MOTT MACDONALD

Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities – The Road Connection between HKBCF and the Airport, Chek Lap Kok

Construction Phase Quarterly EM&A Report No. 1 (October to December 2021)

January 2022

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Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

This Quarterly EM&A Report No. 1 has been

reviewed and certified by the Environmental Team Leader (ETL)

in accordance with Section 15.3 of the EM&A Manual for

Further Environmental Permit No. FEP-01/353/2009/K.

Certified by:

Heidi Yu
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date 1 March 2022

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By Email

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

Attn: Mr. Lawrence Tsui, Principal Manager, Environmental Compliance

2 March 2022

Dear Sir,

Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilitiies – The Road Connection Between HKBCF and the Airport, Chek Lap Kok - Independent Environmental Checker Consultancy Services

Submission of Quarterly EM&A Report No. 1 (October 2021 – December 2021)

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No. 1 (October 2021 – December 2021) certified by ET leader in accordance with Section 15.3 of the EM&A Manual for Further Environmental Permit No.FEP-01/353/2009/K.

Please be informed that we have no adverse comment on the captioned submission.

Should you have any query, please feel free to contact the undersigned at 3922 9141.

Yours faithfully,
AECOM Asia Co. Ltd.

Roy Man
Independent Environmental Checker

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Executive Summary

The "Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities (HZMB HKBCF) – The Road Connection between HKBCF and the Airport, Chek Lap Kok" (the HKIA-HKBCF Road Connection Project) serves to connect the HKBCF with the Hong Kong International Airport (HKIA). The Environmental Impact Assessment (EIA) for the HKBCF project, which covered the HKBCF Viaduct/Roads as a Designated Project (DP) based on the requirements set out in Item A.8. (i.e., a road bridge more than 100 m in length between abutments) in Part 1 of Schedule 2 to the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), was completed and approved (EIA Register No.: AEIAR-145/2009) and an Environmental Permit (EP) (EP No.: EP-353/2009) was granted under the EIAO to the Highways Department (HyD). A Further Environmental Permit (FEP) (EP No. FEP-01/353/2009/K) for the construction of the Project was granted to Airport Authority Hong Kong (AAHK) in December 2018 in accordance with Section 12 of EIAO. Afterwards, an Environmental Monitoring and Audit Manual for HZMB HKBCF – The Road Connection between HKBCF and the Airport, Chek Lap Kok (the EM&A Manual) has been prepared to include appropriate environmental monitoring and audit (EM&A) requirements in accordance with the information and recommendations described in the EIA Report and by taking into account the specific site conditions of the Project under the FEP.

Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Airport Authority Hong Kong (AAHK) to undertake the role of Environmental Team (ET) for carrying out the EM&A works during the construction phase of the Project in accordance with the EM&A Manual. AECOM Asia Company Limited (AECOM) was employed by AAHK as the Independent Environmental Checker (IEC) for the Project. Site clearance and preparation works started in August 2021, and the construction works of the Project commenced on 4 October 2021.

This is the 1st Construction Phase Quarterly EM&A Report for the Project which summarises the monitoring and audit findings of the EM&A programme during the reporting period from 4 October 2021 to 31 December 2021.

Key Construction Activities in the Reporting Period

The construction activities of the Project carried out in the reporting period included temporary road construction, excavation, bored pile and pre-drilling works.

EM&A Activities Conducted in the Reporting Period

The EM&A programme was undertaken in accordance with the EM&A Manual of the Project. Environmental monitoring and audit works including regular environmental site inspections of construction works, monitoring and audit of landscape and visual mitigation measures were conducted by the ET and the IEC in the reporting period.

Summary of the monitoring and audit activities during the reporting period is listed below:

Monitoring and Audit Activities	Number of Sessions
Environmental site inspection	13
Monitoring and audit of landscape and visual mitigation measures	6

Based on information including ET's observations and Contractor's site records, it is noted that environmental pollution control and mitigation measures of the Project were properly addressed and implemented during the reporting period.

