

Development of Lok Ma Chau Loop

Revised Project Profile

(prepared in accordance with
the Environmental Impact Assessment Ordinance (Cap. 499))

October 2011

Civil Engineering and Development Department

Revised Project Profile

Table of Contents

1.	BASIC INFORMATION.....	1
1.1	Project Title.....	1
1.2	Purpose and Nature of Project.....	1
1.3	Name of Project Proponent.....	2
1.4	Location and Scale of Project and History of Site.....	2
1.5	Number and Types of Designated Projects to be Covered by the Revised Project Profile.....	3
1.6	Name and Telephone Number of Contact Person.....	3
2.	OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME.....	3
2.1	Project Implementation.....	3
2.2	Project Time Table.....	4
2.3	Interactions with Other Projects.....	4
3.	POSSIBLE IMPACTS ON THE ENVIRONMENT.....	4
3.0	Preamble.....	4
	Part A - Original Study Area	
3.1	Air Quality.....	5
3.2	Noise.....	5
3.3	Water Quality.....	5
3.4	Solid Waste.....	6
3.5	Landfill Gas.....	6
3.6	Ecology.....	7
3.7	Cultural Heritage.....	8
3.8	Land Contamination.....	8
3.9	Landscape and Visual.....	8
	Part B - Added Study Area	
3.10	Air Quality.....	8
3.11	Noise.....	9
3.12	Water Quality.....	9
3.13	Solid Waste.....	10
3.14	Landfill Gas.....	10
3.15	Ecology.....	10
3.16	Cultural Heritage.....	10
3.17	Land Contamination.....	10
3.18	Landscape and Visual.....	10
4.	MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT.....	10
4.0	Preamble.....	11
	Part A - Original Study Area	
4.1	Air Quality.....	11
4.2	Noise.....	11
4.3	Water Quality.....	11
4.4	Solid Waste.....	12
4.5	Ecology.....	12
4.6	Cultural Heritage.....	12
4.7	Land Contamination.....	12
4.8	Landscape and Visual.....	13

Part B - Added Study Area	
4.9 Air Quality.....	13
4.10 Noise.....	13
4.11 Water Quality.....	13
4.12 Solid Waste.....	14
4.13 Ecology.....	14
4.14 Cultural Heritage.....	14
4.15 Land Contamination.....	14
4.16 Landscape and Visual.....	14
5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS.....	14
5.0 Preamble.....	15
5.1 General.....	15
Part A - Original Study Area	
5.2 Air quality.....	15
5.3 Noise.....	16
5.4 Water Quality.....	17
5.5 Solid Waste.....	18
5.6 Ecology.....	19
5.7 Cultural Heritage.....	20
5.8 Land Contamination.....	20
5.9 Landscape and Visual.....	20
5.10 Landfill Gas Hazard.....	22
Part B - Added Study Area	
5.11 Air quality.....	22
5.12 Noise.....	22
5.13 Water Quality.....	22
5.14 Solid Waste.....	23
5.15 Ecology.....	23
5.16 Cultural Heritage.....	23
5.17 Land Contamination.....	23
5.18 Landscape and Visual.....	23
5.19 Landfill Gas Hazard.....	23
6. USE OF PREVIOUSLY APPROVED EIA REPORTS.....	24

List of Drawings

Dwg. No.

NTNZ 1584A Planning and Engineering Study on Development of Lok Ma Chau Loop -
Location Plan of Revised Study Area

1. BASIC INFORMATION

1.1 *Project Title*

1.1.1 Development of Lok Ma Chau Loop

1.2 *Purpose and Nature of Project*

- 1.2.1 In the “Hong Kong 2030: Planning Vision and Strategy Study” (HK 2030 Study), a preliminary assessment of the development potential of the Frontier Closed Area was undertaken and the Lok Ma Chau Loop (the Loop) was identified as an area having potential for special uses pertinent to its boundary location. To fully exploit the strategic location of the Loop, the HK 2030 Study had also examined the possibility of allowing easy access arrangement for Mainlanders to the Loop. A linkage to the MTR Lok Ma Chau Station and widening of Lok Ma Chau Road were proposed to facilitate movement of goods and services and to cope with additional traffic.
- 1.2.2 In the Chief Executive’s 2007-08 Policy Address, development of the Loop was identified as one of the ten major infrastructure projects for economic growth. The Government of the Hong Kong Special Administrative Region (HKSARG) would work with the Shenzhen authorities to tap the land resources of the Loop to meet future development needs and consolidate the strategic position of Hong Kong (HK) and Shenzhen (SZ) in the Pan-Pearl River Delta region.
- 1.2.3 HK and SZ undertook concurrent public engagement exercises in mid 2008 to consult the public on the future development of the Loop. Based on the findings of the exercises, both sides initially considered that higher education might be developed as the leading land use in the Loop with new high-tech research and development facilities and creative industries incorporated. The proposed land uses would provide impetus for human resources development in the South China region and enhance the competitiveness of the Pearl River Delta, as well as benefit the long-term economic development of the two cities.
- 1.2.4 On 13 November 2008, the governments of HK and SZ signed the Cooperation Agreement on jointly undertaking a comprehensive planning and engineering study (P&E Study) including environmental impact assessment on development of the Loop on the basis of mutual benefits. The P&E Study, jointly conducted by the Planning Department and Civil Engineering and Development Department, is to formulate a comprehensive plan for the development of the Loop and the associated infrastructure based on the preferred land uses mentioned in paragraph 1.2.3 above, so as to meet long-term social, economic and environmental needs. In this regard, the P&E Study includes, among others, preparation of Recommended Outline Development Plan (RODP) and Recommended Layout Plan (RLP), preliminary design of engineering works and formulation of the implementation strategies for the Loop and the associated infrastructure. An environmental impact assessment (EIA) which is the subject of the revised Project Profile is within the scope of the P&E Study.
- 1.2.5 The Project comprises the developments and infrastructure within the Loop and the adjacent areas in HK. The Loop will be developed for higher education as the leading land use with some elements of new high-tech research and development facilities and creative industries. The land uses alongside the infrastructure within the adjacent areas in HK will also be reviewed.
- 1.2.6 Subsequent to the issue of the EIA Study Brief No. ESB-201/2008, the P&E Study commenced in June 2009. The Preliminary Outline Development Plan for the Loop development was formulated and connection roads were proposed within the adjacent areas in HK for serving the Loop development. At this stage, environmental impact assessments and technical assessments of the Loop development and infrastructure are

being interactively conducted to determine technical parameters for development and tentative alignment of the transport infrastructure connecting the Loop and adjacent areas in Hong Kong.

1.3 Name of Project Proponent

- 1.3.1 New Territories North and West Development Office (NTN&WDevO), Civil Engineering and Development Department (CEDD), HKSARG.

