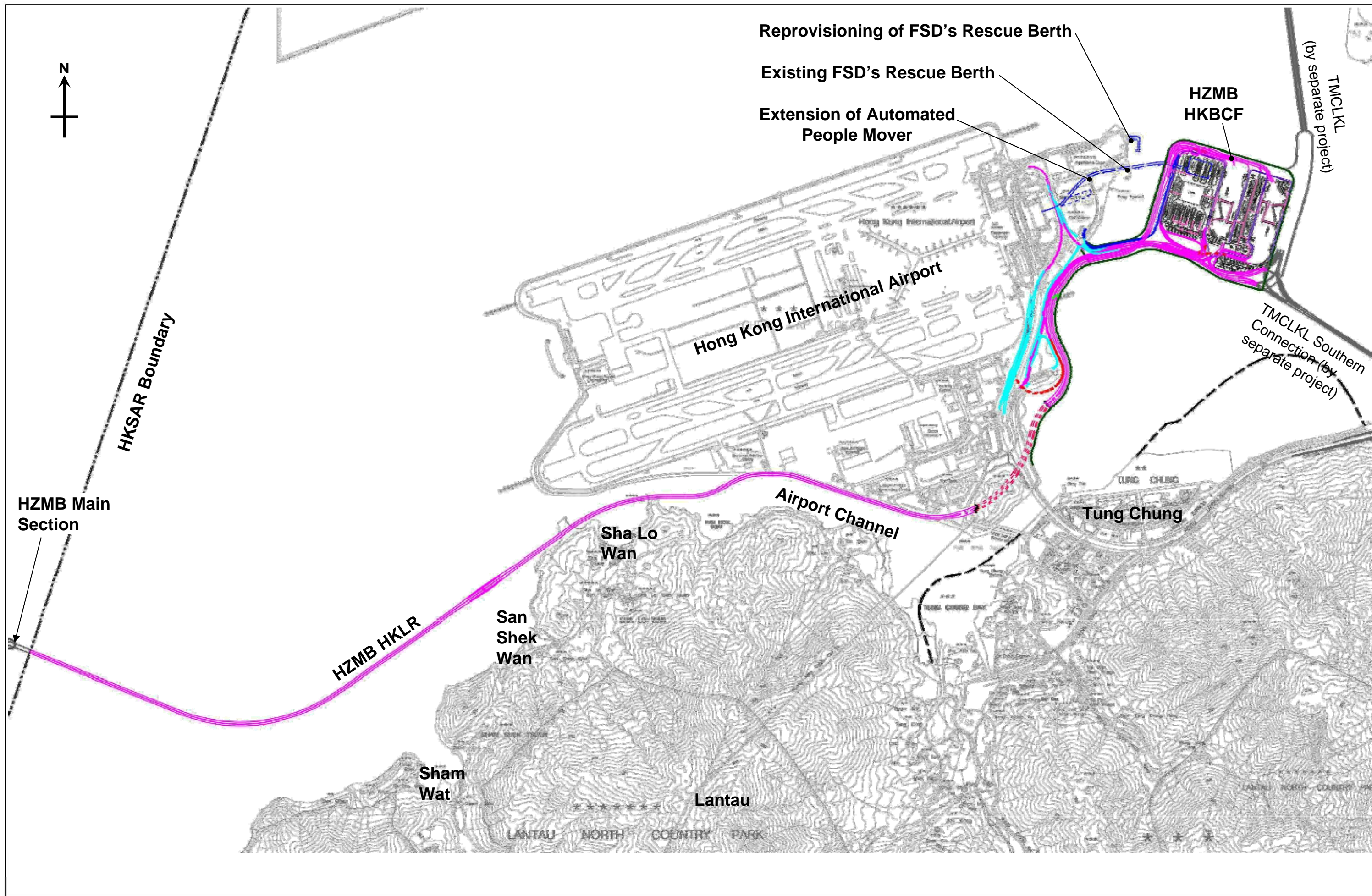
Concurrent Projects	Cumulative Impacts to be included
Existing East Sha Chau Confined Marine Sediment Disposal Area/Suspended North Brothers Open Sea Sediment Disposal Area	<ul style="list-style-type: none"> Water quality impacts from daily operation
Container Terminal No. 10	<ul style="list-style-type: none"> Air quality emission from additional marine vessels along the north coast of Lantau
Kwai Tsing Container Basin & Approach Channel	<ul style="list-style-type: none"> Water quality impacts from dredging of the basin
CLP Castle Peak Power Station	<ul style="list-style-type: none"> Air pollutants from stacks Cooling water discharge for water model
CLP Black Point Power Station	<ul style="list-style-type: none"> Air pollutants from stacks Cooling water discharge for water model