Summary Table

The following table summarises the key findings of the EM&A programme during the reporting period:

	Yes	No	Details	Analysis / Recommendation / Remedial Actions
Non-conformity^		✓	No non-conformity was recorded.	Nil
Complaint Received		✓	No complaint was received.	Nil
Notification of any summons and status of prosecutions		✓	No notification of summons or prosecution was received.	Nil
Change that affect the EM&A		✓	There was no reporting changes.	Nil

Remarks: ^ Refer to the Event and Action Plan provided in the Landscape and Visual section.

1 Introduction

1.1 Background

To connect the Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Boundary Crossing Facilities (HKBCF) with the Hong Kong International Airport (HKIA), roads including an elevated bridge structure (hereinafter referred to as "the HKBCF Viaduct/Roads") were proposed as part of the HKBCF project, as described in Section 4.5 of the approved Environmental Impact Assessment (EIA) report of the HKBCF project. The HKBCF Viaduct/Roads are located partly within the boundary of the Airport Island near Terminal 2 (T2) and partly within the boundary of the land corridor between HKBCF and the Airport Island, i.e., partly within the HKBCF boundary.

Under the HKBCF project, the arrangements for the planning of the construction of the HKBCF Viaduct/Roads were formulated based on the scenario with the existing two-runway system (2RS) at the HKIA. The portion of the HKBCF Viaduct/Roads falling within the boundary of the land corridor between HKBCF and HKIA were originally planned to be constructed by Highways Department (HyD) of the Government of the Hong Kong Special Administrative Region (HKSARG) as part of the HKBCF project.

With the planned expansion of HKIA into a three-runway system (3RS), a revised layout of the HKBCF Viaduct/Roads (the revised layout is hereinafter referred to as the proposed "HKIA-HKBCF Road Connection") was formulated as part of the P282 Terminal 2 Expansion Design Consultancy of Airport Authority Hong Kong (AAHK). The proposed HKIA-HKBCF Road Connection has taken the design of the 3RS road network designed around the expanded T2 building into account. In addition to preparing the detailed design, it was also considered that the proposed HKIA-HKBCF Road Connection within the HKBCF boundary would be constructed by AAHK instead of HyD along with the 3RS road network planned within the Airport Island. Upon completion of the construction works, the new HKIA-HKBCF Road Connection outside the Airport Island would be handed over to HyD for future operation and maintenance.

The EIA for the HKBCF project, which covered the HKBCF Viaduct/Roads as a Designated Project (DP) based on the requirements set out in Item A.8. (i.e., a road bridge more than 100 m in length between abutments) in Part 1 of Schedule 2 to the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), was completed and approved (EIA Register No.: AEIAR-145/2009) and an Environmental Permit (EP) (EP No.: EP-353/2009) was granted under the EIAO to HyD.

On the other hand, the 3RS EIA had subsequently commenced and completed (EIA Register No.: AEIAR-185/2014) by AAHK, and it has already taken the layout of the proposed HKIA-HKBCF Road Connection into account and has assessed the relevant cumulative environmental impacts. The planned change in implementation agent from HyD to AAHK for the construction of the proposed HKIA-HKBCF Road Connection outside the Airport Island would, involves a transfer of corresponding responsibilities under the HKBCF EP from HyD to AAHK. To this end, an Environmental Review Report (ERR) was prepared and submitted to Environmental Protection Department (EPD) in November 2018 which concluded that the change of implementation agent from HyD to AAHK for the construction of HKIA-HKBCF Road Connection would not result in any exceedance or violation of the environmental performance requirements set out in the approved HKBCF and 3RS EIAs and the mitigation measures identified in these EIAs remained relevant and valid. A Further Environmental Permit (EP No. FEP-01/353/2009/K) for the construction of the HKIA-HKBCF Road Connection (hereinafter referred to as "the Project") was granted to AAHK in December 2018 in accordance with Section 12 of EIAO. Afterwards, an Environmental Monitoring and Audit Manual for HZMB HKBCF – The Road Connection between HKBCF and the Airport, Chek Lap Kok (the EM&A Manual) has been prepared to include appropriate

environmental monitoring and audit (EM&A) requirements in accordance with the information and recommendations described in the EIA Report and by taking into account the specific site conditions of the Project under the FEP.

