



土木工程拓展署

New Territories North and West Development Office
Civil Engineering and Development Department




Service Contract No. WD/02/2021

Environmental Team for Hung Shui Kiu/ Ha Tsuen New Development Area Site 1 Works – Site Formation and Engineering Infrastructure

Updated Environmental Monitoring and Audit Manual

Document No.

ASCL	/	210168223	/	UEMA	/	5
Publisher		Project Code		Sequential No.		Revision Index

	Author:	Checker:	Approver:
Name	Andy Mok	Wingo So	F. C. TSANG
Position	Environmental Team Member	Environmental Team Member	Environmental Team Leader
Signature			
Date:	23 April 2022	23 April 2022	23 April 2022



Revision History

Rev.	Description of Modification	Date	Author	Reviewer	Approver
1	First Issue	12 Nov 2021	Andy Mok	Wingo So	F. C. Tsang
2	Second Issue	26 Nov 2021	Andy Mok	Wingo So	F. C. Tsang
3	Third Issue	19 Jan 2022	Andy Mok	Wingo So	F. C. Tsang
4	Fourth Issue	13 March 2022	Andy Mok	Wingo So	F. C. Tsang
5	Fifth Issue	23 April 2022	Andy Mok	Wingo So	F. C. Tsang



TABLE OF CONTENTS

1 INTRODUCTION	1
1.1 Project Background	1
1.2 The Assignment	1
1.3 Designated Projects	1
1.4 Purpose of this Manual	8
2 PROJECT DESCRIPTION	10
2.1 General Description.....	10
2.2 Revised Recommended Outline Development Plan	11
2.3 Implementation Programme and Phasing.....	12
2.4 Summary of Concurrent Projects.....	14
2.5 Project Implementation Schedule	15
3 PROJECT ORGANISATION	16
4 AIR QUALITY IMPACT	19
4.1 Introduction	19
4.2 Air Quality Parameters	19
4.3 Monitoring Equipment.....	20
4.4 Laboratory Measurement / Analysis	21
4.5 Monitoring Locations	22
4.6 Baseline Monitoring.....	25
4.7 Impact Monitoring.....	26
4.8 Event and Action Plan	26
4.9 Performance Compliance Test	28
4.10 Mitigation Measures	28
5 NOISE IMPACT	31
5.1 Introduction	31
5.2 Monitoring Parameters for Construction Noise	31
5.3 Monitoring Equipment for Construction Noise.....	31
5.4 Monitoring Locations for Construction Noise	32
5.5 Baseline Monitoring for Construction Noise	34
5.6 Impact Monitoring for Construction Noise	34
5.7 Event and Action Plan for Construction Noise	34
5.8 Noise Parameters for Operational Traffic Noise.....	37
5.9 Monitoring Locations for Operational Traffic Noise	37
5.10 Monitoring Requirement for Operational Traffic Noise	38
5.11 Event and Action Plan for Traffic Noise	39
5.12 Commissioning Test for Fixed Plant Noise	39
5.13 Mitigation Measures	39
6 WATER QUALITY IMPACT	48
6.1 Introduction	48
6.2 Water Quality Parameters	48
6.3 Monitoring Locations	48
6.4 Baseline Monitoring.....	50
6.5 Impact Monitoring.....	51
6.6 Site Audits.....	51
6.7 Field Log	52
6.8 Monitoring Equipment.....	52
6.9 Laboratory Measurement / Analysis	53
6.10 Event and Action Plan	54
6.11 Mitigation Measures	55



7 SEWERAGE AND SEWAGE TREATMENT IMPLICATIONS	58
7.1 Introduction	58
7.2 Sewerage and Sewage Treatment Implications during Construction Phase	58
7.3 Mitigation Measures	58
7.4 Sewerage and Sewage Treatment Implications during Operational Phase	58
8 WASTE MANAGEMENT IMPLICATIONS.....	59
8.1 Introduction	59
8.2 Mitigation Measures	59
8.3 EM&A Requirements.....	59
9 LAND CONTAMINATION IMPACT	61
10 ECOLOGICAL IMPACT	62
10.1 Introduction	62
10.2 Mitigation Measures	62
10.3 Monitoring and Audit Requirement	64
11 FISHERIES IMPACT	66
12 LANDSCAPE AND VISUAL IMPACT	67
12.1 Introduction	67
12.2 Mitigation Measures	67
12.3 Baseline Monitoring.....	72
12.4 Audit Requirement.....	72
12.5 Event and Action Plan	73
13 Impact on Cultural Heritage.....	75
13.1 Mitigation Measures	75
14 SITE ENVIRONMENTAL AUDIT	87
14.1 Site Inspection.....	87
14.2 Compliance with Legal and Contractual Requirements.....	88
14.3 Environmental Complaints.....	88
15 REPORTING	90
15.1 Introduction	90
15.2 Baseline Monitoring Report	90
15.3 Monthly Monitoring Reports.....	91
15.4 Final EM&A Review Reports	95
15.5 Data Keeping	97
15.6 Interim Notifications of Environmental Quality Limit Exceedances.....	98



APPENDICES

- Appendix 2.1 Implementation Programme and Phasing**
- Appendix 2.2 Implementation Schedule of Mitigation Measures**
- Appendix 3.1 Project Organisation for Environmental Works**
- Appendix 4.1 Sample Data Record Sheet for TSP Monitoring**
- Appendix 5.1 Sample Data Record Sheet for Construction Noise Monitoring**
- Appendix 6.1 Sample Data Record Sheet for Water Quality Monitoring**
- Appendix 15.1 Sample Template for Interim Notifications of Environmental Quality Limits Exceedances**

- Appendix A EM&A Programme for Road D1 under Contract No. YL/2020/03 Hung Shui Kiu/ Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure**

FIGURES

- Figure 1.1 Location Plan**
- Figure 1.2 Location of Designated Projects**
- Figure 1.3 Location of Designated Projects Subject to Environmental Permit Application**
- Figure 2.1 Revised Recommended Outline Development Plan (RODP)**
- Figure 2.2 Development Phasing Plan**
- Figure 2.3 Locations of Concurrent Projects**
- Figure 4.1 Location of Construction Dust Monitoring Stations**
- Figure 5.1 Locations of Construction Noise Monitoring Stations (Sheet 1 of 2)**
- Figure 5.2 Locations of Construction Noise Monitoring Stations (Sheet 2 of 2)**
- Figure 5.3 Locations of Traffic Noise Monitoring Stations (Sheet 1 of 2)**
- Figure 5.4 Locations of Traffic Noise Monitoring Stations (Sheet 2 of 2)**
- Figure 6.1 Water Quality Monitoring Stations**



1. INTRODUCTION

1.1. Project Background

1.1.1. The Hung Shui Kiu New Development Area, now renamed as “Hung Shui Kiu/Ha Tsuen New Development Area” (“HSK/HT NDA”) was formerly studied under “Planning and Development Study on North West New Territories” (the NWNT Study) from 1997 to 2003. The NWNT Study was an integrated planning and engineering study to identify NDAs in North West New Territories (NWNT) in response to projections of housing demand for Hong Kong arising from the Territorial Development Strategy Review in 1996. The NWNT Study identified HSK suitable as a NDA to accommodate a population of about 160,000 and to provide 48,000 jobs upon full development. The NWNT Study identified 450 ha for the HSK NDA. Various land uses including residential, government, institution or community, education, recreation, business use, open spaces, port back-up, green belt, etc. were proposed.

1.1.2. The HSK/HT NDA proposals were subsequently shelved in 2003 in light of an anticipated slower population growth at that time. Under the study of Hong Kong 2030: Planning Vision and Strategy (the HK2030 Study) completed by Planning Department (PlanD) in 2007, the HSK/HT NDA identified in the NWNT Study was revisited and recommended for implementation to address the long-term housing demand and provide employment opportunities. The Chief Executive announced in his 2007-08 Policy Address the planning for the NDA in HSK/HT as one of the ten major infrastructure projects for economic growth.

1.1.3. Having regard to the substantial changes in planning circumstances and public aspiration since completion of the NWNT Study, the boundary of the HSK/HT NDA was tentatively expanded to 790 ha in 2011. A comprehensive planning and engineering study on the HSK/HT NDA was commissioned in 2011.

1.1.4. The planning and engineering study is to revisit the findings and recommendations of the NWNT Study, to take into account changes in the latest circumstances and public aspiration so as to confirm the feasibility of the proposed developments to meet long-term housing, social, economic and environmental needs, and to prepare a recommended outline development plan (RODP) and preliminary engineering design for the development.

1.2. The Assignment

1.2.1. The Updated EM&A Manual include the latest EM&A requirements in accordance with the information and recommendations described in the EIA Report and by taking into account any specific site conditions that may be changed before the construction of the Project.

1.3. Designated Projects

1.3.1. The HSK/HT NDA (herein referred to as the “Project”) is a Designated Project (DP) under Item 1 Schedule 3 of the Environmental Impact Assessment (EIA) Ordinance – 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, as it covers an area of 714 ha and will accommodate a total population of 218,000.

- 1.3.2. In addition, based on the Revised RODP, the Project would comprise the following DPs by virtue of items A.1, A.2, A.3, A.8, A.9, B.5, F.1, F.3(b), F.4, G.2 and Q.1, of Part I, Schedule 2 of the EIAO (**Table 1.1** and **Figure 1.2** and **Figure 1.3**).

Table 1.1 Schedule 2 Designated Projects in the HSK/HT NDA

DP Ref. No.	Schedule 2 Designated Project		Work Component / Reference in Revised RODP
DP1 ¹	Part I, A.1	A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road	Construction of new primary distributor road (Road P1)
DP2 ¹	Part I, A.1	A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road	Construction of eight new distributor roads (Roads D1 to D8)
DP3 ²	Part I, A.2	A railway and its associated stations	Construction of new West Rail Hung Shui Kiu Station (HSK Station) (Site 4-34)
DP4 (Potential DP) ²	Part I, A.3	A tramway and its associated stations	Construction of Environmentally Friendly Transport Services (EFTS) – subject to further review
DP5 ¹	Part I, A.8	A road or railway bridge more than 100 m in length between abutments	Construction of slip roads between: Road D8 Junction and existing Castle Peak Road; Junction of D8/P1 and Junction of D7/P1; and Kong Sham Western Highway (KSWH) connection to Road D3
DP6 ¹	Part I, A.9	A road fully enclosed by decking above and by structure on the sides for more than 100 m	Construction of partly depressed and partly decked-over roads located at Road D2, Road D4, and Road D6
DP7 (Potential DP) ²	Part I, B.5	A container back-up area, container storage, container handling or container packing area (including a container vehicle parking area) more than 5 ha in size and within 300 m of an existing or planned receiver	Construction of a new container back-up and storage area (Sites 3-1, 3-4, 3-5, 3-13 and 3-14) – subject to further review
DP8 ²	Part I, F.1	Sewage treatment works with an installed capacity of more than 15,000 m ³ per day	Construction of new HSK Sewage Treatment Works (STW) (Site 3-26 and part of existing San Wai STW)
DP9 ¹	Part I, F.3(b)	A sewage pumping station – (b) with an installed capacity of more than 2,000 m ³ per day and a boundary of which is less than 150 m from an existing or planned receiver	Construction of four new sewage pumping stations (SPS) (Sites 2-34, 3-41, 3-48 and 4-35)



DP Ref. No.	Schedule 2 Designated Project		Work Component / Reference in Revised RODP
DP10 ²	Part I, F.4	An activity for the reuse of treated sewage effluent from a treatment plant	Construction of flushing water service reservoirs (FLWSR) for reuse of reclaimed water at Tan Kwai Tsuen and Fung Kong Tsuen (Site 3-3 and Site 5-40)
DP11 ²	Part I, G.2	A refuse transfer station	Construction of one refuse transfer station (RTS) (Site 3-12)
DP12 ¹	Part 1, Q.1	All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest.	Construction of Road P1 and a slip-road from KSWH to Road D3 partly located within the "Conservation Area" of Yuen Tau Shan

Note: 1. Subject to an Environmental Permit (EP) application under this EIA Study.
2. Subject to separate EIA Study, as required.

DP 1 - Construction of New Primary Distributor Road (Road P1)

1.3.3. The majority of the new primary distributor road (Road P1) located under the existing KSWH at the western Project area (approximately 3.2 km in length), provides a service access with 2 lanes per direction to both the "I" areas and the new core area around the proposed HSK Station. Alignment options have been reviewed to minimise impacts on the DBL project mitigation ponds (wetland compensation area) located in the immediate vicinity of the road, opposite Site 3-26.

1.3.4. The at-grade alignment will have several connections to the proposed district distributor roads (Road D1/D5/D6/D7/D8). Two pairs of slip roads will be constructed to connect between the at-grade Road P1 and existing KSWH. In addition, a pair of slip roads along Road P1 will be constructed between the existing KSWH and at-grade Road D6 to facilitate the traffic connection at north western part of the Project area.

DP2 - Construction of Eight New Distributor Roads (Roads D1 to D8)

1.3.5. A total of eight Distributor Roads are proposed. All will provide a major role in servicing proposed land uses and existing developments (including villages where linkages have been provided). These comprise:

- **Road D1:** This road provides a partly dual three and partly dual two, west to east primary connection at the northern part of the Project area linking Tin Shui Wai (TSW) with the KSWH and providing links to District Distributors that provide the secondary links to the south of the Project area. The local road from a section of Road D1 near Lau Fau Shan



to serve the residential sites and commercial sites in the northern part of the Project area will be restricted to private cars access only. A section of Road D1 from KSWH to road junction of Road D4/D3/D1 will be partly depressed and partly decked-over to allow crossing of the EFTS alignment. A section of Road D1 near the roundabout with Tin Wah Road will be a bridge structure (not greater than 30 m in length between abutments) to allow the local road to/from residential sites in the northern part of the Project area in parallel with Lau Fau Shan Road to the end of Site 2-1.

- **Road D2:** Comprises a north-south primary route that links to Ping Ha Road and Hung Tin Road. Road D2 is planned to dual 2 standards by widening of existing Ping Ha Road to enhance the magnitude of residential development and reduce the environmental adverse noise impact that is realisable in the north east of the Project area. The link will accommodate the traffic capacity currently carried along Tin Ying Road and Ping Ha Road and also has the capacity to service existing and proposed development. Most of the Road D2 is constructed at-grade, except a section of approximately 450 m which is a depressed road in order to improve pedestrian connectivity between the residential Sites 1-5, 1-6 and 2-31.
- **Road D3:** Provides a link between Road D4/D1 and Road D5. A depressed road will be constructed near the roundabout of Road D4/D1 to avoid reduction on the traffic flow efficiency to and from Road D1. A section of Road D3 will be constructed in abutment for connection from slip road from KSWH to the at-grade section of Road D3.
- **Road D4:** Provides a link between Road D1/D3 to Road D2 to facilitate an eastward connection to TSW New Town and Castle Peak Road via Road D4. This route will serve to alleviate the pressure on other west to east links. A section of Road D4 of approximately 300 m length will be constructed as depressed road with partial pedestrian decking-over to facilitate access, and thus increasing connectivity between Sites 2-30 and 2-32.
- **Road D5:** Provides a link between the services areas (e.g. Special Industry (Logistics Facility)) and connects to Road P1 in the west and Tin Ha Road in the east. The whole section of Road D5 will be at-grade with a roundabout with Road D3.
- **Road D6:** Connects with Road D8 along its alignment. The route will play a major role in servicing the proposed HSK Station and related development as well as the proposed commercial sites and mixed commercial/residential development. To avoid conflict to pedestrian activity in the Regional Plaza near the proposed HSK Station, half of Road R6 will be constructed in depressed road of approximate 550 m long with partial decking-over in the Regional Plaza section.
- **Road D7:** Road D7 provides access from Road P1 to the commercial sites at Sites 4-12, 4-13 and 4-16.
- **Road D8:** Road D8 provides a connection between the proposed Road P1 and Castle Peak Road. The route will provide an important west to east link whilst also providing a major means of access to the proposed HSK Station, the civic node at Site 4-31, and the commercial and residential developments located east of the proposed HSK Station. The road will be constructed at-grade with a depressed EFTS crossing under Road D8.



DP3 - Construction of New West Rail Hung Shui Kiu Station (Site 4-34)

- 1.3.6. A new WRL Station will be built at the south of the Project area. This railway station will be important for transportation in the southern part of Project area in addition to the road traffic at Road P1 and Castle Peak Road. Railway associated facilities such as ventilation shafts etc. would be located in the vicinity of the station. As the construction of the station would be undertaken under a separate EIA, station details are not currently available. However, a proposed schematic layout of the station is proposed for the purpose of this EIA (Figure 4.8.1). Any details required for the EIA assumptions are described in the relevant EIA sections (e.g. Chapter 4 – Noise Impact).

DP4 - Construction of Environmental Friendly Transport Services – Potential DP subject to further review

- 1.3.7. The proposed EFTS traverses the core residential, commercial and other land reserves within the Project area. The separation between stations is walking distance to facilitate public access. A modern low profile tram system has been assumed for the purpose of the EIA; however, the system that will ultimately be used is subject to further study. The GTC reserve allocated to the tram will be also abutted by cycle and pedestrian routes. This will allow the public to cycle within vehicle free routes. The quality of the reserve will be enhanced through the application of high and low profile landscape treatments. A depot associated with the proposed EFTS is located at Site 3-18. Most of the alignment of the EFTS will be constructed at-grade, except some sections will be depressed and elevated at junctions within the proposed carriageway.

DP5 - Construction of Slip Roads between: Road D8 Junction and Existing Castle Peak Road; Junction of D8/P1 and Junction of D7/P1; and KSWH Connection to Road D3

- 1.3.8. The proposed slip roads have a length of more than 100 m between abutments. Two pairs of slip roads will be constructed near the two roundabouts of Road D8 and Road D7. They provide connection between at-grade Road P1 and existing elevated KSWH in order to improve the traffic connectivity to the Project area. Another pair of slip roads will be constructed from the existing KSWH to at-grade Road D3 to provide direct traffic connection to the port-back up areas and the logistic facilities at the western part of the Project.

DP6 - Construction of Partly Depressed and Partly Decked-over Roads Located at Road D2, D4 and D6

- 1.3.9. Some sections of Road D2, D4 and D6 are enclosed by decking above and by structure on the side for more than 100 m and hence classified as DP under Item A.9 Part 1, Schedule 2 of the EIAO.
- 1.3.10. The district open space (Site 2-32) located to the south of Road D4 and west of Road D2 is intended to act as a buffer between new developments and the villages to the south, and provides flexibility for community farming and farming markets. This district open space and the proposed residential sites are however separated



by Roads D2 and D4. A section of Road D2 is therefore decked-over for approximately 450 m with intermittent openings to improve pedestrian access/connectivity between the residential sites near the TSW Main Channel to “LO”, via Site 2-31 and crossing Road D4. Similarly, to enhance connectivity with the district open space (Site 2-32), it is proposed to deck over approximately 250 m of Road D4 in order to provide pedestrian crossing and flow from north to south across Road D4.

- 1.3.11. Approximately 300 m with intermittent openings of Road D6 would be decked-over near the proposed Regional Plaza near the proposed HSK Station. The decked-over structure is intended to maximise the area of Regional Plaza and allow pedestrian crossing to the EFTS station and the western part of development. In particular, a 20 m wide pedestrian street lined with retail shops, cafés and restaurants is proposed as a major pedestrian connection between the communities to the south of Castle Peak Road and the Town Centre. The proposed arrangement of depressing and decking over a section of Road D6 will allow seamless at-grade crossing between commercial complexes on two sides of the proposed HSK Station and provide a pleasant walking environment within the Town Centre.

DP7 - Construction of a New Container Back-up and Storage Area – Potential DP subject to further review

- 1.3.12. The western part of the Project is planned to serve as “PBU” and logistic facilities area to accommodate existing brownfield operations within the Project area. It is intended to locate these facilities at the west of the Project area to minimise interface issues with planned residential development and communities. The details of this development (i.e. size/area of container back-up area, container storage area) would be determined at the detailed design stage. This development would be a potential designated project where the area was more than 5 ha and within 300 m of an existing or planned receiver (e.g. Sites 3-1, 34, 3-5, 3-13 and 3-14).

DP8 - Construction of New HSK Sewage Treatment Works

- 1.3.13. As the planned SW STW – Phase 1 is not designed to cater for the additional flow generated from the Project, a new HSK STW will be provided to handle the sewage arising from the new population and employment in the Project area. The new HSK STW will be implemented in two phases to serve the different phases of development.
- 1.3.14. The new HSK STW (Phase 1) will start operation before Stage 2 of the Project (i.e. 2031) to handle the sewage from the Project using Site 3-26. The potential for using part of the land of the existing the SW STW for further expansion of the HSK STW (Phase 2) will also be explored, subject to review of the future population growth. The new HSK STW will be constructed with tertiary treatment for reuse of reclaimed water and secondary plus treatment (with UV disinfection and 75% nitrogen removal) for disposal of effluent with an ultimate design capacity of approximately 85,500 m³ per day.



- 1.3.15. As the construction of the STW would be undertaken under a separate EIA, there is currently no information regarding the layout. Any details required for the EIA assumptions are described in the relevant EIA sections (e.g. Chapter 6 – Sewage and Sewerage Treatment Implications).

DP9 - Construction of Four New Sewage Pumping Stations

- 1.3.16. The sewerage arrangement for the intermediate and ultimate development stages, include four SPS (SPS1, SPS2, SPS3 and SPS4), which will be required to convey the sewage to SW STW- phase 1 and the proposed new HSK STW. The four new SPS will be implemented in two stages and designed with a capacity of 27,000 m³ per day (SPS1), 39,500 m³ per day (SPS2), 11,000 m³ per day (SPS3), and 68,000 m³ per day (SPS4) (Sites 2-34, 3-41, 3-48 and 4-35, respectively).
- 1.3.17. Construction of SPS1 and SPS2 (general layout presented in **Figures 2.14** and **2.15** of the EIA Report, respectively) will be carried out in the intermediate development stage in order to cope with the completion of advance works for the Project. SPS1 is designated to convey sewage from the southern Project area next to Castle Peak Road to SPS2 and then to San Wai STW. SPS2 sewage catchment also includes the western Project area next to KSWH. These two SPSs are tentatively scheduled to be completed by 2029.
- 1.3.18. Construction of SPS3 and SPS4 (general layout presented in **Figures 2.16** and **2.17** of the EIA Report, respectively) will be carried out in the ultimate development stage. SPS3 will receive sewage flow from the middle part of the Project area and then convey it to SPS2 for further pumping to the future new HSK STW. SPS4 will collect sewage from northern part of the Project area and divert the sewage from Tin Wah Road to San Wai STW through a proposed new rising main. These two SPSs are tentatively scheduled to be completed by 2031.
- 1.3.19. Since all these SPSs are with an installed capacity of more than 2,000 m³ per day and are located within 150 m from existing and/or planned residential area or educational institution, these SPSs are classified as DPs under Item F.3, Part 1, Schedule 2 of the EIAO.

DP10 - Construction of Flushing Water Service Reservoirs for Reuse of Reclaimed Water at Tan Kwai Tsuen and Fung Kong Tsuen

- 1.3.20. In order to achieve a sustainable development, reclaimed water from the sewage treatment plant will be reused for flushing water serving the Project. To facilitate the reuse of reclaimed water, service reservoirs at Tan Kwai Tsuen and Fung Kong Tsuen would be constructed (Site 3-3 and Site 5-40).

DP11 - Construction of a Refuse Transfer Station

- 1.3.21. In the northern part of the Project area along the KSWH, Site 3-12 has been proposed for the provision of a new “RTS” to support the existing NWNT “RTS” and cope with the new population waste generation. A Community Green Station is also co-located within the site to enhance environmental education and help collect



different types of recyclables in the local community, which could provide synergistic effect to achieve better operational efficiency.

DP12 - Construction of Road P1 and a Slip Road from Kong Sham Western Highway to Road D3 Partly within the “Conservation Area” of Yuen Tau Shan

- 1.3.22. A north bound slip road from KSWH is proposed to provide direct access via Road D4 to west part of the Project area which will be located next to KSWH. The slip road and part of Road P1 will be partially located in the “CA” designation of Yuen Tau Shan. The alignment of Road P1 and the slip road will be constructed along the reinforced concrete flood storage ponds to avoid loss of natural/ semi-natural habitats.

1.4. Purpose of this Manual

- 1.4.1. The purpose of this updated Environmental Monitoring and Audit (EM&A) Manual is to:

- Guide the set-up of an EM&A programme to ensure compliance with the EIA recommendations;
- Specify the requirements for monitoring equipment;
- Propose environmental monitoring points, monitoring frequency etc.;
- Propose Action and Limit Levels; and
- Propose Event and Action Plans.

- 1.4.2. This Manual outlines the monitoring and audit programme for the construction and operation of the proposed Project and provides systematic procedures for monitoring, auditing and minimising environmental impacts.

- 1.4.3. Hong Kong environmental regulations and the Hong Kong Planning Standards and Guidelines (HKPSG) have served as environmental standards and guidelines in the preparation of this Manual. In addition, this EM&A Manual has been prepared in accordance with the requirements stipulated in Annex 21 of the Technical Memorandum on the EIA Process (TM-EIAO).

- 1.4.4. This Manual contains the following information:

- Responsibilities of the Contractor, the Engineer or Engineer’s Representative (ER), Environmental Team (ET), and the Independent Environmental Checker (IEC) under the context of EM&A;
- Project organisation for the EM&A works;
- The basis for, and description of the broad approach underlying the EM&A programme;
- Details of the methodologies to be adopted, including all laboratories and analytical procedures, and details on quality assurance and quality control programme;
- The rationale on which the environmental monitoring data will be evaluated and interpreted;
- Definition of Action and Limit Levels;
- Establishment of Event and Action Plans;



- Requirements for reviewing pollution sources and working procedures required in the event of non-compliance with the environmental criteria and complaints; and
- Requirements for presentation of environmental monitoring and audit data and appropriate reporting procedures.

1.4.5. This EM&A Manual is a dynamic document that should be reviewed regularly and updated as necessary during the construction and operation of the Project.



2. PROJECT DESCRIPTION

2.1. General Description

2.1.1. Adhering to the planning principles for creating a sustainable, people-oriented and balanced community, the Project will be the next generation New Town providing a desirable place to live, work, learn and play for a total population of approximately 218,000. It will also offer development spaces for various commercial and special industrial uses and “Government, Institution and Community” (“G/IC”) facilities.

2.1.2. Being the Regional Economic and Civic Hub for the NWNT, the Project will create approximately 150,000 new employment opportunities, and supporting services for people living in the Project area, TSW, Tuen Mun and Yuen Long as well as the proposed Yuen Long New Towns as well as the proposed Yuen Long South development project.

2.1.3. The Project comprises the following elements:

- The provision of about 61,000 **new residential units** will house an estimated new population of about 176,000 persons. With the existing population and population from the planned/ committed residential developments within the Project area, the overall population is projected to be around 218,000 persons upon full development.
- **Commercial** sites for office, retail and hotel developments around the proposed HSK Station and existing TSW Station to reinforce their respective roles as “Regional Economic and Civic Hub” and “District Commercial Node”, as well as two commercial sites in the northern edge of the Project area to complement local economic activities in the Lau Fau Shan and the northern part of TSW New Town area.
- **Enterprise and Technology Park** for accommodating a variety of innovation and technology uses, which may include research centre, testing & certification use, data centre, modern industries and other related businesses and non-polluting industrial uses.
- **Logistics Facility** to facilitate accommodation of modern logistics buildings.
- Multi-storey buildings on land reserved for **Port Back-Up, Storage and Workshop Uses** to accommodate some of the affected brownfield operations in a land-efficient manner.
- **Industrial** land for general industrial uses.
- A comprehensive **Open Space** network, including a continuous riverside promenade and a Regional Town Park in the centre of the Project area, that would optimise existing natural, cultural and landscape resources and provide recreational and leisure spaces.
- A variety of “**G/IC**” **facilities** such as social welfare facilities, education facilities, etc. to support the existing neighbourhood and future population.
- A **New HSK Sewage Treatment Works (STW)** with a tertiary and secondary plus treatment process and an ultimate design capacity of approximately 85,500 m³ per day.
- **Four new Sewage Pumping Stations (SPSs)** with a design capacity of 27,000 m³ per day (SPS1), 39,500 m³ per day (SPS2), 11,000m³ per day (SPS3), and 68,000m³ per day (SPS4).



- **A Fresh Water Service Reservoir (FWSR) and FLWSRs.**
- A **RTS** to support the existing NWNT RTS and cope with the new population waste generation.
- **District Cooling System (DCS)** in the vicinity of the proposed HSK Station and the existing TSW Station – subject to further review.
- **Primary Distributor Road** (Dual 2 / Dual 3 Standard) – Road P1.
- Eight **District Distributor Roads** (Dual 2 / Dual 3 Standards).
- **Green Transit Corridor (GTC)** comprising EFTS, pedestrian walkways and cycle tracks, which would traverse the core of residential, commercial and other land reserves within the Project area – details subject to further review.
- **Comprehensive Pedestrian Walkway and Cycle Track Network** to promote walking and cycling within the Project area.

2.2. Revised Recommended Outline Development Plan

2.2.1. The major planning parameters forming the basis of the Revised RODP are provided in Figure 2.1.

Table 2.1 Major Planning Parameters of the Revised RODP

Land Use	Area (ha)
Residential Residential and Commercial / Residential	80 (18%) 80
Economic Commercial (office, hotel and retail) Logistics Facilities Port Back Up, Storage and Workshop Uses Enterprise and Technology Park Industrial	105 (24%) 22 37 24 9 13
Public Facilities Government, Institution or Community (other than Education) Education and Related Uses Public Utilities (Petrol Filling Station, Bus Depot, Regional Plaza, Station, etc.)	86 (20%) 32 28 26
Open Space Regional Open Space District Open Space Local Open Space	66 (15%) 16 27 23
New Roads and Amenity New Roads Amenity	104 (23%) 86 18
Total	441



Land Use	Area (ha)
Others	
Existing Road and River Channel	70
Green Belt (Preserved Knolls & Hillslopes)	54
Retained Existing/ Committed Development (including villages)	149
Grand Total	714

2.3. Implementation Programme and Phasing

2.3.1. The Project would be commissioned in phases with the first population intake in Year 2024. The major construction work is targeted to commence in Year 2019 and be completed by Year 2037/2038 for full population intake. A summary of the key construction elements is summarised below. The construction programme is presented in **Appendix 2.1** and phasing illustrated in **Figure 2.2**.

Advance Works

2.3.2. The Advance Works are targeted to bring in early population and employment to the Project area within the capacity of existing strategic infrastructure. The required supporting infrastructure works are therefore minimal. Some industrial sites and a key access roads (Road P1), will be implemented under this development stage. The major site formation and infrastructure works in this development stage will include:

- Site formation works for “Residential” (“R”), “G/IC”, “Commercial” (“C”) and “Industrial” (“I”) sites.
- Two new SPSs (SPS1 and SPS2) (DP9) and associated rising mains.
- Primary Distributor Road P1 under KSWH and associated interchange/ junction works connecting with KSWH, Castle Peak Road and other District Distributors (DP1).
- Slip Roads between Road D8 Junction and existing Castle Peak Road; Junction of D8/P1 and Junction of D7/P1 (DP5).
- Essential utilities for the future development of relevant sites in the Project, such as sewerage, watermains, power supply cables and electricity substation (ESS), etc.

Stage 1

2.3.3. In Stage 1, three “OU(PBU+SWU)” sites in the northern part of the Project will be developed. The early completion could provide opportunity for accommodating some of the affected brownfield operations. The major site formation and infrastructure works in this development stage will include:

- Site formation works for the three “OU(PBU+SWU)” sites and two “R” sites.
- A section of District Distributor Road D1 (DP2) connecting the “OU(PBU+SWU)” sites to KSWH.
- Utilities laying works for the future development of relevant sites in the Project, such as sewerage, watermains, power supply cables, etc. along the proposed Road P1.



Stage 2

- 2.3.4. In Stage 2, the development mainly focuses on areas surrounding the proposed HSK Station and the remaining “OU(PBU+SWU)” sites in the northern part of the Project area.
- 2.3.5. The major site formation and infrastructure works in this development stage will include:
- District Distributor Road D6, D7 and D8 (DP2 and DP6) and local roads, and associated pedestrian walkway and cycle tracks.
 - District Distributor Road D1, a section of Road D3 (DP2) and local roads, and associated pedestrian walkway and cycle tracks.
 - Site formation works for “R”, “C”, “G/IC” and open space sites in the southern Project area and associated section of the GTC.
 - Site formation works for the remaining “OU(PBU+SWU)” sites and RTS in the northern Project area.
 - Two new SPSs (SPS3 and SPS4) (DP9) and associated rising mains.
 - New HSK STW Phase 1 (DP8).
 - A FWSR and FLWSRs for reuse of reclaimed water (DP10) near Tan Kwai Tsuen and associated supply networks.
 - DCS near proposed HSK Station (if implemented).
 - Utilities for the future development of relevant sites in the Project, such as sewerage, watermains, power supply cables, ESS, etc.

Stage 3

- 2.3.6. In Stage 3, the development would focus on special industrial sites, public housing sites in the northern Project area, and open space in the middle part of the Project area. Most of the existing brownfield operations are located in the areas under this development stage. The major site formation and infrastructure works in this development stage will include:
- District Distributor Road D4 and Ping Ha Road (Road D2) widening (DP2 and DP6) and local roads, and associated pedestrian walkways and cycle tracks.
 - District Distributor Road D3 and D5 (DP2), and associated pedestrian walkways and cycle tracks.
 - Slip roads connecting KSWH and Road D3 (DP5 and DP12).
 - Site formation works for “R”, “C” and “G/IC” sites in the eastern and northern parts of the project area and associated section of GTC.
 - Site formation works for “OU(Logistics Facilities)” and “OU(Enterprise and Technology Park)” sites in the western Project area and associated section of GTC.



- New HSK STW Phase 2 (DP8).
- A FLWSR for reuse of reclaimed water near Fung Kong Tsuen (DP10) and associated supply networks.
- Extension of FWSR near Fung Kong Tsuen and associated supply networks.
- Revitalisation of existing Tin Sam Channel and HSK Main Channel.
- Flood retention facilities and open spaces.
- Utilities for the future development of relevant sites in the Project, such as sewerage, watermains, power supply cables, etc.

Stage 4

2.3.7. In Stage 4, the remaining residential development along the TSW Main Channel and the low density residential development in Lau Fau Shan area will be completed. The major site formation and infrastructure works in this development stage will include:

- Local roads serving development sites, and associated pedestrian walkways and cycle tracks.
- Site formation works for “R”, “G/IC”, “C”, open spaces and riverside promenade sites in the eastern and northern Project areas and associated section of GTC.
- Revitalisation of TSW Main Channel.
- Flood retention facilities.
- DCS near existing TSW Station (if implemented).
- Construction of EFTS (DP4) (if implemented), and associated pedestrian walkway and cycle tracks within the GTC.
- Utilities for the future development of relevant sites in the Project, such as sewerage, watermains, power supply cables, etc.

2.4. Summary of Concurrent Projects

2.4.1. In order to assess the cumulative impacts, a review of best available information to identify a number of other projects that are undergoing planning, design, construction and/ or operation within the construction and/ or operation period for this Study has been conducted and a list of the tentative concurrent projects identified at each stage is summarised below of these concurrent projects.

- Engineering Study Review for Site Formation and Infrastructure Works at San Hing Road, Tuen Mun - Investigation (and its Additional Services)
- Engineering Study for Site Formation and Infrastructural Works at Hong Po Road – Feasibility Study



- Site Formation and Infrastructural Works for the Development near Tan Kwai Tsuen, Yuen Long – Feasibility Study
- Preliminary Land Use Study for Lam Tei Quarry and the Adjoining Areas
- Yuen Long and Kam Tin Sewerage Disposal Stage 2 and Stage 3
- Tuen Mun Western Bypass
- Proposed Development Under the Study on the Enhancement of the Lau Fau Shan Rural Township and Surrounding Areas
- Planning and Engineering Study for Housing Sites in Yuen Long South – Investigation
- Water Supply to Hung Shui Kiu New Development Area
- Site Formation and Infrastructural Works for the Development at Long Bin, Yuen Long, Feasibility Study

2.5. Project Implementation Schedule

- 2.5.1. Detailed environmental impact assessment has been conducted and presented in the EIA Report. Mitigation measures have also been identified and recommended. The Project Implementation Schedule (PIS) is presented **Appendix 2.2**. It specifies the extent, locations, time frame and responsibilities for the implementation of the environmental mitigation measures identified.



3. PROJECT ORGANISATION

3.1.1. The proposed project organisation and lines of communication with respect to environmental protection works are shown in **Appendix 3.1**.

3.1.2. The responsibilities of respective parties are:

The Contractor

3.1.3. The Contractor should report to the Engineer's Representative (ER). The duties and responsibilities of the Contractor are:

- Implement the EIA recommendations and requirements;
- Provide assistance to Environmental Team (ET) in carrying out monitoring and auditing;
- Submit proposals on mitigation measures in case of exceedances of Action and Limit Levels in accordance with the Event and Action Plans;
- Implement measures to reduce impact where Action and Limit Levels are exceeded; and
- Adhere to the agreed procedures for carrying out compliant investigation.

Environmental Team

3.1.4. The ET should be led and managed by the ET Leader. The ET Leader should be independent party from the Contractor and should have at least 7 years of experience in conducting EM&A for infrastructure projects. The ET should monitor the mitigation measures implemented by the Contractor on regular basis to ensure the compliance with the intended aims of the measures. The duties and responsibilities of the ET are:

- Set up all the required environmental monitoring stations;
- Monitor various environmental parameters as required in the EM&A Manual;
- Analyse the environmental monitoring and audit data, review the success of EM&A programme, confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions, and to identify any adverse environmental impacts arising;
- Carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation measures, and take proactive actions to pre-empt problems;
- Audit and prepare audit reports on the environmental monitoring data and site environmental conditions;
- Report on the environmental monitoring and audit results to the Independent Environmental Checker (IEC), Contractor, the ER and EPD or its delegated representative;
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit Levels in accordance with the Event and Action Plans;



- Undertake regular on-site audits / inspections and report to the Contractor and the ER of any potential non-compliance;
- Follow up and close out non-compliance actions; and
- Adhere to the procedures for carrying out environmental complaint investigation.

Engineer or Engineer's Representative

3.1.5. The Engineer or ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contractual requirements. The duties and responsibilities of the Engineer or ER with respect to EM&A include:

- Supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- Assist the Project Proponent in employing an IEC to audit the results of the EM&A works carried out by the ET;
- Comply with the agreed Event and Action Plans in the event of any exceedance; and
- Adhere to the procedures for carrying out complaint investigations.

Independent Environmental Checker

3.1.6. The IEC should be an independent party from the Contractor and the Environmental Team and possess at least 7 years of experience in EM&A. The duties and responsibilities of the IEC are:

- Review the EM&A works performed by the ET (at not less than monthly intervals);
- Audit the monitoring activities and results (at not less than monthly intervals);
- Validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and location of sensitive receivers;
- Report the audit results to the ER and EPD in parallel;
- Review the EM&A reports (monthly and quarterly summary reports) submitted by the ET;
- Review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures that have been recommended in the EIA and this Manual, and ensure they are properly implemented in a timely manner, when necessary; and
- Report the findings of site inspections and other environmental performance reviews to ER and EPD.



- 3.1.7. Sufficient and suitably qualified professional and technical staff should be employed by the respective parties to ensure full compliance with their duties and responsibilities, as required under the EM&A programme for the duration of the Project.



4. AIR QUALITY IMPACT

4.1. Introduction

4.1.1. As identified in the EIA Report, the Project would not cause any adverse air quality impacts during operation phase. Separate EIA studies would be carried for proposed HSK Station, proposed EFTS, container storage area, RTS and the new HSK STW and the required operational EM&A requirements for these facilities would be recommended in the individual EIA Reports. This section presents the requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of air quality impact during the construction phase of the Project and the requirements of the commissioning tests for deodorising units of the SPSs.

4.1.2. As identified in the EIA Report, the Project would not cause any adverse air quality impacts during operation phase. This section presents the requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of air quality impact during the construction phase of the Project.

4.1.3. The objectives of the air quality monitoring shall be:

- to identify the extent of construction dust impact on sensitive receivers;
- to determine the effectiveness of mitigation measures to control fugitive dust emission from activities during the construction phase;
- to audit the compliance of the Contractor with regard to dust control, contract conditions and the relevant dust impact criteria;
- to recommend further mitigation measures if found to be necessary; and
- to comply with Action and Limit (A/L) Levels for air quality as defined in this Manual.

4.2. Air Quality Parameters

4.2.1. The major dusty construction activities of the Project would likely be site formation work, excavation work, loading/ unloading activities, and demolition of existing buildings which would generate insignificant amount of small size particulates, hence, no significant Respirable Suspended Particulates (“RSP”) or Fine Suspended Particulates (“FSP”) impacts would be anticipated. Monitoring of 24-hour RSP and 24-hour FSP levels are not proposed. Therefore, only 1-hour Total Suspended Particulates (“TSP”) is recommended to be monitored and audited at the proposed monitoring locations.

4.2.2. The criterion against which ambient air quality monitoring to be assessed are:

- 1-hour TSP limit of 500 $\mu\text{g m}^{-3}$



- 4.2.3. This level should not be exceeded at Air Sensitive Receivers (ASRs).
- 4.2.4. Monitoring and audit of the TSP levels shall be carried out by the ET to ensure that any deteriorating air quality could be readily detected and timely action shall be undertaken to rectify such situation.
- 4.2.5. 1-hour TSP levels should be measured to indicate the impacts of construction dust on air quality. The TSP levels should be measured by following the standard method as set out in High Volume Sampling Method for *Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA* (hereinafter referred to as “HVS method”). Upon approval of EPD and IEC, an alternative sampling method of using direct reading methods which are capable of producing comparable results as that by the high volume sampling method can be used to indicate short event impacts.
- 4.2.6. All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, other local atmospheric factors affecting or affected by site conditions and work progress of the concerned site etc. shall be recorded in details. A sample data record sheet is shown in **Appendix 4.1**.

4.3. Monitoring Equipment

- 4.3.1. High volume sampler (HVS) in compliance with the following specifications shall be used for carrying out the 1-hour TSP monitoring:
- 0.6 - 1.7 m³ per minute (20 - 60 standard cubic feet per minute) adjustable flow range;
 - equipped with a timing/ control device with ± 5 minutes accuracy for 24 hours operation;
 - installed with elapsed-time meter with ± 2 minutes accuracy for 24 hours operation;
 - capable of providing a minimum exposed area of 406 cm²;
 - flow control accuracy: ± 2.5% deviation over 24-hour sampling period;
 - equipped with a shelter to protect the filter and sampler;
 - incorporated with an electronic mass flow rate controller or other equivalent devices;
 - equipped with a flow recorder for continuous monitoring;
 - provided with a peaked roof inlet;
 - incorporated with a manometer;
 - able to hold and seal the filter paper to the sampler housing at horizontal position;
 - easy to change the filter; and
 - capable of operating continuously for 24-hour period.