1.4 Location and Scale of Project and History of Site

- 1.4.1 The Loop is located to the northeast of Mai Po Nature Reserve and is surrounded by fishponds and other wetland habitats of high ecological value. The Lok Ma Chau Station of Lok Ma Chau Spur Line and the Lok Ma Chau Boundary Control Point (BCP) are located to its southwest. Opposite the Loop to the north across Shenzhen River is Huanggang BCP and Futian Commercial District in SZ.
- 1.4.2 Before the training of Shenzhen River, the Loop was largely used for pond fish culture. As a result of the training of Shenzhen River, which serves as the administrative boundary between Hong Kong and Shenzhen, an area of about 87 ha, which previously lay to the north of the river course, became situated to the south of the re-aligned river course and within the boundary of the Hong Kong Special Administrative Region (HKSAR). During the river training work, the Loop was used as a dumping ground for sediments extracted from the old riverbed, some of which were contaminated.
- 1.4.3 Subject to the findings of the P&E Study, the Project comprises developments and infrastructure within the Loop and the adjacent areas in HK. The Loop will be developed for higher education as the leading land use incorporating new high-tech R&D facilities and creative industries. The size of population and number of employment opportunities to be accommodated in the Loop and the adjacent areas in HK are to be ascertained by the P&E Study having regard to the environmental resources, infrastructure and other physical constraints.
- 1.4.4 In the course of iteratively conducting technical assessments and environmental impact assessments under the P&E Study, tentative proposals for the transport infrastructure with regard to site constraints, environmental concerns, as well as benefits to the local community have been devised and studied. As a result, the original study area of the P&E Study as presented in EIA Study Brief No. ESB-201/2008 needs to be adjusted so as to include the preliminary findings of the above assessments for the revised alignment of the proposed transport infrastructure, basically the connection roads.
- 1.4.5 This revised project profile covers the development and infrastructure within the Loop and the updated alignment of the proposed transport infrastructure in the adjacent areas in HK for serving the Loop.
- 1.4.6 The revised Study Area of the P&E Study, as shown in Drawing No. NTNZ 1584A, includes the original study area (the original Study Area) and the additional areas near San Tin Highway Interchange, Pak Shek Au and Shun Yee San Tsuen (the added Study Area). The revised Study Area will cover the proposed transport infrastructure. The added Study Area is indicated in the same drawing.

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

- 1.5.1 The Designated Projects to be covered by the revised Project Profile include the planning and engineering study (i.e. the P&E Study) of urban development of the Loop of about 87 ha in area. Therefore, the P&E Study falls within Item 1 under Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO), i.e. "Engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100,000". The P&E Study is a Designated Project requiring an EIA report.
- 1.5.2 The Project also involves various Schedule 2 Designated Projects under the EIAO that may be identified in the course of the P&E Study. The following elements of the Project, which may be proposed under the P&E Study and identified as Schedule 2 Designated Projects, are also included in the revised Project Profile :-
- (i) District distributor roads [under Schedule 2, Part I, A.1]
 - (ii) A railway and its associated station [under Schedule 2, Part I, A.2]
 - (iii) A road tunnel more than 800 m in length between portals [under Schedule 2, Part I, A.7]
 - (iv) Sewage treatment works [under Schedule 2, Part I, F.2]
 - (v) Sewage pumping stations [under Schedule 2, Part I, F.3]
 - (vi) Construction of new access roads and sewers in Lok Ma Chau Conservation Area [under Schedule 2, Part I, Q.1]

1.6 Name and Telephone Number of Contact Person

All queries regarding the Project can be addressed to :

Mr. LAW Man-tim (Chief Engineer/Project 2)
New Territories North and West Development Office
Civil Engineering and Development Department
9/F Sha Tin Government Offices,
1 Sheung Wo Che Road,
Sha Tin, New Territories.
Tel. 2158 5608
Fax. 2693 2918

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Implementation

- 2.1.1 The Project Proponent, NTN&WDevO of CEDD subject to the final recommendation of the P&E Study, will be responsible for implementing the proposed works, together with all the environmental mitigation measures, the environmental monitoring and audit requirements as specified in the approved Environmental Impact Assessment (EIA) Report of this Project.
- Specialist Environmental Consultants have been employed by CEDD through the main Consultants of the P&E Study and responsible for undertaking the EIA study according to

the Study Brief already issued and the revised Study Brief to be issued by the Director of Environmental Protection and to respond on behalf of the Project Proponent on issues related to the EIA.

The construction works of the proposed site formation and engineering infrastructure to serve the whole development of the Loop will be carried out in phases by appointed contractors under various works contracts.

2.2 Project Time Table

2.2.1 The P&E Study, including the EIA, commenced in mid 2009 for completion in 2013. Detailed design and associated statutory procedures of the Project will follow. The construction works of the Project will commence around 2014/2015. An outline implementation programme will be formulated under the P&E Study.

2.3 Interactions with Other Projects

2.3.1 The Project will likely interface with the following major projects in the North District :-

- (i) Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
- (ii) Land Use Planning for the Closed Area
- (iii) Cycle Tracks connecting North West New Territories with North East New Territories
- (iv) New Development Areas in North East New Territories
- (v) Stormwater Drainage Master Plan Study in the Northern New Territories
- (vi) Construction of a Secondary Boundary Fence and new sections of Primary Boundary Fence and Boundary Patrol Road
- (vii) The proposed Northern Link of the railway
- (viii) Regulation of Shenzhen River Stage IV

3. POSSIBLE IMPACTS ON THE ENVIRONMENT

3.0 Preamble

This paragraph consists of 2 parts. Part A addresses the possible impacts on the environment for the original Study Area in EIA Study Brief No. ESB-201/2008. The various aspects pertaining to the original Study Area remain largely unchanged (except for minor textual modifications) and are reproduced for easy reference. Part B addresses the possible impacts on the environment for the added Study Area as mentioned in paragraph 1.4.3.

Part A – Original Study Area

3.1 Air Quality

Construction Impacts

- 3.1.1 Dust from construction works is expected to be the major source of impact during construction phase of the development. Dust generating construction activities include site clearance, demolition, material handling, stone crushing, concrete batching, site formation, infrastructure construction and vehicle movement on unpaved haul roads.

Operational Impacts

- 3.1.2 The major air pollution sources during the operation of the developments in the Loop and the associated infrastructure will include vehicle exhaust emissions in terms of elevated levels of nitrogen dioxide (NO₂), sulphur dioxide (SO₂), carbon monoxide (CO), respirable dust particulates and total suspended particulates from the existing and future road networks; emission from new ventilation shafts and railway stations; air quality inside the new tunnel and odour emissions from the new sewage pumping stations, transport terminus (TTs) / transport interchanges (TIs), refuse collection points (RCP) and carparks, etc. Besides, the possible land uses to be recommended under the "Land Use Planning for the Closed Area Study" (CA Study) may be subject to potential environmental impacts from some of the proposed infrastructure of the Project.

3.2 Noise

Construction Impacts

- 3.2.1 Noise impacts during the construction phase may result from various phases of construction activities, neighbouring concurrent construction works, the use of powered mechanical equipment, construction plant, traffic along site access roads, blasting works, piling works, etc. The noise generated from construction activities will have the potential to pose adverse noise impacts to the surrounding sensitive receivers.