The Project consists of the construction of a road bridge more than 100 m in length between abutments connecting between HKBCF and the HKIA which is part of the work for HZMB-HKBCF. Location of the Project area is shown in **Figure 1.1**.

Site clearance and preparation works of the Project started in August 2021, and the construction works commenced on 4 October 2021. The summary of construction works programme can be referred to the corresponding Monthly EM&A Reports.

1.2 Scope of this Report

This is the 1st Construction Phase Quarterly EM&A Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 4 October 2021 to 31 December 2021.

1.3 Project Organisation

The Project's organisation structure is presented in **Appendix A**. Contact details of the key personnel are presented in **Table 1.1**.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Manager's Representative (Airport Authority Hong Kong)	Principal Manager, Environmental Compliance, Sustainability	Lawrence Tsui	2183 2734
Environmental Team (ET) (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Heidi Yu	2828 5704
Independent Environmental Checker (IEC) (AECOM Asia Company Limited)	Independent Environmental Checker	Roy Man	3922 9141
Contractor (Gammon Engineering & Construction Limited)	Project Director	Richard Ellis	6201 5637
	Environmental Officer	Fanny Law	6184 4650

1.4 Summary of Construction Works

The construction works undertaken during the quarter included temporary road construction, excavation, bored pile and pre-drilling works. The construction programme is enclosed in **Appendix B**.

1.5 Summary of EM&A Programme Requirements

The construction phase EM&A programme involves waste monitoring, construction stage bi-weekly landscape and visual monitoring, weekly site environmental inspections and related auditing conducted by the ET, as well as site audit by the IEC for at least once a month for checking the implementation of the required environmental mitigation measures recommended in the approved HZMB-HKBCF EIA Report. The EM&A requirements remained unchanged during the reporting period.

The EM&A programme has been following the recommendations presented in the approved HZMB-HKBCF EIA Report and the EM&A Manual. A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix C**.

2 Environmental Site Inspection and Audit

2.1 General

Implementations of environmental mitigation measures recommended in the approved HZMB-HKBCF EIA Report for air quality, noise, water quality, waste management, landscape and visual aspects for the construction phase of the Project were monitored and audited by ET and IEC through site environmental inspections of the construction works and checking of Contractor's records and submission of information.

Site inspection findings are summarised in **Section 2.2**. Audit for waste management is summarised in **Section 2.3**, while that for landscape and visual measures are summarised in **Section 2.4**.

2.2 Site Inspection

Site inspections of the construction works were carried out on a weekly basis by the ET and at least once per month by the IEC to monitor the implementation of proper environmental pollution control and mitigation measures for construction dust, construction noise, construction waste and wastewater for the Project.

During the reporting quarter, a total of 13 sessions of environmental site inspections were carried out. Key examples of environmental pollution control and mitigation measures implemented in the Project are highlighted as follows:

1. Sand bags barriers were provided along the gullies next to excavated area to prevent any soil/silt or excavated materials from entering the drainage system. Surface drain and trench near the ground investigation works were blocked to prevent surface runoff entering the drainage system, and training was provided to frontline staff to avoid reoccurrence.
2. Wheel washing bay was provided at site entrance, and water spraying was provided for temporary stockpiles for dust suppression.
3. For the temporary marine sediment storage area, gaps were filled with cement grout to prevent leakage of leachate; impermeable sheet was provided to properly cover marine sediment; temporary fencing with warning notices were provided for demarcation; trench and sandbag barriers were provided to collect potential surface runoff.

A summary of implementation status of environmental protection and pollution control as well as mitigation measures during the reporting period is provided in **Appendix C**.

2.3 Waste Management

In accordance with the EM&A Manual, the waste generated from construction activities was audited once per week to determine if wastes are being managed in accordance with the Waste Management Plan (WMP) prepared for the Project, and any statutory and contractual requirements. All aspects of waste management including waste generation, storage, transportation and disposal were assessed during the audits.