- 4.3.2. The ET shall be responsible for the provision of the monitoring equipment. He shall ensure that sufficient number of HVSs with appropriate calibration kit is available for carrying out the baseline, regular impacts monitoring and ad-hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals, in accordance with requirements stated in the manufacturers operating manual. All the equipment, calibration kit, filter papers, etc., shall be clearly labelled.
- 4.3.3. Initial calibration of the dust monitoring equipment shall be conducted upon installation and prior to commissioning at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognised primary standard and be calibrated annually. The calibration data shall be properly documented for future reference by the concerned parties such as the IEC. All the data shall be converted into standard temperature and pressure condition.
- 4.3.4. The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded on the data sheet as shown in **Appendix 4.1**.
- 4.3.5. If the ET Leader proposes to use a direct reading dust meter to measure 1-hour TSP levels, he shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable result as that of the HVS before it may be used for the 1-hour sampling. The instrument shall also be calibrated regularly, and the 1-hour sampling shall be determined periodically by HVS to check the validity and accuracy of the results measured by direct reading method.
- 4.3.6. Wind data monitoring equipment shall also be provided and set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the ER and the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:
- The wind sensors shall be installed on masts at an elevated level 10 m above ground so that they are clear of obstructions or turbulence caused by the buildings;
 - The wind data shall be captured by a data logger. The data recorded in the data logger shall be downloaded periodically for analysis at least once a month;
 - The wind data monitoring equipment shall be re-calibrated at least once every six months; and
 - Wind direction should be divided into 16 sectors of 22.5 degrees each.
- 4.3.7. In exceptional situations, the ET may propose alternative methods to obtain representative wind data upon approval from the ER and agreement from the IEC.

4.4. Laboratory Measurement / Analysis

- 4.4.1. A clean laboratory with constant temperature and humidity control and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and



maintenance. The laboratory shall be HOKLAS accredited or other internationally accredited laboratory.

- 4.4.2. If a site laboratory is set up or a non-HOKLAS accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment shall be verified by the IEC and approved by the EPD. Measurement performed by the laboratory shall be demonstrated to the satisfaction of the IEC and EPD.
- 4.4.3. The IEC shall conduct regular audit of the measurement performed by the laboratory so as to ensure the accuracy of measurement results. The ET shall provide the ER with one copy of the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B* for his/ her reference.
- 4.4.4. Filter paper of size 8" × 10" shall be labelled before sampling. It shall be a clean filter paper with no pinholes, and shall be conditioned in a humidity-controlled chamber for over 24-hour and be pre-weighed before use for the sampling.
- 4.4.5. After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity-controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.
- 4.4.6. All the collected samples shall be kept in a good condition for 6 months before disposal.

Monitoring Locations

- 4.5.1. The selected monitoring locations are the worst potentially affected air sensitive receivers located in the vicinity of construction sites of the Project. The proposed air quality monitoring locations during construction phase are listed in **Table 4.1** below and shown in **Figure 4.1**.

Table 4.1 Proposed Construction Dust Monitoring Stations

Monitoring Station ID	EIA ID	Location	Phases of the Project	Monitoring Period ⁽¹⁾
Existing Air Sensitive Receivers				
AM1	A204	Kam Cheong Garden	First Phase Development and Second Phase Development.	To be confirmed
AM2	A208	Oaklands Court		To be confirmed
AM3	A209	Ling Liang Church Primary School	First Phase Development, Second Phase Development and Remaining Phase Development.	To be confirmed
AM4	A310	Tin Ha Road Playground		To be confirmed
AM5	A415	Tin Sum Tsuen		To be confirmed
AM6	A410	Galore Garden		To be confirmed
AM7	A414	Shek Po Tusen		To be confirmed



Monitoring Station ID	EIA ID	Location	Phases of the Project	Monitoring Period ⁽¹⁾
AM8	A813	Block H, Tin Shing Court	Second Phase Development and Remaining Phase Development.	To be confirmed
AM9	A702	San Uk Tsuen		To be confirmed
AM10	A802	Kiu Tau Wai	First Phase Development, Second Phase Development and Remaining Phase Development.	To be confirmed
AM11	A703	Sha Chau Lei Tsuen	Second Phase Development and Remaining Phase Development.	To be confirmed
AM12	A704	Ha Tsuen Shi		To be confirmed
AM13	A708	Sik Kong Wai		To be confirmed
AM14	A601	Tseung Kong Wai		To be confirmed
AM15	A1101	Lo Uk Tsuen		To be confirmed
AM16	A1103	Block 8, Locwood Court		To be confirmed
AM17	A1106	Shui Lung House, Tin Shui Estate		To be confirmed
AM18	A1303	Sha Kong Wai Tsai	First Phase Development and Remaining Phase Development.	To be confirmed
AM19	A1305	Ngau Hom Tsuen		To be confirmed
AM20	A1302	Wing Jan School	Remaining Phase Development.	To be confirmed
AM21	A1002	Fung Kong Tsuen	First Phase Development, Second Phase Development and Remaining Phase Development.	To be confirmed
Planned Development				
AM22	P240	Planned Village Resite at Site 4-20	First Phase Development and Second Phase Development.	To be confirmed
AM23	P1032	Planned Port Back-up, Storage and Workshop at Site 3-6	First Phase Development, Second Phase Development and Remaining Phase Development.	To be confirmed
AM24	P1501	Planned Port Back-up, Storage and Workshop at Site 3-8		To be confirmed
AM25	P606	Planned Port Back-up, Storage and Workshop at Site 3-14		To be confirmed

Note: (1) The monitoring period is subject to the construction programme of the relevant contracts in the construction stage.



- 4.5.2. For Contract No. YL/2020/03 Hung Shui Kiu / Ha Tsuen New Development Area Stage 1 Works – Site Formation and Engineering Infrastructure, an interim section of Road D1, which is classified as a DP (**Table 1.1**), will be constructed. The ET service under Service Contract No. WD/02/2021 will cover the environmental monitoring and audit programme during the construction and operation of Road D1. The proposal of air quality monitoring locations under Service Contract No. WD/02/2021 is presented in **Appendix A**.
- 4.5.3. The status and locations of the air quality sensitive receivers may change after issuing this Manual. In such case, the ET shall propose updated monitoring locations and seek approval from IEC and agreement from EPD on the proposal.
- 4.5.4. When alternative monitoring locations are proposed, the following criteria, as far as practicable, shall be followed:
- i. at the site boundary or such locations close to the major dust emission source;
 - ii. close to the air sensitive receivers as defined in the EIAO-TM;
 - iii. proper position/ sitting and orientation of the monitoring equipment; and
 - iv. take into account the prevailing meteorological conditions.
- 4.5.5. The ET shall agree with the IEC on the position of the HVS for installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:
- i. a horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
 - ii. two samplers shall be placed less than 2 m apart;
 - iii. the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
 - iv. a minimum of 2 m of separation from walls, parapets and penthouses is required for rooftop samplers;
 - v. a minimum of 2 m of separation from any supporting structure, measured horizontally is required;
 - vi. no furnace or incinerator flue is nearby;
 - vii. airflow around the sampler is unrestricted;
 - viii. the sampler is more than 20 m from the dripline;
 - ix. any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
 - x. permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
 - xi. a secured supply of electricity is needed to operate the samplers.



4.6. Baseline Monitoring

- 4.6.1. Baseline monitoring shall be carried out to determine the ambient 1-hour TSP levels at the monitoring locations prior to the commencement of the Project. During the baseline monitoring, there shall not be any construction or dust generating activities in the vicinity of the monitoring stations. The baseline monitoring will provide data for the determination of the appropriate Action levels with the Limit levels set against statutory or otherwise agreed limits.
- 4.6.2. Before commencing the baseline monitoring, the ET shall inform the IEC of the baseline monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the baseline monitoring results.
- 4.6.3. TSP baseline monitoring should be carried out at all of the designated monitoring locations for at least 14 consecutive days prior to the commissioning of the construction works. 1-hour TSP sampling shall be done at least three times per day at each monitoring station when the highest dust impacts are expected. During the baseline monitoring, there should not be any construction or dust generating activities in the vicinity of the monitoring stations. General meteorological conditions (wind speed, direction and precipitation) and notes regarding any significant adjacent dust producing sources should also be recorded throughout the baseline monitoring period. A summary of baseline monitoring is presented in **Table 4.2**.
- 4.6.4. In case the baseline monitoring cannot be carried out at the designated monitoring locations during the baseline monitoring period, the ET Leader shall carry out the monitoring at alternative locations which can effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring location shall be agreed with IEC and approved by EPD.
- 4.6.5. In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with the IEC to agree on an appropriate set of data to be used as a baseline reference and submit to EPD for approval.
- 4.6.6. If the ET Leader considers that significant changes in the ambient conditions have arisen, a repeat of the baseline monitoring may be carried out to update the baseline levels. The revised baseline levels, in turn, the air quality criteria, shall be agreed with the IEC and EPD.

4.7. Impact Monitoring

- 4.7.1. The ET shall carry out impact monitoring during construction phase of the Project. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs. In case of non-compliance with the air criteria, more frequent monitoring, as specified in the Action Plan in the following section, should be conducted. This additional monitoring should be continued until the excessive dust emission or the deterioration in the air quality is rectified. The impact monitoring programme is summarised in **Table 4.2**.
- 4.7.2. The monthly schedule of the compliance and impact monitoring programme should be drawn up by the ET one month prior to the commencement of the scheduled construction period. Before commencing the impact monitoring, the ET shall inform the IEC of the impact monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the impact monitoring results.

Table 4.2 Summary of Construction Dust Monitoring Programme

Monitoring Period	Duration	Sampling Parameter	Frequency
Baseline Monitoring	Consecutive days of at least 2 weeks before commencement of major construction works	1-hour TSP	3 times per day
Impact Monitoring	Throughout the construction phase	1-hour TSP	3 times in every 6 days when documented and valid complaint was received

4.8. Event and Action Plan

- 4.8.1. The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 1-hour TSP. **Table 4.3** shows the air quality criteria, namely Action and Limit levels to be used. Should non-compliance of the air quality criteria occur, action in accordance with the Action Plan in **Table 4.4** shall be carried out.

Table 4.3 Action and Limit Levels for Air Quality (Dust)

Parameter	Action Level (1)	Limit Level
TSP (1 hour average)	BL ≤ 384 µg m ⁻³ , AL = (BL * 1.3 + LL)/2 BL > 384 µg m ⁻³ , AL = LL	500 µg m ⁻³

Note: (1) BL = Baseline level, AL = Action level, LL = Limit level.

Table 4.4 Event and Action Plan for Air Quality (Dust)

Event	Action			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform Contractor, IEC and ER; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate.
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 1. Identify source; 2. Inform Contractor, IEC and ER; 3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with Contractor, IEC and ER; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented by the Contractor; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.
Limit level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; and 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; and 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit level being exceeded by two or more	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET; 2. Discuss amongst ER, ET, and Contractor on 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance;



Event	Action			
	ET	IEC	ER	Contractor
consecutive sampling	4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 4. Supervise the implementation of remedial measures.	2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

4.9. Performance Compliance Test

4.9.1. Performance compliance tests for the deodorising units of the four SPSs (DP9) are recommended to determine whether the odour removal efficiency meet the requirements as stated in the EIA Report. Odour sampling is proposed at the intake and exhaust locations for olfactometric analysis at the commissioning stage.

4.10. Mitigation Measures

Construction Phase

4.10.1. Mitigation measures for dust control have been recommended in the EIA Report. The Contractor shall be responsible for the design and implementation of these measures.

4.10.2. Recommended mitigation measures to minimise the adverse impacts on air quality during construction phases of the Project including all DPs are detailed in **Section 4.10.3** below.

4.10.3. To ensure compliance with the guideline level and AQO at the ASRs, the Air Pollution Control (Construction Dust) Regulation should be implemented and good site practices should be incorporated in the contract clauses to minimise construction dust impact. A number of dust suppression measures are proposed to be implemented as follows:

- Watering once time per hour on active works areas and exposed areas so as to achieve a dust removal efficiency of 91.7%.



- When there are open excavation and spoil handling works, hoarding of 3 m high should be provided along the construction site boundary adjacent to the non-construction areas such as residential, educational institutes or recreation area in use so as to minimise the dust impact.
- Use of frequent watering for particularly dusty construction areas and areas close to ASRs.
- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.
- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.
- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.
- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.
- Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.
- Provision of not less than 2.4 m high hoarding from ground level along site boundary where adjoins roads, streets or other accessible to the public except for a site entrance or exit. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period.
- Imposition of speed controls for vehicles on site haul roads.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.
- Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.

4.10.4. For the work site of the Work Contract nearest to the ASRs at Site 3-6, Site 3-8, Site 3-14, Site 4-20, and existing ASRs at Oaklands Court (A208), Ling Liang Church Primary School (A209), Tin Ha Road Playground (A310) and San Uk Tsuen (A702), it is recommended to reduce the active construction works area to one-third of monthly average work of the respective Work Contract so as to alleviate adverse dust impact.

Operation Phase

4.10.5. All facilities and areas with potential odour emission such as wet well, inlet chamber and screen chamber of the four SPSs are proposed to be covered and the exhausted air would be conveyed to a deodouriser (at least 90% of odour removal efficiency) for treatment before discharge to the environment. The ventilation system would also maintain a slight negative pressure within the facilities. The exhaust outlet of the deodouriser shall also be located away from the nearby air



sensitive receivers as far as practicable. The screening wastes are proposed to be removed regularly (at least twice a week) from the four SPSs and would be properly packed and handled within the SPS structures and transported to designated landfill for disposal immediately after collection from the SPSs.

- 4.10.6. Regarding the odour impact due to the existing chicken farm, portion of Site 3-1 (“OU”, “PBU+SWU”), it is proposed that air sensitive uses at Site 3-1 should not be located at these exceedance zone or the fresh air intake of the building located at least 6 mAG.



5. NOISE IMPACT

5.1. Introduction

- 5.1.1. The EIA has predicted the potential construction noise impact, operation phase road traffic noise impact, railway noise impact and fixed plant noise impact from this Project.
- 5.1.2. Construction noise mitigation measures would be required to reduce noise levels to the stipulated standard. A noise monitoring and audit programme should be undertaken to confirm such mitigation measures would be implemented properly.
- 5.1.3. Mitigation measures of noise barriers would need to be implemented along the roadworks within the Project area. Road traffic noise levels should be monitored at representative NSRs, which are in the vicinity of the recommended direct mitigation measures, during the first year after road opening. The purpose of the monitoring is to ascertain that the recommended mitigation measures are effective in reducing the noise levels.
- 5.1.4. For fixed plant noise impact, the Contractor should carry out a noise commissioning test for planned fixed noise sources before operation of the relevant fixed plant noise sources, in order to ensure compliance of the operation airborne noise levels with the TM's stipulated noise standard.
- 5.1.5. In this section, the requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of construction noise impacts and operational traffic noise are presented.

5.2. Monitoring Parameters for Construction Noise

- 5.2.1. The construction noise levels should be measured in terms of the 30-minute A-weighted equivalent continuous sound pressure level ($L_{eq(30-min)}$). $L_{eq(30-min)}$ should be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays.
- 5.2.2. Supplementary information for data auditing and statistical results such as L10 and L90 should also be obtained for reference. Sample noise field data sheets are shown in **Appendix 5.1** of this Manual for reference. The ET Leader may modify the data record sheet for this EM&A programme but the format of which should be agreed by the IEC.

5.3. Monitoring Equipment for Construction Noise

- 5.3.1. As referred to in the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements shall be accepted as valid

only if the calibration level from before and after the noise measurement agree to within 1.0 dB.

5.3.2. Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

5.3.3. The ET is responsible for the provision of the monitoring equipment. He shall ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. All the equipment and associated instrumentation shall be clearly labelled. The equipment installation location shall be proposed by the ET Leader and agreed with the IEC and EPD.

5.4. Monitoring Locations for Construction Noise

5.4.1. **Figures 5.1** and **5.2** show the construction noise monitoring stations. The details of proposed noise monitoring stations are summarised in **Table 5.1** below.

Table 5.1 Proposed Noise Monitoring Stations during Construction Phase

Monitoring Station ID	EIA ID	Location	Impact Monitoring Period ⁽¹⁾
CM1	ETCW02	No. 739, Oaklands Court	To be confirmed
CM2	ESFW01	No. 332, Chung Uk Tsuen	To be confirmed
CM3	ESFW02	Village house, Nai Wai	To be confirmed
CM4	ECUT01	No. 16, Chung Uk Tsuen	To be confirmed
CM5	ELFS02	No. 3H, San Hing Tsuen	To be confirmed
CM6	ELFS03	No. 310, Sha Kong Wai	To be confirmed
CM7	ELFS04	Wing Jan School/Wing Jan Lutheran Church	To be confirmed
CM8	ETSW05	Shui Fung House, Tin Shui Estate	To be confirmed
CM9	ETSW08	VTC Youth College (Tin Shui Wai)	To be confirmed
CM10	ETSW11	YLPMSAA Tang Siu Tong Secondary School	To be confirmed
CM11	E53902	No. 125, Lee Fong Yuen	To be confirmed
CM12	ETST05b	No. 143, Tin Sum, (West Façade)	To be confirmed
CM13	ESLUT01	No. 46A, San Lee Uk Tsuen	To be confirmed
CM14	ESLUT03	No. 62, San Lee Uk Tsuen	To be confirmed
CM15	ESLUT04	No. 254, San Lee Uk Tsuen	To be confirmed
CM16	E52505	Hung Yan House, Hung Fuk Estate	To be confirmed
CM17	EHUT04	No. 85A, Kiu Tau Wai	To be confirmed



Monitoring Station ID	EIA ID	Location	Impact Monitoring Period ⁽¹⁾
CM18	ESPT06	No. 201, Shek Po Tsuen	To be confirmed
CM19	ESST07	No, 60, San Sang Tsuen	To be confirmed
CM20	ESCL03	No. 45, Sha Chau Lei Tsuen	To be confirmed
CM21	EHTS01	No. 1B, San Uk Tsuen	To be confirmed
CM22	ELUT01	Block 11, Yan Wu Garden	To be confirmed
CM23	ESKT02	No. 151, Sik Kong Wai	To be confirmed
CM24	ETKW01	No.108C, Tseung Kong Wai	To be confirmed
CM25	ETTT01	Block A Luxor Garden, Tung Tau Tsuen	To be confirmed
CM26	EFKT01	No.61, Fung Kong Tsuen	To be confirmed
CM27	40305	Planned Residential Development in Site 4-3	To be confirmed
CM28	42001	Planned Residential Development in Site 4-20	To be confirmed
CM29	42251	Planned Residential Development in Site 4-22	To be confirmed
CM30	21801	Planned Residential Development in Site 2-18	To be confirmed
CM31	52408	Planned Residential Development in Site 5-24	To be confirmed
CM32	52151	Planned School in Site 5-21	To be confirmed

Note: (1) The monitoring period is subject to the construction programme of the relevant contracts in the construction stage.

5.4.2. The proposal of noise monitoring locations under Service Contract No. WD/02/2021 is presented in **Appendix A**.

5.4.3. The status and locations of noise sensitive receivers (NSRs) may change after issuing this Manual. If such cases exist, the ET shall propose updated monitoring locations and seek approval from the IEC and agreement from EPD of the proposal.

5.4.4. When alternative monitoring locations are proposed, the monitoring locations shall be chosen based on the following criteria:

- i. at locations close to the major site activities which are likely to have noise impacts;
- ii. close to the NSRs; and
- iii. for monitoring locations located in the vicinity of the sensitive receivers, care shall be taken to cause minimal disturbance to the occupants during monitoring.

5.4.5. The construction noise monitoring station shall normally be at a point 1 m from the exterior of the sensitive receivers building façade and be a position 1.2 m above the ground. If there is a problem with access to the normal monitoring position, an alternative position shall be chosen, and a correction to the measurements shall



be made. For reference, a correction of +3 dB(A) shall be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

5.5. Baseline Monitoring for Construction Noise

- 5.5.1. Baseline noise monitoring shall be carried out daily in all of the identified monitoring stations for at least 2 weeks prior to the commissioning of the construction works. A schedule of the baseline monitoring shall be submitted to the IEC for approval before the monitoring starts.
- 5.5.2. During the baseline monitoring, there shall not be any construction activities in the vicinity of the monitoring stations.
- 5.5.3. In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with EPD and in consultation with the IEC to agree on an appropriate set of data to be used as a baseline reference.

5.6. Impact Monitoring for Construction Noise

- 5.6.1. Construction noise monitoring should be carried out at the designated monitoring station when there are Project-related construction activities being undertaken within a radius of 300 m from the monitoring stations. The monitoring frequency should depend on the scale of the construction activities. An initial guide on the monitoring is to obtain one set of 30-minute measurement at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.
- 5.6.2. If construction works are extended to include works during the hours of 1900 - 0700, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under NCO shall be obtained by the Contractor.
- 5.6.3. In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action Plan in **Table 5.4** shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

5.7. Event and Action Plan for Construction Noise

- 5.7.1. The Action and Limit levels for construction noise are defined in **Table 5.2**. Should noncompliance of the criteria occur, action in accordance with the Action Plan in **Table 5.3** shall be carried out.



Table 5.2 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700 – 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A)*

Notes:

- If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.
- * 70 dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

Table 5.3 Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; and 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; and 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; and 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; and 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

5.8. Noise Parameters for Operational Traffic Noise

- 5.8.1. The ET should also carry out monitoring of road traffic noise after the works under Contract are completed and commence the operation of the Project. The road traffic noise during operation of the Project should be measured in terms of the A-weighted equivalent of L_{10} (1-hour). During the traffic noise measurement, traffic count should also be undertaken concurrently. Supplementary information for data auditing and statistical results such as L_{eq} and L_{90} should also be obtained for reference.
- 5.8.2. Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

5.9. Monitoring Locations for Operational Traffic Noise

- 5.9.1. Those most affected NSRs identified in the EIA Report are selected as the noise monitoring locations in this EM&A Manual. The traffic noise monitoring locations during operational phase are listed in **Table 5.4** and shown in **Figure 5.3** and **Figure 5.4**. In addition, noise monitoring shall be carried out for one year following construction. The locations for operational noise monitoring shall be defined during detailed design on the basis of the status of the most up-to-date information on proposed developments surrounding the Project.

Table 5.4 Traffic Noise Monitoring Locations

Monitoring Station ID	EIA ID	Location	Noise Barrier Location
OM1	E2-OC_R01	Sha Kong Wai	VB2, Tin Wah Road / Lau Fau Shan Road
OM2	E2-IA_R01	Fung Kong Tsuen	VB5, Proposed Road D1
OM3	E1-IA_R01	Tseung Kong Wai	VB7, VB8 & VB9, Proposed Road D3
OM4	E1-IF_R02	Ha Tsuen Shi	VB26, Proposed Road L1
OM5	E1-OB_21	Lions Clubs International Ho Tak Sum Primary School	VB21 & VB24, Proposed Road D2/ Ping Ha Road
OM6	E4-OA_R01	Tsing Cheun Wai	VB39 & VB40, Proposed Road P1

- 5.9.2. The status and locations of NSRs may change after issuing this manual. In this event, the ET Leader shall propose updated monitoring locations and seek approval from IEC and agreement from EPD of the proposal.
- 5.9.3. When alternative monitoring locations are proposed, the monitoring locations should be chosen based on the following criteria in that they should be:
- At locations close to the major site activities which are likely to have noise impacts;

- Close to the NSRs; and
- For monitoring locations located in the vicinity of the sensitive receivers, care should be taken to cause minimal disturbance to the occupants during monitoring.

5.9.4. The monitoring station shall normally be at a point 1 m from the exterior of the sensitive receiver building facade and be at a position 1.2 m above the ground. If there is a problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3 dB(A) shall be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted before commencement of monitoring.

5.10. Monitoring Requirement for Operational Traffic Noise

5.10.1. Traffic noise monitoring shall be carried out at all the designated traffic noise monitoring stations. The following is an initial guide on the traffic noise monitoring requirements during the operational phase:

- One set of measurements at the morning traffic peak hour on normal weekdays;
- One set of measurements at the evening traffic peak hour on normal weekdays;
- A concurrent census of traffic flow and percentage heavy vehicle shall be conducted for the Project roads and the existing road network in the vicinity of each measuring point;
- Average vehicle speed estimated for Project road and the existing road network in the vicinity of each measuring points; and
- The two sets of monitoring data should be obtained within the first year of operation.

5.10.2. The ET should prepare and deposit to EPD, at least 6 months before the operation of the proposed roads under the Project, a monitoring plan for the purpose of assessing the accuracy of traffic noise predictions by comparing the noise impact predictions with the actual impacts. The monitoring plan should contain monitoring locations, monitoring schedules, methodology of noise monitoring including noise measurement procedures, traffic counts and speed checks, and methodology of comparison with the predicted levels. The ET should implement the monitoring plan in accordance with the deposited monitoring plan unless with prior justifications. Monitoring details and results including the comparison between the measured noise levels and the predicted levels should be recorded in a report to be deposited with EPD within one month of the completion of the monitoring. The report should be certified by the ET Leader before deposit with EPD.

5.10.3. Measured noise levels should be compared with predicted noise levels by applying appropriate conversion corrections to allow for the traffic conditions at the time of measurement.

5.10.4. Each set of measurements shall include three measurements of 30 minutes. The parameters L_{10} , L_{eq} , L_{90} and L_{max} will be recorded for data auditing and reference.

5.11. Event and Action Plan for Traffic Noise

- 5.11.1. For traffic noise, the measured/ monitored noise levels shall be compared with the predicted results and the predicted traffic flow conditions (calculated noise levels based on concurrent traffic census obtained). In case discrepancies are observed, explanation shall be given to justify the discrepancies.

5.12. Commissioning Test for Fixed Plant Noise

- 5.12.1. Fixed noise commissioning test shall be carried out at planned facilities including SPS, DCS, ESS, chiller plants/ cooling tower at the planned hospital and condenser/ transformer at planned fire station to determine the maximum allowable sound power level as stated in the EIA Report. The SWL criteria shall be implemented by Contractor before operation of the Project, in order to ensure of the compliance of the operational airborne noise levels with the TM's stipulated noise standard. There are separate EIA studies for the proposed HSK Station, RTS, new HSK STW and the Port Back-Up facilities, the relevant monitoring requirement would be proposed in its individual EIA Report.
- 5.12.2. For the Sports Ground / Sports Complex, upon any rehearsal and main event, the organiser should appoint an appropriate person to monitor the noise situation by sound level meter at the most affected NSRs. That person should provide feedback to the organiser for immediate action, such as adjustment of the speaker output level, whenever necessary. Noise measurement should be conducted at least hourly during the event, of which the results should be recorded properly and submitted to the venue operator subsequently. The venue operator will provide the recorded measurements for reference to EPD when requested for any necessary follow up investigation.
- 5.12.3. The ET should prepare and deposit a commissioning test plan for the fixed plant noise to EPD, at least 6 months before the operation of the planned fixed plants. The plan should contain locations, measurement schedules, methodology of noise measurement including noise measurement procedures and data analysis of measured noise level. The commissioning test should be certified by the ET Leader and verified by IEC before deposit with the EPD.

5.13. Mitigation Measures

Construction Phase

- 5.13.1. To alleviate the construction noise impact on the affected NSRs, adoption of quiet powered mechanical equipment (PME), adoption of noise barriers or enclosure for particular items of plant and recommendation on workfront management are proposed for the Project (including all DPs) during construction phase. It is anticipated that a movable noise barrier with a cantilevered upper portion located within 5 m from any static or mobile plant can provide 5 dB(A) noise reduction for mobile plant and 10 dB(A) noise reduction for static plant. The barrier material shall have a surface mass of not less than 14 kg/m² on skid footing with 25 mm thick internal sound absorptive lining to achieve the maximum screening effect.

- 5.13.2. In addition, the good site practices listed below should be adopted by all the Contractors to further ameliorate the noise impacts:
- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.
 - Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program.
 - Mobile plant, if any, should be sited as far away from NSRs as possible.
 - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.
 - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
 - Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.
- 5.13.3. The Contractor should have proper workfront management as proposed in Table 4.19 of the EIA Report during construction activities operated at the critical work areas.
- 5.13.4. The Contractor shall also have proper grouping of PMEs for following NSRs during critical construction activities as presented in Table 4.23 and Appendix 4.6.6 of the EIA Report:
- Wing Jan School/Wing Jan Lutheran Church
 - VTC Youth College (Tin Shui Wai)
 - YLPMSAA Tang Siu Tong Secondary School
 - No. 62, San Lee Uk Tsuen
 - No. 60, San Sang Tsuen
 - No. 1B, San Uk Tsuen
 - Planned School in Site 1-3
 - Planned School in Site 1-15
 - Planned Residential Development in Site 4-20
 - Planned Residential Development in Site 4-22
 - Planned School in Site 5-21
- 5.13.5. In addition, proper grouping of PME for the planned school in Site 1-15 (as presented in Appendix 4.6.9 of the EIA Report) and maintain the recommended minimum separation (as presented in Appendix 4.6.8 of the EIA Report) between

the following schools and the critical works areas during examination periods should also be implemented.

- Wing Jan School/Wing Jan Lutheran Church
- VTC Youth College (Tin Shui Wai)
- YLPMSAA Tang Siu Tong Secondary School
- Planned School in Site 1-3
- Planned School in Site 5-21

5.13.6. The Contractors should liaise with the school representative(s) of following schools to obtain the examination schedule so as to avoid noisy construction activities during school examination period.

- Wing Jan School/Wing Jan Lutheran Church
- VTC Youth College (Tin Shui Wai)
- YLPMSAA Tang Siu Tong Secondary School
- Planned School in Site 1-3
- Planned School in Site 1-15
- Planned School in Site 5-21

5.13.7. If the above measures are not sufficient to restore the construction noise quality to acceptable levels upon the advice of ET Leader, the Contractor shall liaise with the ET Leader to identify further mitigation measures. They shall be proposed to ER for approval, and the contractor shall then implement these additional mitigation measures.

5.13.8. As the construction of the Project may involve different parties, it is proposed to set up a liaison group among relevant government departments, contractors of the Works contracts, etc. during construction phase of the Project to ensure proper implementation of all proposed mitigation measures.

5.13.9. The implementation schedule for the recommended mitigation measures is presented in **Appendix 2.2**.

Operation Phase

Traffic Noise

5.13.10. Direct noise mitigation measures including low noise road surfacing and noise barriers, and special building designs have been proposed to alleviate the traffic noise impact. **Table 5.5** and **Table 5.6** summarise the proposed noise mitigation measures. **Table 5.8** summarises the special building design for the concerned sites.

Table 5.5 List of Proposed Noise Mitigation Measures (Low-Noise Road Surfacing)

ID	Road	Length, m
LNS1	Not used	-
LNS2	Tin Wah Road	350
LNS3	Proposed Roundabout at Junction J2	210
LNS4	Proposed Road D1	500
LNS5	Proposed Road near Site 2-26	280
LNS6	Proposed Road D1	400
LNS7	Proposed Road D1	640
LNS8	Proposed Road D1 (Depressed Section)	120
LNS9	Proposed Road L1	670
LNS10	Proposed Road P1	560
LNS11	Proposed Road L5	440
LNS12	Proposed Road D2	280
LNS13	Proposed Road D2 (Depressed Section)	180
LNS14	Proposed Road D2	1260
LNS15	Proposed Road L3	390
LNS16	Proposed Road D2	370
LNS17	Proposed Roundabout at Junction J8	190
LNS18	Ping Ha Road	110
LNS19	Not used	-
LNS20	Kiu Fat Street	280
LNS22	Proposed Road near Site 5-13	730
LNS23	Hung Chi Road / Proposed Road L5	340
LNS24	Not used	-
LNS25	Not used	-
LNS26	Not used	-
LNS27	Proposed Road near Site 4-24	140
LNS28	Not used	-
LNS29	Proposed Road L2	670
LNS30	Proposed Road near Site 4-29	270
LNS31	Not used	-
LNS32	Proposed Road P1	790
LNS33	Proposed Road P1	380
LNS34	Proposed Road P1	610
LNS35	Proposed Road D8	480
LNS36	Proposed Road near Site 4-33	210
-	Hung Chi Road	350
-	Hung Shui Kiu Tin Sum Road (East Section and South of San Lee Uk Tsuen)	480

Table 5.6 List of Proposed Noise Mitigation Measures (Barriers and Enclosure)

Noise Barrier ID	Location	Barrier Type	Height, mAG	Length, m
CB1	Proposed Road D2	Cantilever	6+4.2 m at 45 degree	50
CB2	Not used	-	-	-
CB3a	Proposed Road P1	Cantilever	5.5+2.5 m at 45 degree	80
CB3b	Proposed Road P1	Cantilever	5.5+2.5 m at 45 degree	130
CB4	Not used	-	-	-
CB5	Proposed Road D2, near Site 1-22	Cantilever	6+4.2 m at 45 degree	130
VB2	Tin Wah Road / Lau Fau Shan Road	Vertical	5	140
VB3	Proposed Road D1	Vertical	3	120
VB4	Proposed Road D2	Vertical	5	140
VB5	Proposed Road D1	Vertical	5	90
VB6	Proposed Road D1	Vertical	5	150
VB7	Proposed Road D3	Vertical	4	60
VB8	Proposed Road D3	Vertical	4	50
VB9	Proposed Road D3	Vertical	4	50
VB10	Proposed Road D2	Vertical	4	180
VB11	Not used	-	-	-
VB12	Proposed Road D2	Vertical	6	110
VB13	Not used	-	-	-
VB14	Not used	-	-	-
VB15	Proposed Road D2	Vertical	5	30
VB16	Proposed Road D2	Vertical	5	60
VB17	Proposed Road D2	Vertical	5	20
VB18	Proposed Road D2	Vertical	4	60
VB19	Not used	-	-	-
VB20	Proposed Road L3	Vertical	7	110
VB21	Proposed Road D2/ Ping Ha Road	Vertical	7	50
VB22	Not used	-	-	-

Noise Barrier ID	Location	Barrier Type	Height, mAG	Length, m
VB23	Proposed Road D2/ Ping Ha Road	Vertical	7	130
VB24	Ping Ha Road	Vertical	7	160
VB25	Not used	-	-	-
VB26	Proposed Road L1	Vertical	5	70
VB27	Not used	-	-	-
VB28	Hung Tin Road	Vertical	5	90
VB29	Hung Tin Road	Vertical	7	80
VB30	Not used	-	-	-
VB31	Hung Tin Road	Vertical	7	60
VB32	Not used	-	-	-
VB33	Not used	-	-	-
VB34	Not used	-	-	-
VB35	Proposed Road D5	Vertical	5	80
VB36	Proposed Road D5	Vertical	5	70
VB37	Proposed Road D5	Vertical	3	70
VB38	Proposed Road D5	Vertical	3	80
VB39	Proposed Road P1	Vertical	3	100
VB40	Proposed Road P1	Vertical	3	130
VB41	Proposed Road D2	Vertical	5	130
VB42	Not used	-	-	-

Table 5.7 Details of Proposed Boundary Wall for Planned Education Institutes

Boundary Wall ID	Location	Barrier Type	Height, mAG	Length, m
VB1	Boundary Wall at Site 2-9	Vertical	3	65
VB43	Boundary wall at Site 4-36	Vertical	3	60
VB44	Boundary wall at Site 4-36	Vertical	3	120
VB45	Boundary wall at Site 4-33	Vertical	3	200
VB46	Boundary wall at Site 5-34	Vertical	3	150
VB47	Boundary wall at Site 5-34	Vertical	3	160

Table 5.8 Proposed Additional Mitigation Measures at Planned Sites

Site Ref. No.	Use	Proposed Additional Mitigation Measures	Applied to	Figure (EIA) Reference
1-2	Residential	Acoustic Windows	1 - 17/F	Figure 4.7.19
1-15	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.21
1-22	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.21
2-26	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.20
4-1	Staff Quarters	Acoustic Windows	1 - 25/F	Figure 4.7.25
		Blank Façade	1 edge of 2 buildings	
4-5	Residential	Acoustic Windows	20 - 42/F	Figure 4.7.25
4-24	Residential	Acoustic Windows	1 - 20/F	Figure 4.7.26
4-26	Residential	Acoustic Windows	3 - 11/F	Figure 4.7.26
4-28	Residential	Acoustic Windows	1 - 2/F	Figure 4.7.26
4-33	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.27
5-7b	Residential/ Commercial	Acoustic Windows	1 - 9/F	Figure 4.7.22
5-14	Educational	Noise Insulated Windows and Air Conditioning	2 schools	Figure 4.7.23
5-16	Residential	Acoustic Windows	3 - 22/F	Figure 4.7.21
5-17	Residential	Acoustic Windows	4 - 29/F	Figure 4.7.22
5-21	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.23
5-22	Residential	Acoustic Balcony	1 - 21/F	Figure 4.7.24
5-28	Residential Home for the Elderly	Noise Insulated Windows and Air Conditioning	1 Residential Home for the Elderly	Figure 4.7.24
5-32	Residential/ Commercial	Acoustic Windows	1 - 28/F	Figure 4.7.24
		Acoustic Balcony	1 - 9/F	
5-34	Educational	Blank Façade	1 edge of 1 building	Figure 4.7.24
		Noise Insulated Windows and Air Conditioning	1 school	
5-37	Educational	Noise Insulated Windows and Air Conditioning	1 school	Figure 4.7.24

Note: For Site 5-28, the need of additional measures would be subject to whether the LNRS can apply on Hung Shui Kiu Tin Sam Road (East Section).

5.13.11. Environmental reviews shall be conducted at the later design stage to review and ascertain the proposed provisional noise mitigation measures taking into account the latest design standard at that time for the suitability and application of the LNRS materials.

5.13.12. Noise impact assessment at the planned residential sites is proposed to be conducted by future developers at the detailed design stage to study whether the future development layout would avoid exposing excessive traffic noise levels so as to minimise the scale/ extent of the proposed noise mitigation measures.

Railway Noise

5.13.13. For the new development in the OZP, the future development proponents should conduct a stand-alone Railway Noise Impact Assessment to assess the potential noise impacts from rail operations on future occupants, and implement the mitigation measures as presented in Section 4.8.11 – 4.8.15 of the EIA Report or other specific designed noise mitigation measures at their respective development sites to the satisfaction of EPD, to ensure full compliance with the statutory noise limits. The above development requirements shall be imposed through relevant Planning Briefs or Land Lease conditions to be fulfilled by the future development proponents.

Fixed Plant Noise

5.13.14. The maximum allowable sound power levels for the planned fixed plant noise sources including the four planned SPSs (DP9) as presented in Section 4.9 of the EIA Report should be achieved such that the nearest NSRs can be in compliance with the TM noise criteria. Provision of enclosures on the noisy sewage facilities and acoustic silencers for the ventilation shaft of the four planned SPSs is recommended to alleviate the fixed plant noise impact. The following tentative noise mitigation measures are recommended for the planned fixed plant noise sources which are located near to the existing and planned NSRs:

- All the pumps and noisy plants should be enclosed inside a building structure;
- Proper selection of quiet plant aiming to reduce the tonality at NSRs;
- Installation of silencer/ acoustic enclosure/ acoustic louvre for the exhaust of ventilation system; and
- Openings of ventilation systems should be located away from NSRs as far as practicable.

5.13.15. The feasibility, practicability, programming and effectiveness of the above mitigation measures have been reviewed by engineer.

5.13.16. Project Proponent would further liaise and agree with the relevant departments on the responsibility of implementation and maintenance of the predicted maximum allowable sound power levels for the planned fixed plant noise sources in the detailed design stage.

- 5.13.17. The implementation schedule for the recommended mitigation measures is presented in **Appendix 2.2**.

6. WATER QUALITY IMPACT

6.1. Introduction

6.1.1. As identified in the EIA Report, the key water quality impacts caused by the Project would be associated with the land-based construction activities. To ensure no adverse water quality impact to the nearby watercourses due to the discharges from construction activities, water quality monitoring is recommended during the construction phase. It is also recommended that regular site inspections should be undertaken to inspect the construction activities and works areas in order to ensure the recommended mitigation measures are properly implemented. The water quality monitoring and audit programme should be suitably adjusted according to the phased implementation of the Project.

6.1.2. No water quality monitoring and audit programme specific to the operational phase is proposed for the Project.

6.1.3. This section describes the requirement of water quality monitoring during construction of the Project.

6.2. Water Quality Parameters

6.2.1. Dissolved oxygen (DO), turbidity, suspended solids (SS) level and pH should be monitored at designated water quality monitoring stations in the watercourses.

6.2.2. The levels of DO, turbidity and pH should be measured in-situ whereas SS should be determined by laboratory analysis.

6.3. Monitoring Locations

6.3.1. Water quality monitoring is proposed in the major watercourses in the Project area including TSW Main Channel, Hang Hau Tsuen Channel, upstream tributaries of Shan Pui River and Tuen Mun River and small watercourses along Deep Bay. The proposed water quality monitoring stations in the watercourses are listed in Table 6.1 and shown in Figure 6.1.

Table 6.1 Proposed Water Quality Monitoring Stations

Fresh Water System	Station	Description	Easting	Northing
TSW Main Channel and its tributaries	U1	Upstream Stations	815936	834150
	U2		816240	834009
	U3		816137	832945
	U4		816092	832459
	U5		816067	832292
	U6		817701	832513
	TS1	Gradient Stations	816815	832297
	TS2		817277	833356
	TSR1		817687	833812

Fresh Water System	Station	Description	Easting	Northing
	ST		816938	833266
	SW		816304	834321
	HT		816866	834314
	LUT		817595	834737
	D2		Impact Station	817533
Hang Hau Tsuen Channel	LFS	Gradient Station	816504	835862
	D1	Impact Station	816187	836064
Fresh Water System	Station	Description	Easting	Northing
Tuen Mun River	D3	Impact Station	816437	831500
Small Watercourses along Deep Bay	DB	Gradient Station	816091	834976
	D4	Impact Station	815874	835223
Upstream / Tributaries of Shan Pui River	U7	Upstream Station	818712	831733
	D5	Impact Station	818857	832139
	D6	Impact Station	818889	832005

- 6.3.2. TSW Main Channel and its tributaries are a large river system which spread across the majority of the Project area. Six monitoring stations (namely U1 to U6 respectively) should be set in the tributaries of TSW Main Channel upstream of the works area as control stations, and one impact monitoring station (namely D2) should be set in the main TSW Main Channel downstream of the works area as shown in **Figure 6.1**. Seven gradient stations (namely TS1, TS2, TSR1, ST, SW, HT and LUT respectively) should also be set within the Project area to assist in the identification of the potential sources of any impact at Station D2.
- 6.3.3. Hang Hau Tsuen Channel is a relatively small storm water system at the northern Project area. One impact station (namely D1) should be set in the watercourse downstream of the Project works and one gradient station (namely LFS) should be set within the Project works area to assist in the identification of the sources of any impact at Station D1 as shown in **Figure 6.1**. Since the most upstream sections of Hang Hau Tsuen and its side branch to the north will be removed under the Project and are located within the Project works areas. No upstream control station can be identified for Hang Hau Tsuen Channel.
- 6.3.4. Only a very small tributary of Tuen Mun River is located within the Project area as shown in **Figure 6.1**. Thus, only one impact station (namely D3) should be set in this tributary downstream of the Project works. Since the upstream section of this tributary will be removed under this Project and is also within the Project works area, no upstream control station can be identified for the Tuen Mun River.
- 6.3.5. Two proposed sites for service reservoirs are located in the northern and southern Project area respectively as shown in **Figure 6.1**. Watercourses along Deep Bay and some small tributaries of TSW Main Channel are located downstream of the

northern reservoir as shown in **Figure 6.1**. Two monitoring stations (namely D4 and DB) are proposed at these watercourses. Station D4 is located downstream of the Project area in a watercourse running into the Deep Bay as shown in **Figure 6.1** and thus this station would serve as an impact station. Station DB is located downstream of the reservoir but also at the upstream of other construction works areas within the Project area as shown in **Figure 6.1**. Hence Station DB would serve as a gradient station to assist in the identification of the sources of any impact upon the TSW Main Channel and its tributaries further downstream. For the reservoir in the south near the tributaries of Shan Pui River, two impact stations (namely D5 and D6) should be set in the tributaries downstream of the reservoir and one monitoring station (namely U7) upstream of the reservoir as a control station as shown in **Figure 6.1**.