Operational Impacts

- 3.2.2 The main operational noise sources are from road traffic, rail, helicopter and fixed plant. The potential impacts from sources of road and rail traffic include the traffic noise from existing roads such as major roads like Fanling Highway and the traffic noise from new roads and railway system. The noises from fixed plant sources include new sewage pumping stations and treatment facilities, ventilation shafts from railway stations and tunnel, buildings and associated facilities, electricity substations and other open-air noise generated by operational facilities at the Loop. Besides, the possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project.

3.3 Water Quality

Construction Impacts

- 3.3.1 The Project will involve various construction activities undertaken at various stages. The activities, which will have likely impact on water quality, include site formation, sediment removal, concrete mixing, construction of bridge, bore piling works, construction and upgrading of road network, site workshop or depot and presence of additional workforce.
- 3.3.2 Potential impacts to water quality are due to discharge of surface run-off carrying suspended solids, fuel or soil spill from construction plants and wastewater generated from construction sites. The need for soil treatment works with regard to the land uses within the Loop area and the leakage of contaminated sediments during excavation works shall

be addressed. Dredging works will be avoided or minimized. Should dredging works be required, assessment of the sediments in compliance with the Dumping at Sea Ordinance will be needed. The water quality impacts on the adjacent fishponds, water bodies, Shenzhen River and Deep Bay will need to be addressed.

Operational Impacts

- 3.3.3 The Project will result in increases in sewage effluent discharges and changes to the hydrological regime of the nearby drainage basins. The following aspects have to be considered in the operational impact assessment:
- (i) the potential impacts to inland and marine water quality of the sewage and industrial effluents generated by the developments and the works associated with the sewerage system;
 - (ii) the potential for increased risks of flooding resulting from hydrological changes due to the proposed developments; and
 - (iii) the potential for impacts to inland and marine water quality due to discharges from the stormwater system.
- 3.3.4 Water bodies including adjacent fishponds at Hoo Hok Wai and Tai Law Hau, the old section of Shenzhen River, Inner Deep Bay Site of Special Scientific Interest (SSSI), Mai Po Marshes SSSI and Shenzhen River may be affected.
- 3.3.5 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

3.4 Solid Waste

Construction Phase

- 3.4.1 Solid wastes are mainly generated from a wide range of construction activities such as site formation, construction of roads and drains, and construction of the proposed development and infrastructure. The wastes arising from construction will largely consist of excavated and demolished C&D materials during earthworks and demolition works, chemical waste, and general refuse. The quantities of wastes to be generated during construction largely depend on the programmes of various works packages requiring off-site disposal. Waste management on reuse and recycle of C&D materials and excavated materials will help in reducing quantities of wastes generated.

Operational Phase

- 3.4.2 The operation of the development and its associated infrastructure will generate a significant amount of municipal solid waste. The storage and handling of this waste have the potential to cause adverse environmental impact.

3.5 Landfill Gas

- 3.5.1 The Ma Tso Lung landfill which was closed in 1979 is situated in the vicinity of the P&E Study area. Commissioned restoration facilities were commissioned in 2000 according to the Hong Kong Environment 2004. A portion of the proposed engineering infrastructure serving the Loop falls within the 250 m consultation zone.

3.6 Ecology

3.6.1 The site is surrounded by the Shenzhen River, the meander formed by the old section of Shenzhen River and fishponds/ wetlands of ecological significance such as Inner Deep Bay SSSI and Mai Po Marshes SSSI, and Hoo Hok Wai wetlands etc. Furthermore, the strip of wetland sandwiched between the Loop and Lok Ma Chau, may serve as one key link between Hoo Hok Wai and Mai Po/ San Tin wetlands for birds and other wildlife. The surrounding area is predominantly flat land with grasses and shrubs comprising mostly wetland, natural landscape, hilly terrain, woodland, agricultural land and fishponds.

3.6.2 The potential terrestrial ecological impact arising from the Project will be :-

Construction Phase

- (i) Direct habitat loss and habitat fragmentation resulting from land take for development;
- (ii) Direct loss of inactive/less mobile/habitat-specific wildlife nesting/inhabiting the affected area;
- (iii) Direct loss and impacts to watercourses as a result of construction discharge;
- (iv) Impacts to wildlife as a result of isolation and fragmentation of ecological habitat; and
- (v) Impacts to the surrounding habitat and associated wildlife due to physical disturbance of this habitat, increased human activity, inappropriate storage or dumping of construction material, or hill fire.

Operational Phase

- (vi) Impacts to the surrounding habitats, water birds and associated wildlife due to increased human activities/disturbance associated with the operation of the proposed development.
- (vii) The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study

3.6.3 The potential aquatic ecological impact arising from the Project will be :-

Construction Phase

- (i) Direct loss of riparian habitat/vegetation and associated fauna/nearby fish pond/wetland habitat resulting from land take for infrastructure connecting to the Loop;
- (ii) Direct loss of inactive/less mobile/habitat-specific wildlife nesting/inhabiting the affected area;
- (iii) Direct impacts to Shenzhen river courses as a result of construction discharge; and
- (iv) Impacts to the surrounding habitat and associated wildlife due to physical disturbance of this habitat, increased human activity, changes in sediment dynamics and water quality, inappropriate storage or dumping of construction material and fire.

Operational Phase

- (v) Impacts to the surrounding habitats, water birds and associated wildlife due to increased human activities/disturbance, changes in sediment dynamics and water quality associated with the operation of the proposed development and associated infrastructure.
- (vi) The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses

arising from the land uses recommended under the CA Study, will be addressed in the EIA study

3.7 Cultural Heritage

3.7.1 The cultural and heritage impact may arise from the following :

- (i) Landtake for both temporary and permanent facilities which may result in damage to, or loss of, archaeological remains and deposits, culturally significant features and changes to the physical coherence of historic landscape; and
- (ii) Construction works may result in damage to or loss of buried archaeological sites by:
 - Disturbance through excavation at or near an archaeological site, topsoil stripping and the passage of heavy machinery on exposed and buried deposits;
 - Change in the water table due to construction and development activities;
 - The burial of sites resulting in limitation on accessibility for future archaeological investigations (including surface survey and remote sensing techniques) and obscuring visible surface evidence;
 - Ground compaction due to construction activities or the weight of permanent filled materials may cause damage or distortion to buried archaeological remains, especially in soft alluvial deposits; and
 - Indirect impacts such as visual, vibration and noise intrusion on the setting and amenity of historic and cultural resources (e.g. grave sites and monuments and culturally or historically significant landscape features).

3.8 Land Contamination

3.8.1 The future land use for the Loop development will not include industrial activities such that no high-polluting activities will be induced.

3.8.2 Land contamination may come from the contaminated sediments dredged during the river training works of Shenzhen River and deposited at the Loop. The contaminated land impacts are likely due to pollutants from contaminated sediments during construction works to nearby fishponds and water bodies that could be dangerous to aquatic organisms and water birds. Besides, health risks to site workers and potential health risks to future users of the sites are identified as contaminated land impacts. Other uses outside the Loop that may cause land contamination concerns include sewage treatment works proposed outside the Loop and areas for supporting infrastructure affected by existing/ previous open storage/ contaminating uses.