The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting was carried out on site. A sufficient number of receptacles were available for general refuse collection.

Weekly monitoring was carried out by the ET to check and monitor the implementation of proper waste management practices during the construction phase according to the requirement of the

Waste Management Plan, EM&A Manual and the implementation schedule of the waste management mitigation measures in **Appendix C**.

Summary of construction waste generated during the reporting period is presented in **Table 2.1** based on updated information provided by the Contractor.

Table 2.1: Construction Waste Statistics

	C&D[(1)] Material Stockpiled for Reuse or Recycle (m^3)	C&D Material Reused in the Project (m^3)	C&D Material Reused in other Projects (m^3)	C&D Material Transferred to Public Fill (m^3)	Chemical Waste (kg)	Chemical Waste (l)	General Refuse (tonne)
October 2021	36.6	0	0	14.7	0	0	8.93
November 2021	60.7	0	0	332.2	0	0	0
December 2021	32.6	0	0	1029.2	0	0	11.38

Notes:
(1) C&D refers to Construction and Demolition.

There was no non-compliance of the WMP, statutory and contractual requirements during the reporting period.

Marine sediment was managed according to the EIA Report, Updated EM&A Manual and Waste Management Plan of the Project. The Contractor carried out sampling and testing for the excavated marine sediment and storage conditions of the excavated marine sediment as well as associated records were inspected to ensure they were in compliance with the requirements as stipulated in the Waste Management Plan. Sampling works and testing for excavated marine sediment was on-going during the reporting period, while treatment process and final backfilling location would be confirmed upon the testing results. The details of the marine sediment sampling and testing, treatment and backfilling will be reported in the subsequent EM&A Reports upon completion.

2.4 Landscape and Visual

A total of six sessions of bi-weekly monitoring and audit by checking of Contractor's compliance on applicable landscape and visual mitigation measures were carried out by the ET during the reporting quarter, with findings reported in site inspection records agreed by the IEC. Implementation status of the landscape and visual mitigation measures is summarized below in **Table 2.2** and provided in **Appendix C**.

Table 2.2: Landscape and Visual – Construction Phase Audit Summary

Landscape and Visual Mitigation Measures during Construction	Implementation Status
G1 – Grass-hydroseed bare soil surface and stockpile areas	The implementation of mitigation measures was checked by ET during site inspections. Implementation of the measures G11 and V1 by Contractor was observed. Measures G1, G2 and V2 were not applicable during the reporting period.
G2 – Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic	
G11 – All existing trees shall be carefully protected during construction	
V1 – Minimize time for construction activities during construction period	

Landscape and Visual Mitigation Measures during Construction	Implementation Status
V2 - Provide screen hoarding at the portion of the project site / works areas / storage areas near Visual Sensitive Receivers (VSRs) who have close low-level views to the Project during construction.	

2.5 Status of Environmental Licenses and Permits

During the reporting period, environmental related licenses and permits required for the construction activities were checked, and no non-compliance with environmental statutory requirements was recorded.

Summary of the valid environmental permits, licenses, and/or notifications on environmental protection for this Project is presented in **Table 2.3**.

Table 2.3: Status of Environmental Licences and Permits

Statutory Reference	Description	Permit /Reference No.	Status
Environmental Impact Assessment Ordinance (EIAO)	Environmental Permit	FEP-01/353/2009/K	Approved and granted on 27 December 2018
Air Pollution Control Ordinance (APCO)	Notification of Construction Work under APCO	459017 (Form NA)*	Receipt acknowledged by EPD on 27 August 2020*
		459469 (Form NB)*	Receipt acknowledged by EPD on 4 September 2020*
Noise Control Ordinance (NCO)	Construction Noise Permit (General Works)	GW-RS0886-21	Valid from 19 November 2021 to 16 May 2022 (Superseded by GW-RS0979-21)
		GW-RS0979-21	Valid from 19 December 2021 to 31 May 2022
Waste Disposal Ordinance (WDO)	Registration as Chemical Waste Producer	WPN-5218-951-G2898-01*	Completion of Registration on 28 September 2020*
	Bill account for disposal	7038224*	Approval granted from EPD on 8 September 2020*
Water Pollution Control Ordinance (WPCO)	Discharge License	EPIC Reference No: 2108121	Application on 22 October 2021 (in progress)

*Notes: Licences and permits were applied by the Contractor for their contract areas which include construction site areas for the Project and 3RS Project.