- 6.3.6. The proposal of water quality monitoring locations under Service Contract No. WD/02/2021 is presented in **Appendix A**.
- 6.3.7. Sampling should be taken at three water depths, namely, 1 m below water surface, mid-depth and 1 m above river bed. If the sampling water depth is less than 6 m, the mid-depth may be omitted. For water depth that is less than 3 m, only the mid-depth station will be monitored.
- 6.3.8. The exact locations may be reviewed when the detailed design of the construction sites are available at the later stage of the Project. The status and locations of water quality monitoring stations and the works activities may change after issuing this Manual. If such cases exist, the ET Leader should propose with justification for changes to monitoring locations or other requirements of the EM&A programme, and seek approval from the IEC and EPD.
- 6.3.9. When alternative monitoring locations are proposed, they shall be chosen based on the following criteria:
- at locations close to and preferably at the boundary of the mixing zone of the major site activities as indicated in the EIA Report, which are likely to have water quality impacts;
 - close to the sensitive receptors which are directly or likely to be affected;
 - for monitoring locations located in the vicinity of the sensitive receptors, care shall be taken to cause minimal disturbance during monitoring;
 - two or more control stations which shall be at locations representative of the project site in its undisturbed condition. Control stations shall be located, as far as is practicable, both upstream and downstream of the works area.

6.4. Baseline Monitoring

- 6.4.1. Baseline conditions in the watercourses should be established and agreed with EPD prior to the commencement of construction works. The purpose of the baseline monitoring is to establish ambient conditions prior to the commencement of the works and to demonstrate the suitability of the proposed monitoring stations. The baseline conditions should normally be established by measuring the water quality parameters specified in **Section 6.2**.

- 6.4.2. The baseline monitoring should be taken at all 22 designated monitoring stations in the five watercourses, three days per week, for at least 4 weeks prior to the commencement of construction works. There should not be any construction activities in the vicinity of the stations during the baseline monitoring. The interval between 2 sets of monitoring should not be less than 36 hours.
- 6.4.3. Baseline monitoring schedule should be submitted to EPD at least 4 weeks prior to the commencement of baseline monitoring. EPD should also be notified immediately for any changes in schedule.
- 6.4.4. The baseline monitoring report should be submitted to EPD at least 4 weeks before the commencement of the construction works for agreement. The baseline monitoring report should be certified by the IEC before submission to EPD.

6.5. Impact Monitoring

- 6.5.1. During the construction phase of the Project, impact monitoring should be undertaken at all 22 designated monitoring stations three days per week with sampling / measurement at the designated monitoring stations in the five watercourses. Upon completion of the construction phase, the monitoring exercise at the designated monitoring locations should be continued for four weeks in the same manner as the impact monitoring. The interval between two sets of monitoring should not be less than 36 hours except where there are exceedances of Action and/or Limit Levels, in which case the monitoring frequency will be increased.
- 6.5.2. The water quality monitoring schedule should be submitted to EPD at least 1 week before the first day of the monitoring month. EPD should be notified immediately of any changes in schedule. If the monitoring data collected at the designated stations indicate that the Action or Limit Levels as shown in **Table 6.3** are exceeded, appropriate actions should be taken in accordance with the Event and Action Plan in **Table 6.4**.

6.6. Site Audits

- 6.6.1. Implementation of regular site audits aim to ensure that the recommended mitigation measures are properly undertaken during proposed construction works. It can also provide an effective control of any malpractices and therefore achieve continual improvement of environmental performance on site.
- 6.6.2. Site audits should be carried out by the ET and should be based on the mitigation measures for water pollution control recommended in the implementation schedule as presented in **Appendix 2.2**. In the event that the recommended mitigation measures are not fully or properly implemented, deficiency should be recorded and reported to the site management. Suitable actions are to be carried out to:
- investigate the problems and the causes;
 - issue action notes to the Contractor who is responsible for the works;
 - implement remedial and corrective actions immediately;

- re-inspect the site conditions upon completion of the remedial and corrective actions; and
- record the event and discuss with the Contractor for preventive actions.

6.7. Field Log

- 6.7.1. Other relevant data should also be recorded, such as: monitoring location / position, time, water depth, weather conditions and any special phenomena underway near the monitoring station. A sample data record sheet is shown in **Appendix 6.1** for reference.

6.8. Monitoring Equipment

Dissolved Oxygen and Temperature Measuring Equipment

- 6.8.1. The instrument should be a portable and weatherproof DO measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring:

- a DO level in the range of 0 – 20 mg/L and 0 – 200% saturation; and
- a temperature of 0 – 45 degree Celsius.

Turbidity Measurement Instrument

- 6.8.2. The instrument should be a portable and weatherproof turbidity-measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 – 1000 NTU (for example, Hach model 2100P or an approved similar instrument).

pH Measurement Instrument

- 6.8.3. The instrument should consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It should be readable to 0.1 pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 should be used for calibration of the instrument before and after use.

Sampler

- 6.8.4. A water sampler is required. It should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

Water Depth Detector

- 6.8.5. A portable, battery-operated echo sounder would be used for the determination of water depth at each designated monitoring station. If echo sounder is not

applicable due to low water depth, various sized stainless steel rules would be used to determine the water depth.

Sample Containers and Storage

- 6.8.6. Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4 °C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples should be collected to achieve the detection limit stated in **Table 6.2**.

Calibration of In-Situ Instruments

- 6.8.7. The DO meter and turbidimeter should be checked and calibrated before use. DO meter and turbidimeter should be certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter should be carried out before measurement at each monitoring location.
- 6.8.8. Sufficient stocks of spare parts should be maintained for replacements when necessary. Backup monitoring equipment should also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

6.9. Laboratory Measurement / Analysis

- 6.9.1. Analysis of suspended solids (SS) should be carried out in a HOKLAS or other international accredited laboratory. Sufficient water samples should be collected at the monitoring stations for carrying out the laboratory determinations. The determination work should start within 24 hours after collection of the water samples. The analyses should follow the American Public Health Association (APHA) Standard Methods for the Examination of Water and Wastewater or an equivalent method subject to the approval of EPD. Analytical methods and detection limits for SS are present in **Table 6.2**.

Table 6.2 Analytical Methods to be Applied to Water Quality Samples

Parameters	Analytical Method	Detection Limit
Suspended Solids	APHA 2540D *	1 mg/L

* APHA American Public Health Association Standard Methods for the Examination of Water and Wastewater.

- 6.9.2. The testing of SS should be HOKLAS accredited (or if not, approved by EPD) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results.
- 6.9.3. Detailed testing methods, pre-treatment procedures, instruments use, Quality Assurance / Quality Control (QA/QC) details (such as blank, spike recovery, number of duplicate samples per batch, etc.), detection limit and accuracy should be submitted to EPD for approval prior to the commencement of monitoring programme. EPD may also request the laboratory to carry out analysis of known

standards provided by EPD for quality assurance. The QA/QC should be in accordance with the requirements of HOKLAS or international accredited scheme. The QA/QC results should be reported. The testing methods and related proposal should be checked and certified by IEC before submission to EPD for approval.

6.9.4. Additional duplicate samples may be required by EPD for inter-laboratory calibration. Remaining samples after analysis should be kept by the laboratory for 3 months in case repeat analysis is required. If in-house or non-standard methods are proposed, details of the method verification may also be required to submit to EPD. In any circumstance, the sample testing should have comprehensive quality assurance and quality control programmes. The laboratory should prepare to demonstrate the programme to EPD or his representatives when requested.

6.10. Event and Action Plan

6.10.1. The water quality criteria, namely action and limit levels, are shown in **Table 6.3**. These criteria should be applied to ensure that any deterioration of water quality is readily detected and timely action is taken to rectify the situation. Should the monitoring results of the water quality parameters at any designated impact monitoring station exceed the water quality criteria, the actions in accordance with the Event and Action Plan summarised in **Table 6.4** should be carried out.

6.10.2. The ET Leader should assess the potential impacts on the water sensitive receivers based on the monitoring data. The performance of the environmental management system (i.e. of the overall EM&A programme) should be reviewed by the ET Leader on a quarterly basis. The findings of this review should be included in the quarterly EM&A summary reports, together with any recommendations to improve the performance of the EM&A programme.

Table 6.3 Action and Limit Levels for Water Quality Impact Stations (D1, D2 and D3)

Parameters	Action Level	Limit Level
DO in mg/L	<u>Surface, middle, bottom DO</u> ≤ 5%-ile of baseline data	<u>Surface, middle DO</u> ≤ 4 mg/L and 1%-ile of baseline data for surface and middle layer <u>Bottom DO</u> ≤ 2 mg/L and 1%-ile of baseline data for bottom layer
SS in mg/L	<u>Depth-averaged SS</u> ≥ 95%-ile of baseline data	<u>Depth-averaged SS</u> ≥ 99%-ile of baseline
Turbidity in NTU	<u>Depth-averaged SS</u> ≥ 95%-ile of baseline data	<u>Depth-averaged SS</u> ≥ 99%-ile of baseline
pH	Beyond the range 6.6 to 8.4	Beyond the range of 6.5 to 8.5

Notes:

- (1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- (2) For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

6.11. Mitigation Measures

- 6.11.1. Mitigation measures for water quality control have been recommended in the EIA Report. The Contractor should be responsible for the design and implementation of these measures.
- 6.11.2. Recommended mitigation measures to minimise the adverse impacts on water quality during the construction activities are listed in the implementation schedule given in **Appendix 2.2**.
- 6.11.3. In the event of complaints or non-compliance / area of improvement being observed, the ET and the Contractor should review the effectiveness of these mitigation measures, design alternative or additional mitigation measures as appropriate and propose to the IEC for approval and implement these alternative or additional measures.

Table 6.4 Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ul style="list-style-type: none"> • Repeat <i>in-situ</i> measurement to confirm findings; • Identify source(s) of impact; • Inform IEC and Contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented. 	<ul style="list-style-type: none"> • Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Consider changes of working methods; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agreed mitigation measures.

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by more than one consecutive sampling days	<ul style="list-style-type: none"> Repeat <i>in-situ</i> measurement to confirm findings; Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	<ul style="list-style-type: none"> Repeat <i>in-situ</i> measurement to confirm findings; Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures.

Event	ET Leader	IEC	ER	Contractor
Limit level being exceeded by more than one consecutive sampling days	<ul style="list-style-type: none"> Repeat <i>in-situ</i> measurement to confirm findings; Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ul style="list-style-type: none"> Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures; Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. 	<ul style="list-style-type: none"> Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures; As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.

7. SEWERAGE AND SEWAGE TREATMENT IMPLICATIONS

7.1. Introduction

- 7.1.1. An assessment of potential impacts due to the sewage arising from the proposed Project has been assessed in Chapter 6 of the EIA Report.

7.2. Sewerage and Sewage Treatment Implications during Construction Phase

- 7.2.1. The sewage generated during the construction stage from the on-site workforce will be collected in chemical toilets and disposed of off-site. Therefore, no sewerage impacts are expected from the site during the construction phase. As such, environmental monitoring and audit of the sewerage system is considered not required.

7.3. Mitigation Measures

- 7.3.1. The implementation schedule of the relevant construction-related mitigation measures is presented in **Appendix 2.2**.

7.4. Sewerage and Sewage Treatment Implications during Operational Phase

- 7.4.1. The different design / mitigation measures to minimise the emergency discharges will be thoroughly considered and assessed under the separate Schedule 2 EIA study for the new HSK STW.

8. WASTE MANAGEMENT IMPLICATIONS

8.1. Introduction

8.1.1. The quantity and timing for the generation of waste during the construction and operation phases of the Project have been estimated. Measures including the opportunity for on-site sorting, reusing excavated materials etc., are devised to minimise the surplus materials to be disposed off-site. Proper disposal of chemical waste should be via a licensed waste collector.

8.2. Mitigation Measures

8.2.1. All the proposed mitigation measures are stipulated in the EIA Report and summarised in **Appendix 2.2**.

8.2.2. The types and quantities of waste that would be generated during the construction phase have been assessed. EM&A requirements are required for waste management during the construction phase and the effective management of waste arising during the construction phase will be monitored through the site audit programme. The aims of the waste audit are:

- To ensure the waste arising from the works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner; and
- To encourage the reuse and recycling of material.

8.2.3. The types and quantities of waste that would be generated during the operation phase have been assessed. It is anticipated there would not be any insurmountable impacts during the operational phase. Recommendations have been made to ensure proper treatment and proper disposal of these wastes in the EIA Report and summarised in **Appendix 2.2**.

8.2.4. According to Section 7.2.8 in the EIA Report, a Construction and Demolition Material Management Plan (C&DMMP) was submitted to the Public Fill Committee (PFC) for approval in accordance with Section 4.1.3 of the Project Administrative Handbook for Civil Engineering Works (2014 Edition) published by CEDD.

8.2.5. According to Section 7.2.9 in the EIA Report, the Contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TC(W) No. 19/2005 for construction phase. The EMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and summarised in the PIS should be adopted.

8.3. EM&A Requirements

8.3.1. The Contractor should be required to pay attention to the environmental standard and guidelines and carry out appropriate waste management and obtain the relevant licences / permits for waste disposal. The ET should ensure that the Contractor has obtained from the appropriate authorities the necessary wastes disposal permits or licences including:

- Waste Collection Licence and Waste Disposal Licence under the Waste Disposal Ordinance (Cap. 354);
- Application for Registration under Section 7(5) of the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Public Dumping Licence under the Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Effluent Discharge Licence under the Water Pollution Control Ordinance (Cap. 358); and
- Approval of Construction & Demolition Material Management Plan (C&DMMP).

8.3.2. The Contractor should refer to the relevant information and guidelines issued by the DEP when applying for the licence / permit and the ET should refer to these booklets for auditing purposes.

8.3.3. Regular audits and site inspections should be carried out during construction phase by the ET to ensure that the recommended good site practices and other recommended mitigation measures are properly implemented by the Contractor. The audits should concern all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Apart from site inspection, documents including licences, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation and contract requirements.

9. LAND CONTAMINATION IMPACT

9.1.1. The land contamination assessment examined the potential contaminative land use within the assessment area and their potential impacts to future land use. The majority of the potentially contaminated sites could not be accessed to assess the site conditions by site walkover, at the time of reporting. For those sites that were accessible for site walkover, permission could not be obtained from the site operators to carry out the site investigation (SI) works.

9.1.2. As the identified potentially contaminated sites are still in operation and the development will only commence in stages from 2019 to 2037/38, and there may be change in land use prior to development within both the potentially contaminated and non-contaminated sites, it is recommended to conduct further works. This would include site re-appraisal, SI works as well as submission of supplementary Contamination Assessment Plan(s) (CAP(s)), Contamination Assessment Report(s) (CAR(s)) and Remediation Action Plan(s) (RAP(s)) for the Environmental Protection Department's (EPD) approval after the sites are handed over to Project Proponent for development. If contaminated soil and/or groundwater were identified, remediation should be carried out according to EPD's approved RAP(s) and Remediation Report(s) (RR(s)) which should be submitted to EPD for agreement after completion of the remediation works. No development works shall be commenced prior to EPD's agreement of the RR(s).

Construction Phase

9.1.3. Remediation works, if necessary, would be carried out based on the abovementioned future works during construction phase but prior to commencement of any other construction works. Mitigation measures as recommended in the future EPD's approved RAP(s) should be implemented during the remediation works. The EM&A requirements should be carried out in the form of regular site inspection to ensure the recommended mitigation measures are properly implemented and findings of the audit should be reported in the EM&A reports.

Operation Phase

9.1.4. As any contaminated soil / groundwater would be identified and properly treated prior to the re-development, land contamination during the operation phase is not expected. As such, EM&A during operation phase for land contamination is considered not necessary.

10. ECOLOGICAL IMPACT

10.1. Introduction

- 10.1.1. The ecological impact assessment in the EIA Report has evaluated the potential ecological impacts arise from the proposed development area. All sites of conservation importance are either located outside the proposed development area or retained in situ under the “Green Belt” (“GB”) zoning, except a small strip of “CA” comprising of 0.1 ha would be affected under the construction of slip road under DP12. Given this affected area was small and developed with no species of conservation importance recorded, the impact was negligible.
- 10.1.2. Mitigation measures have been proposed in the EIA to reduce the potential ecological impacts to acceptable level. Major mitigation measures were listed in the following section.

10.2. Mitigation Measures

Design Phase

- 10.2.1. The alignment of the two proposed slip roads from the existing KSWH connecting to the Road D3 had been adjusted to avoid loss of semi-natural/natural habitats comprising the CA and the four DBL project mitigation ponds.
- 10.2.2. San Sang San Tsuen egretty would be retained under the “GB” zoning (Site 3-38) and a wide “Local Open Space” (“LO”) corridor at Site 3-37 to maintain the flight lines.
- 10.2.3. One individual of Incense Tree (*Aquilaria sinensis*) in Tung Tau Tsuen woodland would be directly impacted. Therefore, it is suggested to preserve the Tung Tau Tsuen woodland in situ together with the Incense Tree.

Construction Phase

- 10.2.4. While San Sang San Tsuen egretty would be retained under the “GB” zoning (Site 3-38), construction activities adjacent to the egretty would create disturbance impact. The impact would be mitigated by (1) scheduling the site formation and construction works at Sites 3-32, 3-33, 3-37, 3-39 and 3-40 outside the breeding season of the ardeids (i.e. between March and August).
- 10.2.5. Due to the close distance, installation of hoarding or screening at the “I” zone and slip road would minimise disturbance impact to the “CA” at northwest of San Sang San Tsuen during the construction phase.
- 10.2.6. Provision of screening (e.g. hoarding) around the “GB” zoning, Site 3-2, should be provided to minimise disturbance (e.g. visual, noise, human activity) to Crested Serpent Eagle and its habitat during construction phase.

- 10.2.7. The revitalisation of the riverside channels at TSW Main Channel should not result in disturbance impacts to the habitats/fauna utilising the channels (e.g. foraging avifauna). In addition, the construction method and sequence of the proposed pier in the watercourses should be carefully designed so that all the construction works including any pilling and excavation would be undertaken within a dry zone and physically separated from the watercourse downstream.
- 10.2.8. To avoid potential injury to bat species, if any evidence of roosting bats is found in any buildings or trees that would be cleared during the construction phase, an ecologist with relevant experience should be consulted and involved to develop appropriate mitigation strategies.
- 10.2.9. During the demolition of the existing watercourses, the works should be undertaken in dry conditions and dry season. Also, the flow diversion works should be conducted in dry season, where possible, when the flow in the watercourse is low.
- 10.2.10. To minimise construction disturbance, i.e. noise and site run-off, to the DBL project mitigation ponds, provision of hoarding for proper delineation of works boundary is recommended before the commencement of the works. With implementation of proper mitigation measures stated in Section 9.7 in the EIA Report, the construction disturbance would be minimised.
- 10.2.11. In general, air and noise quality impacts to the surrounding habitats and associated wildlife arising from the construction activities could be minimised by adopting the measures as stated in Sections 9.7.14 – 9.7.15 in EIA Report.
- 10.2.12. Through night-time lighting control during construction phase, glare disturbance to wildlife would be minimised.
- 10.2.13. As stated in the Water Quality Impact Assessment in the EIA Report, the recommended mitigation measures included adequate storm drainage system and SPS, blue-green infrastructure, and best storm water management practices and storm water pollution control plan.
- 10.2.14. Good site practices as stated in Section 9.7.18 in EIA Report should be adopted to avoid any pollution entering any nearby watercourses. Practices to minimise surface run-off and to reduce suspended solid levels should be undertaken during the construction phase.
- 10.2.15. Impermeable sheet pile cofferdam walls and silt removal facilities should be used before discharging the effluent to the watercourses. Silt curtains should also be deployed around the construction works area inside the watercourses, where practicable, to minimise the water quality impacts.

Operational Phase

- 10.2.16. Any temporary vegetation loss within the project boundary would be replaced by new or restored back to native shrub and woodland plantings in areas of open space.

- 10.2.17. The provision of screening planting at the boundary of the “Other Specified Use” sites adjacent to the Site 3-2 (i.e. Site 3-1, 3-5, 3-6, 3-7 and 3-8) will help to minimise disturbance impacts during the operational phase. Moreover, buffer planting at the boundaries of Sites 3-32, 3-33, 3-37, 3-39 and 3-40 can minimise the impact.
- 10.2.18. Due to the close distance, provision of buffer/screen planting at the “I” zone, slip road and “OU” sites adjacent to Site 3-2 would minimise disturbance impact to the “CA” at northwest of San Sang San Tsuen and Site 3-2 during the operational phase.
- 10.2.19. Buffer planting would be provided to shield vegetated area from the surrounding developed zones. Moreover, minimising the lighting along river channel and vegetated areas or incorporate wildlife-friendly lighting to avoid light spill is recommended.
- 10.2.20. The existing tree belt (including some tall trees) on the eastern side of the larger pond would be retained. The proposed amenity strip and additional tree planting along the new Road P1 would provide screening for the existing ponds. Other screening measures (e.g. vertical greening walls, green roof and noise barriers) are recommended to be incorporated at the buildings and roads.
- 10.2.21. The road networks and associated noise barriers may result in bird collision and mortality. Mitigation measures such as use of tinted materials and superimposing dark patterns or strips on the barrier, as per EPD/Highways Department requirements stated in “Guidelines on Design of Design of Noise Barriers” (2003), would be employed.
- 10.2.22. A Contingency Plan should be developed to minimise the potential impact of sewage discharge to Deep Bay WCZ in the event of failure of the treatment facilities (e.g. new HSK STW) during operational phase. To minimise the chance of emergency sewage discharge, standby pump would be provided to cater for emergency breakdown or maintenance of the duty pump. Backup power supply in the form of dual / ring circuit power supply or generator would be provided to secure electrical power supply.

10.3. Monitoring and Audit Requirement

Audit Requirement

- 10.3.1. Site audits should be undertaken monthly during the construction phase of the Project to check the proper implementation and maintenance of recommended mitigation measures.
- 10.3.2. Site hoardings and fences will be checked regularly by the ET. Damage sighted should be reported to the site manager and damaged site hoarding/fence should be repaired by the Contractor as soon as possible.

- 10.3.3. Site inspection should be carried out to ensure the site formation and construction works in Sites 3-32, 3-33, 3-37, 3-39 and 3-40 are not undertaken during the breeding season of ardeids (i.e. March – August). Site inspection should be undertaken by the ET regularly to check the implementation of standard good site practices.

Monitoring Requirement

- 10.3.4. A monitoring programme covering construction phase for monitoring the condition and integrity of the San Sang San Tsuen egretty and use of the site by ardeids and any other species of conservation significance should be specified during the detailed design stage of the development. No site formation and construction works would be done in Sites 3-32, 3-33, 3-37, 3-39 and 3-40 during the breeding season of ardeids (i.e. March to August).
- 10.3.5. During the construction phase, the San Sang San Tsuen egretty would be monitored monthly in the ardeid breeding season i.e. from March to August by qualified ecologists with at least 10 years relevant local experience to confirm if it is active during the breeding season and if the egretty is significantly disturbed (e.g. physical damage of nesting vegetation or pollution of any kind) by other construction activities out of the aforementioned Sites.
- 10.3.6. The Incense Tree individual is recommended to be preserved *in situ* together with Tung Tau Tsuen woodland, thus site audit should be done to ensure that the construction work does not encroach into the woodland.
- 10.3.7. The construction programme of the four (foot and cycle) bridges would be phased to create disturbance-free region on TSW Main Channel during the construction phase. Construction method and sequence would also be carefully designed to minimise potential disturbance impact including water quality, noise and dust to the channel. Regular site audit would be done to guarantee that the mitigation measures would be implemented correctly.

11. FISHERIES IMPACT

- 11.1.1. Based on the findings from the Fisheries Impact Assessment in the EIA Report, no unacceptable fisheries impacts are expected from the Project. No specific monitoring programme for fisheries resources is required.

12. LANDSCAPE AND VISUAL IMPACT

12.1. Introduction

12.1.1. The EIA has recommended landscape and visual mitigation measures to be undertaken during both the construction and operational phases of the Project. The design, implementation and maintenance of landscape and visual mitigation measures should be checked to ensure that they are fully realised and that any potential conflicts between the proposed landscape measure and any other works of the Project would be resolved as early as practical without affecting the implementation of the mitigation measures. In addition, implementation of the mitigation measures recommended by the EIA will be monitored through the site audit programme.

12.2. Mitigation Measures

12.2.1. The proposed mitigation measures for the landscape and visual impacts are summarised below as well as in the PIS in **Appendix 2.2**. The landscape and visual mitigation measures proposed should be incorporated in the detailed landscape and engineering design. The construction phase mitigation measures should be implemented as early as possible during construction and should be in place throughout the entire construction period. Mitigation measures for the operational phase should be implemented during the detailed design and be built as part of the construction works so that they are in place on commissioning of the Project (**Table 12.1**).

Table 12.1 Proposed Landscape and Visual Mitigation Measures

ID No.	Landscape and Visual Mitigation Measures	Mitigate Landscape Impacts	Mitigate Visual Impacts
Construction Phase			
CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	✓	✓
CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Chapter 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	✓	
CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the	✓	✓

ID No.	Landscape and Visual Mitigation Measures	Mitigate Landscape Impacts	Mitigate Visual Impacts
	<p>protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.</p> <p>A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.</p>		
CM4	<p><u>Transplantation of existing trees where practical</u></p> <p>Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with DEVB TCW 06/2015 and 07/2015 and final locations of transplanted trees should be agreed prior to commencement of the work.</p> <p>For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.</p>	✓	✓
CM5	<p><u>Control of night-time lighting</u></p> <p>Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.</p>		✓
CM6	<p><u>Construction of decorative hoarding around construction works</u></p> <p>Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.</p> <p>Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/ or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.</p>		✓
CM7	<p><u>Reduction of construction period to practical minimum</u></p> <p>Options to reduce the construction period to practical minimum to be provided.</p>		✓
CM8	<p><u>Prevention of run-off</u></p> <p>Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways.</p>	✓	
CM9	<p><u>Phasing of construction stage</u></p> <p>Phasing of the construction stage to reduce visual impacts.</p>		✓

ID No.	Landscape and Visual Mitigation Measures	Mitigate Landscape Impacts	Mitigate Visual Impacts
CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	✓	✓
CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	✓	
CM12	<u>Protection of existing watercourses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	✓	
CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011 - Technical Guidelines on Landscape Treatment for Slopes.	✓	✓
CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/ rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	✓	✓

ID No.	Landscape and Visual Mitigation Measures	Mitigate Landscape Impacts	Mitigate Visual Impacts
Operation Phase			
OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 7/2015. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.	✓	✓
OM2	<u>Sensitive design of above-ground structures</u> All above-ground structures, including SPS, Electrical Sub-Stations, EFLS Stations, Emergency and Firemens' Accesses, etc. shall be sensitively designed in a manner that responds to the existing and planned urban context. The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity.	✓	✓
OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	✓	✓
OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	✓	✓
OM5	<u>Visual softening via soft landscape elements</u> Attractive soft landscape in areas adjoining SPS, Electrical Sub-Stations, EFTS Stations, Emergency and Firemen's' Accesses, etc. (taking into account the necessary setbacks) so as to provide a visual softening and greening effect (e.g. provision of tree / shrub / climber planting).		✓
OM6	<u>Quality greening along roadside amenity strips</u> Shade trees, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality. Provision of utility free planting strips for quality planting shall be adopted according to DEVB TCW 2/2012.	✓	✓
OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.		✓

ID No.	Landscape and Visual Mitigation Measures	Mitigate Landscape Impacts	Mitigate Visual Impacts
OM8	<u>Sensitive and chromatic treatment of architectural facades</u> Elegant architectural and engineering design, sensitive architectural and chromatic treatment for building facades. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components.		✓
OM9	<u>Sensitive design of vertical landscape areas</u> Elegant, sensitive design and generous planting of the associated landscape areas. Open Space Provision - the principles adopted in the RODP planning ensure that public open space systems are incorporated. All requirements for open space areas stipulated in the planning documents for the formulation of the Preliminary Layout Plan should be adhered to.	✓	✓
OM10	<u>Sensitive design of noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/ or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.		✓
OM11	<u>Tree planting at site boundaries</u> Tree planting screens along appropriate site boundaries	✓	✓
OM12	<u>Night time lighting</u> Control of lighting glare. A balance between lighting for safety, and avoiding excessive lighting can be achieved through consideration of the following: the type of lamp (light source) used; use of directional lighting to avoid light spill into sensitive areas; height of the lighting column can affect the amount/ extent of glare; and control/ timing of lighting periods of some facilities, particularly those close to sites of conservation importance.		✓
OM13	<u>Green roofs and vertical greening</u> Green roofs and vertical greening provision of green roofs and vertical greening where feasible and appropriate to mitigate visual impacts of buildings and structures.	✓	✓
OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct and noise barrier form.	✓	✓

12.3. Baseline Monitoring

- 12.3.1. The landscape and visual baseline will be determined with reference to the landscape resource maps included in the EIA Report, a detailed tree survey to be completed before the works can commence, as well as field surveys of existing conditions, detailed topographic surveys, and site visits.

12.4. Audit Requirement

- 12.4.1. Site audits should be undertaken during the construction phase of the Project to check that the proposed landscape and visual mitigation measures are properly implemented and maintained as per their intended objectives. Site inspections should be undertaken by the ET at least once every two weeks during the construction period, by a Registered Landscape Architect (RLA). Particularly audits should be carried out during site clearance when tree felling, and transplantation may occur. For all soft landscaping work, including measures involving trees such as tree transplantation, compensatory planting and woodland restoration, there should be at least a 12-month establishment period (however an extended establishment period and audit mechanism shall be considered where the transplanting of important trees are involved) and maintenance which will commence once soft landscaping in an area has been planted. The broad scope of the audit is detailed below.
- The extent of the agreed works areas should be regularly checked during the construction phase. Any trespass by the contractor outside the limit of the works, including any damage to existing trees and woodland shall be noted and reported to the ER.
 - The progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken.
 - The tree and shrub transplanting and planting operations.
 - Topsoil protection and storage operations.
 - All existing trees and vegetation within the study area which are not directly affected by the works are retained and protected.
 - The methods of protecting existing vegetation proposed by the Contractor are acceptable and enforced.
 - All landscaping works are carried out in accordance with the specifications, with particular attention to approved use of herbicides or pesticides.
 - The species and mix of new plant species to be planted are in accordance with contract specification.
 - The newly planted trees, shrubs and grassed areas are maintained throughout the establishment period, particularly in respect of the following:
 - regular watering, weeding and fertilising of all planting and grass reinstatement;
 - regular grass cutting for reinstated areas;

- re-staking of plants before typhoon and rainy season;
- regular checks for and eradication of pests, fungal infection etc.;
- pruning of dead or broken branches; and
- prompt replacement of dead plants and re-grassing of failed areas.

12.4.2. Operational phase auditing will be restricted to the 12-month establishment works of the landscaping proposals, with the appropriate agents taking over the maintenance and monitoring after this period as identified in the EIA Report. The audit of the compensatory planting will also extend during the one year maintenance period, to ensure the establishment of the compensatory planting.

12.4.3. The monitoring programme at different stages is shown in **Table 12.2**.

Table 12.2 Monitoring Programme for Landscape and Visual

Stage	Monitoring Task	Monitoring Report	Form of Approval	Frequency
Design	Monitoring of design works against the recommendations of the landscape and visual impact assessments within the EIA should be undertaken by the Engineer and Landscape Architect, to ensure that they fulfil the intentions of the mitigation measures. Any changes to the design, including design changes on site should also be checked.	Report by Engineer confirming that the design conforms to requirements of EP	Approval by Project Proponent	At completion of design stage
Construction	Monitoring of the contractor's operations during the construction period.	Report on Contractor's compliance by ET	Counter-signature of report by IEC	Monthly
Establishment Works	Monitoring of the planting works during the 12-months Establishment Period after completion of the construction works. Auditing period for transplanted Important Trees may lengthen.	Report on Contractor's compliance by ET	Counter-signature of report by IEC	Bi-monthly
	Monitoring of important trees during the 24-month Establishment Period after completion of the construction works.	Report on Contractor's compliance by ET	Counter-signature of report by IEC	Monthly

ET – Environmental Team, IEC – Independent Environmental Consultant, EP – Environmental Permit

12.5. Event and Action Plan

12.5.1. In the event of non-compliance, the responsibilities of the relevant parties are detailed in the Event/Action plan provided in **Table 12.3**.

Table 12.3 Event/Action Plan for Landscape and Visual

Event	Action			
	ET	IEC	ER	Contractor
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary.	1. Undertake remedial design if necessary.	-
Nonconformity on one occasion	1. Inform the IEC, ER and the Contractor 2. Discuss remedial actions with IEC, ER and Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report. 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures. 4. Advise ER on effective of proposed remedial measures. 5. Check implementation of remedial measures	1. Confirm receipt of notification of nonconformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Ensure remedial measures are properly implemented	1. Identify source and investigate the nonconformity 2. Amend working methods agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement
Repeated Nonconformity	1. Identify sources 2. Inform the Contractor, IEC and ER 3. Discuss inspection frequency 4. Discuss remedial actions with IEC, ER and Contractor 5. Monitor remedial actions until rectification has been completed 6. If nonconformity stops, cease additional monitoring	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures	1. Identify source and investigate the nonconformity 2. Amend working methods agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement. 4. Stop relevant portion of works as determined by ER until the nonconformity is abated.

ET – Environmental Team, IEC – Independent Environmental Consultant, EP – Environmental Permit

13. IMPACT ON CULTURAL HERITAGE

13.1. Mitigation Measures

- 13.1.1. Based on desktop review and through Archaeological Field Survey (AFS) conducted in 2015, a total of six Sites of Archaeological Interest (SAIs) and four Archaeological Potential Areas (APAs) were identified within the assessment area. The six SAIs contained high archaeological significance. Tseung Kong Wai SAI (F1) and Tung Tau Tsuen SAI (F2) might be partially impacted by construction works, but no insurmountable impact is anticipated. The archaeological impact arising from the construction works should be assessed when the detailed design of the works is available. Preservation *in situ* is the top priority to safeguard the archaeological remains in the impacted area by amending the layout plans of the construction works. However, if the works cannot avoid disturbance to the archaeological deposit, depending on degree of direct impact, the following mitigation measures should be considered, such as archaeological surveys, archaeological watching brief, preservation by record and relocation of archaeological remains. The scope and programme of the archaeological fieldwork would be agreed with AMO.
- 13.1.2. Further archaeological survey is required to be conducted at APA 1 and APA 2 to ascertain the extent of any archaeological remains within the APAs if any construction works will be carried out. Based on the findings of the survey, mitigation measures could be proposed, such as preservation *in situ*, preservation by record, or relocation of archaeological remains, in prior agreement with the AMO. Direct impact arising from the proposed development within APA 3 should be avoided as far as possible (**Table 13.1**).
- 13.1.3. A total number of 21 traditional villages with archaeological potential were identified. As no development is proposed in the “V” zone, no impact is anticipated and hence no mitigation measure is required.
- 13.1.4. The two Declared Monuments, seven Graded Historic Buildings and 327 nil grade resources that are outside Yick Yuen Tsuen, Tin Sam San Tsuen and South of Tin Sam are to be preserved in totality on the “V” land use, which is a beneficial impact.
- 13.1.5. Twelve nil grade built heritage in Yick Yuen Tsuen, Tin Sam San Tsuen and south of Tin Sam are to be directly impacted during the construction phase by site formation works. In the light of their removal is unavoidable, preservation by record (including cartographic and photographic record) prior to any construction works would be required for the directly impacted built heritage. As these nil grade resources contained no cultural heritage significance, the impact to cultural heritage caused by the proposed development to them is unavoidable yet acceptable with mitigation measures (**Table 13.2**).

Table 13.1 Mitigation Measures for Archaeological Resources

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
Site of Archaeological Interest (SAI)/ Archaeological Potential Area (APA)/ Traditional Villages with Archaeological Potential	F1 – Tseung Kong Wai SAI	Remains from Neolithic, Ming and Qing	<p>No apparent removal of the original deposits.</p> <p>High significance as archaeological deposit is known from previous surveys.</p>	<p>The scheduled land uses of the area include roads (Road D5 of Designated Project No. 2), “LO” (3-22), “OU(LF)” (3-20) and “GB” (3-23).</p> <p>There might be some destruction to the archaeological deposits by the road, “LO” and “OU” land use development.</p>	<p>No works that involve excavation or soil transportation is carried out in “GB”, hence no mitigation measure is required.</p> <p>For the rest of the site falls within the road, “LO” and “OU” land use development, the archaeological impact arising from the proposed development should be assessed when the detailed design of the development is available.</p> <p>Preservation <i>in situ</i> is the top priority to safeguard the archaeological remains in the impacted area by amending the layout plans of the construction works. However, if the works cannot avoid disturbance to the archaeological deposit, depending on the degree of direct impact, the following mitigation measures should be considered, such as archaeological survey, archaeological watching brief, preservation by records and relocation of archaeological remains. The scope and programme of the archaeological fieldwork would be agreed with AMO.</p>

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
	F2 – Tung Tau Tsuen SAI	<p>Stone adze (Neolithic)</p> <p>Stone pavement and brick wall remains with celadon wares (Song) at Tung Tau Tsuen</p> <p>Celadon from Song to Ming</p>	<p>No apparent removal of the original deposits.</p> <p>High significance as archaeological deposit is known from previous surveys.</p>	North half of the site falls within “DO” (2-32) and south half of the site falls within “V”.	<p>As long as no development is carried out in “V” area, no mitigation measure is required.</p> <p>For the northern half of the site falls within the “DO”, the archaeological impact arising from the proposed development should be assessed when the detailed design of the development is available.</p> <p>Preservation <i>in situ</i> is the top priority to safeguard the archaeological remains in the impacted area by amending the layout plans of the construction works. However, if the works cannot avoid disturbance to the archaeological deposit, depending on the degree of direct impact, the following mitigation measures should be considered, such as archaeological survey, archaeological watching brief, preservation by records and relocation of archaeological remains. The scope and programme of the archaeological fieldwork would be agreed with AMO.</p>

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
	F3 – Hang Hau Tsuen	Geometric patterned pottery (Bronze Age) Celadon (Song) Blue and White porcelain (Ming)	Some apparent modification to the local soil. High significance as archaeological deposit is known from previous surveys.	The scheduled land uses of the area include “LO” (2-5) and “E” (2-16). Refer to the AFS (Appendix 12.2 refers), no archaeological impact is anticipated on Hang Hau Tsuen SAI within the Revised RODP.	No archaeological impact is anticipated and no mitigation measure is required.
	F4 – Sha Kong Miu (North) SAI	Hard geometric pattern pottery and coarse pottery (Bronze Age)	No apparent removal to the original deposits. High significance as archaeological deposit is known from previous surveys.	The scheduled land uses of the area include “G” (2-20). Refer to the AFS (Appendix 12.2 refers), no archaeological impact is anticipated on Sha Kong Miu (North) SAI within the Revised RODP.	No archaeological impact is anticipated and no mitigation measure is required.

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
Site of Archaeological Interest (SAI)/ Archaeological Potential Area (APA)/ Traditional Villages with Archaeological Potential	F5 – Ngau Hom Shek SAI	Double-F pottery (Bronze Age) Celadon (Song) Remains from Ming	The beach site has been mostly destroyed. High significance as archaeological deposit is known from previous surveys.	The scheduled land uses of the area include “GB” (3-2). Refer to the AFS (Appendix 12.2 refers), no archaeological impact is anticipated on Ngau Hom Shek SAI within the Revised RODP.	No impact is anticipated as no development is proposed according to the Revised RODP.
	F6 – Fu Tei Au SAI	Stone tools and ceramics, postholes, house floors, ditches and burials of Late Neolithic and Bronze Age	High significance as archaeological deposit is known from previous surveys.	The SAI is located within the assessment area but excluded in the Revised RODP.	No impact is anticipated as no development is proposed according to the Revised RODP.
	F7 – Tsing Chuen Wai SAI	Tile sherds, celadon and white-glazed stoneware of Song dynasty	High significance as archaeological deposit is known from previous surveys.	The SAI is located outside the assessment area and is excluded in the Revised RODP surveys.	No impact is anticipated as no development is proposed according to the Revised RODP.

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
	APA 1 – Lau Fau Shan	Unknown	Uncertain Significance	<p>The scheduled land uses of the area include “C” (2-1), “R3” (2-2 and 2-3), “OU” (2-35) and the local road from a section of the proposed road D1.</p> <p>There might be some destruction to the archaeological deposits by the “C”, “OU” and “R” land use development.</p>	<p>If construction works are carried out inside the APA, various mitigation measures would be proposed to verify the archaeological significance when land access is assumed, including but not limited to:</p> <ul style="list-style-type: none"> • Conduct an archaeological survey to find out the extent and condition of archaeological deposits (if any), and amend the layout plans to avoid further disturbance to significant archaeological materials; • preservation by records if the works cannot avoid the removal of the archaeological deposits after survey; or • relocation of archaeological remains. <p>Scope of the Archaeological Survey would be agreed with the AMO.</p>
	APA 2 – Kiu Tau Wai	Unknown	Uncertain Significance	<p>The scheduled land uses of the area includes “GB” (5-10), “OU” (5-8) and “LO” (5-11).</p> <p>There might be some destruction to the archaeological deposits by the “OU” and “LO” land use development.</p>	<p>As long as no works that involves excavation or soil transportation is carried out in “GB”, no mitigation measure is required.</p> <p>If construction works are carried out inside the APA, various mitigation measures would be proposed to verify the archaeological significance when land access is assumed, including but not limited to:</p> <ul style="list-style-type: none"> • Conduct an archaeological survey to find out the extent and condition of archaeological deposits (if any), and amend the layout plans to avoid further disturbance to significant archaeological materials; • preservation by records if the works cannot avoid the removal of the archaeological deposits after survey; or

Archaeological Resource	Site / Areas	Previous Key Archaeological Findings	Preservation and Significance	Potential Impact by the Project (Revised RODP)	Mitigation Measures
					<ul style="list-style-type: none"> relocation of archaeological remains. <p>Scope of the Archaeological Survey would be agreed with the AMO.</p>
Site of Archaeological Interest (SAI)/ Archaeological Potential Area (APA)/ Traditional Villages with Archaeological Potential	APA 3 – Hung Uk Tsuen (North)	Unknown	Uncertain Significance	The scheduled land uses of the area includes “GB” (5-12) and “A”.	Direct impact arising from the proposed development to the small portion of the APA3 should be avoided as far as possible. If direct impact is unavoidable, AMO’s comment on the proposed development works should be sought at the detailed design stage.
	APA 4 – Hung Uk Tsuen (South)	Unknown	Uncertain Significance	The scheduled land uses of the area includes “GB” (5-15) and “V”.	<p>As long as no works that involves excavation or soil transportation is carried out in “GB”, no mitigation measure is required.</p> <p>Also, as no development is proposed in the “V” zones, no impact is anticipated and hence no mitigation measure is required.</p>
Site of Archaeological Interest (SAI)/ Archaeological Potential Area (APA)/ Traditional Villages with Archaeological Potential	21 Traditional Villages	Unknown	Uncertain Significance	No development is proposed in the “V” zone.	As no development is proposed in the “V” zones, no impact is anticipated and, hence, no mitigation measure is required.