HEC Lamma Power Station	<ul style="list-style-type: none"> Air pollutants from stacks Cooling water discharge for water model
Sludge Treatment Facilities	<ul style="list-style-type: none"> Emission from incineration and any other related activities
Road P1 (Sham Shui Kok to Sunny Bay)	<ul style="list-style-type: none"> Vehicular emissions Road traffic noise Water quality impacts due to reclamation
HK International Airport	<ul style="list-style-type: none"> Air pollutants from activities within the Airport Island (based on the published Airport Masterplan 2020) Water quality impacts from daily operation
TMCLKL	<ul style="list-style-type: none"> Vehicular emissions Road traffic noise Water quality Ecology and fisheries Waste Landscape and visual impacts
HZMB Main Bridge	<ul style="list-style-type: none"> Vehicular emissions Water quality impacts

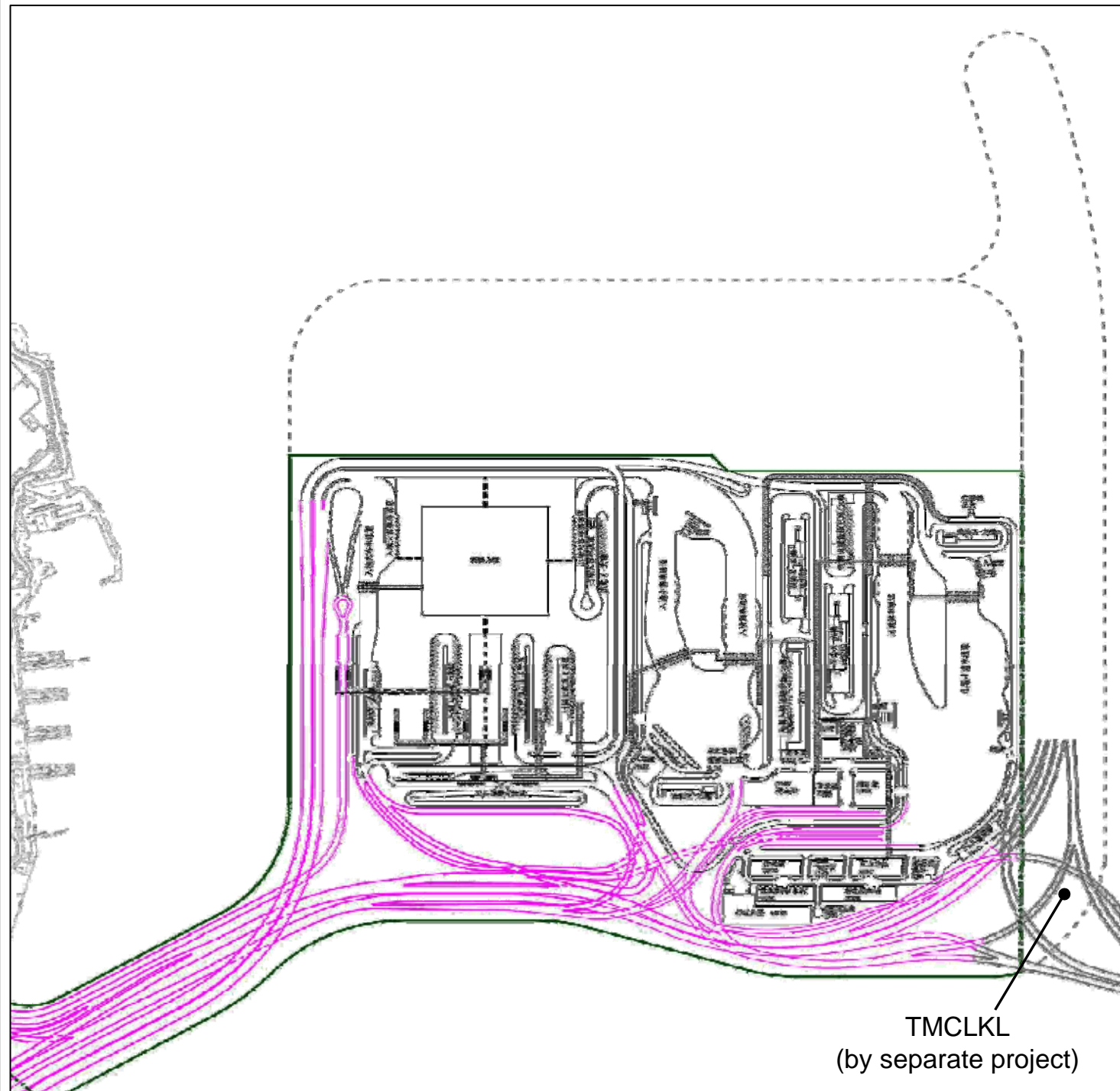
1.10 Structure of EIA Report