2.6 Status of Submissions under Environmental Permit

Summary of status of submissions under the FEP is presented in **Table 2.4**.

Table 2.4: Status of Submissions under Environmental Permit

FEP Condition	Submission	Status
3.1	EM&A Manual	Accepted by EPD on 11 November 2021
2.3	Management Organisation	Accepted by EPD on 16 August 2021
2.4	Landscape and Visual Plan	Accepted by EPD on 11 November 2021
2.5	Waste Management Plan	Accepted by EPD on 26 September 2021

2.7 Summary of Complaints, Notifications of Summons and Successful Prosecutions

2.7.1 Complaints

No construction activities-related complaint was received during the reporting period.

2.7.2 Notifications of Summons and Successful Prosecutions

Neither notification of summons nor prosecution was received during the reporting period.

2.7.3 Cumulative Statistics

Cumulative statistics on environmental complaints, notifications of summons and successful prosecutions are summarised in **Table 2.5**.

Table 2.5: Status for Complaints, Notifications of Summons and Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Prosecutions
This reporting period	0	0	0

3 Conclusion and Recommendation

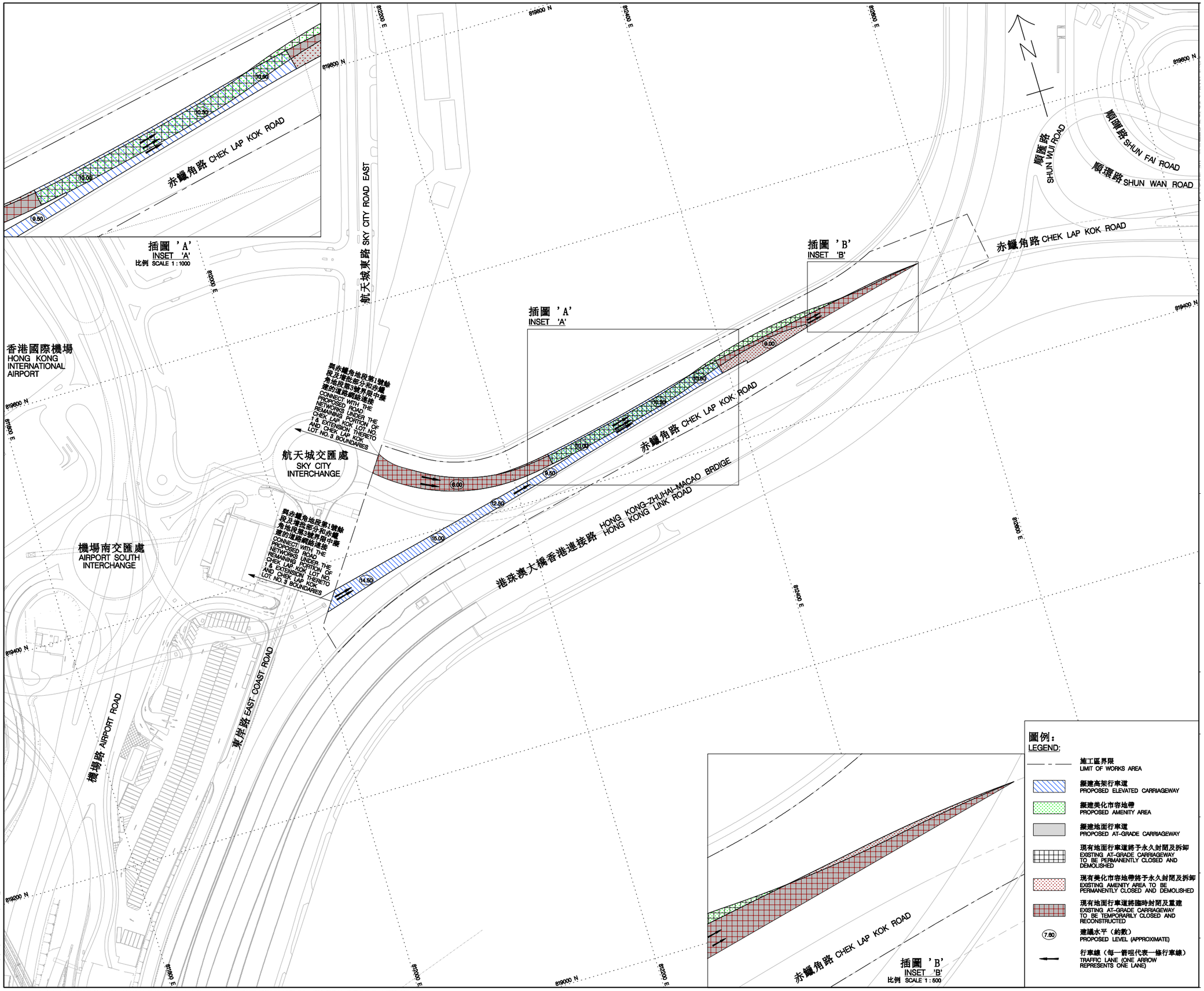
In this quarterly period from 4 October 2021 to 31 December 2021, major construction activities of the Project carried out included temporary road construction, excavation, bored pile and pre-drilling works.