3.9 Landscape and Visual

3.9.1 Landscape and visual impacts are likely to result from the new urbanized developments and the infrastructure of the Project which would significantly change the existing visual system.

Part B – Added Study Area

3.10 Air Quality

Construction Impacts

3.10.1 The air quality impacts arising from construction works in the added Study Area are expected to be similar to those in the original Study Area as detailed in paragraph 3.1.1.

Operational Impacts

3.10.2 The major air pollution sources during the operation of the transport infrastructure will include vehicle exhaust emissions in terms of elevated levels of nitrogen dioxide (NO₂), sulphur dioxide (SO₂), carbon monoxide (CO), respirable dust particulates and total suspended particulates from the existing and future road network, etc. Besides, the possible land uses to be recommended under the "Land Use Planning for the Closed Area Study" (CA Study) may be subject to potential environmental impacts from some of the proposed infrastructure of the Project.

3.11 Noise

Construction Impacts

3.11.1 The noise impacts arising from construction works in the added Study Area are expected to be similar to those in the original Study Area as detailed in paragraph 3.2.1.

Operational Impacts

3.11.2 The main operational noise sources are from road traffic. The potential impacts from sources of road traffic include the traffic noise from existing roads such as major roads like San Tin Highway and Fanling Highway, as well as the traffic noise from new roads. Besides, the possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project.

3.12 Water Quality

Construction Impacts

3.12.1 The construction activities, which will have likely impact on water quality, include site formation, concreting, construction of bridge, bore piling works, construction and upgrading of road network and presence of additional workforce.

3.12.2 Potential impacts to water quality are due to discharge of surface run-off carrying suspended solids, fuel or soil spill from construction plants and wastewater generated from construction sites. The water quality impacts on the adjacent fishponds and water bodies will need to be addressed.

Operational Impacts

3.12.3 During the operation phase, potential water quality impact may arise from oil or grease spillage from passing traffic causing contamination to rainwater runoff.

3.12.4 Water bodies including adjacent fishponds at Hoo Hok Wai, Ma Tso Lung and Lok Ma Chau, as well as natural streams at Ma Tso Lung may be affected.

3.12.5 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

3.13 Solid Waste

Construction Impacts

- 3.13.1 Types of solid wastes arising from construction in the added Study Area are similar to the original Study Area as detailed in paragraph 3.4.1.

3.14 Landfill Gas

- 3.14.1 The potential landfill gas hazard in the added Study Area is similar to that in the original Study Area as detailed in paragraph 3.5.

3.15 Ecology

- 3.15.1 Part of the added Study Area at Ma Tso Lung is near the fish pond at the southern part of Hoo Hok Wai wetland. The surrounding area is predominantly flat land with grasses and shrubs comprising mostly wetland, natural landscape, hilly terrain, woodland, agricultural land and fishponds. The proposed transport infrastructure may affect the natural watercourse of moderate to high ecological value at Ma Tso Lung.
- 3.15.2 Another part of the added Study Area is near San Tin Highway and Fanling Highway. The surrounding area is predominantly urban area and plantation.
- 3.15.3 The potential terrestrial and aquatic ecological impacts arising from the Project within the added Study Area are expected to be similar to those within the original Study Area as detailed in paragraph 3.6.2 and paragraph 3.6.3 except for such in paragraph 3.6.3(iii) being not relevant.

3.16 Cultural Heritage

- 3.16.1 The cultural and heritage impacts within the added Study Area are expected to be similar to those within the original Study Area as detailed in paragraph 3.7.1.

3.17 Land Contamination

- 3.17.1 Uses within the added Study Area that may cause land contamination concerns include areas for supporting infrastructure affected by existing / previous open storage / contaminating uses.

3.18 Landscape and Visual

- 3.18.1 Landscape and visual impacts in the added Study Area are similar to those in the original Study Area as detailed in paragraph 3.9.1.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

Surrounding Environment including Existing and Planned Sensitive Receivers

4.0 Preamble

This paragraph consists of 2 parts. Part A describes major elements of the surrounding environment for the original Study Area in EIA Study Brief No. ESB-201/2008. The various aspects pertaining to the original Study Area remain largely unchanged (except for minor textual modifications) and are reproduced for easy reference. Part B describes major elements of the surrounding environment for the added Study Area as mentioned by paragraph 1.4.3.

Part A – Original Study Area

4.1 Air Quality

- 4.1.1 The Loop is situated within rural village and agriculture area without industrial developments. Emissions from roads are the major source affecting the air quality in the area. However, the site is close to Shenzhen's Futian Commercial District which is part of the Shenzhen's central urban cluster, emissions from traffic and exhaust are major sources of air pollution affecting the adjacent areas. According to the historical data from routine air quality monitoring records, comparatively higher dust levels generally occur in winter and spring. Subject to the findings of the EIA Study, the existing sensitive receivers are the nearby village houses (such as Lok Ma Chau Tsuen, Ha Wan Tsuen, Pun Uk Tsuen and Chau Tau Tsuen) and the planned sensitive receivers will be the future developments of the Loop and Kwu Tung North New Development Area.
- 4.1.2 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.2 Noise

- 4.2.1 The site is rural in character, mainly with scattered village houses in the area. The background noise environment is generally tranquil except for areas located along major roads, in particularly the Fanling Highway and railway noise from Lok Ma Chau Spur Line.
- 4.2.2 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.3 Water Quality

- 4.3.1 The site is within the Deep Bay Water Control Zone according to Water Pollution Control Ordinance. The EPD's "Deep Bay Zero Discharge" policy proposes no net increase of pollutant loadings into Deep Bay Water Control Zone to protect the environmental resources of the Deep Bay catchment and the downstream water quality in Deep Bay. The existing sensitive receivers include Shenzhen River, the nearby fishponds, Inner Deep Bay SSSI and Mai Po Marshes SSSI. The water quality of Shenzhen River is affected by discharge of industrial and organic pollutants from municipal sewage. Water flows in the Shenzhen River are dominated by direct runoff. At the time of low flow, the quantity of sewage frequently exceeds the natural flows. The middle and downstream reaches are tidal which further reduces flushing capacity. The principal pollutants are nitrogen and

phosphorus. The water quality deteriorates downstream as pollutant load increases due to increasing industrial and sewage discharge.

- 4.3.2 The site comprises mostly agricultural farmlands and scattered villages with open space and thus most of the area is not served by public sewers. Domestic sewage discharge would also affect the water quality of the nearby fishponds. Dredging works will be avoided or minimized. Should dredging works be required, assessment of the sediments in compliance with the Dumping at Sea Ordinance will be needed.
- 4.3.3 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.4 Solid Waste

- 4.4.1 The existing solid waste arising from the Loop and the adjacent area is minimal. Domestic waste from village houses and agricultural waste are the major source of solid waste. It is anticipated that the major sources from the future developments are domestic and commercial waste.