- 1.10.1 As the HKLR and the HKBCF are closely inter-related, they are presented together under the EIA Report of each, hence, the HKLR EIA Report will present descriptions and assessments not only on HKLR but also relevant aspects on HKBCF; similarly, the HKBCF EIA Report will present descriptions and assessment not only on HKBCF but also relevant aspects on HKLR.

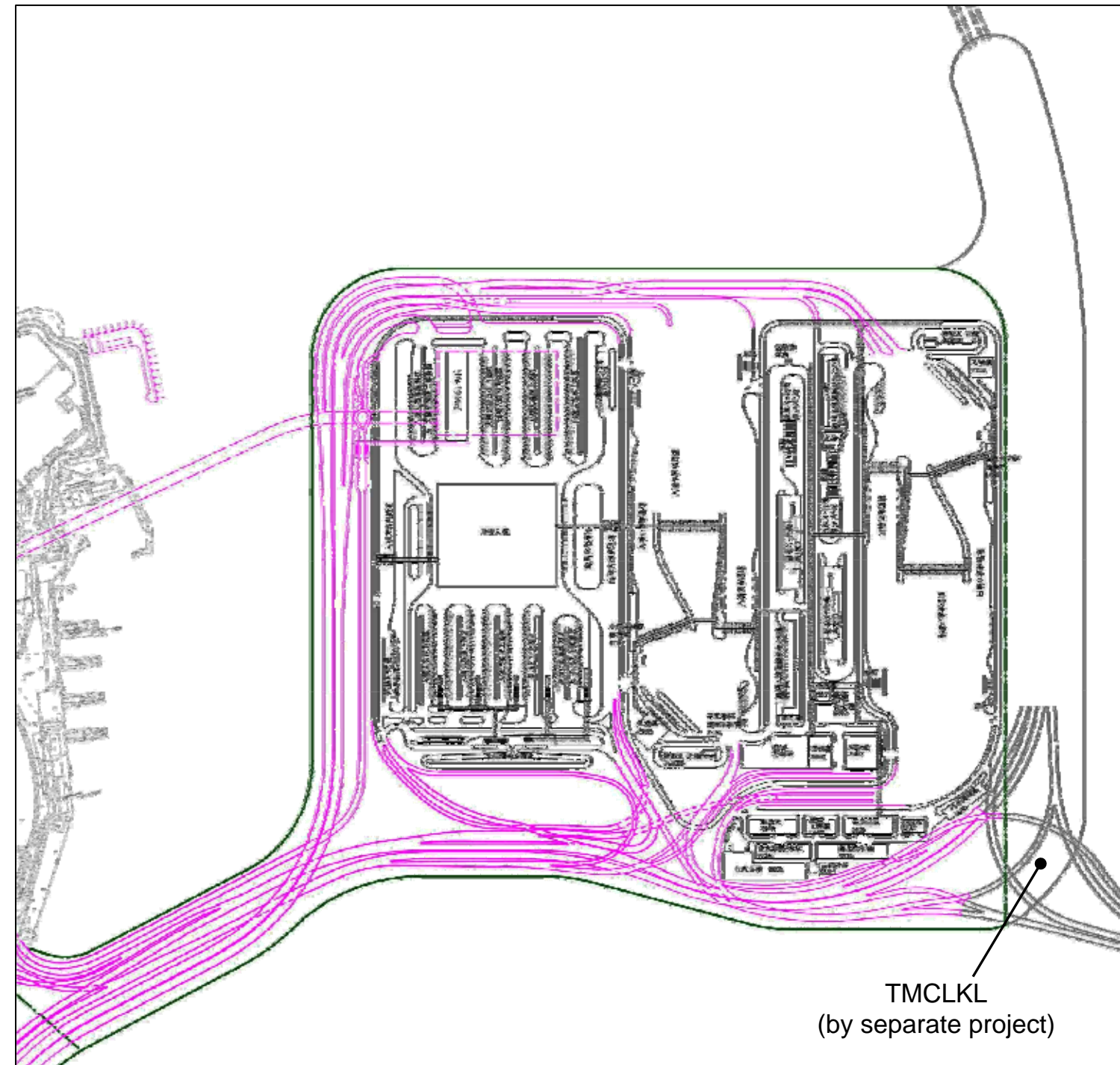
1.10.2 The structure of this EIA report is outlined below for ease of reference.

<u>Section</u>	<u>Title</u>	<u>Aims</u>
1	Introduction	Introduces the background information and the layout of the EIA Report
2	Study Scope	Outlines the objectives and scope for various environmental aspects
3	Alternative Options	Summarises the various options considered and the main reasons for adopting the scheme recommended
4	Construction Descriptions	Describes relevant main construction/engineering aspects for the recommended scheme