Environmental site inspections of the construction works were carried out on a weekly basis by the ET and at least once per month by the IEC to monitor the implementation of proper environmental pollution control and mitigation measures. A total of 13 sessions of site inspections were carried out. Remedial actions recommended for the deficiencies identified during the site inspections were properly implemented by the Contractor.

There were no environmental complaints, notification of summons or successful prosecution received during the reporting period.

Figures

Figure 1.1
Location of Project



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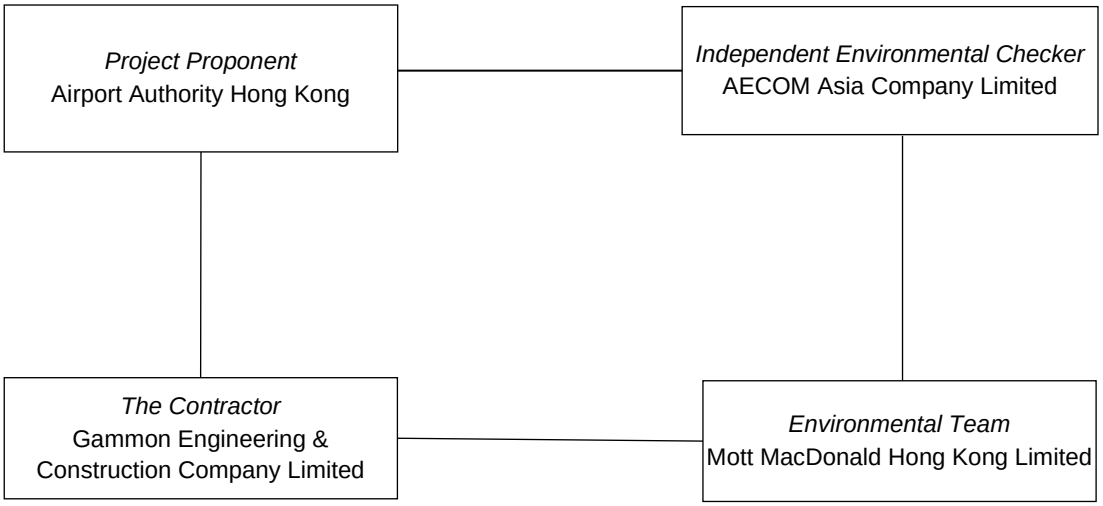
Appendix A Project Organization