4.5 Ecology

- 4.5.1 The Loop is surrounded by fishponds and wetland of ecological importance which are zoned "Green Belt" and "Conservation Area" in the San Tin Outline Zoning Plan (Plan No. S/YL-ST/8) and zoned "Unspecified Use" in the draft Ma Tso Lung and Hoo Hok Wai Development Permission Area Plan (Plan No. DPA/NE-MTL/1). Mai Po Nature Reserve and the Mai Po Inner Deep Bay Ramsar Site are about 6 km to the southwest of the Loop, and Hoo Hok Wai, which largely comprises fishponds and other wetland habitats, is located to the northeast. Inner Deep Bay SSSI and Mai Po Marshes SSSI are ecologically important sites within the Ramsar Site. Furthermore, the strip of wetland sandwiched between the Loop and Lok Ma Chau, may serve as a key link between Hoo Hok Wai and Mai Po/ San Tin wetlands for birds and other wildlife. Changes in environment, air quality, noise, hydrodynamics, water quality as well as human disturbance could result in direct or indirect impacts to the ecology of the area. Ecological impact assessment will address such impacts on habitats and associated wildlife due to the implementation of the Project.
- 4.5.2 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.6 Cultural Heritage

- 4.6.1 The site is not within any archaeological site but the Lok Ma Chau Police Station and the MacIntosh Fort (Ma Tso Lung) are Graded historic buildings. Heritage impact assessment will be conducted under the EIA Study.

4.7 Land Contamination

- 4.7.1 The contaminated materials are largely from the sediments dredged during Shenzhen River training work. According to the EIA Study on Shenzhen River Regulation Project, the contaminated materials are mainly heavy metals such as chromium, copper and zinc, lead and inorganic material from industrial waste discharging into Shenzhen River. The quantity

of contaminated material was about 1Mm³ mostly placed in the abandoned fishponds in the Loop area and backfilled by excavated materials.

- 4.7.2 Land contamination assessment will be carried out under the EIA to formulate appropriate contamination assessment plans and remediation action plan.

4.8 *Landscape and Visual*

- 4.8.1 Landscape and visual impacts are likely to result from the new urbanized developments and infrastructure of the Loop which will significantly change the existing visual system by reducing existing views of quality and resources. The development density and landscape design would be addressed in the P&E Study.

Part B – Added Study Area

4.9 *Air Quality*

- 4.9.1 The site of the added Study Area is situated within rural village and agriculture area without industrial developments. Emissions from roads are the major source affecting the air quality in the area. Subject to the findings of the EIA Study, the existing sensitive receivers are the nearby village houses (such as Pun Uk Tsuen and Chau Tau Tsuen, Shun Yee San Tsuen, Ma Tso Lung Tsuen) and the planned sensitive receivers will be the future developments of the Loop and Kwu Tung North New Development Area.
- 4.9.2 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.10 *Noise*

- 4.10.1 The background noise and possible future land uses within the added Study Area are similar to those within the original Study Area as detailed in paragraph 4.2.1 and paragraph 4.2.2.

4.11 *Water Quality*

- 4.11.1 The site is within the Deep Bay Water Control Zone according to Water Pollution Control Ordinance. The EPD's "Deep Bay Zero Discharge" policy proposes no net increase of pollutant loadings into Deep Bay Water Control Zone to protect the environmental resources of the Deep Bay catchment and the downstream water quality in Deep Bay. The existing sensitive receivers include fishponds near Hoo Hok Wai and natural streams at Ma Tso Lung.
- 4.11.2 The eastern part of the site of the added Study Area comprises mostly agricultural farmlands and scattered villages with open space and thus most of the area is not served by public sewers. Domestic sewage discharge would also affect the water quality of the nearby fishponds and natural stream.
- 4.11.3 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project.

The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.12 Solid Waste

4.12.1 The characters of the site with respect to solid waste within the added Study Area are similar to those within the original Study Area as detailed in paragraph 4.4.1.

4.13 Ecology

4.13.1 The natural streams of Ma Tso Lung area, partly within the added Study Area, include a vegetated riparian corridor from where there is a single record of Three-banded Box Terrapin. In addition, fishpond, wetland and woodland are in the vicinity of the added Study Area in Ma Tso Lung. Any potential impact on the above and any other ecological resources will be fully addressed under the on-going Ecological Impact Assessment study under the Project.

4.13.2 The possible land uses to be recommended under the CA Study may be subject to potential environmental impacts from some of the proposed infrastructure of the Project. The cumulative impacts, including the relevant planned infrastructure/ uses arising from the land uses recommended under the CA Study, will be addressed in the EIA study.

4.14 Cultural Heritage

4.14.1 The site is not within any archaeological site but the MacIntosh Fort (Ma Tso Lung) is Graded historic buildings. Heritage impact assessment will be conducted under the EIA Study.

4.15 Land Contamination

4.15.1 The site of the added Study Area near Ma Tso Lung is predominately village houses and agricultural land. The site of the added Study Area near San Tin Highway / Fanling Highway is predominately used for open car park, open storage yards and and vehicle repairing workshops. Possible land contamination may arise from these industrial activities.

4.15.2 Land contamination assessment will be carried out under the EIA to formulate appropriate contamination assessment plans and remediation action plan.

4.16 Landscape and Visual

4.16.1 Landscape and visual impacts are likely to result from the new infrastructure which will significantly change the existing visual system by reducing existing views of quality and resources. The landscape design would be addressed in the P&E Study.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.0 *Preamble*

This paragraph consists of 2 parts. Part A describes environmental protection measures to be incorporated in the design and any future environmental implications for the original Study Area in EIA Study Brief No. ESB-201/2008. The various aspects pertaining to the original Study Area remain largely unchanged (except for minor textual modifications) and are reproduced for easy reference. Part B describes environmental protection measures to be incorporated in the design and any future environmental implications for the added Study Area as mentioned in paragraph 1.4.3.

5.1 *General*

5.1.1 The EIA study will investigate those environmental impacts and propose the appropriate mitigation measures with the explicit intention that all proposals would be environmentally acceptable. The residual impacts, if any, would be confined within allowable limits. Environmental monitoring and auditing of potential impacts that may arise from the works of the Project would be provided for in the construction and operational phases. Subject to the findings of the EIA study, mitigation measures will be incorporated in the design and construction of the Project.

Part A – Original Study Area

5.2 *Air quality*

Construction Phase

5.2.1 In order to prevent adverse impacts on air quality, the control measures stipulated in the Air Pollution Control (Construction Dust) Regulation should be implemented wherever applicable, to limit the dust emissions from the site. Mitigation measures, including but not limited to the following, will be put in place.

- Stockpiles of dusty material will not extend beyond site boundaries.
- In the process of material handling, any material which has the potential to create dust will be treated with water or sprayed with a wetting agent where practicable.
- Any vehicle with an open load compartment used for transferring dusty materials off-site will be properly fitted with side and tail boards and cover.
- Stockpiles of sand and aggregate will be enclosed on three sides and water sprays will be used to dampen stored materials and when receiving raw material.
- The site will be frequently cleaned and watered to minimise fugitive dust emissions.
- Motorised vehicles on site will be restricted to a maximum speed of 15 km/hr and shall be confined to designated haul roads which will be surfaced with hardcore.