Table 13.2 Mitigation Measures for Built Heritage Resources

Areas	Figure Number	Existing Built Heritage	Proposed Land Use on Revised RODP	Potential Impact	Mitigation Measures
Sun Fung Wai	Figure 12.V1	12 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Chung Uk Tsuen	Figure 12.V2	25 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Kau Lee Uk Tsuen	Figure 12.V3	2 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
San Sang Tsuen	Figure 12.V4	27 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
San Lee Uk Tsuen	Figure 12.V5	3 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.

Areas	Figure Number	Existing Built Heritage	Proposed Land Use on Revised RODP	Potential Impact	Mitigation Measures
Tin Sam	Figure 12.V6.1 Figure 12.V6.2	1 Grade 3 Historic Building (C4 – Shrine (Tin Sam Tsuen)); 15 Nil Grade Built Heritage	"V", "R"	No direct impact is anticipated at this stage on the graded historic building and built heritage in "Village Type Development" area. Potential adverse impacts (e.g. removal) on structure of 4 heritage resources with no grade located around Hung Leong Road.	If direct impact to the historic buildings with no grade is not avoidable, photographic and cartographic records of them must be kept before demolition.
Yick Yuen Tsuen	Figure 12.V7	3 Nil Grade Built Heritage	"E" "Government" "R"	Potential adverse impacts (e.g. removal) on structure of 3 heritage resources within the works area.	If direct impact to the historic buildings with no grade is not avoidable, photographic and cartographic records of them must be kept before demolition.
Tin Sam San Tsuen	Figure 12.V8	5 Nil Grade Built Heritage	"E" "R" "DO" "LO" "Other Specified Uses" ("OU")	Potential adverse impacts (e.g. removal) on structure of 6 heritage resources within the works area.	If direct impact to the historic buildings with no grade is not avoidable, photographic and cartographic records of them must be kept before demolition.

Areas	Figure Number	Existing Built Heritage	Proposed Land Use on Revised RODP	Potential Impact	Mitigation Measures
Ha Tsuen Shi	Figure 12.V9	1 Declared Monument (A1 – Tang Ancestral Hall (Ha Tsuen)); 2 Grade 2 Historic Building (C1 – Gate Tower (Ha Tsuen Shi) and C2 – Kwan Tai Temple (Ha Tsuen Shi)); 18 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Hong Mei Tsuen	Figure 12.V10	4 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Lo Uk Tsuen	Figure 12.V11	21 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
San Uk Tsuen	Figure 12.V12	10 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
San Wai	Figure 12.V13	1 Grade 3 Historic Building (C3 – Shi Wang Study Hall (San Wai)); 79 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.

Areas	Figure Number	Existing Built Heritage	Proposed Land Use on Revised RODP	Potential Impact	Mitigation Measures
Shek Po Tsuen	Figure 12.V14	1 Grade 3 Historic Building (C5 – Entrance Gate of Shek Po Wai (Shek Po Wai)); 30 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Sik Kong Wai	Figure 12.V15	25 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Sik Kong Tsuen	Figure 12.V16	27 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Tseung Kong Wai	Figure 12.V17	7 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Tung Tau Tsuen	Figure 12.V18	1 Declared Monument (A2 – Yeung Hau Temple (Ha Tsuen)); 1 Grade 3 Historic Building (C6 – Old Village School (Tung Tau Tsuen)) 12 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.

Areas	Figure Number	Existing Built Heritage	Proposed Land Use on Revised RODP	Potential Impact	Mitigation Measures
Hung Uk Tsuen	Figure 12.V19	1 Grade 3 Historic Building (C7 – Nos 76-77 Hung Uk Tsuen (demolished)) 2 Nil Grade Built Heritage	"V"	The built heritage have been demolished. No direct impact is identified at this stage.	Mitigation measure is not required.
San Hing Tsuen	Figure 12.V20	2 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Fung Kong Tsuen	Figure 12.V21	10 Nil Grade Built Heritage	"V"	The built heritage are of considerable distance from the intrusive development. No direct impact is identified at this stage.	Mitigation measure is not required.
Historic / clan graves or burial urns	---	---	"GB"	No built heritage is identified.	Mitigation measure is not required.

14. SITE ENVIRONMENTAL AUDIT

14.1. Site Inspection

14.1.1. Site inspection is one of the most effective tools to enforce the environmental protection requirements at the works area by providing a direct mean to trigger and enforce specified environmental protection and pollution control measures. Site inspection should be undertaken regularly during the construction phase to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented for the activities associated with the Project.

14.1.2. The ET Leader should be responsible for formulating the environmental site inspection programme as well as the deficiency and remedial action reporting system, and for carrying out the site inspections. The proposal for rectification, if any, should be prepared by ET, agreed by the Contractor and submitted to IEC for approval.

- Regular site inspections should be carried out and led by the ER and attended by the Contractor and ET at least once per week during the construction phase. The areas of inspection should not be limited to the environmental conditions and the pollution control and mitigation measures within the works area, it should also review the environmental conditions of locations that are beyond the boundary of the works area but are likely to be affected directly or indirectly by the construction site activities of the Project. During the inspection, the following information should be referred to:
- The EIA Report and EM&A recommendations on environmental protection and pollution control mitigation measures;
- Ongoing results of the EM&A programme;
- Works progress and programme;
- Individual works methodology proposals (which should include the proposal on associated pollution control measures);
- Contract specifications on environmental protection and pollution prevention control;
- Relevant environmental protection and pollution control legislations; and
- Previous site inspection results undertaken by the ET and others.

14.1.3. The Contractor should keep the ER and ET Leader updated with all relevant environmental related information on the construction contract necessary for him/her to carry out the site inspections. Site inspection results and associated recommendations for improvements to the environmental protection and pollution control efforts should be recorded and followed up by the Contractor in an agreed time-frame. The Contractor should follow the procedures and time-frame stipulated in the environmental site inspection, and the deficiency and remedial action reporting system to be formulated by the ET Leader, to report any remedial measures subsequent to the site inspections.

- 14.1.4. The ER, ET and the Contractor should also carry out ad hoc site inspections if significant environmental problems are identified. Inspections may also be required subsequent to receipt of an environmental complaint, or as part of the investigation work, as specified in the Event and Action Plan for the EM&A programme.

14.2. Compliance with Legal and Contractual Requirements

- 14.2.1. There are statutory and contractual requirements on environmental protection and pollution control with which construction activities must comply.
- 14.2.2. To ensure that the workers are in compliance with the contractual requirements, all method statements of works should be submitted by the Contractor to the ER for approval and to the ET Leader for vetting to determine if sufficient environmental protection and pollution control measures have been included. The implementation schedule of mitigation measures is summarised in **Appendix 2.2**.
- 14.2.3. The ER and ET Leader should also review the progress and programme of the works to check that relevant environmental legislations have not been violated, and that any foreseeable potential for violating laws can be prevented.
- 14.2.4. The Contractor should provide the update of the relevant documents to the ET Leader so that works checking could be carried out effectively. The document should at least include the updated Works Progress Reports, updated Works Programme, any application letters for licences / permits under the environmental protection legislations, and copies of all valid licences / permits. The site diary should also be available for the inspection by the relevant parties.
- 14.2.5. After reviewing the documentation, the ET Leader should advise the Contractor of any non-compliance with contractual and legislative requirements on environmental protection and pollution control so that they can timely take follow-up actions as appropriate. If the follow-up actions may still result in violation of environmental protection and pollution control requirements, the ER and ET should provide further advice to the Contractor to take remedial actions to resolve the problem.
- 14.2.6. Upon receipt of the advice, the Contractor should undertake immediate action to remedy the situation. The ER and ET should follow up to ensure that appropriate action has been taken in order to satisfy contractual and legal requirements.

14.3. Environmental Complaints

- 14.3.1. The following procedures should be undertaken upon receipt of any environmental complaint:
- i) The Contractor to log complaint and date of receipt onto the complaint database and inform the ER, ET and IEC immediately;
 - ii) The Contractor to investigate, with the ER and ET, the complaint to determine its validity, and assess whether the source of the problem is due to construction works of the Project with the support of additional monitoring frequency and stations, if necessary;

- iii) The Contractor to identify remedial measures in consultation with the IEC, ET and ER if a complaint is valid and due to the construction works of the Project;
- iv) The Contractor to implement the remedial measures as required by the ER and to agree with the ET and IEC any additional monitoring frequency and stations, where necessary, for checking the effectiveness of the remedial measures;
- v) The ER, ET and IEC to review the effectiveness of the Contractor's remedial measures and the updated situation;
- vi) The ET/Contractor to undertake additional monitoring and audit to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur;
- vii) If the complaint is referred by EPD, the Contractor to prepare interim report on the status of the complaint investigation and follow-up action stipulated above, including the details of the remedial measures and additional monitoring identified or already taken, for submission to EPD within the time frame assigned by the EPD; and
- viii) The ET to record the details of the complaint, results of the investigation, subsequent actions taken to address the complaint and updated situation including the effectiveness of the remedial measures, supported by regular and additional monitoring results in the monthly EM&A reports.

15. REPORTING

15.1. Introduction

15.1.1. Types of reports that the ET should prepare and submit include Baseline Monitoring Report, Monthly EM&A Reports and Final EM&A Review Report. In accordance with Annex 21 of the TM-EIAO, a copy of the monthly and final review EM&A Reports should be made available to the Director of Environmental Protection.

15.1.2. Reports can be provided in an electronic medium upon agreeing the format with EPD. All the monitoring data (baseline and impact) should be submitted in electronic medium. Sample data record sheets for air quality, noise, and water are presented in **Appendices 4.1, 5.1 and 6.1**.

15.2. Baseline Monitoring Report

15.2.1. The ET should prepare and submit a Baseline Environmental Monitoring report within 10 working days after completion of the baseline monitoring works. It should be first verified by the IEC before formal submission to EPD. Copies of the Baseline Environmental Monitoring Report should be submitted to the IEC, ER and EPD. The ET should liaise with the relevant parties on the exact number of copies require.

15.2.2. The Baseline Monitoring Report should include at least the following information:

- Up to half a page of executive summary;
- Brief description of project background information;
- Drawings showing locations of the baseline monitoring stations;
- Monitoring results (in both hard and diskette copies) together with the following information:
 - Monitoring methodology
 - Name of the laboratory and types of equipment used and calibration details
 - Parameters monitored
 - Monitoring locations (and depth)
 - Monitoring date, time, frequency and duration
 - QA/QC results and detection limits
- Details of influencing factors, including:
 - Major activities, if any, being carried out in the Project site during the period
 - Weather conditions during the period

- Other factors which might affect the monitoring results
- Determination of the Action and Limit Levels (AL levels) for each monitoring parameter and statistical analysis of the baseline data;
- Revisions for inclusion in the EM&A Manual; and
- Comments and conclusions.

15.3. Monthly Monitoring Reports

First Monthly EM&A Report

15.3.1. The first monthly EM&A report shall include at least the following:

- i) Executive summary (1-2 pages):
 - breaches of Action and Limit levels;
 - compliant log
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues.
- ii) Basic project information:
 - project organisation including key personnel contact names and telephone numbers;
 - programme;
 - management structure; and
 - works undertaken during the month.
- iii) Environmental status:
 - advice on the status of statutory environmental compliance such as the status of compliance with the EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures;
 - works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
 - drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations).
- iv) A brief summary of EM&A requirements including:
 - all monitoring parameters;
 - environmental quality performance limits (Action and Limit levels);

- Event-Action Plans;
 - environmental mitigation measures, as recommended in the EIA Report; and
 - environmental requirements in contract documents.
- v) Implementation status
- advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report.
- vi) Monitoring results (in both hard and diskette copies) together with the following information:
- monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - monitoring parameters;
 - monitoring locations;
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - any other factors which might affect the monitoring results; and
 - QA / QC results and detection limits.
- vii) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
 - record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
 - record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliances, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- viii) Others
- an account of the future key issues as reviewed from the works programme and work method statements;

- advice on the solid and liquid waste management status;
- record of any project changes from the originally proposed as described in the EIA Report (e.g. construction methods, mitigation proposals, design changes, etc.); and
- comments (for example, effectiveness and efficiency of the mitigation measures), recommendations (for examples, any improvement in the EM&A programme) and conclusions.

Subsequent Monthly EM&A Reports

15.3.2. Subsequent monthly EM&A reports shall include at least the following:

- i) Executive summary (1-2 pages):
 - breaches of Action and Limit levels;
 - compliant log;
 - notifications of any summons and successful prosecutions;
 - reporting changes; and
 - future key issues.
- ii) Basic project information:
 - project organisation including key personnel contact names and telephone numbers;
 - programme;
 - management structure;
 - works undertaken during the month; and
 - any updates as needed to the scope of works and construction methodologies.
- iii) Environmental status:
 - advice on the status of statutory environmental compliance such as the status of compliance with the EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures;
 - works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
 - drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.
- iv) Implementation status
 - advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report.
- v) Monitoring results (in both hard and diskette copies) together with the following information:

- monitoring methodology;
 - name of laboratory and types of equipment used and calibration details;
 - monitoring parameters;
 - monitoring locations;
 - monitoring date, time, frequency, and duration;
 - weather conditions during the period;
 - any other factors which might affect the monitoring results; and
 - QA / QC results and detection limits.
- vi) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
 - record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
 - record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - review of the reasons for and the implications of non-compliances, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- vii) Others
- an account of the future key issues as reviewed from the works programme and work method statements;
 - advice on the solid and liquid waste management status;
 - record of any project changes from the originally proposed as described in the EIA (e.g. construction methods, mitigation proposals, design changes, etc.); and
 - comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for examples, any improvement in the EM&A programme) and conclusions.
- viii) Appendices
- Action and Limit levels;

- graphical plots of trends of the monitoring parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
 - a) major activities being carried out on site during the period;
 - b) weather conditions during the period; and
 - c) any other factors that might affect the monitoring results.
- monitoring schedule for the present and next reporting period;
- cumulative statistics on complaints, notifications of summons and successful prosecutions; and
- outstanding issues and deficiencies.

15.4. Final EM&A Review Reports

General

- 15.4.1. The EM&A programme for construction stage should be terminated upon the completion of the construction activities, while the EM&A programme for operation stage should be terminated upon the completion of operation monitoring.
- 15.4.2. The proposed termination should only be implemented after the proposal has been endorsed by the IEC and the Project Proponent followed by approval from the Director of Environmental Protection.

Final EM&A Review Report for Construction Stage

- 15.4.3. The final EM&A review report for construction stage (to be submitted after completion of construction activities) should contain at least the following information:
- i) Executive summary (1-2 pages);
 - ii) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
 - iii) Basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the course of the project or past twelve months;
 - iv) A brief summary of EM&A requirements including:
 - environmental mitigation measures for construction stage, as recommended in the project EIA Report;
 - environmental impact hypotheses tested;
 - environmental quality performance limits (Action and Limit levels);
 - all monitoring parameters;

- Event and Action Plans;
- v) A summary of the implementation status of environmental protection and pollution control / mitigation measures for construction stage, as recommended in the project EIA Report and summarised in the updated implementation schedule;
- vi) Graphical plots and the statistical analysis of the trends of monitoring parameters over the course of the project, including:
 - the major activities being carried out on site during the period;
 - weather conditions during the period; and
 - any other factors which might affect the monitoring results;
- vii) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- viii) A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;
- ix) A description of the actions taken in the event of non-compliance;
- x) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up actions taken and results;
- xi) A review of the validity of EIA predictions for construction stage and identification of shortcomings in EIA recommendations;
- xii) Comments (for example, a review of the effectiveness and efficiency of the mitigation measures, the performance of the environmental management system, and the overall EM&A programme for construction stage); and
- xiii) Recommendations and conclusions (for example, a review of success of the overall EM&A programme for construction stage to cost-effectively identify deterioration and to initiate prompt effective mitigatory action when necessary).

Final EM&A Review Report for Operation Stage

- 15.4.4. The final EM&A review report for operation stage (to be submitted after completion of operation monitoring) should contain at least the following information:
- i) Executive summary (1-2 pages):
 - ii) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
 - iii) Basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the course of the project or past twelve months;
 - iv) A brief summary of EM&A requirements including:
 - environmental mitigation measures for operation stage, as recommended in the project EIA Report;

- environmental impact hypotheses tested;
 - environmental quality performance limits (Action and Limit levels);
 - all monitoring parameters;
 - Event and Action Plans;
- v) A summary of the implementation status of environmental protection and pollution control / mitigation measures for operation stage, as recommended in the project EIA Report and summarised in the updated implementation schedule;
- vi) Graphical plots and the statistical analysis of the trends of monitoring parameters over the course of the project, including:
- the major activities being carried out on site during the period;
 - weather conditions during the period; and
 - any other factors which might affect the monitoring results;
- vii) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- viii) A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;
- ix) A description of the actions taken in the event of non-compliance;
- x) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up actions taken and results;
- xi) A review of the validity of EIA predictions for operation stage and identification of shortcomings in EIA recommendations;
- xii) Comments (for example, a review of the effectiveness and efficiency of the mitigation measures, the performance of the environmental management system, and the overall EM&A programme for operation stage); and
- xiii) Recommendations and conclusions (for example, a review of success of the overall EM&A programme for operational stage to cost-effectively identify deterioration and to initiate prompt effective mitigatory action when necessary).

15.5. Data Keeping

- 15.5.1. No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. Monitoring data shall also be recorded in magnetic media form, and the software copy must be available upon request. Data format shall be agreed with EPD. All documents and data shall be kept for at least one year following completion of the construction contract and one year

following completion of the operational phase monitoring for construction phase EM&A and operational EM&A respectively.

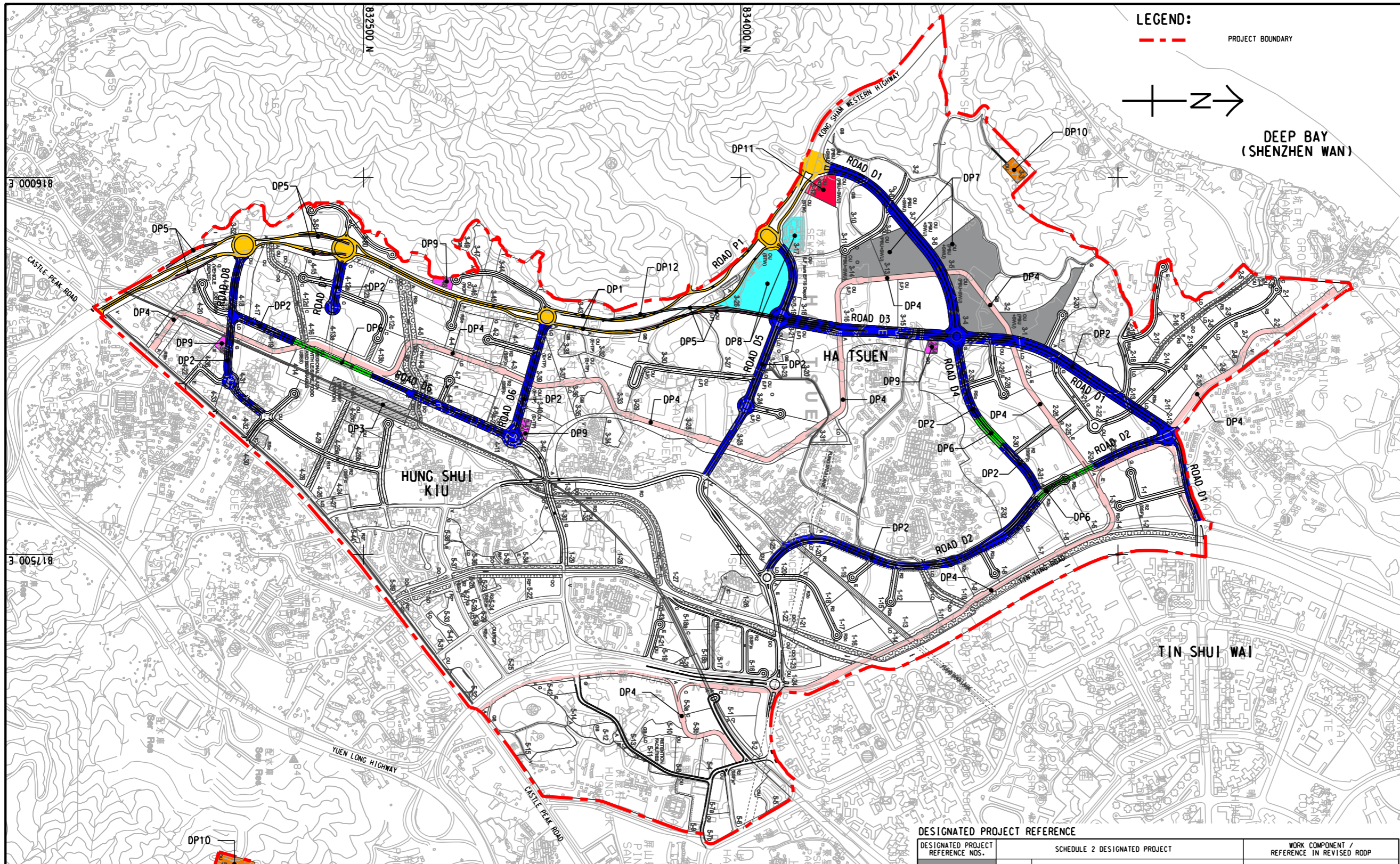
15.6. Interim Notifications of Environmental Quality Limit Exceedances

- 15.6.1. With reference to the Event and Action Plans, when the environmental quality performance limits are exceeded and if they are proven to be valid, the ET should immediately notify the IEC and EPD, as appropriate. The notification should be followed up with advice to the IEC and EPD on the results of the investigation, proposed actions and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notification is presented in **Appendix 15.1**.

Figure 1.1 Location Plan

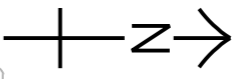
Figure 1.2 Location of Designated Projects

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
3 000618
3 000918
81500 E
3 000618
Pld File by: ZENGFK
PATH: P:\PROJECTS\6022570\DRAWING\REPORT\TR19B\TR19B_102.dgn



LEGEND:

--- PROJECT BOUNDARY



DEEP BAY
(SHENZHEN WAN)

PROJECT
HUNG SHUI KIU/HA TSUEN
NEW DEVELOPMENT AREA
STAGE 1 WORKS - SITE
FORMATION AND
ENGINEERING
INFRASTRUCTURE

CLIENT

土木工程拓展署
Civil Engineering and
Development Department

CONSULTANT

ACUTY
SUSTAINABILITY
ENGINEERING

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION

IR	DATE	DESCRIPTION	CHK

STATUS

SCALE
A3 1:16000

DIMENSION UNIT
METRES

KEY PLAN

DESIGNATED PROJECT REFERENCE

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT	WORK COMPONENT / REFERENCE IN REVISED ROOP
DP1*	PART 1, A.1 A ROAD WHICH IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD INCLUDING NEW ROADS, AND MAJOR EXTENSIONS OR IMPROVEMENTS TO EXISTING ROAD	CONSTRUCTION OF NEW PRIMARY DISTRIBUTOR ROAD (ROAD P1)
DP2*	PART 1, A.1 A ROAD WHICH IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD INCLUDING NEW ROADS, AND MAJOR EXTENSIONS OR IMPROVEMENTS TO EXISTING ROAD	CONSTRUCTION OF EIGHT NEW DISTRICT DISTRIBUTOR ROADS (ROADS D1 TO D8)
DP3	PART 1, A.2 A RAILWAY AND ITS ASSOCIATED STATIONS	CONSTRUCTION OF NEW WEST RAIL HSK STATION (SITE 4-34)
(POTENTIAL DP) DP4	PART 1, A.3 A TRAMWAY AND ITS ASSOCIATED STATIONS	CONSTRUCTION OF EFTS - SUBJECT TO FURTHER REVIEW
DP5*	PART 1, A.8 A ROAD OR RAILWAY BRIDGE MORE THAN 100m IN LENGTH BETWEEN ABUTMENTS	CONSTRUCTION OF SLIP ROADS BETWEEN: ROAD D8 JUNCTION AND EXISTING CASTLE PEAK ROAD; JUNCTION OF D8/P1 AND JUNCTION OF D7/P1; AND KSWH CONNECTION TO ROAD D3
DP6*	PART 1, A.9 A ROAD FULLY ENCLOSED BY DECKING ABOVE AND BY STRUCTURE ON THE SIDES FOR MORE THAN 100m	CONSTRUCTION OF PARTLY DEPRESSED AND PARTLY DECKED-OVER ROADS LOCATED AT ROAD D2, ROAD D4 AND ROAD D6

DESIGNATED PROJECT REFERENCE

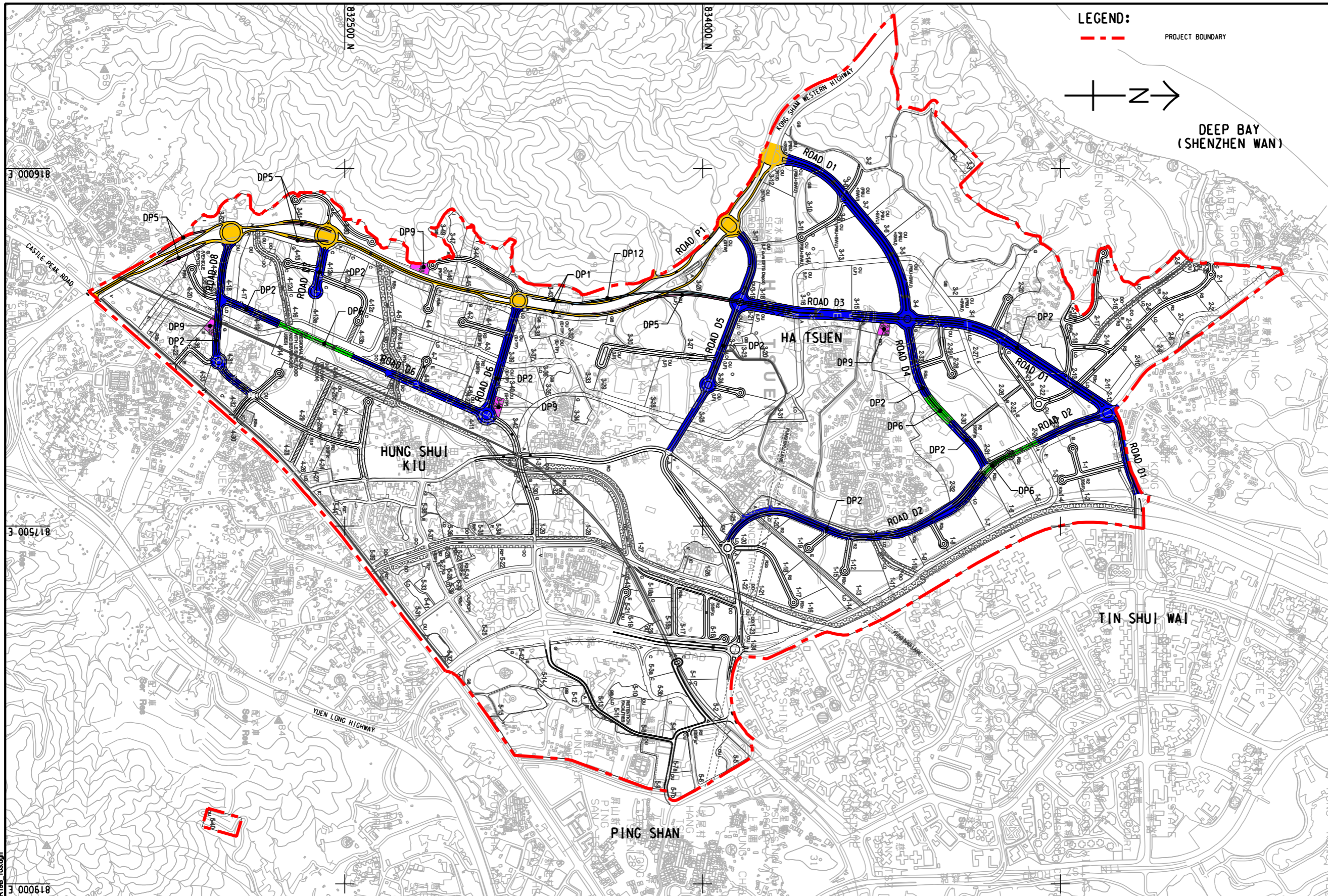
DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT	WORK COMPONENT / REFERENCE IN REVISED ROOP
DP7 (POTENTIAL DP)	PART 1, B.5 A CONTAINER BACK-UP AREA, CONTAINER STORAGE, CONTAINER HANDLING OR CONTAINER PACKING AREA (INCLUDING A CONTAINER VEHICLE PARKING AREA) MORE THAN 5ha IN SIZE AND WITHIN 300m OF AN EXISTING OR PLANNED RECEIVER	CONSTRUCTION OF A NEW CONTAINER BACK-UP AND STORAGE AREA (SITES 3-1, 3-4, 3-5, 3-13 AND 3-14) - SUBJECT TO FURTHER REVIEW
DP8	PART 1, F.1 SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 15000m ³ PER DAY	CONSTRUCTION OF NEW HSK STW (SITE 3-26 AND PART OF EXISTING SW STW)
DP9*	PART 1, F.3(B) A SEWAGE PUMPING STATION - (B) WITH AN INSTALLED CAPACITY OF MORE THAN 2000m ³ PER DAY AND A BOUNDARY OF WHICH IS LESS THAN 150m FROM AN EXISTING OR PLANNED RECEIVER	CONSTRUCTION OF FOUR NEW SPSS (SITES 2-34, 3-41, 3-48 AND 4-35)
DP10	PART 1, F.4 AN ACTIVITY FOR THE REUSE OF TREATED SEWAGE EFFLUENT FROM A TREATMENT PLANT	CONSTRUCTION OF FLUSHING WATER SERVICE RESERVOIRS FOR REUSE OF RECLAIMED WATER AT TAN KWAI TSUEN AND FUNG KONG TSUEN (SITES 3-3 AND 5-40)
DP11	PART 1, G.2 A REFUSE TRANSFER STATION	CONSTRUCTION OF ONE RTS (SITE 3-12)
DP12*	PART 1, O.1 ALL PROJECTS INCLUDING NEW ACCESS ROADS, RAILWAYS, SEWERS, SEWAGE TREATMENT FACILITIES, EARTHWORKS, DREDGING WORKS AND OTHER BUILDING WORKS PARTLY OR WHOLLY IN AN EXISTING OR GAZETTED PROPOSED COUNTRY PARK OR SPECIAL AREA, A CONSERVATION AREA, AN EXISTING OR GAZETTED PROPOSED MARINE PARK OR MARINE RESERVE, A SITE OF CULTURAL HERITAGE, AND A SITE OF SPECIAL SCIENTIFIC INTEREST.	CONSTRUCTION OF ROAD P1 AND A SLIP-ROAD FROM KSWH TO ROAD D3 PARTLY LOCATED WITHIN THE "CONSERVATION AREA" OF YUEN TAU SHAN

NOTE: * SUBJECT TO AN ENVIRONMENTAL PERMIT APPLICATION UNDER THIS EIA STUDY.

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as approved by AECOM or as required by law. AECOM accepts no responsibility, and disclaims any liability whatsoever, for any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

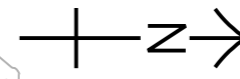
Figure 1.3

Location of Designated Projects Subject to Environmental Permit Application



LEGEND:

--- PROJECT BOUNDARY



DEEP BAY
(SHENZHEN WAN)

PROJECT

HUNG SHUI KIU/HA TSUEN
NEW DEVELOPMENT AREA
STAGE 1 WORKS - SITE
FORMATION AND
ENGINEERING
INFRASTRUCTURE

CLIENT

CEDD
土木工程拓展署
Civil Engineering and
Development Department

CONSULTANT

ACUTY
ACUTY
SUSTAINABILITY
CONSULTANTS

SUB-CONSULTANTS

分列工程顧問公司

ISSUE/REVISION

IR/	DATE	DESCRIPTION	CHK.
NO.	DATE	DESCRIPTION	NO.

STATUS

SCALE

A3 1:16000

DIMENSION UNIT

METRES

KEY PLAN

DESIGNATED PROJECT REFERENCE

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT	WORK COMPONENT / REFERENCE IN REVISED ROOP
DP1*	PART I, A.1 A ROAD WHICH IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD INCLUDING NEW ROADS AND MAJOR EXTENSIONS OR IMPROVEMENTS TO EXISTING ROAD	CONSTRUCTION OF NEW PRIMARY DISTRIBUTOR ROAD (ROAD P1)
DP2*	PART I, A.1 A ROAD WHICH IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD INCLUDING NEW ROADS, AND MAJOR EXTENSIONS OR IMPROVEMENTS TO EXISTING ROAD	CONSTRUCTION OF EIGHT NEW DISTRIBUTOR ROADS (ROADS D1 TO D8)
DP5*	PART I, A.8 A ROAD OR RAILWAY BRIDGE MORE THAN 100m IN LENGTH BETWEEN ABUTMENTS	CONSTRUCTION OF SLIP ROADS BETWEEN: ROAD D8 JUNCTION AND EXISTING CASTLE PEAK ROAD; JUNCTION OF D8/P1 AND JUNCTION OF D7/P1 AND KSWH CONNECTION TO ROAD D3

NOTE: * SUBJECT TO AN ENVIRONMENTAL PERMIT APPLICATION UNDER THIS EIA STUDY.

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT	WORK COMPONENT / REFERENCE IN REVISED ROOP
DP6*	PART I, A.9 A ROAD FULLY ENCLOSED BY DECKING ABOVE AND BY STRUCTURE ON THE SIDES FOR MORE THAN 100m	CONSTRUCTION OF PARTLY DEPRESSED AND PARTLY DECKED-OVER ROADS LOCATED AT ROAD D2, ROAD D4 AND ROAD D6
DP9*	PART I, F.3(B) A SEWAGE PUMPING STATION - (B) WITH AN INSTALLED CAPACITY OF MORE THAN 2000M ³ PER DAY AND A BOUNDARY OF WHICH IS LESS THAN 150m FROM AN EXISTING OR PLANNED RECEIVER	CONSTRUCTION OF FOUR NEW SPSS (SITES 2-34, 3-41, 3-48 AND 4-35)
DP12*	PART I, O.1 ALL PROJECTS INCLUDING NEW ACCESS ROADS, RAILWAYS, SEWERS, SEWAGE TREATMENT FACILITIES, EARTHWORKS, DREDGING WORKS AND OTHER BUILDING WORKS PARTLY OR WHOLLY IN AN EXISTING OR GAZETTED PROPOSED COUNTRY PARK OR SPECIAL AREA, A CONSERVATION AREA, AN EXISTING OR GAZETTED PROPOSED MARINE PARK OR MARINE RESERVE, A SITE OF CULTURAL HERITAGE, AND A SITE OF SPECIAL SCIENTIFIC INTEREST.	CONSTRUCTION OF ROAD P1 AND A SLIP-ROAD FROM KSWH TO ROAD D3 PARTLY LOCATED WITHIN THE "CONSERVATION AREA" OF YUEN TAU SHAN

SERVICE

CONTRACT NO. WD/02/2021

AGREEMENT NO.

CE2/2011 (CE)

SHEET TITLE

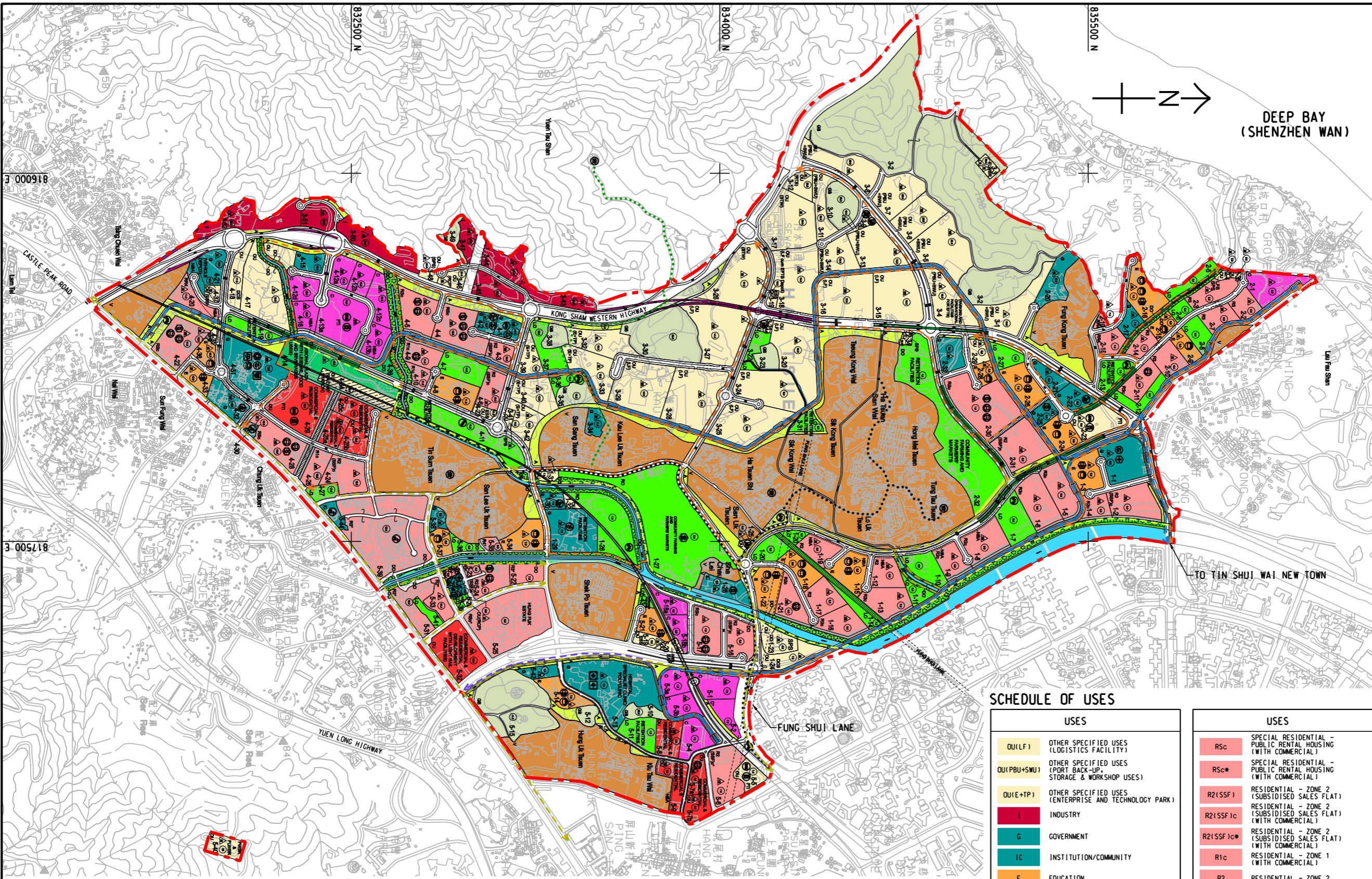
LOCATION OF DESIGNATED PROJECTS
SUBJECT TO ENVIRONMENTAL
PERMIT APPLICATION

SHEET NUMBER

6022570/TR19B/FIGURE 1.3

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and does not warrant, for any part of this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the related dimensions.

Figure 2.1 Revised Recommended Outline Development Plan (RODP)



PROJECT
 HUNG SHUI KIU/HA TSUEN
 NEW DEVELOPMENT AREA
 STAGE 1 WORKS - SITE
 FORMATION AND
 ENGINEERING
 INFRASTRUCTURE

CLIENT
 CEDD
 土木工程拓展署
 Civil Engineering and
 Development Department

CONSULTANT
 ACUTY
 分列工程顧問公司

SUB-CONSULTANTS
 分列工程顧問公司

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS
 現狀

SCALE
 比例尺
 A3 1:16000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

SERVICE CONTRACT NO.
 WD/02/2021

AGREEMENT NO.
 CE2/2011 (CE)

SHEET TITLE
 圖則標題
 REVISED RECOMMENDED OUTLINE
 DEVELOPMENT PLAN (RODP)

SHEET NUMBER
 圖則號碼
 60222570/TR19B/FIGURE 2.1

SCHEDULE OF USES

USES	USES
OU(LF)	OTHER SPECIFIED USES (LOGISTICS FACILITY)
OU(PBU+SWU)	OTHER SPECIFIED USES (PORT BACK-UP, STORAGE & WORKSHOP USES)
OU(E+TP)	OTHER SPECIFIED USES (ENTERPRISE AND TECHNOLOGY PARK)
I	INDUSTRY
G	GOVERNMENT
IC	INSTITUTION/COMMUNITY
E	EDUCATION
GB	GREEN BELT
RO	REGIONAL OPEN SPACE
DO	DISTRICT OPEN SPACE
LO	LOCAL OPEN SPACE
OU	OTHER SPECIFIED USES
OU (REGIONAL PLAZA)	OTHER SPECIFIED USES (REGIONAL PLAZA)
V	VILLAGE TYPE DEVELOPMENT
A	AMENITY AREA
—	ROAD, JUNCTIONS, EFTS ETC.

RSc	SPECIAL RESIDENTIAL - PUBLIC RENTAL HOUSING (WITH COMMERCIAL)
RSc#	SPECIAL RESIDENTIAL - PUBLIC RENTAL HOUSING (WITH COMMERCIAL)
R2(SSF)	RESIDENTIAL - ZONE 2 (SUBSIDISED SALES FLAT)
R2(SSF)c	RESIDENTIAL - ZONE 2 (SUBSIDISED SALES FLAT) (WITH COMMERCIAL)
R2(SSF)c#	RESIDENTIAL - ZONE 2 (SUBSIDISED SALES FLAT) (WITH COMMERCIAL)
R1c	RESIDENTIAL - ZONE 1 (WITH COMMERCIAL)
R2	RESIDENTIAL - ZONE 2
R2c	RESIDENTIAL - ZONE 2 (WITH COMMERCIAL)
R2#	RESIDENTIAL - ZONE 2
R3	RESIDENTIAL - ZONE 3
R3c	RESIDENTIAL - ZONE 3 (WITH COMMERCIAL)
R3#	RESIDENTIAL - ZONE 3
RR4	RURAL RESIDENTIAL - ZONE 4
R4#	RESIDENTIAL - ZONE 4
C	COMMERCIAL
OU(CAR)	OTHER SPECIFIED USES (COMMERCIAL & RESIDENTIAL DEVELOPMENT)

* LAND USES AND DEVELOPMENT PARAMETERS BASED ON THE PROVISIONS IN THE EXISTING OZP / APPROVED DEVELOPMENT SCHEMES.