Appendix B Construction Programme

Item	Name	2021		2022				2023				2024	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
1	**Site Establishment and Enabling Works**												
2	**Bridge SR22**												
2a	Utilities Works												
2b	Foundation Works												
2c	Piers and Decks Construction												
2d	ABWF, MEP, Systems & Road Works												
3	**Bridge SR23**												
3a	Utilities Works												
3b	Foundation Works												
3c	Pier and Deck Construction												
3d	ABWF, MEP, Systems & Road Works												
4	**Bridge SR24**												
4a	Utilities Works												
4b	Foundation Works												
4c	Pier and Deck Construction												
4d	ABWF, MEP, Systems & Road Works												

(Tentative and indicative only)

Appendix C Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

EIA Ref. (Register No. AEIAR-145/2009)	EM&A Log Ref.	EP Condition	Recommended Mitigation Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Air Quality		
S5.5.6.1	A1	-	▪ The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites / Duration of the construction stage	I
S5.5.6.2	A2	-	▪ Proper watering of exposed spoil should be undertaken throughout the construction phase: ▪ Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; ▪ Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; ▪ Stockpile of dusty material should not extend beyond the pedestrian barriers, fencing or traffic cones; ▪ The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; ▪ Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; ▪ When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; ▪ The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; ▪ Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; ▪ Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; ▪ Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; ▪ Any skip hoist for material transport should be totally enclosed by impervious sheeting; ▪ 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;	All construction sites / Duration of the construction stage	I

EIA Ref. (Register No. AEIAR-145/2009)	EM&A Log Ref.	EP Condition	Recommended Mitigation Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high-level alarm which is interlocked with the material filling line and no overfilling is allowed; ▪ Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and ▪ Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.		
S5.5.6.3	A3	Section 2.6 of FEP	▪ The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) within the Project site and associated work area throughout the construction phase.	All construction sites / Duration of the construction stage	I
S5.5.6.4	A4	-	▪ AAHK to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the Contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites / Duration of the design stage	I
			Construction Noise (Airborne)		
S6.4.10	N1	-	1) Use of good site practices to limit noise emissions by considering the following: ▪ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; ▪ Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; ▪ Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; ▪ Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; ▪ Mobile plant should be sited as far away from NSRs as possible and practicable; and ▪ Material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	All construction sites / Duration of the construction stage	I
S6.4.11	N2	-	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites / Duration of the construction stage	N/A (As informed by the Contractor, concerning safety of road user and wind load issues, water barriers with wire mesh installed on top will be

EIA Ref. (Register No. AEIAR-145/2009)	EM&A Log Ref.	EP Condition	Recommended Mitigation Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
					provided as hoarding according to Hoarding plan for Pier Construction.)
S6.4.12	N3	-	3) Install movable noise barriers (typically density @14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	All construction sites, for plant items listed in Appendix 6D of the EIA Report / Duration of the construction stage	Under review
S6.4.13	N4	-	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	All construction sites, for plant items listed in Appendix 6D of the EIA Report / Duration of the construction stage	I
S6.4.14	N5	-	5) Sequencing operation of construction plants where practicable.	All construction sites / Duration of the construction stage	I
			Sediment		
-	-	-	▪ Marine sediments excavated are to be treated using cement/solidification/stabilization techniques and tested against TCLP which were recommended in the EPD's Practice Guide for Investigation and Remediation of Contaminated Land. Properly treated marine sediment is to be reused onsite or offsite for backfilling and/or landscaping such that the need for offsite disposal is avoided as far as practicable.	All construction sites / Duration of the construction stage	I (Sampling works for excavated marine sediment was on-going during the reporting period. The excavated marine sediment was temporarily stored when awaiting for test reports against TCLP for proper treatment.)
			Waste Management (Construction Waste)		
S8.3.8	WM1	-	*Construction and Demolition (C&D) Material* The following mitigation measures should be implemented in handling the waste: ▪ Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; ▪ Carry out on-site sorting;	All construction sites / Duration of the construction stage	I