Operational Phase

5.2.2 The proposed mitigation measures to improve the air quality within the P&E Study area are to be considered as follows :-

- (i) *Vehicle Exhaust Emissions from Open Roads*

- in order to further reduce the impacts from open roads, the use of railway and environmental friendly vehicles would be given higher priority to roads within the Loop development;
 - Environmentally friendly transports such as monorail, electric bus, trolley bus, fuel cell vehicles, EURO III diesel vehicles using ULSD and CRT, etc.; and
 - adequate buffer distance, tree planting and dense shrub plantation are recommended to separate the pedestrian and heavy trafficked road.
- (ii) *Impacts inside tunnels*
- the air quality inside tunnels would follow the air quality guideline stated in the Practice Note on Control of Air Pollution in Vehicle Tunnels.
- (iii) *Impacts from Sewage Pumping Stations (SPS)*
- odour suppression measures such as enclosing the wet well or screening room and providing scrubbing system or activated carbon filter would be considered in the design of the facilities and would be installed during the SPSs operation so as to minimize the odour nuisance to the adjacent ASRs;
 - as some of the proposed SPSs may be classified as Schedule 2 Designated Projects under the EIAO, details of mitigation measures for the sewage pumping station would be proposed under separate cover to meet the requirements of the EIAO; and
 - in general, for all SPSs, the design would follow the *Environmental Guidance Note for Sewage Pumping Station which is NOT a Designated Project*.
- (iv) *Impact from Transport Terminals/Interchanges (TTs/TIs)*
- the design of the TTs/TIs would follow the design consideration recommended in the Control of Air Pollution in Semi-Confined Public Transport Interchanges (ProPECC PN 1/98);
 - adequate ventilation and dilution of vehicle exhaust should be provided; and
 - ventilation exhaust, if any, would be directed away from the nearest ASRs.
- (v) *Impact from Refuse Collection Points (RCPs)*
- odour removal system would be provided for the RCP to reduce odour nuisance in the vicinity; and
 - the discharge of the odour removal system would be directed away from the ASRs to avoid the odour nuisance.

5.3 Noise

Construction Noise

- 5.3.1 In order to mitigate adverse noise impacts, the following general mitigation measures will be put in place.
- Plant operated on site should be well maintained and serviced regularly.
 - Subject to such working constraints as power supply, safety and obstruction of proposed works, mobile plant will be sited as far away from the nearby NSRs (such as residential developments, educational institutions, hospitals, clinics, elderly care centres and the like) as practicable.

- Noise activities will be planned and scheduled to be undertaken during appropriate time periods to minimise potential noise impacts at nearby NSRs. Noisy construction activities will be scheduled to take place at noise-tolerant time periods (e.g. lunch time).
- Materials stockpiles and other massive structures (such as temporary site offices) will be effectively utilised, where possible, to screen noise from construction activities.
- Noisy plant or processes will be replaced by quieter alternatives where possible. Silencers or mufflers on construction equipment should be utilised and be properly maintained during the construction works.
- Where necessary, temporary and movable noise barriers and enclosures will be employed to minimise noise impact to NSRs.

Operational Phase

- 5.3.2 In planning and design of the Project, the separation distance between the sensitive land uses and major roads will be maximised as far as practicable so as to minimize the impacts from road traffic noise. Direct mitigation measures at source such as use of noise barrier/enclosure and open-textured (low noise) road surfacing should be adopted wherever practicable. Direct mitigation measures would be investigated to alleviate the extent of road traffic noise impact.
- 5.3.3 Direct mitigation measures against rail noise at sources such as use of noise barrier/enclosure should be adopted wherever practicable.
- 5.3.4 Sources of fixed plant noise include: (a) existing ones like police firing range; and (b) planned ones with locations yet to be determined such as sewage pumping stations and treatment facilities, fire station and electricity substations etc. For the potential impacts arising from such sources, the following mitigation measures and appropriate building design should be adopted.
- NSRs - proper arrangement of building blocks and the use of special block design.
 - Noise sources - careful siting of noisy machinery within the site; enclosing the noisy machinery within building structures; use of acoustic louver, silencer for ventilating fan, acoustic door and absorptive wall lining; and any opening of the building to be located facing away from any NSRs.

5.4 Water Quality

Construction Phase

- 5.4.1 Construction phase mitigation measures include the use of sediment traps, wheel washing facilities for vehicles leaving the site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, disposal) procedures.
- 5.4.2 In order to prevent adverse impacts on water quality, the following general mitigation measures will be put in place.
- Surface run-off from the construction sites will be directed into storm drains via adequately designed wastewater treatment facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers will be provided on site to properly direct stormwater to such facilities.

- Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- Open stockpiles of materials on site will be avoided or where unavoidable covered with tarpaulin or similar fabric during rainstorms. Measures will be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Manholes (including any newly constructed ones) will always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system.
- Where possible, works entailing soil excavation will be minimised during the rainy season (April to September).
- Final earthworks surfaces will be well compacted and hydroseeding following completion to prevent erosion.
- All vehicles and plant will be cleaned before they leave the construction site to ensure that no earth, sediments or debris is deposited by them on roads.
- During construction works, proper toilets will be provided for the use of site staff. These will be provided by a licensed contractor, who will be responsible for appropriate disposal and maintenance of the effluent.
- All fuel tanks and chemical storage shall be sited on sealed areas and provided with locks. The storage areas shall be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. Drainage from oil filling points and any areas where fuels and lubricants are used will be connected to storm drains via a petrol interceptor.
- For excavation of sediment from fish ponds, it will be ensured that the bunds around the fish pond to be excavated are intact, sufficient to retain any disturbed sediments.
- Dredging works will be avoided or minimized. Should dredging works be required, assessment of the sediments in compliance with the Dumping at Sea Ordinance will be needed.

Operational Phase

5.4.3 The following general mitigation measures are to be considered:

- provision of sand/silt and oil/grease traps at suitable locations to prevent ingress of pollutants to the stormwater system, which would serve to reduce the loading from the storm drains to the inland waters of the Deep Bay Water Control Zone compared to the existing situation;
- construction of drainage works to prevent increased risk of flooding;
- construction of sewerage system to ensure proper discharge of sewage effluent flows from the developments; and
- provision of suitable measures to minimise the risk of emergency discharges of untreated sewage effluent and to ensure timely repair.

5.5 Solid Waste

Construction Phase

- 5.5.1 Solid waste arising from construction will largely consist of spoil generated during earthworks, and general construction waste/surplus materials.
- 5.5.2 The following measures will be implemented to reduce the quantities of C&D waste material that will require landfill disposal:
- Use waste haulier authorised or licensed to collect specific category of waste;
 - 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, such as site manager, 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;
 - A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites);
 - In order to monitor the disposal of C&D material and 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 ETWB TC(W) No. 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Material".
 - A Waste Management Plan (WMP) shall be prepared and this WMP shall be submitted to the Engineer for approval. The WMP will be in accordance with 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 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 material; and
 - Proper storage and site practices to minimise the potential for damage or contamination of construction materials.