LEGEND:

--- (Red dashed)	PROJECT BOUNDARY	⊙	TOWN PARK
⋯ (Black dotted)	CULTURAL HERITAGE TRAIL	⊙	DISTRICT POLICE STATION
⋯ (Green dotted)	ECO TRAIL	⊙	AMBULANCE DEPOT
▨ (Green hatched)	PROPOSED WEST RAIL HSK STATION	⊙	HOSPITAL
▨ (Red hatched)	DEPRESSED ROAD	⊙	POLYCLINIC/SPECIALIST CLINIC
▨ (Blue hatched)	ELEVATED ROAD	⊙	GENERAL CLINIC
▨ (Yellow hatched)	CHANNEL	⊙	BUS TERMINUS
▨ (Grey hatched)	SHOPPING STREET	⊙	GREEN MINIBUS TERMINUS / PUBLIC LIGHT BUS TERMINUS
▨ (White hatched)	PEDESTRIAN STREET	⊙	PETROL FILLING STATION
▨ (Black hatched)	PROPOSED ENVIRONMENTALLY FRIENDLY TRANSPORT SERVICES	⊙	MAJOR CYCLE PARKING FACILITY
▨ (Blue hatched)	RIVERSIDE PROMENADE	⊙	MAGISTRACY
▨ (Red hatched)	FUNG SHUI LANE	⊙	PERFORMANCE VENUE
⊙	NON-BUILDING AREA (NBA)	⊙	PROPOSED GREEN TRANSIT CORRIDOR
⊙	PROPOSED LEVEL (IN M ABOVE PRINCIPAL DATUM)	⊙	PROPOSED GREEN TRANSIT CORRIDOR EXTENSION
⊙	MAXIMUM BUILDING HEIGHT (IN M ABOVE PRINCIPAL DATUM)	⊙	
⊙	GOVERNMENT OFFICES	⊙	
⊙	COMMUNITY HALL	⊙	
⊙	SOCIAL WELFARE FACILITY	⊙	
⊙	POST OFFICE	⊙	
⊙	DIVISIONAL FIRE STATION	⊙	
⊙	SPORT GROUND	⊙	
⊙	SECONDARY SCHOOL	⊙	
⊙	PRIMARY SCHOOL	⊙	
⊙	CHURCH	⊙	
⊙	KINDERGARTEN	⊙	
⊙	TEMPLE	⊙	

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

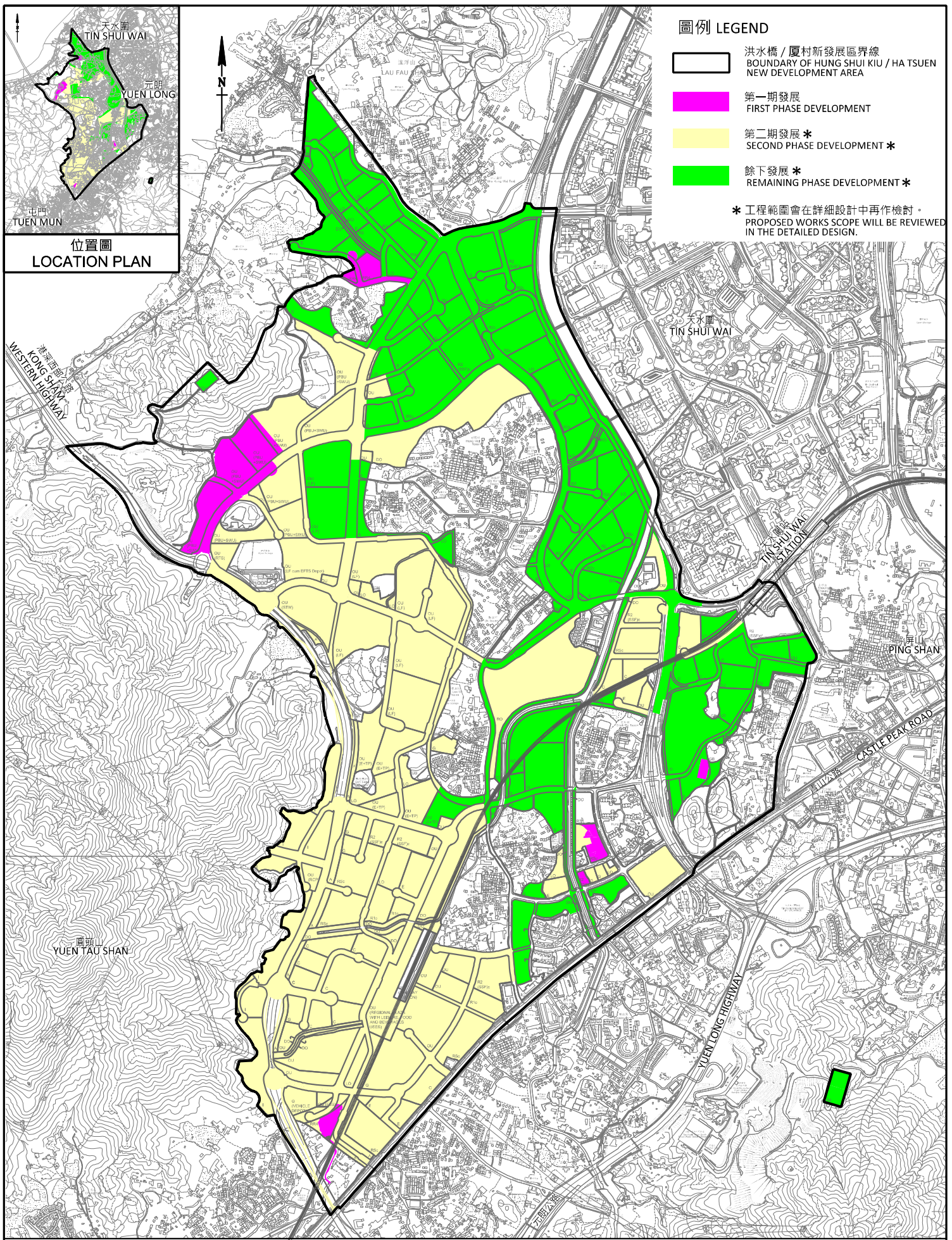
↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

↔ (Yellow)	EXISTING CYCLE TRACK	⊙	PBU+SWU	PORT BACK-UP, STORAGE AND WORKSHOP USES
↔ (Green)	PROPOSED ARTERY CYCLEWAY	⊙	RTS	REFUSE TRANSFER STATION
↔ (Blue)	PROPOSED CYCLE TRACK/REPROVISION OF EXISTING CYCLE TRACK	⊙	STW	SEWAGE TREATMENT WORKS
↔ (Red)	PTI	⊙	LFS	LAU FAU SHAN
↔ (Purple)	TSW WRL	⊙	RCP	REFUSE COLLECTION POINT
↔ (Orange)	WRL EAP	⊙	SPS	SEWAGE PUMPING STATION
↔ (Light Blue)	DCS	⊙	SSF	SUBSIDISED SALES FLAT
↔ (Light Green)	E+TP	⊙		
↔ (Light Purple)	FLWSR	⊙		
↔ (Light Orange)	FWSR	⊙		
↔ (Light Yellow)	LPG	⊙		
↔ (Light Blue-Gray)	ESS	⊙		

Figure 2.2 Development Phasing Plan



圖則名稱 drawing title

FIGURE 2.2

HUNG SHUI KIU / HA TSUEN NEW DEVELOPMENT AREA PHASING PLAN

Figure 2.3 Locations of Concurrent Projects

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:

LEGEND:

- - - PROJECT BOUNDARY
- - - PROPOSED DEVELOPMENT UNDER THE STUDY ON THE ENHANCEMENT OF THE LAU FAU SHAN RURAL TOWNSHIP AND SURROUNDING AREAS
- - - PLANNING AND ENGINEERING STUDY FOR HOUSING SITES IN YUEN LONG SOUTH - INVESTIGATION
- YUEN LONG AND KAM TIN SEWERAGE DISPOSAL STAGE 2 AND STAGE 3
- SITE FORMATION AND INFRASTRUCTURAL WORKS FOR THE DEVELOPMENT NEAR TAN KWAI TSUEN, YUEN LONG - FEASIBILITY STUDY
- SITE FORMATION AND INFRASTRUCTURAL WORKS FOR THE DEVELOPMENT AT LONG BIN, YUEN LONG - FEASIBILITY STUDY
- THE PRELIMINARY LAND USE STUDY FOR LAM TEI QUARRY AND THE ADJOINING AREAS
- ENGINEERING STUDY FOR SITE FORMATION AND INFRASTRUCTURAL WORKS AT HONG PO ROAD - FEASIBILITY STUDY
- ENGINEERING STUDY REVIEW FOR SITE FORMATION AND INFRASTRUCTURE WORKS AT SAN HING ROAD, TUEN MUN - INVESTIGATION
- POSSIBLE TUEN MUN WESTERN BYPASS NORTHERN SECTION
- FRESH WATER SUPPLY TO HSK NDA

81000 E

817000 E

823000 E



832000 N

826000 N

URMSTON ROAD

FUTURE TUEN MUN WESTERN BYPASS (SOUTHERN SECTION)

LUNG KWU TAN

TUEN MUN

HA TSUEN

NGAU TAM MEI

PROJECT
項目
HUNG SHUI KIU/HA TSUEN NEW DEVELOPMENT AREA STAGE 1 WORKS - SITE FORMATION AND ENGINEERING INFRASTRUCTURE

CLIENT
業主
CEDD
土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
工程顧問公司
ACUITY
SUSTAINABILITY CONSULTING CENTER
SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

NO.	DATE	DESCRIPTION	CHK.

STATUS
階段

SCALE
比例
A3 1 : 80000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

SERVICE CONTRACT NO.
服務合約編號
WD/02/2021

AGREEMENT NO.
協議編號
CE2/2011 (CE)

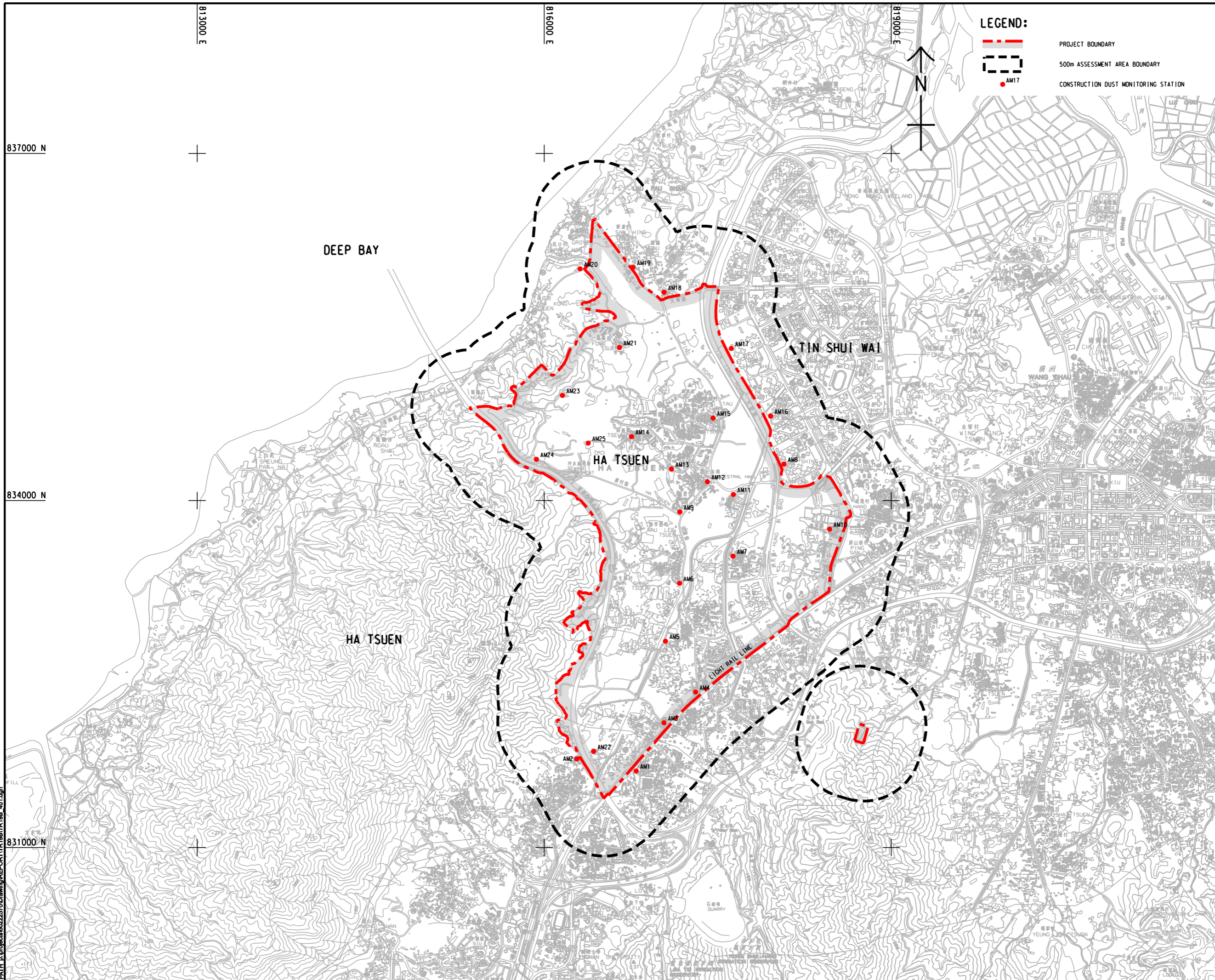
SHEET TITLE
圖紙名稱
LOCATIONS OF CONCURRENT PROJECTS

SHEET NUMBER
圖紙編號
6022570/TR19B/FIGURE 2.3

Pld File by: YANGYUW
PATH: P:\PROJECTS\6022570\DRAWING\REPORT\TR19B\TR19B_203.dgn

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as required by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party, for losses or claims on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Figure 4.1 Location of Construction Dust Monitoring Stations



LEGEND:

- - - PROJECT BOUNDARY
- - - 500m ASSESSMENT AREA BOUNDARY
- AM17 CONSTRUCTION DUST MONITORING STATION

PROJECT
項目
**HUNG SHUI KIU/HA TSUEN
NEW DEVELOPMENT AREA
STAGE 1 WORKS - SITE
FORMATION AND
ENGINEERING
INFRASTRUCTURE**

CLIENT
業主



土木工程拓展署
**Civil Engineering and
Development Department**

CONSULTANT
工程顧問公司



SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

IR	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	核對

STATUS
階段

SCALE
比例
A3 1 : 30000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

SERVICE CONTRACT NO.
服務合約編號
WD/02/2021

AGREEMENT NO.
協議編號
CE2/2011 (CE)

SHEET TITLE
圖紙名稱

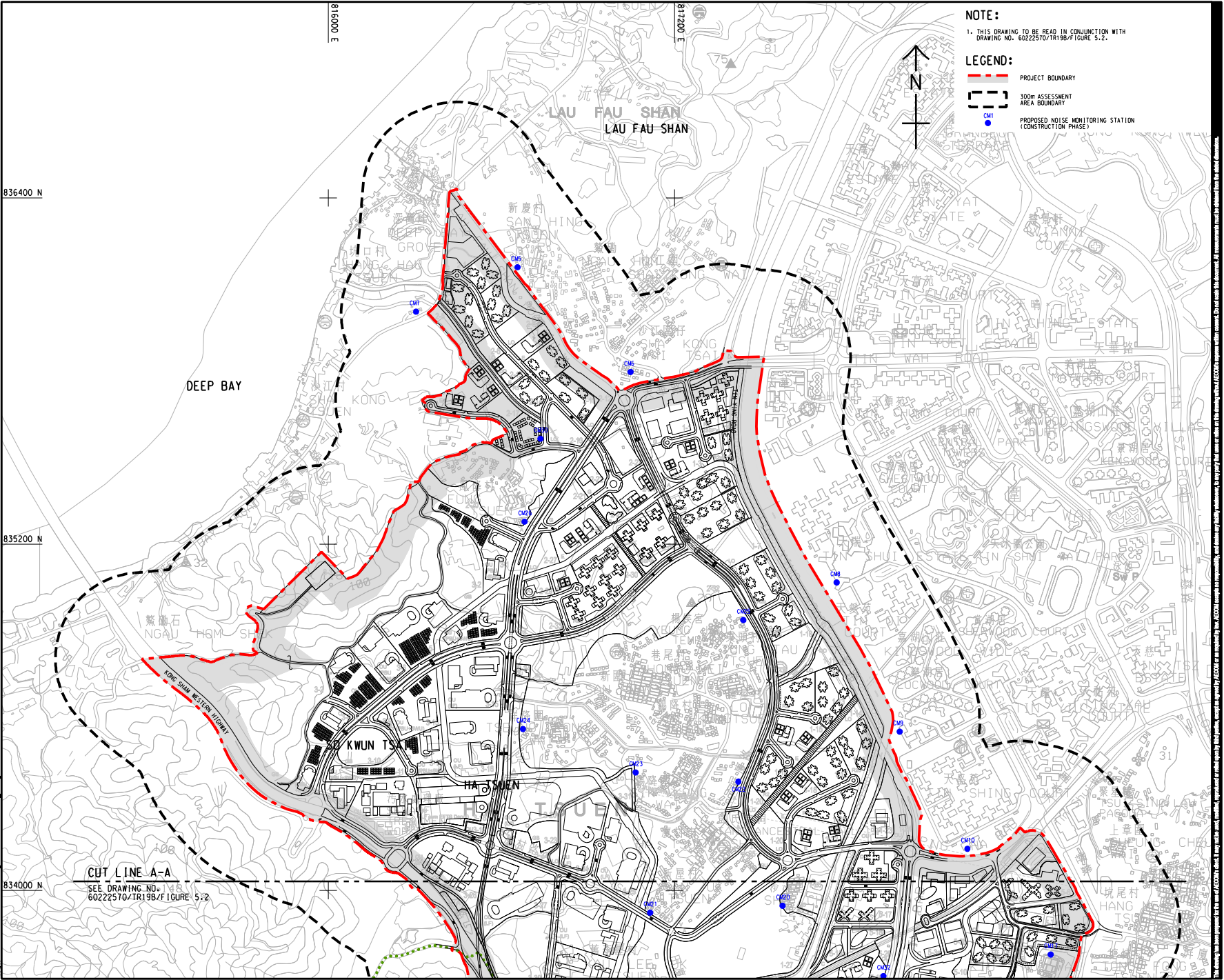
**LOCATIONS OF CONSTRUCTION
DUST MONITORING STATIONS**

SHEET NUMBER
圖紙編號
6022570/TR19B/FIGURE 4.1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as approved by AECOM or as required by law. AECOM accepts no responsibility, express or implied, for any party that uses or relies on this drawing without AECOM's express written consent. All measurements must be obtained from the stated dimensions.

Figure 5.1 Locations of Construction Noise Monitoring Stations (Sheet 1 of 2)

Project Management Initials: Designer: 836400 N 835200 N 834000 N
 Approved: 816000 E 812000 E
 Project File By: YANG YW
 Date: 2022/02/22
 Path: P:\PROJECTS\60222570\TR19B\FIGURE 5.1.dwg



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19B/FIGURE 5.2.

LEGEND:
 - - - PROJECT BOUNDARY
 - - - 300M ASSESSMENT AREA BOUNDARY
 ● PROPOSED NOISE MONITORING STATION (CONSTRUCTION PHASE)

PROJECT
 HUNG SHUI KIU/HA TSUEN
 NEW DEVELOPMENT AREA
 STAGE 1 WORKS - SITE
 FORMATION AND
 ENGINEERING
 INFRASTRUCTURE

CLIENT

 CEDD
 土木工程拓展署
 Civil Engineering and
 Development Department

CONSULTANT

 ACUTY
 亞細亞

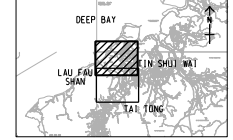
SUB-CONSULTANTS
 2022/02/22

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE	DIMENSION UNIT
A3 1:12000	METRES
KEY PLAN	A3 1:60000



SERVICE CONTRACT NO. **AGREEMENT NO.**
 WD/02/2021 CE2/2011 (CE)

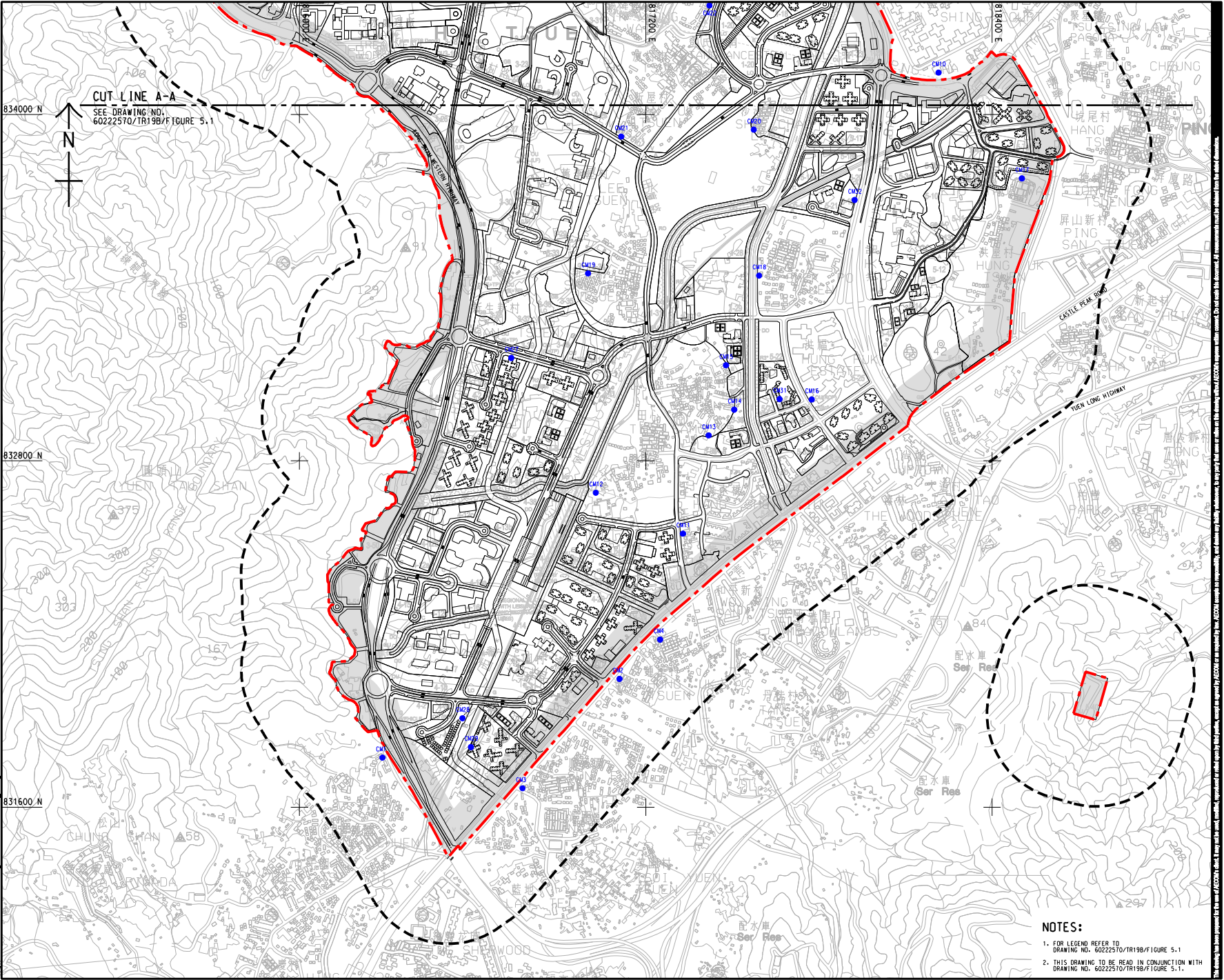
SHEET TITLE
 LOCATIONS OF CONSTRUCTION
 NOISE MONITORING STATIONS

SHEET NUMBER
 60222570/TR19B/FIGURE 5.1

Figure 5.2

Locations of Construction Noise Monitoring Stations (Sheet 2 of 2)

B01A1 84mm x 84mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 File By: YANG YW
 Date: 20/02/2021



PROJECT
 HUNG SHUI KIU/HA TSUEN
 NEW DEVELOPMENT AREA
 STAGE 1 WORKS - SITE
 FORMATION AND
 ENGINEERING
 INFRASTRUCTURE

CLIENT



CONSULTANT



SUB-CONSULTANTS

ISSUE/REVISION

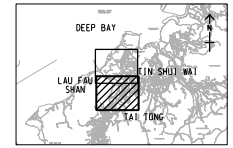
NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE

A3 1:12000 METRES

KEY PLAN A3 1:80000



SERVICE CONTRACT NO.

WD/02/2021

AGREEMENT NO.

CE2/2011 (CE)

SHEET TITLE

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

SHEET NUMBER

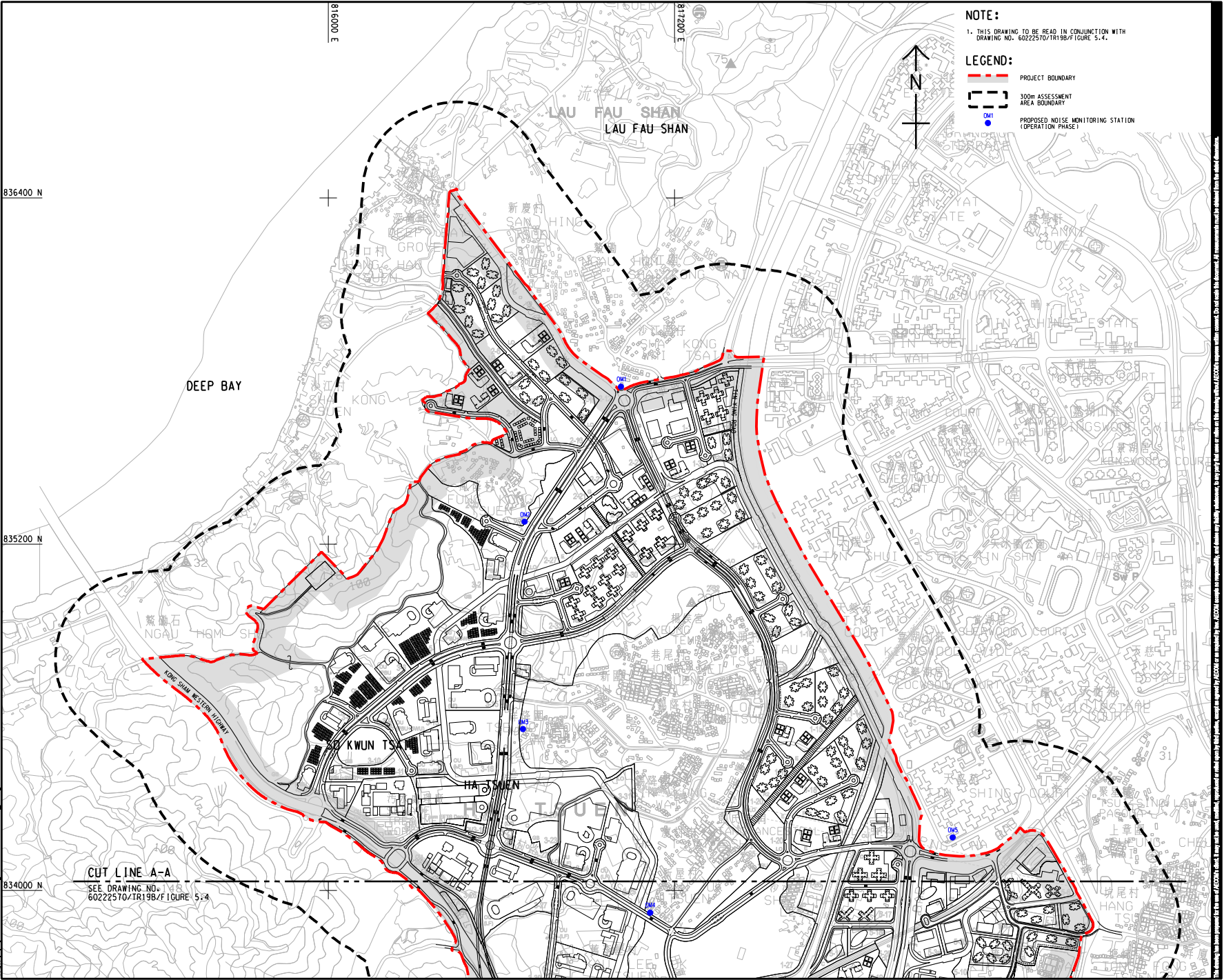
60222570/TR19B/FIGURE 5.2

- NOTES:**
- FOR LEGEND REFER TO DRAWING NO. 60222570/TR19B/FIGURE 5.1
 - THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19B/FIGURE 5.1.

Figure 5.3

Locations of Traffic Noise Monitoring Stations (Sheet 1 of 2)

IBO A1 304mm x 647mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 File No: ANH
 Date: 02/22/2021



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 6022570/TR19B/FIGURE 5.4.

LEGEND:
 [Red dashed line] PROJECT BOUNDARY
 [Black dashed line] 300M ASSESSMENT AREA BOUNDARY
 [Blue dot] PROPOSED NOISE MONITORING STATION (OPERATION PHASE)

PROJECT
 HUNG SHUI KIU/HA TSUEN
 NEW DEVELOPMENT AREA
 STAGE 1 WORKS - SITE
 FORMATION AND
 ENGINEERING
 INFRASTRUCTURE

CLIENT

 CEDD
 土木工程拓展署
 Civil Engineering and
 Development Department

CONSULTANT

 ACUTY
 亞細亞

SUB-CONSULTANTS
 202101

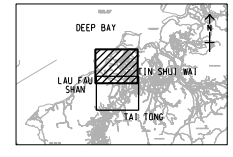
ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
 A3 1:12000
KEY PLAN A3 1:60000

DIMENSION UNIT
 METRES



SERVICE CONTRACT NO. WD/02/2021
AGREEMENT NO. CE2/2011 (CE)

SHEET TITLE
 LOCATIONS OF TRAFFIC
 NOISE MONITORING STATIONS

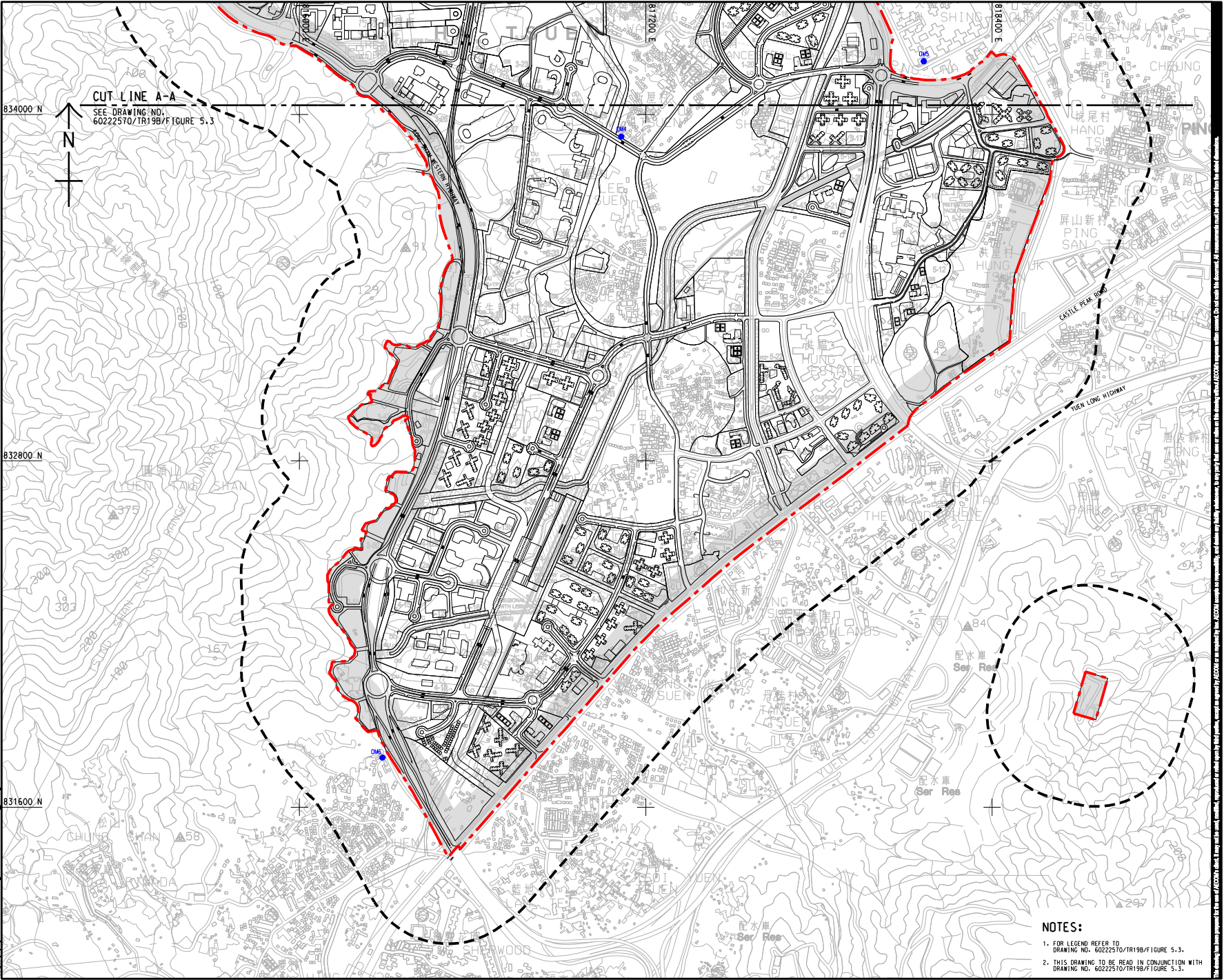
SHEET 1 OF 2

SHEET NUMBER
 6022570/TR19B/FIGURE 5.3

Figure 5.4

Locations of Traffic Noise Monitoring Stations (Sheet 2 of 2)

B01A1 84mm x 84mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 File No: ANHL
 Date: 2022/02/21
 834000 N
 832800 N
 831600 N



PROJECT
 HUNG SHUI KIU/HA TSUEN
 NEW DEVELOPMENT AREA
 STAGE 1 WORKS - SITE
 FORMING AND
 ENGINEERING
 INFRASTRUCTURE

CLIENT

 土木工程拓展署
 Civil Engineering and
 Development Department
CONSULTANT

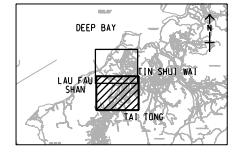
 SUB-CONSULTANTS
 2022/02/21

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE
 A3 1:12000 METRES
KEY PLAN A3 1:80000



SERVICE CONTRACT NO. WD/02/2021
AGREEMENT NO. CE2/2011 (CE)

SHEET TITLE
 LOCATIONS OF TRAFFIC
 NOISE MONITORING STATIONS

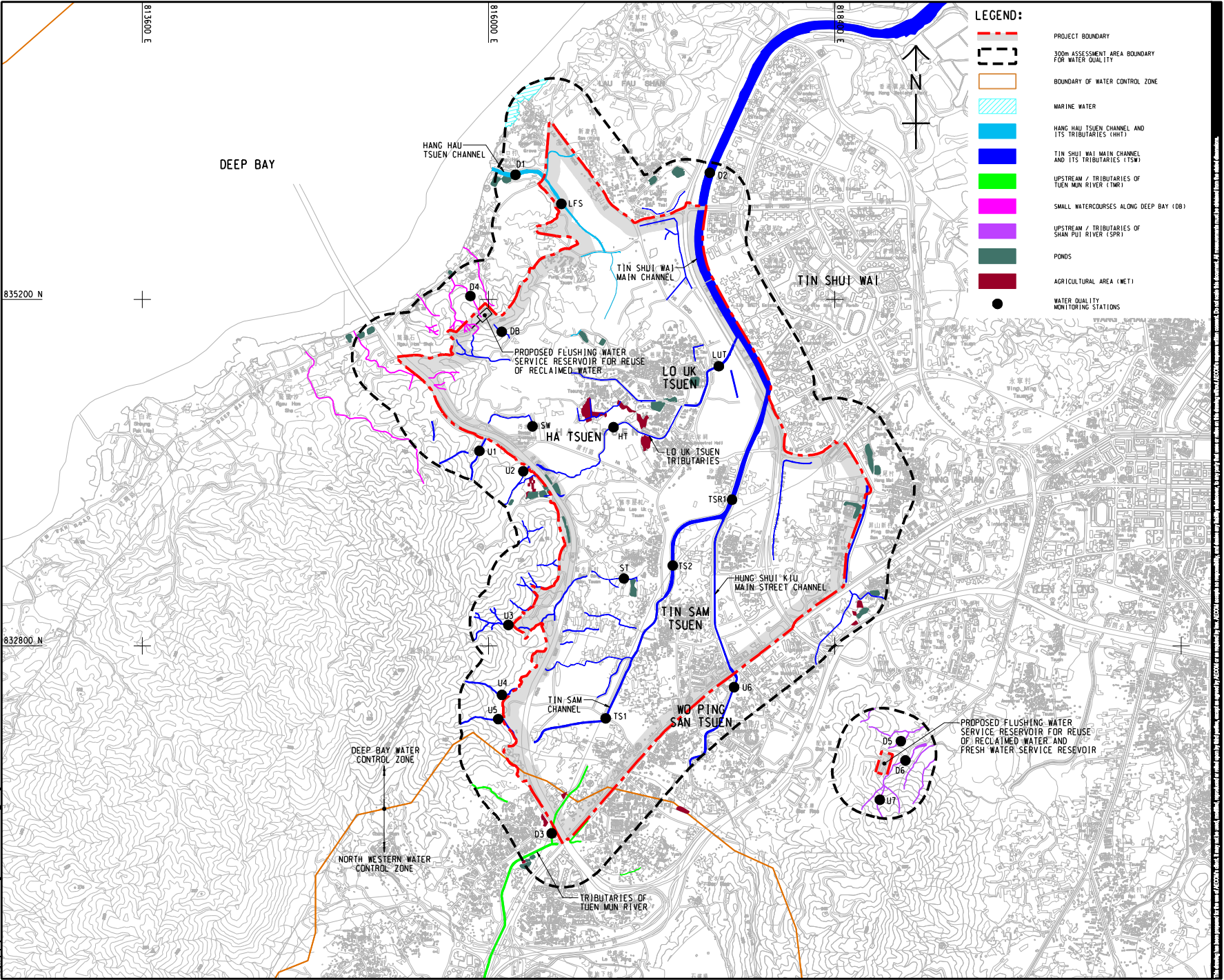
SHEET NUMBER
 60222570/TR19B/FIGURE 5.4

- NOTES:**
- FOR LEGEND REFER TO DRAWING NO. 60222570/TR19B/FIGURE 5.3.
 - THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60222570/TR19B/FIGURE 5.3.

Figure 6.1

Water Quality Monitoring Stations

Project Management Initials: Designer: Checker: Approved: ISO 9001 Registered & Certified



LEGEND:

- PROJECT BOUNDARY
- 300m ASSESSMENT AREA BOUNDARY FOR WATER QUALITY
- BOUNDARY OF WATER CONTROL ZONE
- MARINE WATER
- HANG HAU TSUEN CHANNEL AND ITS TRIBUTARIES (HHT)
- TIN SHUI WAI MAIN CHANNEL AND ITS TRIBUTARIES (TSM)
- UPSTREAM / TRIBUTARIES OF TUEN MUN RIVER (TMR)
- SMALL WATERCOURSES ALONG DEEP BAY (DB)
- UPSTREAM / TRIBUTARIES OF SHAN PAT RIVER (SPR)
- PONDS
- AGRICULTURAL AREA (AET)
- WATER QUALITY MONITORING STATIONS

PROJECT
HUNG SHUI KIU/HA TSUEN
NEW DEVELOPMENT AREA
STAGE 1 WORKS - SITE
FORMATION AND
ENGINEERING
INFRASTRUCTURE

CLIENT

 土木工程拓展署
 Civil Engineering and
 Development Department

CONSULTANT

 土木工程師事務所
 Civil Engineering and
 Development Department

SUB-CONSULTANTS
 20220219

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE	DIMENSION UNIT
A3 1:24000	METRES

KEY PLAN

SERVICE CONTRACT NO.	AGREEMENT NO.
WD/02/2021	CE2/2011 (CE)

SHEET TITLE
 WATER QUALITY MONITORING STATIONS

SHEET NUMBER
 60222570/TR19B/FIGURE 6.1

This drawing has been prepared for the use of ACQUITY. It is not to be used for any other purpose without the written consent of ACQUITY. The user of this drawing is advised that ACQUITY does not accept any liability for any loss or damage, whether direct or indirect, arising from the use of this drawing.

Appendix 2.1

Implementation Programme and Phasing

Appendix 2.2

Implementation Schedule of Mitigation Measures

Appendix 2.2 Project Implementation Schedule

Note: Chapters 1 to 2 of the EIA Report present the background information of the Project, identified concurrent projects, objectives and scope for various environmental aspects, and description on alternative options and construction description. Chapters 3 to 12 of the EIA Report present the EIA findings and mitigation measures, which are described below with cross-reference to the EIA Report. Chapters 13 to 15 describe the environmental monitoring requirements, summary of environmental outcomes and conclusion.