EIA Ref. (Register No. AEIAR-145/2009)	EM&A Log Ref.	EP Condition	Recommended Mitigation Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; ▪ Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; ▪ Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials is properly documented and verified; ▪ Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; and ▪ Disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation.		
S8.3.9 - S8.3.11	WM2	-	*C&D Waste* ▪ Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage; and ▪ The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	All construction sites / Duration of the construction stage	I
S8.2.12 - S8.3.15	WM3	-	*Chemical Waste* ▪ Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes; ▪ Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation; ▪ The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated; and ▪ Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste	All construction sites / Duration of the construction stage	I

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			collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.		
S8.3.16	WM4	-	*Sewage* ▪ Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	All construction sites / Duration of the construction stage	I
S8.3.17	WM5	-	*General Refuse* ▪ General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes; ▪ A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law; ▪ Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible; ▪ Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided; and ▪ Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.	All construction sites / Duration of the construction stage	I
			Water Quality (Construction Phase)		
S9.11.1.3	W2	-	1) General construction activities should be governed by standard good working practice. Specific measures to be written into the works contracts should include: ▪ Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; ▪ Sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; ▪ Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; ▪ Silt removal facilities, channels and manholes shall be maintained, and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; ▪ Temporary access roads should be surfaced with crushed stone or gravel; ▪ Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;	All construction sites / Duration of the construction stage	I

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			▪ Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; ▪ Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; ▪ Manholes (including any 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 storm run-off from getting into foul sewers;		
S.9.11.1.7	W1	-	▪ Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system ▪ All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; ▪ Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; ▪ The section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; ▪ Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; ▪ Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for offsite disposal; ▪ The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; ▪ Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; ▪ All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and ▪ Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All construction sites / Duration of the construction stage	I
			Landscape and Visual (Detailed Design Phase)		
S14.3.3.2	LV1	-	General design measures include: ▪ Protection measures for the trees to be retained during construction activities; ▪ Optimizing the sizes and spacing of the bridge columns; ▪ Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; and ▪ Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed.	All construction sites / Duration of the design stage	I

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			Landscape and Visual (Construction Phase)		
S14.3.3.3	LV2	-	<u>Mitigate both landscape and visual impacts:</u> G1. Grass-hydroseed bare soil surface and stockpile areas.	All construction sites / Duration of the construction stage	N/A (As informed by the Contractor, no bare soil surface or stockpile areas would be left exposed for reasonably long periods of time. Therefore, grass hydroseeding would not be required. However, appropriate dust suppression measures would be provided as appropriate.)
			G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic.	New planting strip and automatic irrigation system will not be added under this Project. Instead, existing irrigation system would be reinstated after the construction works if necessary.	N/A (There were no landscape works at this stage. The planting strip near the bridge was maintained by government or other external parties.)
			G11. All existing trees shall be carefully protected during construction.	All construction sites / Duration of the construction stage	I
S14.3.3.3	LV3	-	<u>Mitigate visual impacts:</u> V1. Minimise time for construction activities during construction period	All construction sites / Duration of the construction stage	I
			V2. Provide screen hoarding at the portion of the project site/ works areas/ storage areas near VSRs who have close low-level views to the Project during construction.	All construction sites / Duration of the construction stage	N/A (As informed by the Contractor, concerning safety

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					of road user and wind load issues, water barriers with wire mesh installed on top will be provided as hoarding according to Hoarding Plan for Pier Construction.)
			Environmental Monitoring and Audit		
S15.2.2	EM1	-	An Independent Environmental Checker shall be employed as per the EM&A Manual.	All construction sites / Duration of the construction stage	I
S15.5 - S15.6	EM2	-	▪ An Environmental Team shall be employed as per the EM&A Manual. ▪ A systematic Environmental Management Plan shall be prepared to ensure effective implementation of the mitigation measures. ▪ Environmental impact monitoring shall be implemented by the Environmental Team to ensure all requirements stipulated in the EM&A Manual are fully complied.	All construction sites / Duration of the construction stage	I

Notes:

" - ": For items denoted as " - " provided under the columns of EM&A Ref. or EP Condition, environmental protection measures should be referred to the relevant paragraph(s) / table(s) in the approved EIA Report.

" I ": Implemented where applicable.

" N/A ": Not applicable to the construction works implemented during the reporting period.

" ^ ": Checked by ET through site inspection and record provided by the Contractor.