Operational Phase

- 5.5.3 The following mitigation measures are to be considered:
- General refuse should be collected from bins with lids and delivered to a central collection point and should be stored in enclosed containers to prevent odour, windblown litter, vermin, water pollution and visual impact.
 - Removal of recyclables should be encouraged or formal systems organised, and may occur before or after the delivery of wastes to the central collection point. Collection bins for used aluminium cans, waste paper and glass bottles are recommended to be provided at strategic locations of the development site to encourage recycling by residents.

5.6 Ecology

- 5.6.1 The Project may cause changes to the ecological conditions of the area. In view of this, an ecological impact assessment including comprehensive ecological survey shall be carried out to assess the impacts.

- 5.6.2 The mitigation measures that are to be implemented to address the impacts on air quality, noise and water quality may also help to address any ecological impacts identified under the Ecological Impact Assessment .
- 5.6.3 In order to preserve the ecological function of habitats, fauna or sites of ecological value, the following mitigation measures will be implemented subject to the recommendations of the ecological impact assessment :-
- Avoiding or minimising any direct impact / disturbance to any habitats and associated wildlife identified of ecological importance such as wetland as far as possible and compensating any unavoidable habitat / wetland loss and disturbance of significant adverse ecological impact
 - Avoiding or minimising development activities with strong light and high levels of unpredictable noise near the sensitive area
 - Avoiding buildings in/near the flight path of waterbirds and/or minimising building height using a height gradient away from the flight path
 - Avoiding or minimising use of outdoor artificial lighting and transparent / reflective surfaces for building façade

5.7 Cultural Heritage

- 5.7.1 Impacts to cultural heritage site should be avoided as far as practicable. If unavoidable, mitigation measures to the direct impact on standing heritage resources will be implemented. They include the use of retaining walls to preserve the structural stability of some graves *in situ* and preserve the sites with cultural heritage interest by record (a full cartographic and photographic record before and during removal) before removal when preservation *in situ* is not possible.
- 5.7.2 Mitigation measures to avoid impact on archaeological deposits include rescue excavation prior to the commencement of construction work and archaeological monitoring during construction to preserve the deposits by record.

5.8 Land Contamination

- 5.8.1 Mitigation measures will be determined with reference to EPD's documents such as "The Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (Dec 2007)", "The Guidance Notes for Contaminated Land Assessment and Remediation (Aug 2007)", and "The Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/ Dismanting Workshops (May 1999)". Dredging works will be avoided or minimized. Should dredging works be required, assessment of the sediments in compliance with the Dumping at Sea Ordinance will be needed.

5.9 Landscape and Visual

Mitigation Measures to be Incorporated in the Development Layout Plan

- 5.9.1 The following measures will be adopted to minimise the landscape and visual impacts during the design stages.
- the urban design principles such as the density of the development and focusing the development around certain functions;
 - controlling building height profiles;

- responsive building massing;
- controlling the walling effect;
- establishing visual and open space links; and
- landscape design principles.

Construction Phase

5.9.2 The following general mitigation measures will be implemented to alleviate the impacts in the construction stage.

- Implementation of erosion control mechanisms during construction phase so that construction equipment, construction works and the landscape is protected if heavy rains occur.
- Measures should be taken to store and use construction equipment and building materials where they are not visually intrusive, or easily washed away or where they produce less dust.
- Damaged vegetation and trees, not ear-marked for removal, should be rectified, repaired or replaced, using the same species, size and form, to the original condition prior to the commencement of works.
- Minimization of light pollution techniques to be implemented. This includes having more lights with focused beams rather than energy wasting, floodlighting which might impact on the nighttime character of the area.
- Hydroseeding of slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character.
- Haul roads should be rehabilitated at the earliest opportunity for compatibility with their existing surrounding landscape or planned surrounding landscape.
- Protection and preservation of grassland mosaic. This will include screening off the grassland mosaic areas as no-go areas during the construction phase.

Operational Phase

5.9.3 The following general mitigation measures are to be considered for the operation stage.

- A variety of woodland, shrubland-grassland screening vegetation should be used to soften the form of the proposed earthworks and integrate any components of designated projects into the existing landscape context.
- Protection and preservation of grassland mosaic. This will include building fire-safety precautions around burial sites and also building in erosion control measures where necessary, such as where visitor traffic volume would cause problems.
- Establishment of vegetation on slopes helps to integrate the artificial slopes into a more natural landscape.
- Establishment of trees as visual barrier is necessary at various locations. Evergreen trees and shrubs with a dense foliage should be used.
- To minimize the visual impact of noise barriers, they should have a non-reflective finish. They should also be tinted and shaped for blending into the surrounding landscape.
- Colour, texture and shape of retaining walls should blend in with the character of the surrounding landscape.

- The form of all highway-associated structures that have a similar engineering function should be compatible with each other to avoid visual clutter.

5.10 Landfill Gas Hazard

5.10.1 The need and details of landfill gas hazard assessment should follow EPD's "Landfill Gas Hazard Assessment Guidance Note (1997)" and Professional Persons Environmental Consultative Committee (ProPECC) PN 3/96 Landfill Gas Hazard Assessment for Developments Adjacent to Landfills (1996)". Mitigation measures during construction and operational stages will be determined accordingly.

Part B – Added Study Area

5.11 Air quality

Construction Phase

5.11.1 The mitigation measures to prevent adverse impacts on air quality for the construction works within the added Study Area are similar to those in the original Study Area as detailed in paragraph 5.2.1.

Operational Phase

5.11.2 The proposed mitigation measures to improve air quality due to vehicle exhaust emission from open roads within the added Study Area are similar to those in the original Study Area, where relevant as detailed in paragraph 5.2.2.

5.12 Noise

Construction Phase

5.12.1 Measures to mitigate adverse noise impacts for the construction works within the added Study Area are similar to those in the original Study Area as detailed in paragraph 5.3.1.

Operational Phase

5.12.2 Measures to mitigate adverse noise impacts within the added Study Area are similar to those in the original Study Area as detailed in paragraph 5.3.2 to paragraph 5.3.4.

5.13 Water Quality

Construction Phase

5.13.1 Measures to mitigate water quality impacts for the construction works within the added Study Area are similar to those in the original Study Area as detailed in paragraph 5.4.1 and paragraph 5.4.2.

Operational Phase

5.13.2 The following general mitigation measures are to be considered:

- provision of sand/silt and oil/grease traps at suitable locations to prevent ingress of pollutants to the stormwater system, which would serve to reduce the loading from the storm drains to the inland waters of the Deep Bay Water Control Zone compared to the existing situation; and
- construction of drainage works to prevent increased risk of flooding.

5.14 Solid Waste

Construction Phase

5.14.1 Types of solid wastes and measures to reduce the quantities of C&D waste material that will require landfill disposal for the construction works within the added Study Area are similar to those within the original Study Area as detailed in paragraph 5.5.1 and paragraph 5.5.2.