The following schedule includes common mitigation measures that are applicable to all project components, and common mitigation measures which are applicable to specific Schedule 2 Designated Projects which are subject to environmental permit application. It is divided into the Following Sections:

- Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)
- Common Mitigation Measures (Applicable to DP1 - Construction of new primary distributor road (P1))
- Common Mitigation Measures (Applicable to DP2 - Construction of eight new distributor roads (D1 to D8))
- Common Mitigation Measures (Applicable to DP5 - Construction of slip roads (between: Road D8 Junction and existing Castle Peak Road; Junction of D8/P1 and Junction of D7/P1; and Kong Sham Western Highway connection to Road D3))
- Common Mitigation Measures (Applicable to DP6 - Construction of partly depressed and partly decked-over roads (Road D2; Road D4 and Road D6))
- Common Mitigation Measures (Applicable to DP9 - Construction of four new sewage pumping stations (Sites 2-34; 3-41; 3-48; and 4-35))
- Common Mitigation Measures (Applicable to DP12 - Construction of Road P1 and slip-road partly located in "Conservation Area" of Yuen Tau Shan)

Implementation Schedule of Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)							
Air Quality (Construction Phase)							
S3.11	S4.10	Watering once per hour on active works areas, exposed areas and unpaved haul roads to reduce dust emission	To minimise the dust impact	Contractor	All active works areas, exposed areas and unpaved haul roads	Construction Phase	<ul style="list-style-type: none"> • Air Pollution Control Ordinance (APCO) • To control the dust impact to meet HKAQO and TM-EIAO criteria
S3.10	S4.10	The active construction works area should be reduced to one-third of monthly average work of the respective Work Contract so as to alleviate adverse dust impact	To minimise the dust impact	Contractor	For the work site of the Work Contract nearest to the ASRs at Site 3-6, Site 3-8, Site 3-14, Site 4-20, and existing ASRs at Oaklands Court (A208), Ling Liang Church Primary School (A209, and Tin Ha Road Playground (A310) and San Uk Tsuen (A702),	Construction Phase	<ul style="list-style-type: none"> • Air Pollution Control Ordinance (APCO) • To control the dust impact to meet HKAQO and TM-EIAO criteria
3.11	S4.10	When there are open excavation and spoil handling works, hoarding of 3m high should be provided along the construction site boundary adjacent to the non-construction areas such as residential, educational institutes or recreation area in use so as to minimize the dust impact.	To minimize the dust impact.	Contractor	All construction work sites	Construction Phase	<ul style="list-style-type: none"> • Air Pollution Control Ordinance (APCO) • To control the dust impact to meet HKAQO and TM-EIAO criteria
S3.11	S4.10	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. 	To minimise the dust impact	Contractor	All construction work sites	Construction Phase	<ul style="list-style-type: none"> • APCO and Air Pollution Control (Construction Dust) Regulation • To control the dust impact to meet HKAQO and TM-EIAO criteria

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Use of frequent watering for particularly dusty construction areas and areas close to Air Sensitive Receivers (ASRs). Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. Imposition of speed controls for vehicles on site haul roads. Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. 					
Air Quality (Operational Phase)							
S3.9	S4.10	Portion of Area 3-1 (OU, PBU + SWU), it is proposed that air sensitive uses at Site 3-1 should not be located at these exceedance zone or the fresh air intake of the building located at least 6mAG	To avoid the odour impact	Site Developers / Operators	Site 3-1	Prior to operation of the Project	EIAO-TM
S3.10	S4.10	Provision of deodourising units for the 4 planned sewage pumping stations (SPS).	To alleviate the odour impact	CEDD	4 Planned SPSs within Project	Operation Phase	EIAO-TM
Construction Noise							
S4.6	S5.13	Use of quiet plant which should be made reference to the Powered Mechanical Equipment (PME) listed in the Technical Memorandum or the Quality Powered Mechanical Equipment (QPME) / other commonly used PME listed in Environmental Protection Department (EPD) web pages as far as possible which includes the Sound Power Level (SWLs) for specific quiet PME.	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction Phase	EIAO-TM
S4.6	S5.13	Install movable noise barrier and enclosures. The movable noise barrier can provide 5 dB(A) noise reduction for mobile plant and 10 dB(A) noise reduction for static plant. The barrier material shall have a surface mass of not less than 14 kg/m ² . The enclosures can provide 15 dB(A) noise reduction.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction Phase	EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S4.6	S5.13	Proper workfront management and proper grouping of PME during construction activities operated at the critical work areas	Reduce the construction noise impact	Contractor	Refer to Section 4.6 of the EIA report	Construction Phase	EIAO-TM
S4.6	S5.13	Maintain the recommended minimum separation between the schools and the critical works areas during examination periods	Reduce the construction noise impact	Contractor	Refer to Section 4.6 of the EIA report	Construction Phase	EIAO-TM
S4.6	S5.13	Good site practices listed below shall be adopted by all the contractors to further ameliorate the noise impacts. <ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program. Mobile plant, if any, should be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	Control construction airborne noise	Contractor	All construction work sites where practicable	Construction Phase	EIAO-TM
S4.6	S5.13	Liaison with the school representative(s) to obtain the examination schedule so as to avoid noisy construction activities during school examination period.	Control construction airborne noise	Contractor	All construction sites within 300 m of educational institutions	Construction Phase	EIAO-TM
S4.6	S5.13	Set up a liaison group among CEDD, relevant government departments, contractors of the Works contracts, etc. during construction phase of the Project to ensure proper implementation of mitigation measures.	Control construction airborne noise	Contractor	All construction sites	Construction Phase	EIAO-TM
Operational Noise (Road Traffic Noise)							
S4.7	S5.13	Provide low noise surfacing material on: <ul style="list-style-type: none"> Planned Road P1, D1, D2, D3, D4 and D5; Tin Wah Road (Project road section) Kiu Fat Street (Improved road section) / Proposed Road L5 Proposed Road L1, L2, L3, L5 Proposed New Road near Site 4-24, 4-29, 5-13 Proposed Roundabout at Junction J2 and J8 Existing Hung Chi Road / Hung Shui Kiu Tin Sam Road (East Section and South of San Lee Uk Tsuen) 	Reduce operation noise from road traffic	CEDD (Design stage & Construction Phase)() & HyD (operation phase)	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs, it should be constructed before population intake of planned NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers on the Project roads.	Reduce operation noise from road traffic	CEDD (Design stage & Construction Phase) & HyD (during operation phase)	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs,	EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
						it should be constructed before population intake of planned NSRs Prior to operation of the Project for planned NSRs.	
S4.7	S5.13	Alternative development layout, special building design, acoustic windows and acoustic balcony for the noise sensitive facades at some planned residential sites (Table 4.33 of EIA Report)	Reduce operation noise from road traffic	Housing Department/Private Developers	Refer to Figure 4.7.17 – 4.7.27.	Prior to operation of the Project for planned NSRs.	EIAO-TM
S4.7	S5.13	Provision of boundary wall, air conditioning, blank facade and noise insulated windows for some planned Educational Institutes a Table 4.29 and 4.33 of EIA Report)	Reduce operation noise from road traffic	ASD	Refer to Figure 4.7.17 – 4.7.27.	Prior to operation of the Project for planned NSRs.	EIAO-TM
Operational Noise (Fixed Plant Noise)							
S4.9	S5.12	The selected equipment for the proposed fixed plants should be free of characteristics of tonality, intermittency and impulsiveness. If the selected equipment cannot be free of the abovementioned characteristics, additional measures should be adopted to mitigate the abovementioned characteristics or reduce the sound power level of the selected equipment in accordance with the correction factors as specified in IND-TM.	Comply with fixed plant noise criteria	CEDD and / or PlanD (CEDD and / or PlanD would further liaison and agree the responsibility of implementation and maintenance of the recommended environmental protection measures/mitigation measures.) / Contractor	All plant rooms where practicable	Design and Operational phase	IND-TM
S4.9	S5.13	For existing and planned NSRs which are located near to the proposed noise sources, the following tentative noise mitigation measures are considered: <ul style="list-style-type: none"> All the pumps and noisy plants should be enclosed inside building structures; Proper selection of quiet plant to reduce the tonality at NSRs; Installation of silencer / acoustic enclosure / acoustic louvers for the exhaust of ventilation system. Openings of ventilation system should be located away from NSRs. 	Reduce operation fixed noise	Relevant government departments / Future Operator	All plant rooms where practicable	Design and Operational phase	Noise Control Ordinance and its TM, EIAO-TM
Operational Noise (Rail Noise)							
S4.8	S5.13	Provision of acoustic fins for the dwellings at Residential Development in Site 4-22 (NSR WR-P5d), Residential Development in Site 5-7 (NSR LR-P5a) and Residential Development in Site 5-9 (NSR LR-P6.2) to narrow the angle of view to the railway track.	To alleviate railway noise impact	Housing Department/Private Developers	Figure 4.8.2 – 4.8.4	Prior to operation of the Project for planned NSRs.	Noise Control Ordinance and EIAO-TM
S4.8	S5.13	Provision of relocation to non-sensitive use or fixed glazing at Residential Development in Site 4-22 (NSRs WR-P5e.1 & P5f.1) and Site 5-9 (NSRs LR-P6.1, P6.2 & P6.3)	To alleviate railway noise impact	Housing Department/Private Developers	Figure 4.8.2 – 4.8.4	Prior to operation of the Project for planned NSRs.	Noise Control Ordinance and EIAO-TM
S4.8	S5.13	25m Setback from West Rail Line for Educational Institute at Site 5-21 (NSR WR-P10).	To alleviate railway noise impact	ASD	Figure 4.8.6	Prior to operation of the Project for planned NSR.	Noise Control Ordinance and EIAO-TM
S4.8	S5.13	70m Setback from West Rail Line for Residential Development at Site 4-29 (NSRs WR-P7b & P7c).	To alleviate railway noise impact	Relevant government departments / Future Operator	Figure 4.8.5	Prior to operation of the Project for planned NSR.	Noise Control Ordinance and EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Water Quality (Construction Phase)							
S5.13	S6.11	Surface run-off from construction sites should be discharged into stormwater drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels/earth bunds/sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels should be provided on site boundaries where necessary to intercept stormwater run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	Water Pollution Control Ordinance (WPCO), Technical Memorandum on EIA Ordinance (EIAO-TM), ProPECC PN 1/94, Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)
S5.13	6.11	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to prevent local flooding. Any practical options for the diversion and re-alignment of drainage should comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Construction works should be programmed to minimise soil excavation works in rainy seasons (April to September). If excavation in soil cannot be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion,, temporary exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest / edge of excavation) to prevent stormwater run-off from washing across exposed soil surfaces. Arrangements should always be in place in such a way that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into stormwater drains via silt removal facilities.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent stormwater run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	To minimise impact from construction site run-off	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into stormwater drains via silt removal facilities.	To minimise impact from boring and drilling water	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	All vehicles and plant should be cleaned before they leave a construction site to minimise the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into stormwater drains. The section of construction road	To minimise impact from wheel washing water	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.					
S5.13	6.11	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralised to within the pH range of 6 to 10 before discharging into foul sewers.	To minimise impact from acidic wastewater	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. All the run-off and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS.	To minimise impact from effluent discharges	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	Beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence.	To minimise impact from effluent discharges	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, TM-DSS
S5.13	6.11	To minimise the potential water quality impacts from the construction works located near any inland watercourses, the practices outlined in ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should be adopted where applicable: <ul style="list-style-type: none"> Impermeable sheet piles and cofferdams should be used as required to divert water flow from the construction works area so that all the construction works would be undertaken within a dry zone and physically separated from the watercourses. The proposed works should preferably be carried out within the dry season where the flow in the stormwater culvert/water channel/stream is low. The use of less or smaller construction plants may be specified in works areas close to the inland water bodies. Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any watercourses during carrying out of the construction works. Stockpiling of construction materials and dusty materials should be covered and located away from any watercourses. Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the watercourses, where practicable. Mitigation measures to control site run-off from entering the nearby water environment should be implemented to minimise water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the run-off. Construction effluent, site run-off and sewage should be properly collected and/or treated. Any temporary works site inside the stormwater watercourses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the stormwater quality. Proper shoring may need to be erected in order to prevent soil/mud from slipping into the inland water bodies. 	To minimise impact from construction works near watercourses	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ETWB TC (Works) No. 5/2005
S5.13	6.11	The key water quality measure for protection of the revitalised drainage channel water is to avoid polluted site run-off from reaching the revitalised drainage channel water. Relevant mitigation measures should follow the practices outlined in ETWB TC (Works) No. 5/2005	To minimise impact from revitalisation and	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ETWB TC (Works) No. 5/2005

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<p>“Protection of natural streams / rivers from adverse impacts arising from construction works” as listed below:</p> <ul style="list-style-type: none"> Impermeable sheet piles and cofferdams should be used as required to divert water flow from the construction works area so that all the construction works would be undertaken within a dry zone and physically separated from the revitalised drainage channel water. The proposed works should preferably be carried out within the dry season where the flow in the revitalised drainage channel is low. The use of less or smaller construction plants may be specified in works areas close to the revitalised drainage channel. Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from the revitalised drainage channel during carrying out of the construction works. Stockpiling of construction materials and dusty materials should be covered and located away from the revitalised drainage channel water. Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby revitalised drainage channel. <ul style="list-style-type: none"> Construction activities, which generate large amount of wastewater, should be carried out a distance away from the revitalised drainage channel, where practicable. Mitigation measures to control site run-off from entering the nearby revitalised drainage channel should be implemented to minimise water quality impacts. Surface channels should be provided along the edge of the revitalised drainage channel within the work sites to intercept the run-off. Construction effluent, site run-off and sewage should be properly collected and/or treated. Any temporary works site inside the revitalised drainage channel should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the revitalised drainage channel water. <p>Proper shoring may need to be erected in order to prevent soil / mud from slipping into the revitalised drainage channel.</p>	greening of Drainage Channel Banks				
S5.13	6.11	The construction method and sequence of the proposed construction in watercourses / concrete flood storage pond for works sites of DP12 should be carefully designed so that all the construction works including any excavation and piling operations would be undertaken within a dry zone and physically separated from the watercourses downstream.	To minimise impact from construction in watercourses / concrete flood storage pond	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	Impermeable sheet pile walls or cofferdam walls or steel casing should be installed to fully enclose the construction works area (including all the excavation and piling works) in the watercourse / pond prior to the commencement of any works in watercourse / pond. Dewatering of the construction works area or diversion of water flow should be undertaken before the construction works to avoid water flow in the construction works area. Silt removal facilities should be used to clarify the effluent generated from the dewatering operation before discharging back to the watercourse / drainage system.	To minimise impact from construction in watercourses / concrete flood storage pond	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	Any construction works including excavation and piling activities should be undertaken in a dry zone surrounded by the impermeable sheet pile walls or cofferdam walls or steel casing. Silt curtains should also be deployed around the construction works area inside the watercourse, where practicable, as a second layer of protection to further minimise sediment and contaminant release. All wastewater generated from the piling activities should be regarded as part of the construction site effluent, which should be properly collected and treated as appropriate to meet the standards stipulated in the TM-DSS	To minimise impact from construction in watercourses / concrete flood storage pond	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		before disposal. It is recommended that the construction works in watercourses / pond should be undertaken in dry seasons, where practicable, when the water flow is low.					
S5.13	6.11	Construction works for removal and diversion of watercourses should be undertaken within a dry zone. Where necessary, cofferdams or similar impermeable sheet pile walls should be used to isolate the works areas from the neighbouring waters.	To minimise impact from removal and diversion of watercourse	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	Construction works at watercourse should be undertaken only after flow diversion or dewatering operation is fully completed to avoid water flow in the works area. Dewatering of watercourse should be performed by diverting the water flow to new or temporary drainage. Where necessary, cofferdams or similar impermeable sheet pile walls should be used to isolate the works areas from neighbouring waters. The permanent or temporary drainage for carrying the diverted flow from existing watercourse to be removed should be constructed and completed before dewatering of that existing watercourse. Construction of all the proposed permanent and temporary drainage should be undertaken in a dry zone prior to receiving any water flow.	To minimise impact from removal and diversion of watercourse	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	The Contractor should provide a dry zone for all the construction works to be undertaken in watercourses and stormwater drainage following the tentative works sequence as described above or using other approved methods as appropriate to suit the works condition. The flow diversion works should be conducted in dry season, where possible, when the flow in the watercourse is low. The wastewater and ingress water from the site should be properly treated to comply with the WPCO and the TM-DSS before discharge.	To minimise impact from removal and diversion of watercourse	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	The site practices outlined in the ProPECC PN 1/94 "Construction Site Drainage" and ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should be adopted for the proposed demolition or diversion of watercourses where applicable.	To minimise impact from removal and diversion of watercourse	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, ProPECC PN 1/94, EIAO-TM, ETWB TC (Works) No. 5/2005
S5.13	6.11	Construction works at the existing ponds / wet areas should be conducted only after dewatering of these ponds / wet areas is fully completed. The drained water generated from the dewatering of these ponds / wet areas to be removed should be temporarily stored in appropriate storage tanks or containers for reuse on-site as far as possible. Any surplus drained water should be tankered away for proper disposal at STW in a controlled manner.	To minimise impact from removal of ponds / wet areas	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	It is recommended to drain only one pond at a time to minimise the potential water quality impact. Dewatering works at ponds / wet areas should be conducted within dry season to minimise the quantity of drained water. No direct discharge of drained water to the stormwater drainage system or marine water should be allowed.	To minimise impact from removal of ponds / wet areas	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes.	To minimise impact from accidental spillage	Contractor	Construction sites	Construction phase	WPCO, Waste Disposal Ordinance (WDO), Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
S5.13	6.11	Any service workshop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	To minimise impact from accidental spillage	Contractor	Construction sites	Construction phase	WPCO, WDO, Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
S5.13	6.11	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 	To minimise impact from accidental spillage	Contractor	Construction sites	Construction phase	WPCO, WDO, Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S5.13	6.11	No discharge of sewage to the stormwater system and marine water will be allowed. Adequate and sufficient portable chemical toilets should be provided in the works areas to handle sewage from construction workforce. A licensed waste collector should be employed to clean and maintain the chemical toilets on a regular basis.	To minimise impact from workforce sewage effluent	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment. Regular environmental audit of the construction site should be conducted to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.	To minimise impact from workforce sewage effluent	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	Any excavated contaminated material and exposed contaminated surface should be properly housed and covered to avoid generation of contaminated run-off. Open stockpiling of contaminated materials should not be allowed. Any contaminated run-off or wastewater generated from the land decontamination processes should be properly collected and diverted to wastewater treatment facilities (WTF). The WTF shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment system shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal.	To minimise impact from contaminated site run-off and wastewater from land decontamination	Contractor	Construction sites	Construction phase	TM-DSS, WPCO, EIAO-TM
S5.13	6.11	No direct discharge of groundwater from contaminated areas should be adopted. Prior to any excavation works within the potentially contaminated areas, the baseline groundwater quality in these areas should be reviewed based on the past relevant site investigation data and any additional groundwater quality measurements to be performed with reference to Guidance Note for Contaminated Land Assessment and Remediation and the review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TM-DSS. If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as total petroleum hydrocarbon) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in the TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal.	To minimise impact from groundwater from contaminated areas	Contractor	Construction sites	Construction phase	WPCO, TM-DSS, Guidance Note for Contaminated Land Assessment and Remediation, TM-DSS
S5.13	6.11	If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in section 2.3 of the TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	To minimise impact from groundwater from contaminated areas	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	The following measures should be implemented by the Contractors to minimise the chance of emergency construction site discharge (due to failure of treatment facilities such as sand traps, silt traps, sedimentation basins, oil interceptors etc.):	To minimise impact from construction site discharges	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Provide spare or standby treatment facilities of suitable capacities for emergency replacement in case damage or defect or malfunctioning of the duty treatment facilities is observed. Conduct daily integrity checking of the construction site drainage and treatment facilities to inspect malfunctions, in particular before, during and after a storm event. Carry out regular maintenance or desilting works to maintain effectiveness of the construction site drainage and treatment facilities in particular before, during and after a storm event. 					
S5.13	6.11	An Emergency Response Plan (ERP) should be developed to minimise the potential impact from construction site discharges under failure of treatment facilities during emergency situations or inclement weather. The ERP should give the emergency contacts to mobilise retention facilities and stakeholders to be notified as well as the details of the proposed construction site drainage system and the design and operation of duty and standby treatment facilities. The ERP should also provide the procedures and guidelines for routine integrity checking and maintenance of the drainage system and treatment facilities as well as the emergency response and rectification procedures to restore normal operation of the treatment facilities in case of treatment failure during emergency situation or inclement weather. The Best Management Practices (BMPs) in controlling water pollution arising from the construction activities and an event and action plan with action and limit levels for water quality monitoring should be included in the ERP. The ERP should be submitted to the EPD for approval before commencement of the construction works.	To minimise impact from construction site discharges	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM, TM-DSS
S5.13	6.11	Construction of the Project would involve diversion of the existing twin 800 mm diameter rising mains along Tin Ying Road. New sewerage facilities for receiving the diverted sewage flow from the existing rising mains should be constructed prior to the commencement of any demolition and construction works at the existing rising mains. All sewage flow running in the existing rising mains along Tin Ying Road should be diverted to the new sewerage system prior to any demolition and construction works at the existing rising mains. No discharge of sewage flow to the environment should be allowed during the sewerage diversion works.	To minimise impact from sewerage diversion works	Contractor	Construction sites	Construction phase	WPCO, EIAO-TM
S5.13	6.11	All excavated materials generated from removal and diversion of watercourses, removal and construction works in ponds and wet areas as well as the proposed bridge pier construction works in watercourses should be collected and handled in compliance with the Waste Disposal Ordinance. Excavated sediment, if any, generated from the excavation activities in watercourses, ponds and wet areas should be tested and classified in accordance with the ETWB TCW No. 34/2002 for determining the disposal arrangement for the sediment. No direct disposal of the construction wastes or excavated materials into the stormwater drainage system and marine water should be allowed.	To manage the disposal of sediment	Contractor	Construction sites	Construction phase	Waste Disposal Ordinance, ETWB TCW No. 34/2002
Water Quality (Operational Phase)							
S5.14	6.11	The following precautionary measures are recommended to minimise the risk of failure of the proposed sewerage system: <ul style="list-style-type: none"> Regular inspection, checking and maintenance of the sewerage system; Provisions of twin rising mains as backup and to facilitate maintenance and repairing purposes; Provisions of leakage collection systems linking to the nearest chamber at its downstream to the rising main for collection of sewage leakage from the damaged rising main; Use tankers to store emergency discharge and transport to the Sewage Treatment Works for disposal in case of both twin rising mains failure; and Provisions of spare / standby parts of sewage pipeworks to facilitate maintenance and repairing of equipment. 	To minimise impact from failure of the proposed sewerage system	Future Operator	Proposed sewerage system	Design and Operational phase	WPCO, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S5.14	6.11	In order to minimise the chance of emergency sewage discharge, the following precautionary measures are proposed in the design of the SPSs: <ul style="list-style-type: none"> • A standby pump and screen should be provided to cater for breakdown and maintenance of the duty pump in order to avoid emergency discharge. • Backup power supply in the form of dual / ring circuit power supply or generator should be provided to secure electricity supply. • An alarm should be installed to signal emergency high water level in the wet well. • An emergency storage tank / spare volume of wet well should be provided for the proposed SPS to cater for breakdown and maintenance of duty pump. • Regular maintenance and checking of plant equipment should be undertaken to prevent equipment failure. • Twin rising mains system should be provided to facilitate maintenance works and to avoid emergency discharge of sewage. • A telemetry system to the nearest manned station / plant should be provided so that swift action can be undertaken in case of malfunction of the unmanned facilities. • A bar screen (with clear spacing of approximately 25 mm) should be provided to cover the lower half of the opening of any emergency sewage bypass which can prevent the discharge of floating solids into receiving waters as far as practicable while ensuring flooding at the facilities would not occur event if the screen is blocked. 	To minimise impact from emergency sewage discharge	Future Operator	SPSs	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	A Contingency Plan to deal with the emergency discharges that may occur during operation of the SPS should be developed in the detailed design stage including the following items: <ul style="list-style-type: none"> • Locations of water bodies or WSRs in the vicinity of the emergency discharges. • A list of relevant government departments to be informed and to provide assistance in the event of emergency discharge, including key contact persons and telephone numbers. • Reporting procedures required in the event of emergency discharges. • Procedures listing the most effective means in rectifying the breakdown of the SPS in order to minimise the discharge duration. 	To minimise impact from emergency sewage discharge	Future Operator	SPSs	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Exposed surface shall be avoided within the development sites to minimise soil erosion. The development site shall be either hard paved or covered by landscaping area and plantation where appropriate.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	The major water channels and nullahs within the development sites should be retained as far as practicable to maintain the original flow path. The drainage system should be designed to avoid flooding.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Green areas / tree / shrub planting etc. should be introduced within the development site as far as possible including open space and along roadside amenity strips and central dividers, which can help to reduce soil erosion.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Road gullies with standard design and silt traps and oil interceptors should be incorporated during the detailed design to remove particles present in stormwater run-off, where appropriate.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Evergreen tree species, which in general generate relatively smaller amount of fallen leaves, should be selected where possible.	To minimise non-point source storm pollution	Future Operator	Project	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Good management measures such as regular cleaning and sweeping of road surface/ open areas are suggested. The road surface/ open area cleaning should also be carried out prior to occurrence rainstorm.	To minimise non-point source storm pollution	Future Operator	Project	Operational phase	WPCO, EIAO-TM
S5.14	6.11	Manholes, as well as stormwater gullies, ditches provided at the development sites should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall.	To minimise non-point source storm pollution	Future Operator	Project	Operational phase	WPCO, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S5.14	6.11	Various blue-green infrastructures have been proposed under this Project to reduce the drainage loading to the drainage system. They include: <ul style="list-style-type: none"> Provision of bioswales, where practicable at roadside, to convey stormwater and provide removal of coarse and medium sediments. As the water is transported along the bioswales, it is treated to remove pollutants and the cleaned water can then be discharged into the receiving water bodies or retained for non-potable reuse, e.g. irrigation. Rainwater harvesting should be implemented within the development site, where possible, to collect rainwater from building roofs, podiums, walkway canopies and other built structures for reuse as an alternative water source e.g. irrigation. The system should meet the prevailing WSD guidelines. Porous paving material should be used, where practical to increase stormwater infiltration and improve groundwater recharge and reducing flooding from surface run-off. 	To minimise non-point source storm pollution	Future Operator	Project	Design and operational phase	WPCO, EIAO-TM
S5.14	6.11	A Stormwater Pollution Control Plan should be developed for potential polluting facilities to prevent or minimise the potential of pollutants coming into contact with rainwater or run-off. The plan shall incorporate details such as locations, sizes and types of measures / installations and the BMPs	To minimise non-point source storm pollution	Future Operator	Project	Design and operational phase	WPCO, EIAO-TM
S5.14	6.11	All the works areas including wastewater generating processes and dusty operations of the concrete batching plants should be fully enclosed to avoid generation of contaminated rainwater run-off.	To minimise impact from concrete batching plants	Future Operator	"I" Zone	Design and operational phase	WPCO, EIAO-TM
S5.14	6.11	All wastewater generated from the concrete batching plants should be collected, treated, stored and recycled to reduce resource consumption. All spent effluents from the works processes should be collected and diverted to sedimentation basins with sufficient treatment capacity. The overlying water from the sedimentation basins should be recycled for reuse within the plants. The deposited sediment should be dewatered and the dry matter should be properly disposed off-site.	To minimise impact from concrete batching plants	Future Operator	"I" Zone	Design and operational phase	WPCO, EIAO-TM, WDO
S5.14	6.11	Stormwater or rainwater run-off is uncontaminated and shall be physically separated from the wastewater streams and spent effluent generated from the works processes of the concrete batching plants.	To minimise impact from concrete batching plants	Future Operator	"I" Zone	Operational phase	WPCO, EIAO-TM, TM-DSS
S5.14	6.11	Industrial wastewater generated in the proposed multi-storey buildings in the "I" zone and "PBU+SWU" areas should be properly collected, treated (as required) and then discharged to the foul sewers.	To minimise impact from multi-storey buildings	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM, TM-DSS
S5.14	6.11	Discharge licence for discharging effluents from the multi-storey industrial buildings into the foul sewers should be applied. The discharge quality should meet the water quality standards for effluents discharging to the foul sewers and the requirements as specified by the EPD in the discharge licence. The industrial wastewater should be properly treated to meet the WPCO and the TM-DSS before it is discharged into public sewerage system. The design capacity and treatment technologies of the on-site wastewater treatment facilities should be determined during the detailed design stage when detailed design of the industrial processes is available.	To minimise impact from multi-storey buildings	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM, TM-DSS
S5.14	6.11	An ERP should be developed by the future Plant Operators to deal with emergency situations caused by malfunctioning of the on-site Wastewater Treatment Facilities (WTF). The ERP for the on-site WTF should cover the following: <ul style="list-style-type: none"> Contact personnel and the means to contact. Procedures to initiate emergency repairs. Procedures to temporarily divert the incoming effluent to any designated temporary holding facility. Procedures to partially/fully treat effluents at an alternative treatment facility. 	To minimise impact from multi-storey buildings	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM
S5.14	6.11	The EPR should be developed in the detailed design stage when the detailed design of the WTF and industrial processes is available. Domestic wastewater (from toilets) generated in the multi-storey buildings should be discharged directly to the public sewerage system.	To minimise impact from multi-storey buildings	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM, TM-DSS

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S5.14	6.11	Perimeter drainage systems should be provided to collect stormwater run-off generated in the open areas of the "I" zone and "PBU + SWU" areas. Under normal operation, rainwater run-off collected in the perimeter drainage system should be diverted to suitable pollutant removal devices (e.g. sedimentation basins and oil interceptors) for necessary treatment and then discharged into the nearby storm water system. The pollutant removal devices of the perimeter drainage system should be designed with sufficient capacity for the "first flush" flow, which would carry most of the pollutants. The subsequent overland flow generated from rainstorms after the "first flush" flow should be bypassing the pollutant removal facilities and discharged directly to the nearby drainage system.	To minimise impact from surface runoff in open area	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM, TM-DSS
S5.14	6.11	Stop-logs should be installed at a suitable location(s) in the perimeter drainage system so that contaminants can be contained in the event of accidental spillage. Under emergency situations, the relevant stop-logs should be closed to isolate the lot with accidental spillage and prevent it from entering the nearby stormwater system. Contaminated surface water, if any, generated in the lot with accidental spillage should be contained within the site by the stop-log system. The collected surface water should be diverted to the on-site WTF for necessary treatment and the treated effluent from the on-site WTF should be discharged into the foul sewers. The effluent of the on-site WTF should meet the water quality standards and the requirements of the discharge license for effluents discharging into the foul sewers. To ensure that there is no chance of contaminated run-off leaving the site untreated during high rainfall, the perimeter drainage system should have sufficient capacity (within the channels or at a designated sump) to store any contaminated run-off (spillage plus collected rainwater) from the area isolated by the stop-logs and allow it to be treated at the on-site WTF. If there is any chemical waste collected, the handling and disposal should comply with the requirements under the Waste Disposal Ordinance.	To minimise impact from surface runoff in open area	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM
S5.14	6.11	Good management and housekeeping measures such as regular cleaning and sweeping of surface/ open areas are recommended. All stormwater drainage and pollutant removal devices should be regularly inspected and cleaned (e.g. weekly). Additional inspection and cleaning should be carried out before forecast heavy rainfall.	To minimise impact from surface runoff in open area	Future Operator	"I" Zone "PBU & SWU"	Operational phase	WPCO, EIAO-TM
S5.14	6.11	An ERP should be developed by the future Operators to deal with emergency situations of accidental spillage. The ERP should cover the following: <ul style="list-style-type: none"> Contact personnel and the means to contact. Procedures to contain contaminants and prevent their escape and/or dispersion, e.g., through closing the stop-logs to isolate in the lot's perimeter drainage system from the surrounding stormwater drainage system. Procedures to divert/transport the contaminated materials to a designated temporary storage area or appropriate treatment facility. Procedures to clear up the lot and/or perimeter drainage system prior to opening the stop-logs. 	To minimise impact from surface runoff in open area	Future Operator	"I" Zone and "PBU & SWU"	Design and operational phase	WPCO, EIAO-TM Waste Disposal Ordinance, Waste Disposal (Chemical Waste) (General) Regulation
S5.14	6.11	The practices outlined in ProPECC PN 5/93 "Drainage Plan subject to Comments by Environmental Protection Department" should be adopted where applicable for handling, treatment and disposal of operational stage effluent. Drainage outlets provided in covered areas, such as covered railway station, covered electricity substation, covered podiums and other roofed areas, should be discharged to foul sewers.	To control operational site effluents	Future Operator	Project	Design and operational phase	WPCO, EIAO-TM, ProPECC PN 5/93. TM-DSS
S5.14	6.11	Drainage serving covered PTI, covered petrol filling stations, covered refuse transfer station and refuse collection points and covered EFTS depot should be connected to foul sewers. Sedimentation facilities, petrol interceptors or other appropriate wastewater treatment system should be provided to treat the wastewater or surface run-off generated in these facilities as necessary to meet the discharge standards as stipulated in the TM-DSS prior to the discharge of these effluents to the public sewers.	To control operational site effluents	Future Operator	Project	Design and operational phase	WPCO, EIAO-TM, TM-DSS
S5.14	6.11	For maintenance of stormwater drainage system, reference should be made to ETWB TC (Works) No. 14/2004 "Maintenance of Stormwater Drainage Systems and Natural Watercourses" where applicable. The circular sets out the departmental responsibilities for	To minimise impact from maintenance of	Future Operator	Stormwater drainage system	Operational phase	WPCO, EIAO-TM, ETWB TC (Works) No. 14/2004

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		the maintenance of stormwater drainage systems and natural watercourses in government and private lands. Any required maintenance or desilting work (e.g. to remove any silt, grit or rubbish deposited in the inland water system) should be carried out during periods of low flow in the dry season to minimise impacts on downstream water quality and sediment suspension.	stormwater drainage system				
S5.14	6.11	Opportunities should be explored to maximise the use of reclaimed water and reduce the TSE discharge as far as possible under the detailed EIA studies for HSK STW.	To minimise impact from TSE from HSK STW	Project Proponent of HSK STW	Project	Operational Phase	WPCO, EIAO-TM
Waste Management (Construction Waste)							
S7.6	S8.2	<p><u>Good Site Practice</u></p> <p>The following good site practices are recommended during the construction phase:</p> <ul style="list-style-type: none"> • Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices; • Training of site personnel in site cleanliness, proper waste management and chemical handling procedures; • Provision of sufficient waste disposal points and regular collection of waste for disposal; • Adoption of appropriate measures to minimise windblown litter and dust during handling, transportation and disposal of waste; and • Preparation of a WMP in accordance with the ETWB TCW No. 19/2005 Environmental Management on Construction Sites and submitted it to the Engineer for approval. 	Minimise waste generation during construction	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance • Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)
S7.6	S8.2	<p><u>Waste Reduction Measures</u></p> <p>Waste reduction is best achieved by proper planning and design at the planning and design phases, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve waste reduction:</p> <ul style="list-style-type: none"> • Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Adopt proper storage and site practices to minimise the potential for damage to, and contamination of, construction materials; • Plan the delivery and stock of construction materials carefully to minimise the amount of waste generated; • Sort out demolition debris and excavated materials from demolition works to recover reusable / recyclable portions (i.e. soil, rock, broken concrete, etc.); • Maximise the use of reusable steel formwork to reduce the amount of C&D materials; • Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering; and 	Minimise waste generation during construction	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as far as possible. 					
S7.6	S8.2	<p><u>Storage of Waste</u></p> <p>Storage of materials on site may induce adverse environmental impacts if not properly managed. The following recommendations should be implemented to minimise the impacts:</p> <ul style="list-style-type: none"> Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; Maintain and clean storage areas routinely; Stockpiling area should be provided with covers and water spraying system to prevent materials from being wind-blown or washed away; and Different locations should be designated to stockpile each material to enhance reuse. 	Minimise waste impacts during storage of waste	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal Ordinance
S7.6	S8.2	<p><u>Collection and Transportation of Waste</u></p> <p>Waste hauler with appropriate permits should be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following recommendation should be implemented to minimise the impacts:</p> <ul style="list-style-type: none"> Remove waste in timely manner; Employ the trucks with cover or enclosed containers for waste transportation; Obtain relevant waste disposal permits from the appropriate authorities; and Dispose of waste at licensed waste disposal facilities. 	Minimise waste impacts during collection and transportation of waste	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal Ordinance
S7.6	S8.2	<p><u>Construction and Demolition (C&D) Materials</u></p> <p>Wherever practicable, C&D materials should be segregated from other waste to avoid contamination and ensure acceptability at the public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the C&D materials:</p> <ul style="list-style-type: none"> Adopt "selective demolition" technique to demolish the existing structure and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; Maintain the stockpile areas and reuse excavated fill material for backfilling; Carry out on-site sorting to recover the inert C&D materials and reusable and recyclable materials prior to disposal off-site; Make provisions in the contract documents to allow and promote the use of recycled aggregates where appropriate; and 	Minimise waste impacts from C&D materials	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal Ordinance Land (Miscellaneous Provisions) Ordinance Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Implement a trip-ticket system for each works contract in accordance with DEVB TC(W) No. 6/2010 Trip-ticket System for Disposal of Construction and Demolition Material to ensure that the disposal of C&D materials are properly documented and verified. <p>The Contractor should be responsible for devising a system to work for on-site sorting of C&D materials. It is recommended that the system should include the identification of the source of generation, estimated quantity of waste generated, arrangement for on-site sorting and/or collection, designated stockpiling areas, frequency of collection by recycling contractors and frequency of removal off-site.</p>					
S7.6	S8.2	<p><u>Asbestos Containing Materials</u></p> <p>Due to the potential large amount of asbestos containing materials during the site clearance stage, asbestos investigation is required. However, as asbestos investigation will involve a large number of buildings and most premises will involve private access, which cannot be obtained at this stage, it is considered that an asbestos specialist shall be employed by the responsible parties during the construction stage to investigate this issue.</p> <p>Sufficient and reasonable lead time shall be allowed for preparation, vetting and implementation of Asbestos Investigation Report and Asbestos Abatement Plan in accordance with Air Pollution Control Ordinance before commencement of any demolition or site clearance work.</p> <p>Some key precautionary measures related to the handling and disposal of asbestos are listed as following:</p> <ul style="list-style-type: none"> Adoption of protection, such as full containment, mini containment, or segregation of work area; Provision of decontamination facilities for cleaning of workings, equipment and bagged waste before leaving the work area; Adoption of engineering control techniques to prevent fibre release from work area, such as use of negative pressure equipment with high efficiency particulate air (HEPA) filters to control air flow between the work area and the outside environment; Wetting of asbestos containing materials before and during disturbance, minimising the breakage and dropping of asbestos containing materials, and packing of debris and waste immediately after it is produced; Cleaning of work area by wet wiping and vacuuming with HEPA-filtered vacuum cleaner; Coating on any surfaces previously in contact with or contained by asbestos with a sealant; Proper bagging, safe storage and disposal of asbestos and asbestos-contaminated waste; Pre-treatment of all effluent from the work area before discharged; and 	Control the asbestos containing materials and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Code of Practice on Handling, Transportation and Disposal of Asbestos Waste ProPECC PN 2/97 Handling of Asbestos Containing Materials in Buildings