5	Air Quality Impact Assessment	Presents the legislation, methodology, assessment and recommendations for air quality impacts
6	Noise Impact Assessment	Presents the legislation, methodology, assessment and recommendations for noise impacts
7	Sediment Quality	Presents the legislation, methodology, assessment and recommendations for sediment
8	Waste Management Implications	Presents the legislation, methodology, assessment and recommendations for waste management
9	Water Quality Impact Assessment	Presents the legislation, methodology, assessment and recommendations for water quality impacts
10	Ecological Impact Assessment	Presents the legislation, methodology, assessment and recommendations for ecological impacts
11	Fisheries Impact Assessment	Presents the legislation, methodology, assessment and recommendations for fisheries impacts
12	Cultural Heritage Impact Assessment	Presents the legislation, methodology, assessment and recommendations for cultural heritage impacts
13	Not Used	
14	Landscape and Visual Impact Assessment	Presents the legislation, methodology, assessment and recommendations for landscape and visual impacts
15	EM&A Requirements	Presents the EM&A requirements
16	Conclusion	Summarises the findings

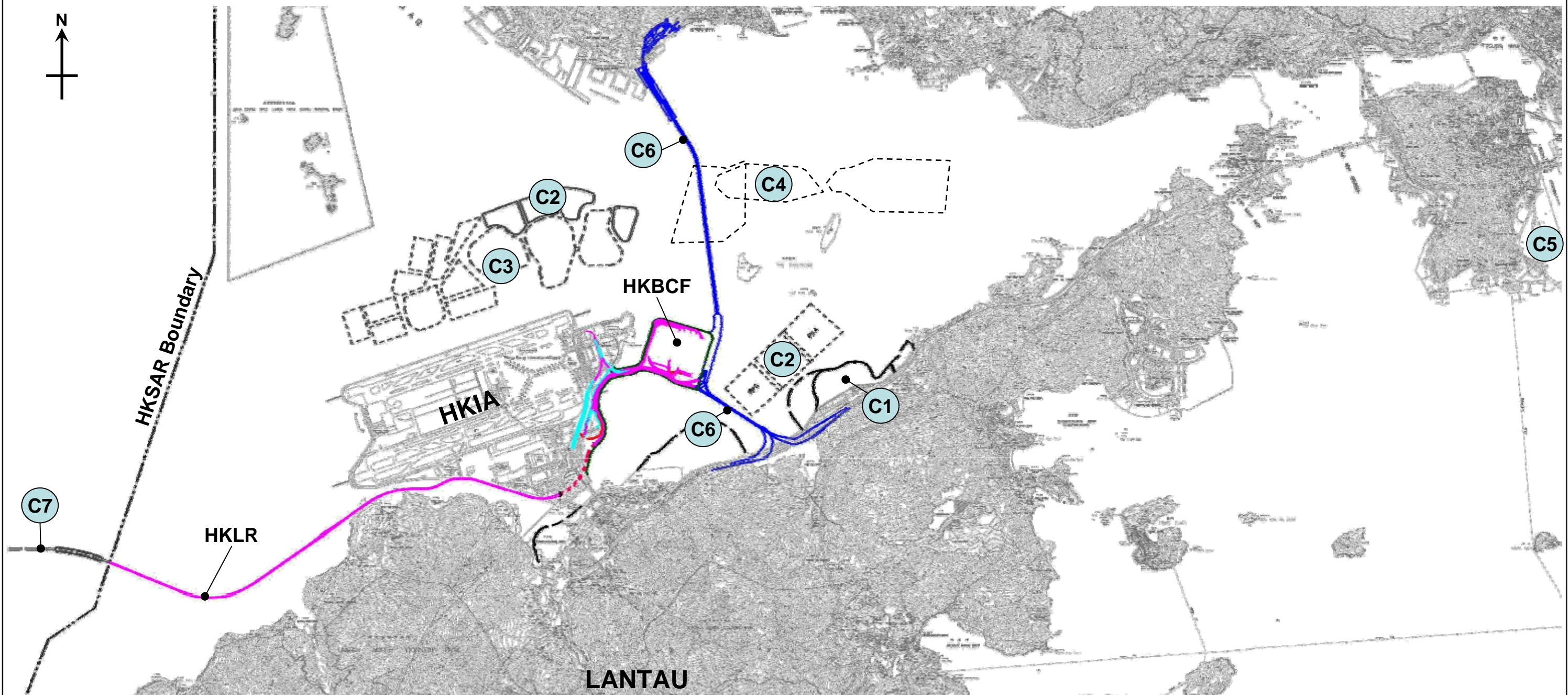




First Phase of HKBCF



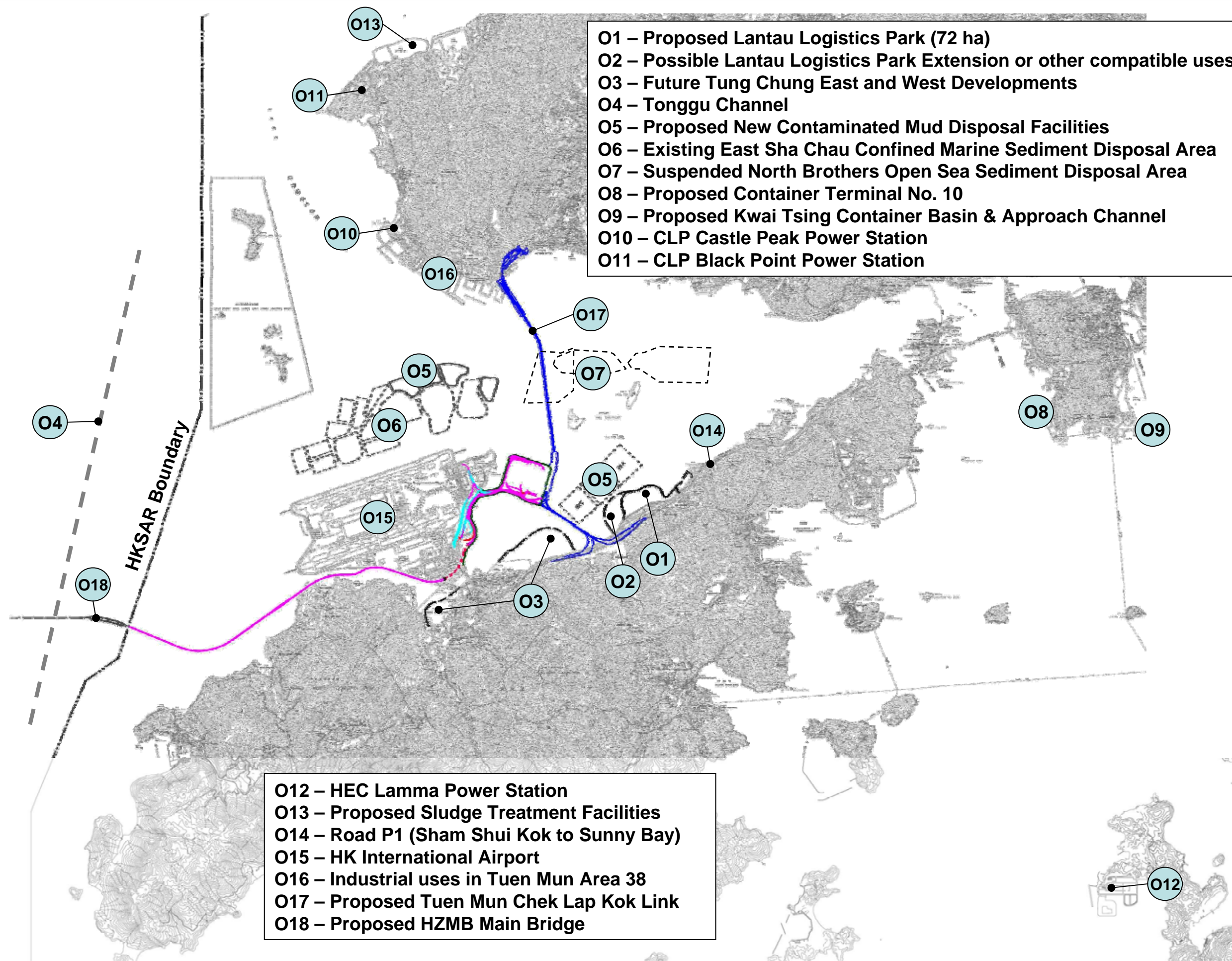
Full Phase of HKBCF



- C1 – Proposed Lantau Logistics Park (72 ha)
- C2 – Proposed New Contaminated Mud Disposal Facilities
- C3 – Existing East Sha Chau Confined Marine Sediment Disposal Area
- C4 – Suspended North Brothers Open Sea Sediment Disposal Area
- C5 – Proposed Kwai Tsing Container Basin & Approach Channel
- C6 – Proposed Tuen Mun-Chek Lap Kok Link
- C7 – HZMB Main Bridge



- O1 – Proposed Lantau Logistics Park (72 ha)
- O2 – Possible Lantau Logistics Park Extension or other compatible uses (40 ha)
- O3 – Future Tung Chung East and West Developments
- O4 – Tonggu Channel
- O5 – Proposed New Contaminated Mud Disposal Facilities
- O6 – Existing East Sha Chau Confined Marine Sediment Disposal Area
- O7 – Suspended North Brothers Open Sea Sediment Disposal Area
- O8 – Proposed Container Terminal No. 10
- O9 – Proposed Kwai Tsing Container Basin & Approach Channel
- O10 – CLP Castle Peak Power Station
- O11 – CLP Black Point Power Station



- O12 – HEC Lamma Power Station
- O13 – Proposed Sludge Treatment Facilities
- O14 – Road P1 (Sham Shui Kok to Sunny Bay)
- O15 – HK International Airport
- O16 – Industrial uses in Tuen Mun Area 38
- O17 – Proposed Tuen Mun Chek Lap Kok Link
- O18 – Proposed HZMB Main Bridge