5.15 Ecology

5.15.1 The mitigation measures subject to the recommendations of the ecological impact assessment for the added Study Area are similar to those for the original Study Area, where relevant as detailed in paragraph 5.6.

5.16 Cultural Heritage

5.16.1 Impacts to cultural heritage site should be avoided as far as practicable. The mitigation measures to the direct impact on standing heritage resources and to avoid impact on archaeological deposit for the added Study Area are similar to those for the original Study Area as detailed in paragraph 5.7.

5.17 Land Contamination

5.17.1 The mitigation measures for the added Study Area are similar to those for the original Study Area, where relevant as detailed in paragraph 5.8.

5.18 Landscape and Visual

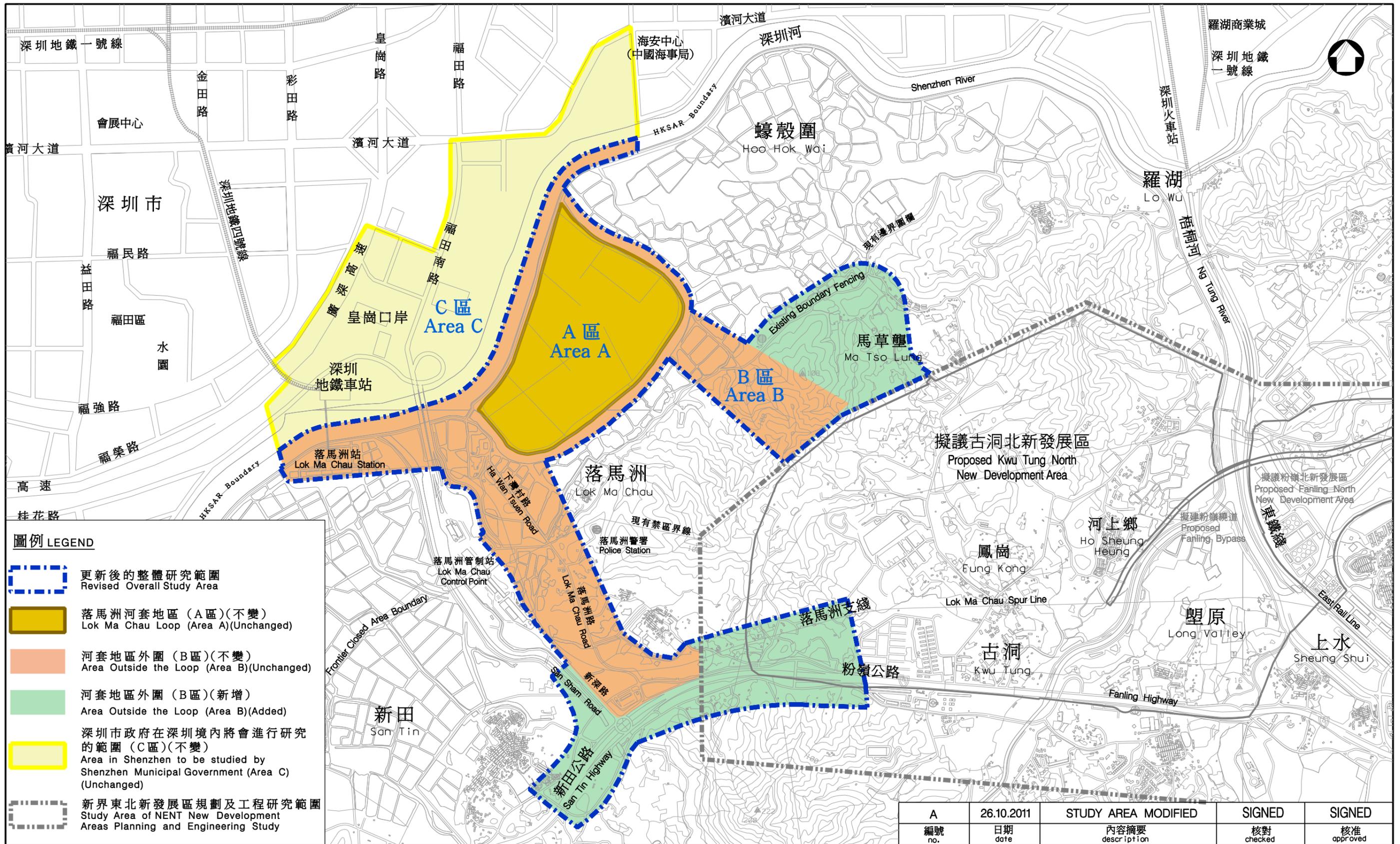
5.18.1 The mitigation measures for the added Study Area are similar to those for the original Study Area, where relevant as detailed in paragraph 5.9.

5.19 Landfill Gas

5.19.1 The need and details of landfill gas hazard assessment should follow EPD's "Landfill Gas Hazard Assessment Guidance Note (1997)" and Professional Persons Environmental Consultative Committee (ProPECC) PN 3/96 Landfill Gas Hazard Assessment for Developments Adjacent to Landfills (1996)". Mitigation measures during construction and operational stages will be determined accordingly.

6. USE OF PREVIOUSLY APPROVED EIA REPORTS

- 6.1.1 Shenzhen River Regulation Project Stage 1 Environmental Impact Assessment, 1994
- 6.1.2 Environmental Impact Assessment Study on Shenzhen River Regulation Project, 1994.



圖例 LEGEND

- 更新後的整體研究範圍
Revised Overall Study Area
- 落馬洲河套地區 (A區)(不變)
Lok Ma Chau Loop (Area A)(Unchanged)
- 河套地區外圍 (B區)(不變)
Area Outside the Loop (Area B)(Unchanged)
- 河套地區外圍 (B區)(新增)
Area Outside the Loop (Area B)(Added)
- 深圳市政府在深圳境內將會進行研究的範圍 (C區)(不變)
Area in Shenzhen to be studied by Shenzhen Municipal Government (Area C)(Unchanged)
- 新界東北新發展區規劃及工程研究範圍
Study Area of NENT New Development Areas Planning and Engineering Study

A	26.10.2011	STUDY AREA MODIFIED	SIGNED	SIGNED
編號 no.	日期 date	內容摘要 description	核對 checked	核准 approved

修訂 REVISION

繪圖 drawn	簽署 initial	日期 date	項目編號 item no.
K H LO	SIGNED	29.12.2008	735CL
核對 checked	簽署 initial	日期 date	比例 scale
Y F TANG	SIGNED	29.12.2008	1:20 000
核准 approved	簽署 initial	日期 date	圖則編號 drawing no.
C S LIU	SIGNED	29.12.2008	NTNZ 1584A

辦事處 office
新界西及北拓展處
 NEW TERRITORIES NORTH AND WEST DEVELOPMENT OFFICE



圖則名稱 drawing title
落馬洲河套地區發展規劃及工程研究 - 修訂研究範圍位置圖
 PLANNING AND ENGINEERING STUDY ON DEVELOPMENT OF LOK MA CHAU LOOP
 - LOCATION PLAN OF REVISED STUDY AREA