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Air monitoring strategy to check the leakage and clearance of the work area during and after the asbestos work. 					
S7.6	S8.2	<p><u>Chemical Waste</u></p> <p>For those processes which generated chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type of less impact on environment, health and safety as far as possible.</p> <p>If chemical waste is produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical waste (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility.</p>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S7.6	S8.2	<p><u>General Refuse</u></p> <p>General refuse should be stored in enclosed bins separately from construction and chemical waste. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. A reputable waste collector should be employed to remove general refuse on a daily basis. It is expected that such arrangements would minimise potential environmental impacts.</p>	Minimise production of general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal Ordinance
S7.6	S8.2	<p><u>Excavated Sediment</u></p> <p>Since the amount of excavated sediment generated from the inland water removal / diversion works is expected to be small, all excavated sediment will be treated and reused on-site as backfilling materials for the Project. This approach avoids the need for off-site disposal that may result in impacts on the marine environment. In addition, all construction works near the watercourses should be undertaken within a dry zone and during dry season to avoid adverse impacts to the environment. The excavated sediment, if stockpiled on site, should be stored in enclosed containers and transported to the on-site treatment facilities as soon as practicable to minimise any potential odour impacts.</p>	Proper handling of excavated sediment	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal Ordinance
S7.6	S8.2	<p><u>Contaminated Soil</u></p> <p>It is considered unlikely that contaminated land issues, if any subject to site investigation, would be a concern during either the construction or the operational of the proposed development as remediation on contaminated area would be carried out prior to construction. However, as a precaution, it is recommended that standard good site practices should be implemented during the construction phase to minimise any potential exposure to contaminated soils or groundwater.</p>	Proper handling of contaminated soil	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Practice Guide for Investigation and Remediation of Contaminated Land
Waste Management (Operational Waste)							
S7.6	S8.2	<p><u>Municipal Solid Waste (MSW)</u></p> <p>Implementation of a waste prevention programme as well as materials recovery and</p>	Minimise production of MSW and avoid odour,	FEHD / relevant operators	All development sites	Operation phase	<ul style="list-style-type: none"> Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<p>recycling programme are recommended in order to minimise the production of waste. The programmes should consist of the following components:</p> <ul style="list-style-type: none"> • Recycling bins such as paper, aluminium cans, plastic bottles, glass bottles, etc. should be placed at prominent locations to encourage recycling; • Banner should be erected at the recycling bins area; • Operator should make arrangements with the recycler to collect and recycle used fluorescent lamps, toner cartridges as well as the scrap electronic equipment, such as computers to avoid disposal at landfills as far as practicable; • Staff awareness training should be provided on waste management procedures, including waste reduction and recycling; • Operator should set up waste reduction and recycled targets; and • Operator should participate in the Wastewi\$e Label scheme to facilitate waste reduction. <p>MSW generated from residential, commercial and industrial buildings should be collected with lidded bins, delivered to the refuse collection room and stored in enclosed containers installed in each building at the ground floor to prevent windblown, vermin, water pollution and visual impact. At least daily collection should be arranged by the waste collector to transport the waste to the RCPs or RTS within the HSK NDA. Odour removal installations are recommended to be installed at the RCPs and RTS to treat the exhaust air. Wastewater generated at the RTS should be treated at the on-site wastewater treatment plant prior to discharge to the public sewerage systems. Such arrangements will minimise potential environmental impacts. Furthermore, the low emission truck, such as EURO V or later model is recommended to be used for waste transportation to minimise traffic emission and the potential air quality impacts. The above recommendations are proposed as technical guidelines for the operator's consideration and will be subject to detailed design.</p>	pest and litter impacts				
S7.6	S8.2	<p><u>Chemical Waste</u></p> <p>The proposed mitigation measures for operational phase are the same as that proposed for the construction phase. The operator should register with EPD as a chemical waste producer. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical waste (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility.</p>	Control the chemical waste and ensure proper storage, handling and disposal.	Relevant operators	All development sites	Operational phase	<ul style="list-style-type: none"> • Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S7.6	S8.2	<p><u>Screenings, Grits and Sewage Sludge</u></p> <p>The new HSK STW is designed to handle the sewage generated from the new development areas under this Project. The major solid waste types produced from the STW would be the screenings and grits collected from the inlet works and the dewatered sludge collected from the sewage treatment process. Screenings and grits generated from the STW is suggested to be disposed of at the WENT Landfill whereas the dewatered sludge generated from the STW is suggested to be treated at the STF. The screenings, grits and dewatered sludge will be delivered by road transport in water tight containers or skips to avoid odour emission during transportation. Unloading process will be operated in the designated room inside</p>	Minimise the production of sewage sludge and ensure proper storage, handling and disposal.	DSD / relevant operators	All development sites	Operational phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		STW which should be enclosed and served by negative pressure by extracting odorous gas to deodorising unit.					
Land Contamination							
S.8.9	-	<p><u>Identified Potentially Contaminated Sites</u></p> <p>Prior to development of these sites, the Project Proponent should appoint a consultant to re-appraise these sites to update the corresponding findings and sampling and testing requirements presented in the Contamination Assessment Plan (CAP).</p> <p>Supplementary CAP(s), incorporating the findings of the site re-appraisal and the updated sampling and testing strategy, should be prepared and submitted to EPD for approval prior to conducting any site investigation (SI) works.</p> <p>SI works should then be carried out according to the supplementary CAP(s). Contamination Assessment Report (CAR(s)) and, if contaminated soil and/or groundwater identified, Remediation Action Plan (RAP(s)) should be prepared and submitted to EPD for approval.</p>	Identify the presence, nature and extent of contamination and formulate the necessary remedial actions.	CEDD / Detailed Design Consultant / Contractor	All potentially contaminated sites as listed in CAP.	After the land is resumed and handed over to the Project Proponent and prior to commencement of any remediation / construction works.	<ul style="list-style-type: none"> EIAO-TM; Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; Guidance Notes for Contaminated Land Assessment and Remediation; and Practice Guide for Investigation and Remediation of Contaminated Land.
S.8.9	-	<p><u>Remaining Non-Contaminated Sites</u></p> <p>After the sites are handed over to the Project Proponent for development, the Project Proponent should appoint a consultant to revisit these sites to assess the latest land uses and site conditions. If any of these sites are found to have potential land contamination issues, the Project Proponents appointed consultant should prepare and submit supplementary CAP(s) to EPD for approval prior to conducting any SI works.</p> <p>SI works should then be carried out according to the supplementary CAP(s). CAR(s) and, if contaminated soil and/or groundwater identified, RAP(s) should be prepared and submitted to EPD for approval.</p>	Identify the presence, nature and extent of contamination and formulate the necessary remedial actions.	CEDD / Detailed Design Consultant / Contractor	Remaining non-contaminated sites within the Assessment Areas.	After the land is resumed and handed over to the Project Proponent and prior to commencement of any remediation / construction works.	<ul style="list-style-type: none"> EIAO-TM; Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; Guidance Notes for Contaminated Land Assessment and Remediation; and Practice Guide for Investigation and Remediation of Contaminated Land.
S.8.9	-	Any contaminated soil and groundwater should be treated according to EPD's approved RAP(s) and RR(s) should be submitted to EPD for agreement after completion of the remediation works.	Remediate any contaminated soil and groundwater and demonstrate that the remediation works are adequate and is carried out in accordance with EPD's approved RAP(s).	Contractor	All identified contaminated sites in future EPD's approved CAR(s)/RAP(s).	After the land is resumed and handed over to the PP and prior to commencement of any construction works.	<ul style="list-style-type: none"> Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; Guidance Notes for Contaminated Land Assessment and Remediation; and Practice Guide for Investigation and Remediation of Contaminated Land
Ecology (Design Phase)							
S9.7.2	S10.1.1	The majority of sites of conservation importance/habitats with high ecological value (e.g. San Sang San Tsuen egret, woodland) have been zoned as "Green Belt" to avoid any direct impacts	Avoid any direct impacts to these sites of conservation importance/habitats with high ecological value	PlanD	Sites of conservation importance/habitats with high ecological value (e.g. San Sang San Tsuen egret, woodland)	Design phase	TM-EIAO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S9.7.2	S10.2.1	The alignment of the two proposed slip roads from the existing KSWH connecting to the Road D3 had been adjusted to locate in existing concrete flood storage pond and its maintenance access road	Avoid loss of semi-natural/natural habitats comprising the CA and the four mitigation ponds	PlanD	Mitigation ponds	Design phase	TM-EIAO
S9.7.3	S10.2.2	Provide a wide “Local Open Space” corridor to maintain the flight lines of San Sang San Tsuen egret	Minimise obstruction between the foraging location in TSW Main Channel and the egret	PlanD	Local Open Space between San Sang San Tsuen egret	Design phase	TM-EIAO
S9.7.5	S10.2.3	Preserve <i>in situ</i> together with the woodland habitat in Tung Tau Tsuen	Protect the plant species of conservation importance	CEDD / PlanD	Woodland habitat in Tung Tau Tsuen	Design phase	TM-EIAO, Cap. 96
Ecology (Construction Phase)							
S9.7.3	S10.2.4	Scheduling the site formation and construction works at Sites 3-32, 3-33, 3-37, 3-39 and 3-40 outside the breeding season of ardeids	Minimise disturbance impacts to breeding ardeids in San Sang San Tsuen egret	CEDD / Contractor	Sites 3-32, 3-33, 3-37, 3-39 and 3-40	Construction phase	TM-EIAO
S9.7.4	S10.2.5	Provision of screening (e.g. hoarding) at adjacent habitats within CA at northwest of San Sang San Tsuen	Disturbance impacts (e.g. noise/vibration, visual) to adjacent habitats within the CA	CEDD / Contractor	CA at northwest of San Sang San Tsuen	Construction phase	TM-EIAO
S9.7.6	S10.2.6	Hoarding around “Green Belt” zoning to mitigate construction disturbance impacts to the Crested Serpent Eagle habitat	Minimise construction disturbance impacts to the Crested Serpent Eagle habitat	CEDD / Contractor	Between the construction work in Sites 3-1, 3-4, 3-5, 3-6, 3-7 and 3-8 and Site 3-2 (Green Belt)	Construction phase	TM-EIAO
S9.7.7	S10.2.7	Carefully design the construction methods and sequence of the proposed pier in the watercourses so that all piling and excavation works would be done within dry zone and physically separated from the watercourse downstream	Minimise potential water quality impacts to the habitats of the main channel and waterbird species	CEDD / Consultant	TSW Main Channel	Construction phase	TM-EIAO
S9.7.8	S10.2.8	An ecologist with relevant experience should be consulted before the clearance of any bat roost	Ensure no bat roost would be damaged due to the proposed development	Ecologist appointed by the Project Proponent	Any identified active bat roost within the Project footprint	Construction phase	Cap. 170
S9.7.11	S10.2.10	Provision of hoarding for proper delineation of works boundary	Minimise construction disturbance impacts to existing mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.14 – S9.7.15	S10.2.11	General dust and noise control measures	Mitigate disturbance impacts to the surrounding habitats and associated wildlife	CEDD / Contractor	All works areas in particular close to sensitive habitats i.e. TSW Main Channel, Ngau Hom Shek knoll, Tung Tau Tsuen woodland, mitigation ponds to the west of Kau Lee Uk Tsuen and San Sang San Tsuen Egret	Construction phase	TM-EIAO
S9.7.16	S10.2.12	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular close to sensitive habitats i.e. TSW Main Channel, Ngau Hom Shek knoll, Tung Tau Tsuen woodland,	Construction phase	TM-EIAO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
					mitigation ponds to the west of Kau Lee Uk Tsuen, San Sang San Tsuen egretty		
S9.7.18 - S9.7.19	S10.2.13 - S10.2.15	Good site practices during the construction phase to avoid any pollution entering any nearby watercourses	Minimise water quality impacts to nearby water bodies	CEDD / Contractor	All works areas in particular work sites close to existing watercourses (e.g. TSW Main Channel) or and mitigation ponds	Construction phase	TM-EIAO
Ecology (Operational Phase)							
S9.7.3	S10.2.17	Buffer planting at the boundaries of Sites 3-32, 3-33, 3-37, 3-39 and 3-40	Minimise disturbance to San Sang San Tsuen egretty during the operational phase	CEDD / Contractor	Sites 3-33, 3-39 and 3-40	Operational phase	TM-EIAO
S9.7.4 and S9.7.6	S10.2.18	Provision of buffer/screen planting at the "Industrial" zone and slip road/CA interface as well as "OU" sites adjacent to Site 3-2	Minimise disturbance to the habitats within the CA	CEDD / Contractor	"Industrial" zone and slip road/CA interface well as "OU" sites adjacent to Site 3-2	Operational phase	TM-EIAO
S9.7.8	S10.2.19	Buffer planting to shield vegetated area from the surrounding developed zones	Minimise human disturbances to habitats of bat	CEDD / PlanD / Contractor	Vegetated areas / developed zones interface	Operational phase	TM-EIAO
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	River channels and vegetated areas	Operational phase	TM-EIAO
S9.7.10	S10.2.16	Replace temporary vegetation loss within Project boundary by native shrub and woodland plantings in areas of open space	Compensate vegetation loss within the Project footprint	CEDD / Contractor	Available areas in "Open Space" zoning	Operational phase	TM-EIAO
S9.7.12	S10.2.20	Retention of tree belt on the eastern side of the larger mitigation pond within the Project boundary	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.13	S10.2.20	Provide amenity strip, additional tree planting and screening measures (e.g. vertical greening walls, green roof, noise barriers) along the new Road P1	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers
S9.7.21	S10.2.22	Develop a Contingency Plan under failure of treatment facilities	Minimise the potential sewage discharges to sensitive area such as Deep Bay WCZ under failure of treatment facilities	DSD / Consultant	San Wai STW, new HSK STW	Operational Phase	TM-EIAO
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	EIA, contractual requirements
Landscape and Visual (Construction [CM] and Operation [OM] Phases)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Table 11.8	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Table 11.8	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	
Table 11.8	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Table 11.8	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the Project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
Table 11.8	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Table 11.8	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.					
Table 11.8	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Table 11.8	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Table 11.8	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Table 11.8	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Table 11.8	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimize land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Table 11.8	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Table 11.8	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Table 11.8	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Table 11.9	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 7/2015. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.	Compensate for felled trees to the satisfaction of relevant Government departments	CEDD (via Contractor)	Throughout NDA	Detailed design, construction stages through to maintenance in operation phase	Tree Removal Application process under ETWBTC 7/2015
Table 11.9	OM2	<u>Sensitive design of above-ground structures</u> All above-ground structures, including Sewage Pumping Stations, Electrical Sub-Stations, EFLS Stations, Emergency and Firemen's' Accesses, etc. shall be sensitively designed in a manner that responds to the existing and planned urban context. The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity.	Ensure aesthetically pleasing designs to improve visual amenity	CEDD / MTR / EFTS Operator	Above ground utility structure as listed	Detailed design, construction stages	
Table 11.9	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Ensure hardscape elements are sensitively designed and respond to planning context	CEDD (via Contractor)	Along roadsides	Detailed design, construction stages through to maintenance in operation phase	
Table 11.9	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments	Reinstate streetscapes to equal or better quality	CEDD (via Contractor)	All streetscape areas	Detailed design, construction stages through to maintenance in operation phase	DEVB TCW 2/2012
Table 11.9	OM5	<u>Visual softening via soft landscape elements</u> Attractive soft landscape in areas adjoining Sewage Pumping Stations, Electrical Sub-Stations, EFTS Stations, Emergency and Firemen's' Accesses, etc. (taking into account the necessary setbacks) so as to provide a visual softening and greening effect (e.g. provision of tree / shrub / climber planting).	Ensure aesthetically pleasing designs for utility structures to improve visual amenity	CEDD (via Contractor)	Utility structures as listed	Detailed design, construction stages through to maintenance in operation phase	DEVB TCW 2/2012
Table 11.9	OM6	<u>Quality greening along roadside amenity strips</u> Shade trees, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality. Provision of utility free planting strips for quality planting shall be adopted according to DEVB TCW 2/2012	Provide pleasant roadside amenity to the benefit of patrons	CEDD (via Contractor)	Along roadsides	Detailed design, construction stages through to maintenance in operation phase	DEVB TCW 2/2012
Table 11.9	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Appropriate design to avoid glare and light pollution	CEDD (via Contractor)	Along roadsides	Detailed design, construction stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Table 11.9	OM8	<u>Sensitive and chromatic treatment of architectural facades</u> Elegant architectural and engineering design, sensitive architectural and chromatic treatment for building facades. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components.	Ensure aesthetically pleasing designs to improve visual amenity	ArchSD, Housing Department, Private Developer	Throughout NDA	Detailed design, construction stages	
Table 11.9	OM9	<u>Sensitive design of landscape areas</u> Elegant, sensitive design and generous planting of the associated landscape areas. Open Space Provision - the principles adopted in the RODP planning ensure that public open space systems are incorporated. All requirements for open space areas stipulated in the planning documents for the formulation of the Preliminary Layout Plan should be adhered to.	Incorporating Open Space Provision principles to improve landscape amenity	ArchSD, Housing Department, Private Developer	Throughout NDA	Detailed design, construction stages through to maintenance in operation phase	
Table 11.9	OM10	<u>Sensitive design of vertical noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.	Ensure aesthetically pleasing designs for noise barriers and enclosures to improve visual amenity	CEDD (via Contractor)	All noise barriers and enclosures	Detailed design, construction stages	
Table 11.9	OM11	<u>Tree planting to site boundaries</u> Tree planting screens along appropriate site boundaries	Provide adequate screening with trees to improve visual amenity	CEDD (via Contractor)	Along site boundaries	Detailed design, construction stages through to maintenance in operation phase	
Table 11.9	OM12	<u>Night time lighting</u> Control of lighting glare. A balance between lighting for safety, and avoiding excessive lighting can be achieved through consideration of the following: the type of lamp (light source) used; use of directional lighting to avoid light spill into sensitive areas; height of the lighting column can affect the amount/extent of glare; and control/timing of lighting periods of some facilities, particularly those close to sites of conservation importance.	Appropriate design to avoid glare and light pollution	ArchSD, Housing Department, Private Developer	Throughout NDA	Detailed design, construction stages	
Table 11.9	OM13	<u>Green roofs and vertical greening</u> Green roofs and vertical greening provision of green roofs and vertical greening where feasible and appropriate to mitigate visual impacts of buildings and structures	Improve landscape amenity to assist in mitigating visual impacts of buildings and structures	Initiating Government Department, Private Developer	Throughout NDA	Detailed design, construction stages through to maintenance in operation phase	
Table 11.9	OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct or noise barrier form.	Improve landscape amenity to assist in mitigating visual impacts of viaduct structure or noise barrier	CEDD (via Contractor)	All viaduct structures and noise barriers as feasible, final location to be confirmed at detailed design stage	Detailed design, construction stages through to maintenance in operation phase	
Cultural Heritage Impact (Construction and Operational Phases)							
Table 12.4	13.1.1	The archaeological impact arising from the construction works should be assessed when the detailed design of the works is available. Preservation in situ is the top priority to safeguard the archaeological remains in the impacted area by amending the layout plans of the construction works. However, if the works cannot avoid disturbance to the archaeological deposit, depending on degree of direct impact, the following mitigation measures should be considered, such as archaeological surveys, archaeological watching brief, preservation by record and relocation of archaeological remains. The scope and programme of the archaeological fieldwork would be agreed with AMO.	Minimise impact to archaeology in SAIs.	Contractor	Tseung Kong Wai SAI (F1) and Tung Tau Tsuen SAI (F2)	Prior to construction phase commencement	<ul style="list-style-type: none"> ➤ Environmental Impact Assessment Ordinance EIAO (Cap.499) and Technical Memorandum (EIAO-TM) ➤ Guidance Note on Assessment of Impact on Sites of Culture Heritage in Environmental Impact Assessment Studies (GCH-EIA)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
							<ul style="list-style-type: none"> ➤ Antiquities and Monuments Ordinance (A&MO) ➤ Hong Kong Planning Standards and Guidelines (HKPSG) ➤ Guidelines for Cultural Heritage Impact Assessment (GCHIA)
Table 12.4	13.1.2	Further archaeological survey is required to be conducted at APA 1 and APA 2 to ascertain the extent of any archaeological remains within the APAs if any construction works will be carried out. Based on the findings of the survey, mitigation measures could be proposed, such as preservation in situ, preservation by record, or relocation of archaeological remains, in prior agreement with the AMO. Direct impact arising from the proposed development within APA 3 should be avoided as far as possible.	Minimise impact to archaeology in APAs.	Contractor	APA 1, APA 2, APA 3	Prior to construction phase commencement	EIAO-TM GCH-EIA A&MO HKPSG GCHIA
12.9.6	13.1.5	Preservation by record (including cartographic and photographic record) prior to any construction works would be required for the directly impacted built heritage.	Minimise impact to built heritage	Contractor	Twelve nil grade built heritage in Yick Yuen Tsuen, Tin Sam San Tsuen and south of Tin Sam that are going to be directly impacted during the construction phase by land site formation works.	Prior to construction phase commencement	EIAO-TM GCH-EIA HKPSG GCHIA
12.9.7	---	A Conservation Management Plan should be proposed to implement future maintenance and management of the cultural heritage.	Maximise the public education, heritage and cultural tourism related opportunities in this area as heritage attractions.	CEDD	Graded Historic buildings, declared monuments and nil grade built heritage in Ha Tsuen area mostly within the "Village Type Development" and "Green Belt" zone.	Prior to construction phase commencement	EIAO-TM GCH-EIA A&MO HKPSG GCHIA
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP1 - Construction of new primary distributor road (P1))							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Construction Noise							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S4.6	S5.13	Use of quiet plant which should be made reference to the Powered Mechanical Equipment (PME) listed in the Technical Memorandum or the Quality Powered Mechanical Equipment (QPME) / other commonly used PME listed in Environmental Protection Department (EPD) web pages as far as possible which includes the Sound Power Level (SWLs) for specific quiet PME.	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction Phase	EIAO-TM
S4.6	S5.13	Install movable noise barrier and enclosures. The movable noise barrier can provide 5 dB(A) noise reduction for mobile plant and 10 dB(A) noise reduction for static plant. The barrier material shall have a surface mass of not less than 14 kg/m ² . The enclosures can provide 15 dB(A) noise reduction..	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction Phase	EIAO-TM
S4.6	S5.13	Good site practices listed below shall be adopted by all the contractors to further ameliorate the noise impacts. <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	Control construction airborne noise	Contractor	All construction work sites where practicable	Construction Phase	EIAO-TM
Operational Noise (Road Traffic Noise)							
S4.7	S5.13	Provide low noise surfacing material on Road P1	Reduce operation noise from road traffic	CEDD (commencement stage) & HyD (during operation phase)	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs, it should be constructed before population intake of planned NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers for the planned noise sensitive receivers	Reduce operation noise from road traffic	Relevant government departments / Private developers	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for planned NSRs.	EIAO-TM
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
S5.14	6.11	Exposed surface shall be avoided within the development sites to minimise soil erosion. The development site shall be either hard paved or covered by landscaping area and plantation where appropriate.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S5.14	6.11	The major water channels and nullahs within the development sites should be retained as far as practicable to maintain the original flow path. The drainage system should be designed to avoid flooding.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Green areas / tree / shrub planting etc. should be introduced within the development site as far as possible including open space and along roadside amenity strips and central dividers, which can help to reduce soil erosion.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Road gullies with standard design and silt traps and oil interceptors should be incorporated during the detailed design to remove particles present in stormwater run-off, where appropriate.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Evergreen tree species, which in general generate relatively smaller amount of fallen leaves, should be selected where possible.	To minimise non-point source storm pollution	Future Operator	DP1	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	Good management measures such as regular cleaning and sweeping of road surface/ open areas are suggested. The road surface/ open area cleaning should also be carried out prior to occurrence rainstorm.	To minimise non-point source storm pollution	Future Operator	DP1	Operational phase	WPCO, EIAO-TM
S5.14	6.11	Manholes, as well as stormwater gullies, ditches provided at the development sites should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall.	To minimise non-point source storm pollution	Future Operator	DP1	Operational phase	WPCO, EIAO-TM
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Construction Phase)							
S9.7.4	S10.2.5	Provision of screening (e.g. hoarding) at adjacent habitats within CA at northwest of San Sang San Tsuen	Disturbance impacts (e.g. noise/vibration, visual) to adjacent habitats within the CA	CEDD / Contractor	CA at northwest of San Sang San Tsuen	Construction phase	TM-EIAO
S9.7.11	S10.2.10	Provision of hoarding for proper delineation of works boundary	Minimise construction disturbance impacts to existing mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.14 – S9.7.15 and S9.7.18	S10.2.11	General good site practice for control of dust, noise and water quality	Mitigate disturbance impacts to the mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.16	S10.2.12	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular sensitive habitats i.e. mitigation ponds to the west of Kau Lee Uk Tsuen, San Sang San Tsuen egretry	Construction phase	TM-EIAO
Ecology (Operational Phase)							
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	River channels and vegetated areas	Operational phase	TM-EIAO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S9.7.13	S10.2.20	Retention of tree belt on the eastern side of the larger mitigation pond within the Project boundary	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.12	S10.2.20	Provide amenity strip, additional tree planting and screening measures (e.g. vertical greening walls, green roof, noise barriers) along the new Road P1	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 DP Package A – Table 11.6	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 DP Package A – Table 11.6	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	
Schedule 2 DP Package A – Table 11.6	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 DP Package A – Table 11.6	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the Project programme.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					
Schedule 2 DP Package A – Table 11.6	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package A – Table 11.6	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.6	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 DP Package A – Table 11.6	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 DP Package A – Table 11.7	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	
Schedule 2 DP Package A – Table 11.7	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscapes	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/	Streetscape and hard and soft landscape areas	Detailed design, construction and establishment works stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
				Contractor			
Schedule 2 DP Package A – Table 11.7	OM6	<u>Quality greening along roadside amenity strips</u> Furniture, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Along roadside amenity	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Minimise potential adverse landscape and visual impacts	Detailed Design Consultant	Streetscapes	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM10	<u>Sensitive design of vertical noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.	Minimise potential adverse landscape and visual impacts	Government Contractor) (via	Noise barriers and enclosures	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct or noise barrier form.	Improve landscape amenity to assist in mitigating visual impacts of viaduct structure or noise barrier	CEDD (via Contractor)	All viaduct structures and noise barriers as feasible, final location to be confirmed at detailed design stage	Detailed design, construction stages through to maintenance in operation phase	
Cultural Heritage Impact (Construction and Operational Phase)							
12.11.2	---	No impact to cultural heritage is anticipated. Hence no mitigation measures required.	---	---	---	---	---
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP2 - Construction of eight new distributor roads (D1 to D8))							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Construction Noise							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Operational Noise (Road Traffic Noise)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S4.7	S5.13	Provide low noise surfacing material on Planned Road P1, D1, D2, D3, D4 and D5	Reduce operation noise from road traffic	CEDD (commencement stage) & HyD (during operation phase)	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs, it should be constructed before population intake of planned NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers for the existing noise sensitive receivers:	Reduce operation noise from road traffic	CEDD	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers for the planned noise sensitive receivers:	Reduce operation noise from road traffic	Relevant government departments / Private developers	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for planned NSRs.	EIAO-TM
S4.7	S5.13	Alternative development layout, special building design for the noise sensitive facades at some planned residential sites (Table 4.29 and 4.33 of EIA Report)	Reduce operation noise from road traffic	Housing Department/Private Developers	Refer to Figure 4.7.17 – 4.7.27.	Prior to operation of the Project for planned NSRs.	EIAO-TM
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Construction Phase)							
S9.7.16	S10.2.12	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular sensitive habitats i.e. Tung Tau Tsuen woodland, San Sang San Tsuen egretty	Construction phase	TM-EIAO
S9.7.18	S10.2.13 - S10.2.15	Good site practices during the construction phase to avoid any pollution entering any nearby watercourses	Minimise water quality impacts to nearby water bodies	CEDD / Contractor	All works areas in particular work sites close to existing watercourses	Construction phase	TM-EIAO
Ecology (Operational Phase)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	River channels and vegetated areas	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 DP Package A – Table 11.6	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 DP Package A – Table 11.6	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	
Schedule 2 DP Package A – Table 11.6	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 DP Package A – Table 11.6	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.					
Schedule 2 DP Package A – Table 11.6	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/ rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/ rivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package A – Table 11.6	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Schedule 2 DP Package A – Table 11.6	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/ rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
							natural streams/ivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 DP Package A – Table 11.6	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/ivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/ivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 DP Package A – Table 11.7	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	
Schedule 2 DP Package A – Table 11.7	OM2	<u>Sensitive design of above-ground structures</u> All above-ground structures, including SPSs, Electrical Sub-Stations, EFLS Stations, Emergency and Firemens' Accesses, etc. shall be sensitively designed in a manner that responds to the existing and planned urban context. The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity.	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	Throughout NDA	Prior to construction	Schedule 2 DP Package A – Table 11.7
Schedule 2 DP Package A – Table 11.7	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscapes	Detailed design, construction and establishment works stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.7	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscape and hard and soft landscape areas	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM6	<u>Quality greening along roadside amenity strips</u> Furniture, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Along roadside amenity	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Minimise potential adverse landscape and visual impacts	Detailed Design Consultant	Streetscapes	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM8	<u>Sensitive and chromatic treatment of architectural facades</u> Elegant architectural and engineering design, sensitive architectural and chromatic treatment for building facades. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components.	Minimise potential adverse landscape and visual impacts	Government/ Developer/ Detailed Design Consultant	All development areas	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM9	<u>Sensitive design of landscape areas</u> Elegant, sensitive design and generous planting of the associated landscape areas. Open Space Provision - the principles adopted in the Revised RODP planning ensure that public open space systems are incorporated. All requirements for open space areas stipulated in the planning documents for the formulation of the Preliminary Layout Plan should be adhered to.	Compensate for impacts on existing landscape, reinstating to equal or better quality Reprovision of open space. Enhance visual amenity of the area and improve the overall landscape character	Government/ Developer/ Detailed Design Consultant/ Contractor	All development areas	Detailed design stage	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines
Schedule 2 DP Package A – Table 11.7	OM10	<u>Sensitive design of vertical noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.	Minimise potential adverse landscape and visual impacts	Government (via Contractor)	Noise barriers and enclosures	Detailed design stage	Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012) Dev. Bureau, Greening, Landscaping & Tree Management Section, Guidelines on Greening of Noise Barriers (April 2012)
Schedule 2 DP Package A – Table 11.7	OM12	<u>Night time lighting</u> Control of lighting glare. A balance between lighting for safety, and avoiding excessive lighting can be achieved through consideration of the following: the type of lamp (light source) used; use of directional lighting to avoid light spill into sensitive areas; height of the lighting column can affect the amount/extent of glare; and control/timing of lighting periods of some facilities, particularly those close to sites of conservation importance.	Minimise potential adverse landscape and visual impacts	Government/ Developer	All areas with lighting	Detailed design, construction and establishment works stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Cultural Heritage Impact (Construction and Operational Phase)							
12.10.4	13.1.1	The archaeological impact arising from the construction works should be assessed when the detailed design of the works is available. Preservation in situ is the top priority to safeguard the archaeological remains in the impacted area by amending the layout plans of the construction works. However, if the works cannot avoid disturbance to the archaeological deposit, depending on degree of direct impact, the following mitigation measures should be considered, such as archaeological surveys, archaeological watching brief, preservation by record and relocation of archaeological remains. The scope and programme of the archaeological fieldwork would be agreed with AMO.	Minimise impact to archaeology to SAIs.	Contractor	Tseung Kong Wai SAI (F1)	Prior to construction phase commencement	EIAO-TM GCH-EIA A&MO HKPSG GCHIA
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP5 - Construction of slip roads (between: Road D8 Junction and existing Castle Peak Road; Junction of D8/P1 and Junction of D7/P1; and KSWH connection to Road D3))							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Construction Noise							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Design Phase)							
S9.7.2	S10.1.1	The alignment of the two proposed slip roads from the existing KSWH connecting to the Road D3 had been adjusted to locate in existing drainage channel and its maintenance access road	Avoid loss of semi-natural/natural habitats comprising the CA and the four mitigation ponds	PlanD	Mitigation ponds	Design phase	TM-EIAO
Ecology (Construction Phase)							
S9.7.11	S10.2.10	Provision of hoarding for proper delineation of works boundary	Minimise construction disturbance impacts to existing mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S9.7.14 - S9.7.15	S10.2.11	General dust and noise control measures	Mitigate disturbance impacts to the mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.16	S10.2.12	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular sensitive habitats i.e. mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.18	S10.2.13 - S10.2.15	Good site practices during the construction phase to avoid any pollution entering any nearby watercourses	Minimise water quality impacts to nearby water bodies	CEDD / Contractor	All works areas in particular work sites close to existing mitigation ponds	Construction phase	TM-EIAO
Ecology (Operational Phase)							
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	Mitigation ponds to west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.12	S10.2.20	Retention of tree belt on the eastern side of the larger mitigation pond within the Project boundary	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.12	S10.2.20	Provide amenity strip, additional tree planting and screening measures (e.g. vertical greening walls, green roof, noise barriers) along the new Road P1	Provide screening for the existing ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 DP Package A – Table 11.6	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 DP Package A – Table 11.6	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.6	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 DP Package A – Table 11.6	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the Project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
Schedule 2 DP Package A – Table 11.6	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.6	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package A – Table 11.6	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Schedule 2 DP Package A – Table 11.6	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 DP Package A – Table 11.6	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 DP Package A – Table 11.7	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase &	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.		Consultant/ Contractor		Maintenance in Operation Phase	
Schedule 2 DP Package A – Table 11.7	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscapes	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscape and hard and soft landscape areas	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM6	<u>Quality greening along roadside amenity strips</u> Furniture, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Along roadside amenity	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Minimise potential adverse landscape and visual impacts	Detailed Design Consultant	Streetscapes	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct or noise barrier form.	Improve landscape amenity to assist in mitigating visual impacts of viaduct structure or noise barrier	CEDD (via Contractor)	All viaduct structures and noise barriers as feasible, final location to be confirmed at detailed design stage	Detailed design, construction stages through to maintenance in operation phase	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;
Cultural Heritage Impact (Construction and Operational Phase)							
12.11.2	---	No impact to cultural heritage is anticipated. Hence no mitigation measures required.	---	---	---	---	---
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP6 - Construction of partly depressed and decked-over roads (Road D2; Road D4; and Road D6))							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Construction Noise							
As per input under 'Common Mitigation Measures (Applicable to DP1) above							
Operational Noise (Road Traffic Noise)							
S4.7	S5.13	Provide low noise surfacing material on D2 and D4	Reduce operation noise from road traffic	CEDD (commencement stage) & HyD (during operation phase)	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs. While for mitigation measures to protect planned NSRs, it should be constructed before population intake of planned NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers for the existing noise sensitive receivers:	Reduce operation noise from road traffic	CEDD	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for existing NSRs.	EIAO-TM
S4.7	S5.13	Provide noise barriers for the planned noise sensitive receivers:	Reduce operation noise from road traffic	Relevant government departments / Private developers	Refer to Figure 4.7.1 to 4.7.16.	Prior to operation of the Project for planned NSRs.	EIAO-TM
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
As per input under 'Common Mitigation Measures (Applicable to DP1) above							
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Construction Phase)							
S9.7.16	S10.2.14	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular sensitive habitats i.e. Tung Tau Tsuen woodland	Construction phase	TM-EIAO
S9.7.18	S10.2.13 - S10.2.15	Good site practices during the construction phase to avoid any pollution entering any nearby watercourses	Minimise water quality impacts to nearby water bodies	CEDD / Contractor	All works areas in particular work sites close to existing watercourses (e.g. TSW Main Channel)	Construction phase	TM-EIAO
Ecology (Operational Phase)							
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	River channels and vegetated areas	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 DP Package A – Table 11.6	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 DP Package A – Table 11.6	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	
Schedule 2 DP Package A – Table 11.6	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 DP Package A – Table 11.6	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.6	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Schedule 2 DP Package A – Table 11.6	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package A – Table 11.6	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package A – Table 11.6	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Schedule 2 DP Package A – Table 11.6	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.6	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 DP Package A – Table 11.6	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 DP Package A – Table 11.7	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	
Schedule 2 DP Package A – Table 11.7	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscapes	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscape and hard and soft landscape areas	Detailed design, construction and establishment works stages	
Schedule 2 DP Package A – Table 11.7	OM6	<u>Quality greening along roadside amenity strips</u> Furniture, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Along roadside amenity	Detailed design, construction and establishment works stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package A – Table 11.7	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Minimise potential adverse landscape and visual impacts	Detailed Design Consultant	Streetscapes	Detailed design stage	
Schedule 2 DP Package A – Table 11.7	OM10	<u>Sensitive design of noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.	Minimise potential adverse landscape and visual impacts	Government Contractor) (via	Noise barriers and enclosures	Detailed design stage	Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012) Dev. Bureau, Greening, Landscaping & Tree Management Section, Guidelines on Greening of Noise Barriers (Apr12)
Schedule 2 DP Package A – Table 11.7	OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct or noise barrier form.	Improve landscape amenity to assist in mitigating visual impacts of viaduct structure or noise barrier	CEDD (via Contractor)	All viaduct structures and noise barriers as feasible, final location to be confirmed at detailed design stage	Detailed design, construction stages through to maintenance in operation phase	
Cultural Heritage Impact (Construction and Operational Phase)							
12.11.2	---	No impact to cultural heritage is anticipated. Hence no mitigation measures required.	---	---	---	---	---
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP9 - Construction of four new sewage pumping stations (Sites 2-34; 3-41; 3-48; and 4-35))							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Construction Noise							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Operational Noise (Fixed Noise)							
S4.9	S5.13	The maximum allowable sound power levels for the planned fixed plant noise sources including the four planned SPSs (DP9) as presented in Section 4.9 of the EIA Report should be achieved such that the nearest NSRs can be in compliance with the TM noise criteria. Provision of enclosures on the noisy sewage facilities and acoustic silencers for the ventilation shaft of the four planned SPSs is recommended to alleviate the fixed plant noise impact. For existing and planned NSRs which are located near to the proposed noise sources, the following tentative noise mitigation measures are considered: <ul style="list-style-type: none"> All the pumps and noisy plants should be enclosed inside building structures; Proper selection of quiet plant to reduce the tonality at NSRs; 	Reduce operation fixed noise	Relevant government departments / Future Operator	Sewage Pumping Stations	Design and Operational phase	Noise Control Ordinance and its TM, EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		<ul style="list-style-type: none"> Installation of silencer / acoustic enclosure / acoustic louvers for the exhaust of ventilation system. Openings of ventilation system should be located away from NSRs. 					
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
S5.14	6.11	Precautionary measures are proposed in the design of the SPS: <ul style="list-style-type: none"> A standby pump and screen should be provided to cater for breakdown and maintenance of the duty pump in order to avoid emergency discharge. Backup power supply in the form of dual / ring circuit power supply or generator should be provided to secure electricity supply. An alarm should be installed to signal emergency high water level in the wet well. An emergency storage tank / spare volume of wet well should be provided for the proposed SPS to cater for breakdown and maintenance of duty pump. Regular maintenance and checking of plant equipment should be undertaken to prevent equipment failure. Twin rising mains system should be provided to facilitate maintenance works and to avoid emergency discharge of sewage. A telemetry system to the nearest manned station / plant should be provided so that swift action can be undertaken in case of malfunction of the unmanned facilities. A bar screen (with clear spacing of approximately 25 mm) should be provided to cover the lower half of the opening of any emergency sewage bypass which can prevent the discharge of floating solids into receiving waters as far as practicable while ensuring flooding at the facilities would not occur event if the screen is blocked. 	To minimise impact from emergency sewage discharge	Future Operator	SPSs	Design and Operational phase	WPCO, EIAO-TM
S5.14	6.11	A Contingency Plan to deal with the emergency discharges that may occur during operation of the SPS should be developed in the detailed design stage including the following items: <ul style="list-style-type: none"> Locations of water bodies or WSRs in the vicinity of the emergency discharges. A list of relevant government departments to be informed and to provide assistance in the event of emergency discharge, including key contact persons and telephone numbers. Reporting procedures required in the event of emergency discharges. Procedures listing the most effective means in rectifying the breakdown of the SPS in order to minimise the discharge duration. 	To minimise impact from emergency sewage discharge	Future Operator	SPSs	Design and Operational phase	WPCO, EIAO-TM
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Construction Phase)							
S9.7.4	S10.2.5	Provision of screening (e.g. hoarding) at adjacent habitats within CA at northwest of San Sang San Tsuen	Disturbance impacts (e.g. noise/vibration, visual) to adjacent habitats within the CA	CEDD / Contractor	CA at northwest of San Sang San Tsuen	Construction phase	TM-EIAO
Fisheries							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 DP Package B – Table 11.6B	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 DP Package B – Table 11.6B	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 DP Package B – Table 11.6B	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the Project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
Schedule 2 DP Package B – Table 11.6B	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package B – Table 11.6B	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 DP Package B – Table 11.6B	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 DP Package B – Table 11.6B	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package B – Table 11.6B	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Schedule 2 DP Package B – Table 11.6B	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 DP Package B – Table 11.6B	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 DP Package B – Table 11.7B	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004
Schedule 2 DP Package B – Table 11.7B	OM2	<u>Sensitive design of above-ground structures</u> All above-ground structures, including SPSS, Electrical Sub-Stations, EFLS Stations, Emergency and Firemens' Accesses, etc. shall be sensitively designed in a manner that responds to the existing and planned urban context.	Improve visual amenity of the new buildings, NDAs in general and integrate as best possible into the surrounding landscape	Detailed Design Consultant	Throughout NDA	Prior to construction	Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines CIBSE HK Branch,

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		The footprint and massing of development components and the works area should also be kept to a practical minimum and the detailed design of development components for Construction phase should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity.					Technical Guidelines for Green Roof Systems in Hong Kong (2011)
Schedule 2 DP Package B – Table 11.7B	OM5	<u>Visual softening via soft landscape elements</u> Attractive soft landscape in areas adjoining SPSs, Electrical Sub-Stations, EFLS Stations, Emergency and Firemen's' Accesses, etc. (taking into account the necessary setbacks) so as to provide a visual softening and greening effect.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Areas adjoining SPSs, Electrical Sub-Stations, EFLS Stations, Emergency and Firemen's' Accesses, etc.	Detailed design, construction and establishment works stages	
Schedule 2 DP Package B – Table 11.7B	OM8	<u>Sensitive and chromatic treatment of architectural facades</u> Elegant architectural and engineering design, sensitive architectural and chromatic treatment for building facades. The form, textures, finishes and colours of the proposed development components should aim to be compatible with the existing surroundings. To improve visual amenity designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example, natural building materials such as stone and timber, should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components.	Minimise potential adverse landscape and visual impacts	Government/ Developer/ Detailed Design Consultant	All development areas	Detailed design stage	
Schedule 2 DP Package B – Table 11.7B	OM11	<u>Tree planting to site boundaries</u> Tree planting screens along appropriate site boundaries. Tall screen/buffer trees and shrubs should be planted. This measure may additionally form part of the compensatory planting.	To screen proposed structures such as roads and buildings. Improve compatibility with the surrounding environment and create a pleasant pedestrian environment	Government / Developer/ Detailed Design Consultant/ Contractor	Along site boundaries	Detailed design, construction and establishment works stages	ETWBTC 3/2006
Schedule 2 DP Package B – Table 11.7B	OM12	<u>Night time lighting</u> Control of lighting glare. A balance between lighting for safety, and avoiding excessive lighting can be achieved through consideration of the following: the type of lamp (light source) used; use of directional lighting to avoid light spill into sensitive areas; height of the lighting column can affect the amount/extent of glare; and control/timing of lighting periods of some facilities, particularly those close to sites of conservation importance.	Minimise potential adverse landscape and visual impacts	Government/ Developer	All areas with lighting	Detailed design, construction and establishment works stages	
Schedule 2 DP Package B – Table 11.7B	OM13	<u>Green roofs and vertical greening</u> Green Roofs and Vertical Greening provision of green roofs and vertical greening where feasible and appropriate to mitigate visual impacts of buildings and structures. Roof greening where appropriate should be established on proposed buildings as per the guidelines stated. These guidelines provide further details including information regarding structural loading, design, maintenance, etc. considerations as well as providing information on what types of plants might be suitable.	Reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels. Provide greening.	Initiating Government Department, Private Developer	Feasible and appropriate buildings and structures	Detailed design, construction and establishment works stages	ArchSD/Urbis Study on Green Roof Application in HK (2007). Hong Kong Planning Standards and Guidelines (HKPSG) issued by the Planning Department (As at Aug 2011); Sustainable Building Design Guidelines CIBSE HK Branch, Technical Guidelines for Green Roof Systems in Hong Kong (2011) ETWB TCW No. 11/2004 – Cyber Manual for Greening
Cultural Heritage Impact (Construction and Operational Phase)							
12.11.2	---	No impact to cultural heritage is anticipated. Hence no mitigation measures required.	---	---	---	---	---
EM&A Project							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
Common Mitigation Measures (Applicable to DP12 - Construction of Road P1 and slip-road partly in "Conservation Area" of Yuen Tau Shan)							
Construction Dust Impact							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Construction Noise							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Operational Noise (Road Traffic Noise)							
S4.7	S5.13	Provide low noise surfacing material on Road P1	Reduce operation noise from road traffic	CEDD (commencement stage) & HyD (during operation phase)	Refer to Figure 4.7.1 to 4.7.16.	It should be constructed before population intake of planned NSRs.	EIAO-TM
Water Quality (Construction Phase)							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Water Quality (Operational Phase)							
As per input under 'Common Mitigation Measures (Applicable to DP1)' above							
Waste Management							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Land Contamination							
As per input under 'Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPs)' above							
Ecology (Construction Phase)							
S9.7.4	S10.2.5	Provision of screening (e.g. hoarding) at adjacent habitats within CA at northwest of San Sang San Tsuen	Disturbance impacts (e.g. noise/vibration, visual) to adjacent habitats within the CA	CEDD / Contractor	CA at northwest of San Sang San Tsuen	Construction phase	TM-EIAO
S9.7.11	S10.2.10	Provision of hoarding for proper delineation of works boundary	Minimise construction disturbance impacts to existing mitigation ponds	CEDD / Contractor	Mitigation ponds to the west of Kau Lee Uk Tsuen	Construction phase	TM-EIAO
S9.7.14 – S9.7.15	S10.2.11	General dust and noise control measures	Mitigate disturbance impacts to the surrounding habitats and associated wildlife	CEDD / Contractor	All works areas in particular close to sensitive habitats i.e. TSW Main Channel, Ngau Hom Shek knoll, Tung Tau Tsuen woodland, mitigation ponds to the west of Kau	Construction phase	TM-EIAO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
					Lee Uk Tsuen and San Sang San Tsuen Egretty		
S9.7.16	S10.2.12	Night-time lighting control	Minimise glare disturbance to wildlife	CEDD / Contractor	All works areas in particular close to sensitive habitats i.e. TSW Main Channel, Ngau Hom Shek knoll, Tung Tau Tsuen woodland, mitigation ponds to the west of Kau Lee Uk Tsuen, San Sang San Tsuen egretty	Construction phase	TM-EIAO
S9.7.18 - S9.7.19	S10.2.13 - S10.2.15	Good site practices during the construction phase to avoid any pollution entering any nearby watercourses	Minimise water quality impacts to nearby water bodies	CEDD / Contractor	All works areas in particular work sites close to existing watercourses (e.g. TSW Main Channel) or and mitigation ponds	Construction phase	TM-EIAO
Ecology (Operational Phase)							
S9.7.4 and S9.7.6	S10.2.18	Provision of buffer/screen planting at the "Industrial" zone and slip road/CA interface as well as "OU" sites adjacent to Site 3-2	Minimise disturbance to the habitats within the CA	CEDD / Contractor	"Industrial" zone and slip road/CA interface well as "OU" sites adjacent to Site 3-2	Operational phase	TM-EIAO
S9.7.8	S10.2.19	Minimise the lighting along river channel and near vegetated areas in CA or "GB" zones or incorporate wildlife-friendly lighting	Minimise level of light pollution and disturbance to wildlife	CEDD / PlanD	River channels and vegetated areas	Operational phase	TM-EIAO
S9.7.17	S10.2.21	Use of tinted materials and superimposing dark patterns or strips on the noise barriers, as per EPD/Highways Department requirements	Minimise bird mortality from collision	CEDD / Contractor	Major road networks with noise barriers installed	Operational phase	Guidelines on Design of Noise Barriers
Fisheries							
S.10.7	S13.4.8	Follow the mitigation measures proposed in the water quality assessment for construction and operational phase	To protect fisheries resources from potential indirect impacts arising from deterioration of water quality	Contractor	Within the boundaries of the Project	Construction phase	TM-EIAO, contractual requirements
Landscape and Visual (Construction Phase)							
Schedule 2 Package A – Table 11.6	CM1	<u>Minimised construction area and contractor's temporary works areas</u> The construction area and contractor's temporary works areas should be minimised. General Good Practice Measures - For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to.	Minimise impacts on adjacent landscape	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Prior to construction, construction stages. This should be implemented as soon as the areas become available, to achieve early establishment	
Schedule 2 Package A – Table 11.6	CM2	<u>Stripping and storing of topsoil</u> Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. On potentially contaminated sites (as per Section 8) where investigation results indicate soil contamination is present, the use of contaminated soils for planting is to be avoided where appropriate.	Minimise the loss of existing topsoil and reduce the need to provide imported material	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas	Detailed design, construction stages	

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 Package A – Table 11.6	CM3	<u>Protection of existing trees</u> Tree Protection & Preservation – Existing trees to be retained within the Project Site should be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained.	Protect and Preserve Trees	Government/ Developer/ Detailed Design Consultant/ Contractor	On site	Detailed design, construction stages	ETWB Technical Circular Works (TCW) No. 29/2004 and 3/2006
Schedule 2 Package A – Table 11.6	CM4	<u>Transplantation of existing trees where practical</u> Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the Project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final locations of transplanted trees should be agreed prior to commencement of the work. For trees associated with highways e.g. roadside planting along highways, that are unavoidably affected and should be transplanted, HyD HQ/GN/13 'Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit' should be referred to.	Transplant Trees where suitable for transplantation	Government/ Developer/ Detailed Design Consultant/ Contractor	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW 3/2006 and 2/2004 HyD HQ/GN/13 Interim Guidelines for Tree Transplanting Works under Highways Department's Vegetation Maintenance Ambit
Schedule 2 Package A – Table 11.6	CM5	<u>Control of night-time lighting</u> Control of night-time lighting and glare by hooding all lights. Construction day and night time lighting should be controlled to minimise glare impact to adjacent VSRs during the Construction phase.	Minimise impact of night-time lighting and glare	Government/ Developer/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 Package A – Table 11.6	CM6	<u>Construction of decorative hoarding around construction works</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publically accessible routes and/or is close to visually sensitive receivers (VSRs). It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.	To screen undesirable views of the works site.	Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 Package A – Table 11.6	CM7	<u>Reduction of construction period to practical minimum</u> Reduction of construction period to practical minimum.	Minimise length of exposure to construction works	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 Package A – Table 11.6	CM8	<u>Prevention of run-off</u> Limitation of / Ensuring no run-off into surrounding landscape and prohibit run-off from entering adjacent water bodies and waterways Refer to guidelines.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
Schedule 2 Package A – Table 11.6	CM9	<u>Phasing of construction stage</u> Phasing of the construction stage to reduce visual impacts.	Minimise visual impacts during the construction phase	Government/ Developer/ Detailed Design Consultant/ Contractor	All construction areas and temporary works areas	Construction stage	
Schedule 2 Package A – Table 11.6	CM10	<u>Advance screen planting</u> Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	Minimise length of exposure without long term mitigation measures	Government/ Developer/ Detailed Design Consultant/ Contractor	Areas adjacent to noise barriers and hoardings	Detailed design, construction stages	ETWB TCW 3/2006 and 2/2004
Schedule 2 Package A – Table 11.6	CM11	<u>Minimise disturbance footprints</u> To minimise landscape and visual impacts, the footprint and elevation of such elements should be optimised to reduce topographical/ landform changes, as well as reduce land take and interference with natural terrain. Where there is a need to significantly cut into the existing landform, retaining walls should be considered as well as cut slopes, to minimise landform changes and land resumption, while also considering visual amenity. Earthworks and engineered slopes should be designed to be a visually interesting landform, compatible with the surrounding landscape and to mimic the natural contouring and terrain e.g. introduction and continuation of natural features such as spurs and ridges where appropriate, to support assimilation with the hillside setting.	Reduce topographical changes and minimise land resumption	Government/ Developer/ Detailed Design Consultant/ Contractor	Throughout NDA	Detailed design, construction stages	GEO Publication No. 1/2011, Technical Guidelines on Landscape Treatment on Slopes
Schedule 2 Package A – Table 11.6	CM12	<u>Protection of existing water courses</u> For all the natural rivers and streams inside the development area, consideration of protection measures should be made to minimise any impacts from the construction works. Avoid affecting Watercourses – In the detailed design, consideration should be made of watercourses, to minimise any impacts e.g. at new bridge crossings, viaducts, road alignment etc. Guidelines stated should be followed. Bridges and box culverts should also be used to minimise the necessity of watercourse modification and protect the watercourses where necessary.	Avoid direct impacts to watercourses	Detailed Design Consultant/ Contractor	All natural rivers and streams inside development area	Detailed design, construction stages	Guidelines for this include ETWB Technical Circular (Works) No. 5/2005 Protection of natural streams/rivers from adverse impacts arising from construction works; Building Department (BD) Practice Note for Authorised Persons and Registered Structural Engineers 295: Protection of natural streams/rivers from adverse impacts arising from construction works
Schedule 2 Package A – Table 11.6	CM13	<u>Hydroseeding on modified slopes</u> Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes.	To prevent erosion and subsequent loss of landscape resources and character. To ensure man-made slopes are as visually amenable as possible.	Government/ Developer/ Detailed Design Consultant/ Contractor	Modified slopes onsite	Prior to Construction, Construction Phase & Maintenance in Operation Phase	GEO publication (1999) – Use of Vegetation as Surface Protection on Slope; GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
Schedule 2 Package A – Table 11.6	CM14	<u>Integrate Open Space Network with existing nullah conditions</u> For watercourses affected during construction, measures should be sought to minimise the impact with respect to the existing nullah conditions, existing shrubs and trees along the banks. Where natural streams are unavoidably affected along some of their length, they can be diverted to avoid the proposed new developments and retain the integrity of the whole stream. Detailed design of any stream diversion should follow the Guidelines in ETWB Technical Circular (Works) No. 5/2005 (Protection of natural streams/rivers from adverse impacts arising from construction works) and appropriate construction methods should be used.	Minimise / limit impacts on surrounding landscape and adjacent water sea areas	Government/ Developer/ Detailed Design Consultant/ Contractor	Watercourses affected during construction	Prior to Construction, Construction Phase & Maintenance in Operation Phase	ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works; DSD Practice Note No.1/2005, Guidelines on Environmental Considerations for River Channel Design
Landscape and Visual (Operational Phase)							
Schedule 2 Package A – Table 11.7	OM1	<u>Compensatory tree planting where practical</u> Compensatory Planting – Compensatory tree planting for felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Removal Application process under ETWBTC 3/2006.	Compensate for trees and shrubs lost due to the Project.	Government / Developer/ Detailed Design Consultant/	Onsite where possible. Otherwise consider offsite locations	Prior to Construction, Construction Phase & Maintenance	

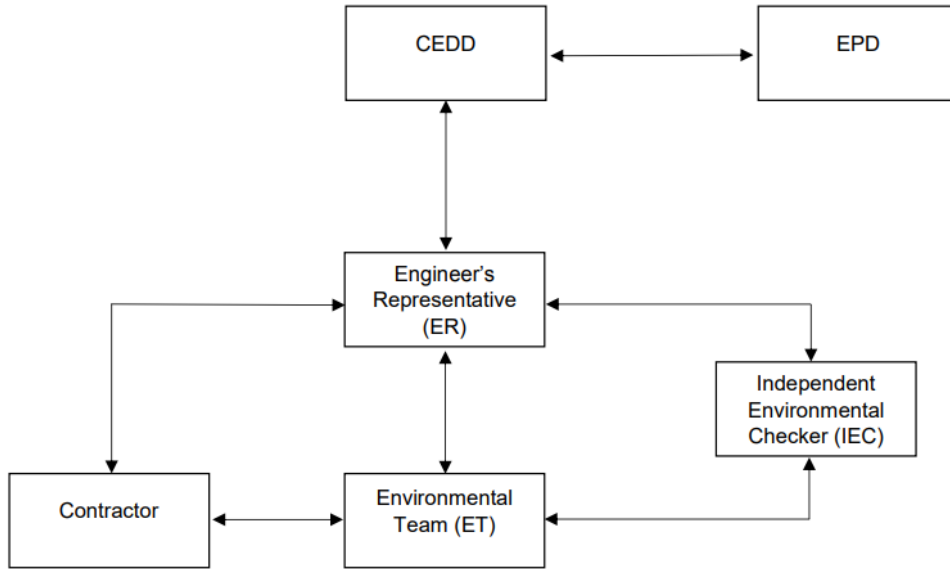
EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
		Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots. Tree compensation within the HSK NDA will be provided at a 1:1 ratio. This means that for every tree that is removed, a new one will be planted. Furthermore, trees affected by DPs will be compensated within their respective DP areas.		Contractor		in Operation Phase	
Schedule 2 Package A – Table 11.7	OM3	<u>Sensitive design of hardscape elements along roadsides</u> Streetscape elements along new and existing roads (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the existing and planned urban context.	Minimise potential adverse landscape and visual impacts	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscapes	Detailed design, construction and establishment works stages	
Schedule 2 Package A – Table 11.7	OM4	<u>Reinstatement of streetscape elements</u> All streetscape areas and hard and soft landscape areas disturbed during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government departments.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Streetscape and hard and soft landscape areas	Detailed design, construction and establishment works stages	
Schedule 2 Package A – Table 11.7	OM6	<u>Quality greening along roadside amenity strips</u> Furniture, ornamental tree / shrub / climber planting should be provided along roadside amenity strips to enhance the townscape quality.	Compensate for impacts on existing landscape, reinstating to equal or better quality	Government / Developer/ Detailed Design Consultant/ Contractor	Along roadside amenity	Detailed design, construction and establishment works stages	
Schedule 2 Package A – Table 11.7	OM7	<u>Design of street lighting</u> Appropriate design of street lighting to avoid glare and light pollution to surrounding areas.	Minimise potential adverse landscape and visual impacts	Detailed Design Consultant	Streetscapes	Detailed design stage	
Schedule 2 Package A – Table 11.7	OM10	<u>Sensitive design of vertical noise barriers and enclosures</u> The visual impact of noise barriers & enclosures will be mitigated by appropriate detailed design, including suitable combination of transparent and sound absorbent materials, appropriate colour selection of panels and supporting structures, or provision of at-grade planting of trees, shrubs and/or climbers camouflage to the barriers, as well as design of supporting structures to incorporate a high level of quality and aesthetics. A combination of transparent panels at top and solid panels at bottom would lighten the visual impact, and at the same time maintain the attractiveness by using colourful panels.	Minimise potential adverse landscape and visual impacts	Government Contractor) (via	Noise barriers and enclosures	Detailed design stage	Greening, Landscape and Tree Management Section (GLTM) of the Development Bureau's Guidelines on Greening of Noise Barriers (April 2012) Dev. Bureau, Greening, Landscaping & Tree Management Section, Guidelines on Greening of Noise Barriers (Apr 12)
Schedule 2 Package A – Table 11.7	OM14	<u>Greening of viaduct structures and noise barriers</u> Aesthetic improvement of viaduct structures and noise barriers through greening of structure where feasible and appropriate to mitigate visual impact of viaduct and noise barrier form. For viaducts, soft landscaping should be provided to soften the hard, straight edges (for climbers used to cover the vertical, hard surfaces of the piers) and shade tolerant plants should be planted, where light is sufficient, to improve aesthetic value of areas under viaducts. Both at grade planting and use of elevated planters should be considered for the soft landscaping of viaducts, taking into account the preference to minimise the overall viaduct bulk and integrate architectural forms and textural finishes which improve aesthetics.	To soften the hard, straight edges and provide greening along viaducts and noise barriers.	Government / Developer/ Detailed Design Consultant/ Contractor	All viaduct structures and noise barriers as feasible, final location to be confirmed at detailed design stage	Detailed design, construction and establishment works stages	Development Bureau TCW No. 2/2013, Greening on Footbridges and Flyovers;
Cultural Heritage Impact (Construction and Operational Phase)							
12.11.2	---	No impact to cultural heritage is anticipated. Hence no mitigation measures required.	---	---	---	---	---

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Implementation Agent	Location of the Measure	Implementation Timing	Requirements and / or Standards to be Achieved
EM&A Project							
		An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO
		1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Project Proponent	All construction sites	Construction stage	EIAO Guidance Note No.4/2010 TM-EIAO

This Page Left Blank Intentionally

Appendix 3.1

Project Organisation for Environmental Works



Appendix 4.1

Sample Data Record Sheet for TSP Monitoring

Appendix 4.1 Data Sheet for TSP Monitoring

Monitoring Location		
Details of Location		
Sampler Identification		
Date & Time of Sampling		
Elapsed-time	Start (min.)	
Meter Reading	Stop (min.)	
Total Sampling Time (min.)		
Weather Conditions		
Site Conditions		
Initial Flow Rate, Qsi	Pi (mmHg)	
	Ti (°C)	
	Hi (in.)	
	Qsi (Std. m ³)	
Final Flow Rate, Qsf	Pf (mmHg)	
	Tf (°C)	
	Hf (in.)	
	Qsf (Std. m ³)	
Average Flow Rate (Std. m ³)		
Total Volume (Std. m ³)		
Filter Identification No.		
Initial Wt. of Filter (g)		
Final Wt. of Filter (g)		
Measured TSP Level (µg/m ³)		

	<u>Name & Designation</u>	<u>Signature</u>	<u>Date</u>
Field Operator:	_____	_____	_____
Laboratory Staff:	_____	_____	_____
Checked by:	_____	_____	_____

Appendix 5.1

Sample Data Record Sheet for Construction Noise Monitoring

Appendix 5.1 Construction Noise Monitoring Field Record Sheet

Monitoring Location		
Description of Location		
Date of Monitoring		
Measurement Start Time (hh:mm)		
Measurement Time Length (min.)		
Noise Meter Model/Identification		
Calibrator Model/Identification		
Measurement Results	L ₉₀ (dB(A))	
	L ₁₀ (dB(A))	
	L _{eq} (dB(A))	
Major Construction Noise Source(s) During Monitoring		
Other Noise Source(s) During Monitoring		
Remarks		

	<u>Name & Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded by:			
Checked by:			

Appendix 6.1

Sample Data Record Sheet for Water Quality Monitoring

Appendix 6.1 Water Quality Monitoring Data Record Sheet

Monitoring Station			
Date			
Start Time (hh:mm)			
Weather Condition			
Condition of Watercourse			
Water Depth (m)			
Monitoring Depth	Surface	Middle	Bottom
pH			
Temperature (°C)			
Turbidity (NTU)			
DO (mg/l)			
DO Saturation (%)			
Sample Identification			
Suspended Solids (mg/l)			
Observed Construction Activities	<100m from location		
	>100m from location		
Remarks / Other Observations			

	<u>Name & Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded by:	_____	_____	_____
Checked by:	_____	_____	_____
Laboratory Staff:	_____	_____	_____

Note:
 1 The suspended solid results are to be entered once they are available from the laboratory.

Appendix 15.1

Sample Template for Interim Notifications of Environmental Quality Limits Exceedances

Appendix 15.1

Sample Template for Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	
Date	
Time	
Monitoring Location	
Parameter	
Action & Limit Levels	
Measured Level	
Possible reason for Action or Limit Level Non-compliance	
Action taken / to be taken	
Remarks	

Location Plan

Prepared by:

Designation:

Signature:

Date:

Appendix A

EM&A Programme for Road D1 under
Contract No. YL/2020/03
Hung Shui Kiu/ Ha Tsuen New Development
Area
Stage 1 Works – Site Formation and
Engineering Infrastructure

A1 Introduction

This appendix presents the background and scope of the environmental monitoring requirements for the construction of interim section of Road D1 under Contract No. YL/2020/03.

A1.1 Background

A1.1.1 The works under HSK/HT NDA Stage 1 works comprises the construction of interim section of new distributor road (Road D1) that is a designated project (“DP”) (defined under item A1 in Schedule 2 of the EIA Ordinance) connecting the site for the first batch of multi-storey buildings (“MSBs”) at Sites 3-6, 3-7 and 3-8 to the existing Ha Tsuen Roundabout of Sham Kong Western Highway. The corresponding Environmental Permit (EP-528/2017) in relation to Road D1 was issued in 2017.

A1.2 Site Location

A1.2.1 The site location (interim section of Road D1) of Contract No. YL/2020/03 is shown in **Figure A1.1**.

A1.3 Environmental Permit

A1.3.1 A summary of the relevant environmental permit for Contract No. YL/2020/03 is presented below:

EP No.	Title of Designated Project
EP-528/2017	Construction of Eight New District Distributor Roads (Road D1 to D8) in Hung Shui Kiu New Development Area

A1.4 Contract Period

A1.4.1 The Initial Period of Service Contract No. WD/02/2021 lasts for 58 months. The Permit Holder (i.e. the CEDD) shall notify the Director of Environment in writing the commencement date of construction of the Project no later than one month prior to the commencement of construction of the Project.

A2 Environmental Monitoring

A2.1 Scope of Monitoring

A2.1.1 Baseline and construction phase air quality, noise and water quality monitoring will be carried out prior to and during the construction of interim section of Road D1. The EM&A requirements are specified in Sections 4, 5 and 6 of the Manual. For the EM&A programme of Road D1 (interim section), however, baseline and impact monitoring will be conducted at monitoring locations essentially within the buffer zones of the site boundary of Road D1, which are defined as 500 m from the site boundary for air quality and water quality monitoring, and 300 m from the site boundary for noise monitoring. **Tables A2.1, A2.2** and

A2.3 summarized the proposed air quality, noise and water quality monitoring stations within the buffer zones of the site boundary of Road D1 (interim section). **Figures A2.1, A2.2** and **A2.3** indicated the corresponding locations of these monitoring stations as recommended in the Manual.

Table A2.1 Proposed Air Quality Monitoring Locations near the Interim Section of Road D1

Monitoring Station ID	EIA ID	Location
AM23	P1032	Planned Port Back-up, Storage and Workshop (at Site 3-6)
AM24	P1501	Planned Port Back-up, Storage and Workshop (at Site 3-8)
AM25	P606	Planned Port Back-up, Storage and Workshop (at Site 3-14)

Table A2.2 Proposed Noise Monitoring Locations near the Interim Section of Road D1

Monitoring Station ID	EIA ID	Location	Scope of Monitoring
-	-	None ⁽¹⁾	-

Note: (1) No designated noise monitoring stations are located within the 300 m buffer zone (Figure A2.2).

Table A2.3 Proposed Water Quality Monitoring Locations near the Interim Section of Road D1

Fresh Water System	Monitoring Station ID	Description	Easting	Northing
Tin Shui Wai Main Channel and its tributaries	U1	Upstream station	815936	834150
	U2	Upstream station	816240	834009
	SW	Gradient station	816304	834321
	HT	Gradient station	816866	834314
Small Watercourses along Deep Bay	DB	Gradient Station	816091	834976

A2.1.2 While the locations of air quality monitoring stations AM23 and AM24 are accessible for baseline and impact monitoring, AM25 is currently located within an “open area” for parking of heavy goods vehicles. It is considered not safe and not suitable to set up the monitoring station within the open area. Hence, it is proposed to relocate AM25 to AM25a next to the San Wai Sewage Treatment Works (**Figure A2.1**). AM25a is located about 100 m south-southwest from AM25, about 380 m north of the identified sensitive receiver A602 and about 500 m west-southwest of the identified sensitive receiver A601 at Tseung Kong Wai (Figure 3.2.3 of the approved EIA Report (Register No. AEIAR-203/2016)). The proposed AM25a is located closer to the proposed Road D1 than A601 and A602, while adjacent to Site 3-14 represented by AM25. The alternative air quality monitoring location of AM25a meets the following criteria as stated in Section 4.5.3 of the EM&A Manual:

- (i) At location close to the major dust emission source;

- (ii) Close to the air sensitive receivers as defined in the EIAO-TM;
- (iii) Proper position/ sitting and orientation of the monitoring equipment; and
- (iv) Take into account the prevailing meteorological conditions (the prevailing meteorological conditions at AM25 and AM25a will be very similar as they are located at a flat land without barriers and around 100 m away from each other).

A2.1.3 **Table A2.4** summarizes the proposed construction dust monitoring stations in the EM&A programme of interim section of Road D1.

Table A2.4 Proposed Construction Dust Monitoring Stations for Baseline and Impact Monitoring of Interim Section of Road D1

Monitoring Station ID	EIA ID	Location	Scope of Monitoring
AM23 ⁽¹⁾	P1032	Planned Port Back-up, Storage and Workshop (at Site 3-6)	Baseline and impact monitoring ⁽³⁾
AM24 ⁽¹⁾	P1501	Planned Port Back-up, Storage and Workshop (at Site 3-8)	Baseline and impact monitoring ⁽³⁾
AM25a ⁽²⁾	-	San Wai Sewage Treatment Plant near the Planned Port Back-up, Storage and Workshop (at Site 3-14)	Baseline and impact monitoring ⁽³⁾

Note: (1) Same as proposed in the EM&A Manual (EIAO Register No.: AEIAR-203/2016).
 (2) An alternative monitoring station proposed to replace AM25.
 (3) Impact monitoring will be carried out after the occupation of the planned port back-up, storage and workshop.

A2.1.4 No designated noise monitoring stations are located with the 300 m buffer zone of the interim section of Road D1 (**Figure A2.2**). As such, baseline and construction phase noise monitoring for Road D1 (interim section) is not recommended.

A2.1.5 While the locations of water quality monitoring stations U1, U2, SW (downstream of U1) and HT (downstream of U2) are accessible for baseline and impact monitoring, the water quality monitoring station DB is within the 500 m assessment area of interim section of Road D1 (**Figure A2.3**). It is surrounded by scrubs and vegetation, and is located at a natural stream channel running along the steep slope of the hill to the south-west of Fung Kong Tsuen. The watercourse runs towards the north of interim section of Road D1 but, based on the information from the government’s GeoInfo Map, drainage records of the Drainage Services Department (DSD), and site visit, no downstream watercourse was identified. Thus, water quality monitoring station DB is not recommended for this Contract without upstream-downstream monitoring locations identified.

A2.1.6 On the other hand, a new water quality monitoring station “TKW” is proposed at an open manmade channel downstream of the interim section of Road D1 near Tseung Kong Wai (**Figure A2.3**) and is within the 500 m assessment area

of Road D1 (interim section). Another monitoring location “TKW1” about 20 m upstream of TKW at an open channel is also proposed (**Figure A2.3**). They will serve as gradient stations for identification of any sources of water quality impact upon the Tin Shui Wai (TSW) Main Channel and its tributaries further downstream. The proposed monitoring locations at TKW1 and TKW meet the following criteria as stated in Section 6.3.8 of the EM&A Manual:

- (a) At locations close to and preferably at the boundary of the major site activities as indicated in the EIA Report, which are likely to have water quality impacts;
- (b) Close to the sensitive receptors which are directly or likely to be affected;
- (c) For monitoring locations located in the vicinity of the sensitive receptors, care shall be taken to cause minimal disturbance during monitoring;
- (d) Two or more control stations which shall be at locations representative of the project site in its undisturbed condition. Control stations shall be located, as far as is practicable, both upstream and downstream of the works area.

A2.1.7 Based on the information from the government’s GeoInfo Map, potential water quality monitoring location upstream of the project site (interim section of Road D1) had been reviewed, but no formal channel could be identified for establishing upstream-downstream relationship further upstream to the location TKW1/ TKW. Site visit was also conducted in early December 2021 but, due to constraints of site access at the local open storage areas and local topography upstream of TKW1, safe access to waters upstream of TKW1 could not be identified.

A2.1.8 **Table A2.5** summarizes the proposed construction water quality monitoring stations in the EM&A programme of Road D1 (interim section).

Table A2.5 Proposed Water Quality Monitoring Stations for Baseline and Impact Monitoring of Interim Section of Road D1

Monitoring Station ID	Description	Easting	Northing	Scope of Monitoring
U1	Upstream station	815936	834150	Baseline and impact monitoring
U2	Upstream station	816240	834009	Baseline and impact monitoring
SW	Gradient station (downstream of U1 and the construction site of Road D1)	816304	834321	Baseline and impact monitoring
HT	Gradient station (downstream of U2 and the construction site of Road D1)	816866	834314	Baseline and impact monitoring
TKW1 ⁽²⁾	Gradient station (downstream of the construction site of Road D1)	816563	834686	Baseline and impact monitoring
TKW ⁽²⁾	Gradient station (downstream of TKW1 and construction site of Road D1)	816594	834690	Baseline and impact monitoring

Note: (1) Based on the information from the government's GeoInfo Map, DSD's drainage records and on-site inspection, no water quality monitoring location can be identified downstream of the monitoring station "DB". Thus, water quality monitoring at DB is not recommended without upstream-downstream monitoring locations identified.

(2) A new water quality monitoring station "TKW" is proposed at the open channel downstream of interim section of Road D1 near Tseung Kong Wai. Another new water quality monitoring station "TKW1" is proposed upstream of "TKW".

(3) The exact locations of the water quality monitoring stations will be determined on site taking account of the site conditions and safety access.

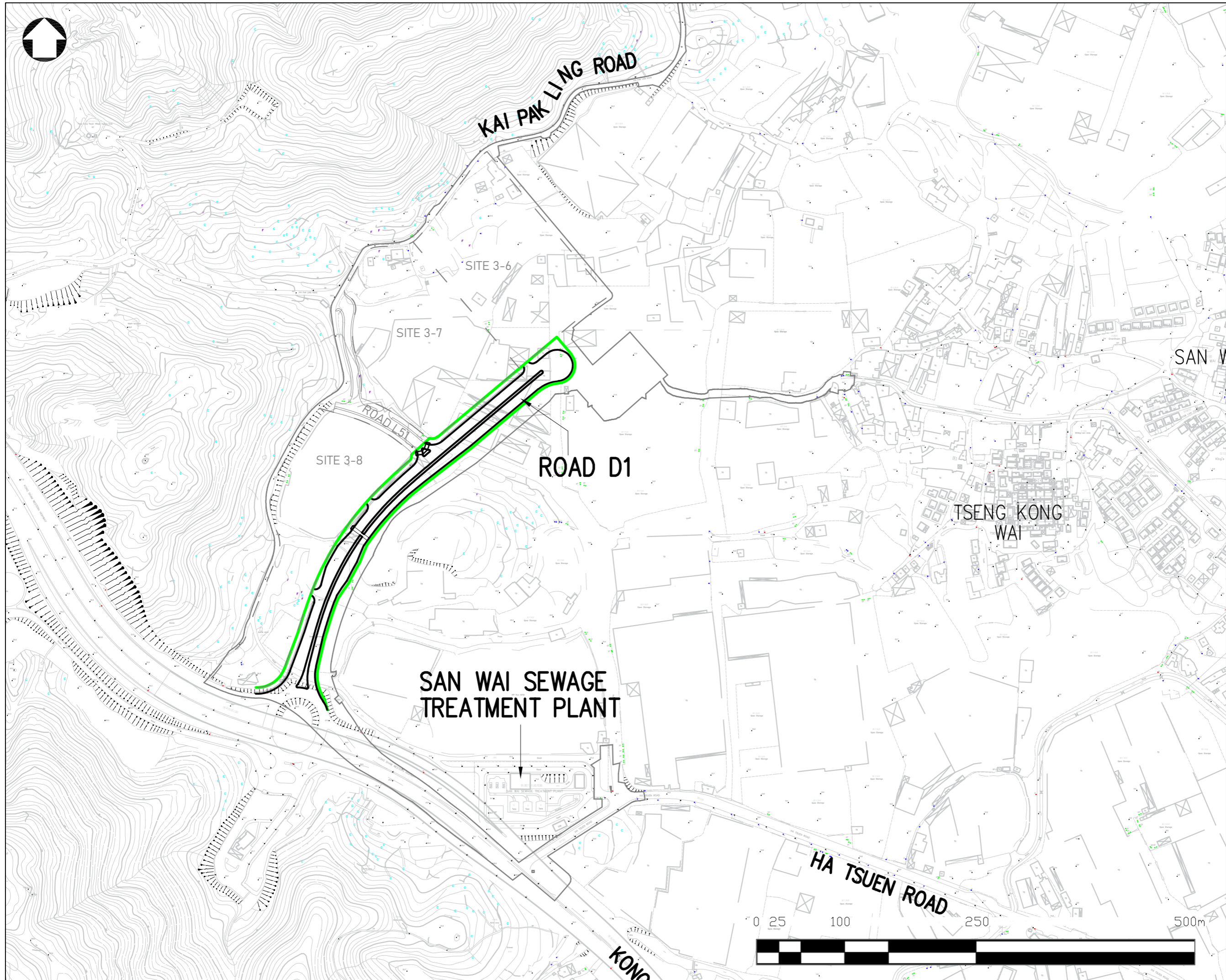
A2.1.9 Contract No. YL/2020/03 is the first engineering and infrastructural contract of the entire HSK/ HT NDA project. It covers most of the first phase development of HSK/ HT NDA. Following discussion with the CEDD, it is understood that the second phase and the remaining phase developments are currently under detailed design and subject to government funding. Thus, construction programmes of the second phase and the remaining phase developments have not been formulated. The ET(s) and the ET Leader(s) will be appointed to carry out baseline and impact monitoring at other designated air quality, noise and water quality monitoring stations in the coming contracts of engineering and infrastructural works of HSK/ HT NDA for the other development phases. The construction of the entire HSK/ HT NDA will be completed in 2037/2038.

A2.1.10 **Table A2.6** summarized the EM&A requirements of other aspects that will be carried out under the EM&A programme of Road D1 (interim section).

Table A2.6 Requirements of Other Environmental Aspects

Aspects	Requirements under the EM&A programme of Road D1	Reference in the EM&A Manual
Sewerage and Sewage Treatment Implications	Not required	-
Waste Management	Regular audit and site inspections during construction phase	S8.3.3
Land Contamination	ETL certification of Supplementary Contamination Assessment Plan	(EP Condition 2.6)
Ecological Impact	Monthly monitoring at San Sang San Tsuen egretty during the ardeid breeding season (that is, from March to August) during the construction phase.	S10.3.5
Landscape and Visual Impact	Field surveys for baseline and site inspections once every two weeks during construction period by RLA.	S12.3 and S12.4
Cultural Heritage	Not required	-
Site Environmental Audit	At least once per week during construction phase	S14.1.2

A2.1.11 Baseline Monitoring Report and Monthly EM&A Monitoring Reports will be submitted according to the requirements specified in Section 15 of the EM&A Manual and the EP.



General Notes

LEGEND:

- PROPOSED ROAD
- SITE BOUNDARY OF ROAD D1

No.	Revision/Issue	Date

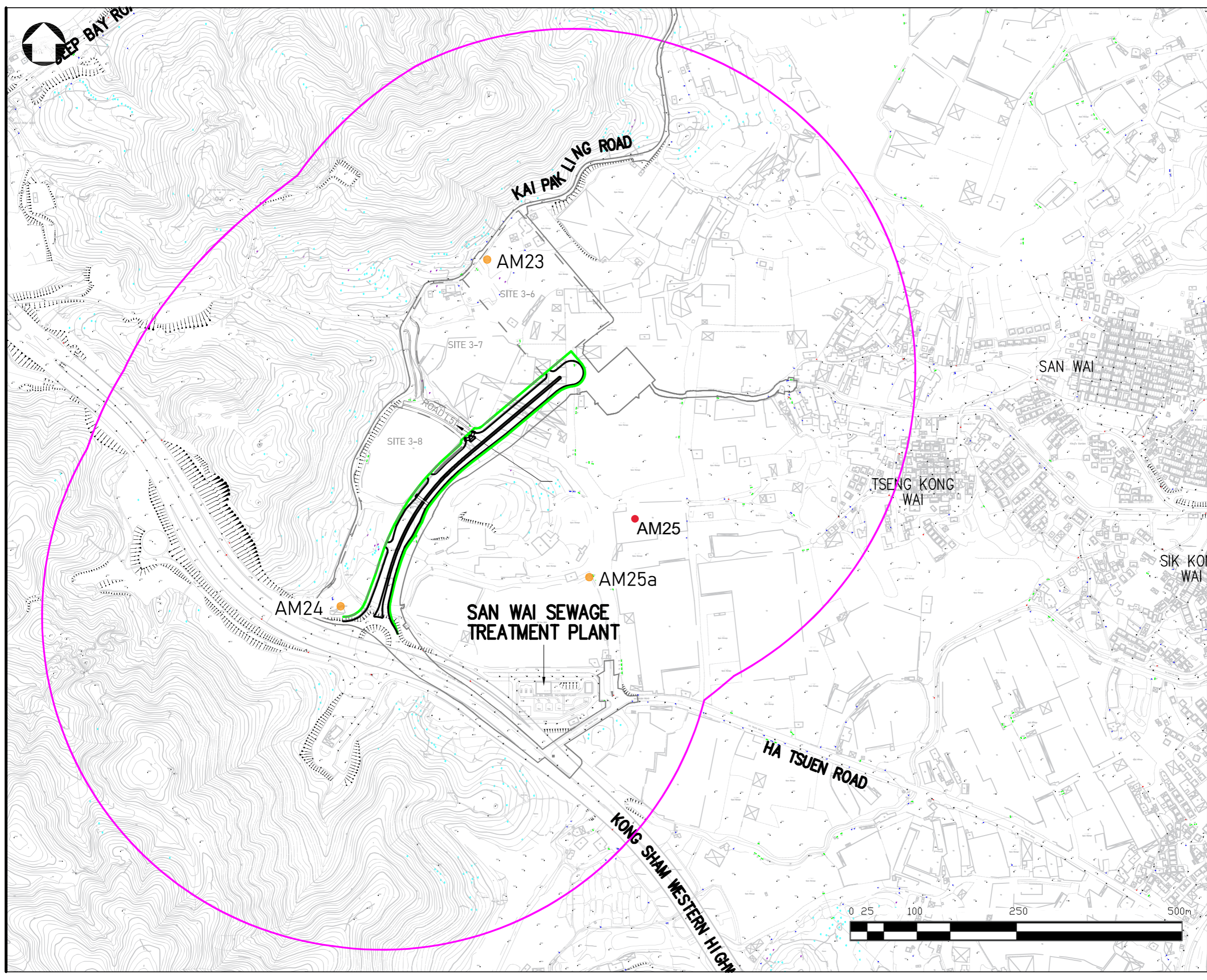
Drawing Title
Figure A1.1 Site Layout

Project Title:
Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kiu/
Ha Tsuen New Development Area
Stage 1 Works—Site Formation and
Engineering Infrastructure

Sheet No.	 土木工程發展局 Civil Engineering and Development Department
Date	
Scale	


ACUTY
 SUSTAINABILITY
 CONSULTING LIMITED





General Notes

LEGEND:

- PROPOSED ROAD
- ▭ SITE BOUNDARY OF ROAD D1
- 500M BUFFER ZONE
- AIR QUALITY MONITORING LOCATIONS
- AIR QUALITY MONITORING STATION PROPOSED TO BE RELOCATED

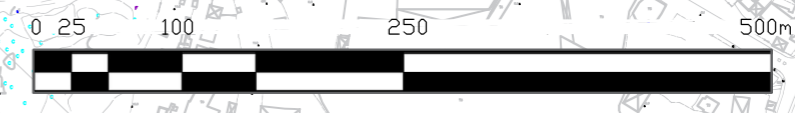
No.	Revision/Issue	Date

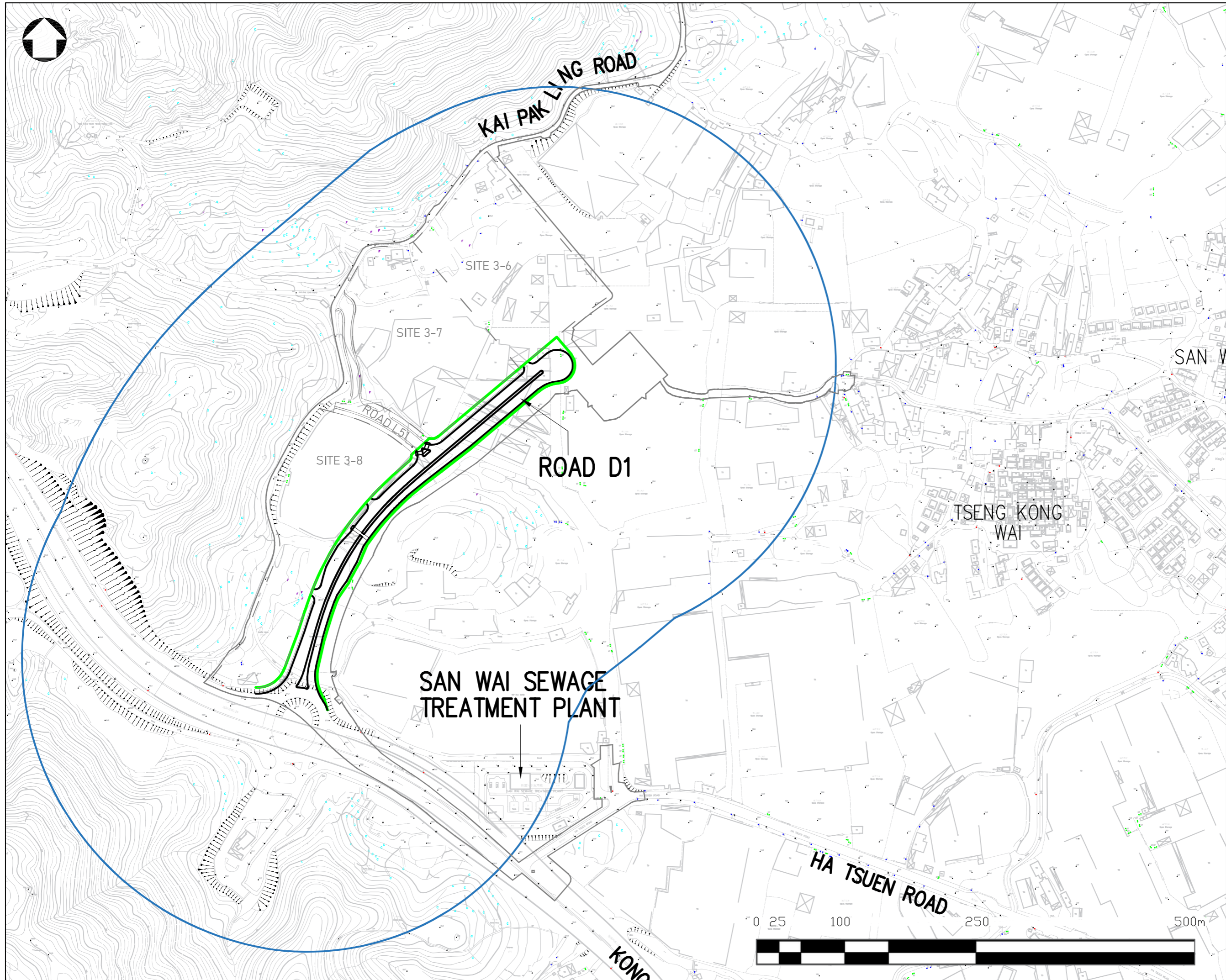
Drawing Title
Figure A2.1 Locations of Air Quality Monitoring Stations for the EM&A Programme of Road D1 (Interim Section)

Project Title:
 Service Contract No. WD/02/2021
 Environmental Team for Hung Shui Kiu/ Ha Tsuen New Development Area Stage 1 Works—Site Formation and Engineering Infrastructure

Sheet No.	 CEDD Civil Engineering and Development Department
Date	
Scale	


ACUITY SUSTAINABILITY CONSULTING LIMITED





General Notes

- LEGEND:
- PROPOSED ROAD
 - SITE BOUNDARY OF ROAD D1
 - 300M BUFFER ZONE

No.	Revision/Issue	Date

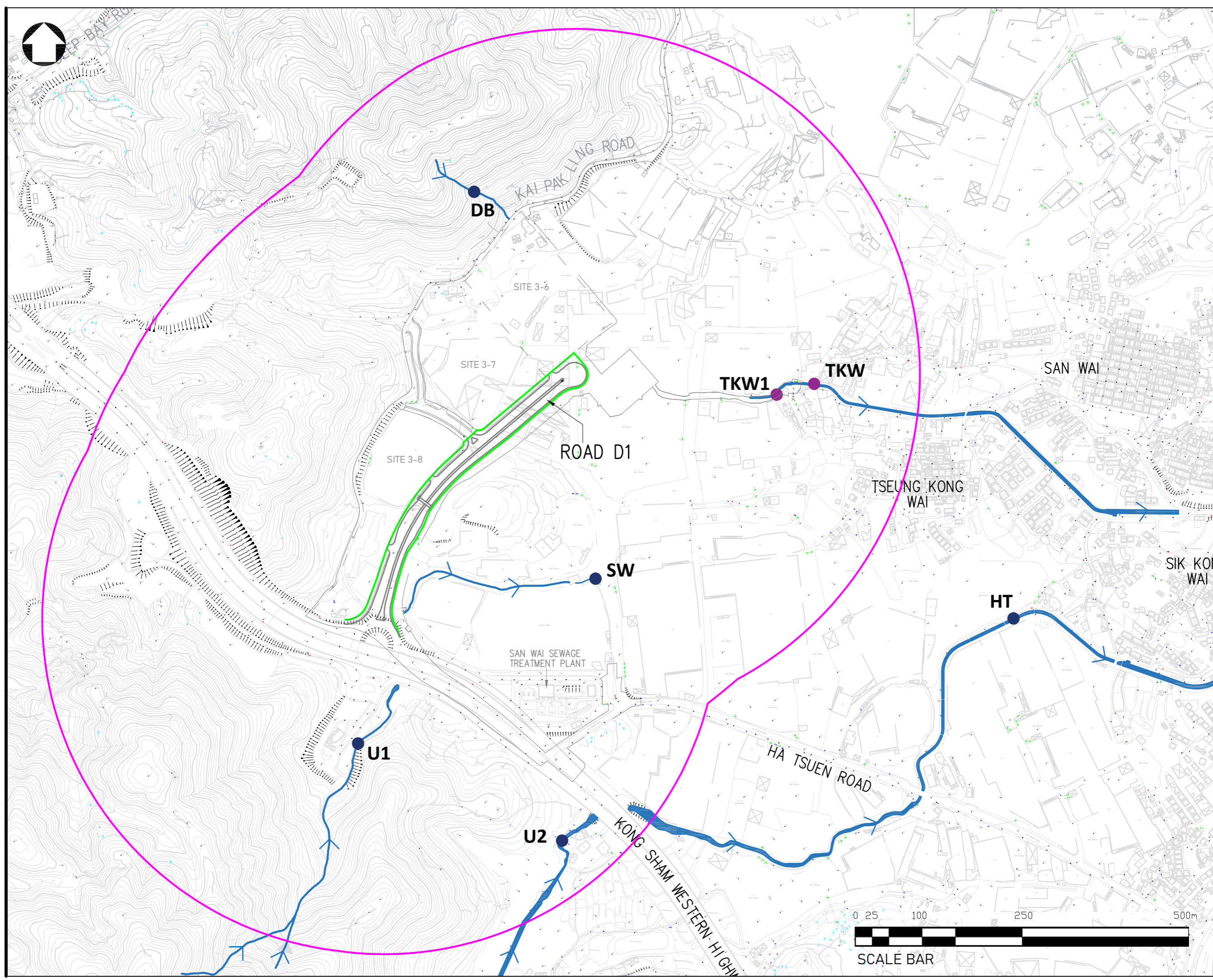
Drawing Title
 Figure A2.2 Locations of Noise Monitoring Stations for the EM&A Programme of Road D1 (Interim Section)

Project Title:
 Service Contract No. WD/02/2021
 Environmental Team for Hung Shui Kiu/ Ha Tsuen New Development Area Stage 1 Works—Site Formation and Engineering Infrastructure

Sheet No.	 CEDD Civil Engineering and Development Department
Date	
Scale	


ACUITY
 SUSTAINABILITY CONSULTING LIMITED





General Notes

LEGEND:

- ▭ SITE BOUNDARY OF ROAD D1
- ▭ 500M BUFFER ZONE
- WATER QUALITY MONITORING LOCATION
- PROPOSED ADDITIONAL WATER QUALITY MONITORING LOCATION
- ➔ WATERCOURSE FLOW DIRECTION

No.	Revision/Issue	Date

Drawing Title
 Figure A2.3 Proposed Locations of Water Quality Monitoring Stations for the EM&A Programme of Road D1 (Interim Section)

Project Title:
 Service Contract No. WD/02/2021
 Environmental Team for Hung Shui Kiu/
 Ha Tsuen New Development Area
 Stage 1 Works-Site Formation and
 Engineering Infrastructure

Sheet No.	 CEDD Civil Engineering and Development Department
Date	
Scale	


ACUITY
 SUSTAINABILITY
 CONSULTING LIMITED

