MTR Corporation Limited

Shatin to Central Link – Hung Hom to Admiralty Section

Monthly EM&A Report No. 58

[Period from 1 to 28 February 2019]

(March 2019)

Verified by:	Fredrick Leong
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Date:	13 March 2019

MTR Corporation Limited

Shatin to Central Link – Hung Hom to Admiralty Section

Monthly EM&A Report No. 58 [Period from 1 to 28 February 2019]

(March 2019)

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Date:	13 March 2019

MTR Corporation Limited

Consultancy Agreements No. C11033B

Shatin to Central Link - Hung Hom to Admiralty Section

Monthly EM&A Report No. 58

[Period from 1 to 28 February 2019]

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Version:	Α	Date:	13 March 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 Shatin to Central Link Hung Hom to Admiralty Section [SCL (HUH ADM)] (hereafter referred to as "the Project") is part of the SCL.
- 1.1.3 The Environmental Impact Assessment (EIA) Report for SCL (HUH-ADM) (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) (EP No.: EP-436/2012) was granted on 22 March 2012 for construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/F) was issued by Director of Environmental Protection (DEP) on 23 January 2019.

1.2 Project Programme

1.2.1 Eight civil construction works contracts of the Project have been awarded since January 2014. The construction of the Project commenced in May 2014 and is expected to complete in 2021¹. The Project will have to interface with other infrastructure projects, including Wan Chai Development Phase II and Central-Wan Chai Bypass. **Table 1.1** summarises the information of the awarded Works Contracts.

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1121 ⁽¹⁾	NSL Cross Harbour Tunnels	March 2015	Penta-Ocean – China State JV	Wellab Limited
1122	Admiralty South Overrun Tunnel	August 2016	Vinci Construction Grands Projects	AECOM Asia Co. Ltd.
1123	Exhibition Station and Western Approach Tunnels	June 2015	Leighton – China State JV	AECOM Asia Co. Ltd.
1124	Admiralty SCL Related Works	February 2017	Build King SCL 1124 JV	Action-United Environmental Services and Consulting (AUES)
1126 ⁽²⁾	Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool	July 2014	Kaden Leader JV	Cinotech Consultants Ltd. (Cinotech)
1128	South Ventilation Building to Admiralty Tunnels	November 2014	Dragages Bouygues J.V.	AECOM Asia Co. Ltd.
1129 ⁽³⁾	SCL – Advance Works for NSL	May 2014	Hsin Chong Construction Co. Ltd.	AECOM Asia Co. Ltd.

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¹ The commissioning date of SCL(HUH-ADM) will very likely be deferred to 2021 to allow flexibility for the topside development of the Exhibition Station, and to cater for the construction works under other infrastructure projects on Hong Kong Island.

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
11227 ⁽⁴⁾	Advance Works for NSL Cross Harbour Tunnels	August 2014	Concentric-Hong Kong River Joint Venture	Cinotech Consultants Ltd. (Cinotech)

Note:

- (1) The environmental team of Works Contract 1121 was taken over by Wellab Limited since 1st January 2019.
- (2) Construction works under Works Contract 1126 was completed on 17 May 2015.
- (3) Construction works under Works Contract 1129 was completed on 20 July 2015.
- 4) Construction works in Victoria Harbour and Shek O Casting Basin under Works Contract 11227 were completed on 15 and 20 December 2014 respectively.

1.3 Purpose of the Report

1.3.1 The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in May 2014. This is the fifty-eighth EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ETs during the period from 1 to 28 February 2019.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1 EM&A Results

- 2.1.1 The EM&A Report for Works Contracts 1128, 1121, 1123, 1122 and 1124 prepared by the respective Contractor's ETs are provided in **Appendices A** to **E** respectively. The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.
- 2.1.2 A summary of the major construction activities undertaken by the respective Contractors of various Works Contracts during the reporting period are presented in **Table 2.1**.

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Table 2.1	Summary of Major Construction Activities in the Reporting Period					
Works Contract	Site	Construction Activities				
1121	Victoria Harbour	 External Works around NOV at Hung Hom; Internal Finishes at NOV at Hung Hom; External Wall Finishes at NOV at Hung Hom; Building Services Installation at NOV at Hung Hom; Construction of Walkway inside the Immersed Tube Tunnels; Sand Blasting at Immersion Joints inside the Immersed Tube Tunnels; Immersion Joints Construction inside the Immersed Tube Tunnels; Re-provision of Finger Pier at Hung Hom; Backfilling for as-installed IMT Elements at Victoria Harbour; Reinstatement of Breakwater at CBTS; and Demolition of Wall 2 at ME4 Tunnel. 				
1122	HKB & Refuse Collection Point	Erecting Scaffolds for L3 Slab; BS Installation Works for Tunnel Connection; Utility Sewage Construction; and Reinstatement Work on the Ground.				
1123	Zone 1 – PTI Area Zone 2 Zone 4 – Tunnel at Tonnochy Road Zone 3 – Swimming Pool Area (including W4, W5, W6 (partial), W7a and W7b) Fleming Road Junction - Area E	 Structure Station/Tunnel. Excvation and Lateral Support. Excavation and Lateral Support. Excavation and Lateral Support. Excavation and Lateral Support; Temporary Traffic Management; and Utilities Diversion & Protection. 				
	Western Vent Shaft and WAT - Area C WAT - Area B WAT - Area A Kai Tak Barging Point ⁽¹⁾	Structure Vent Shaft/Tunnel. Structure Tunnel. Structure Tunnel. Structure Tunnel. Storage and Barging of Fill Materials.				
1124	New Admiralty Station	SCL Level – Mass Concrete for Walkway for Leftover Areas in North Bound & South Bound. Hoist Removal Works Completed near B13 Slab; Cat Ladder and Door Installation Works in North Bound; Concourse Level - Floor Tiles and Wall Painting Carried out in SCR Waiting Area; and Atrium – Aluminium Cladding Works & Escalator Installation Works.				
1128	Area W2	POC Structure Works, Retaining Wall; andSOV Structure Works, Layer S1 Strut Removal,				

Works Contract	Site	Construction Activities
		Corbel Works.
	Area W3	Reinstatement Works.
	Area W4	Reinstatement Works.
	Area W8	 FPP EEP Structure Works, D-wall Opening. Area 2 NIL Works, Pre-bored H-piles. SP1 at Down-Track RC Lining.

Notes:

- (1) The Kai Tak Barging Point will be for storage and barging of fill materials over the whole contract period.
- 2.1.3 During the reporting month, impact monitoring for air quality, construction noise and water quality were conducted in accordance with the EM&A Manual. Continuous noise monitoring was not required in the reporting period according to the Continuous Noise Monitoring Plan (CNMP). No exceedances of the Action/Limit Level of 24-hour TSP, construction noise and impact water quality parameters due to the Project construction were recorded. Results of air quality, construction noise and impact water quality monitoring are summarised in Tables 2.2, 2.3 and 2.4 respectively. Details of the monitoring requirements, locations, equipment and methodology are presented in the EM&A Reports (Appendices A to E).

Table 2.2 Summary of 24-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)	Exceedance due to the Project Construction (Yes/No)	
Works Contrac	ct 1121 ⁽¹⁾					
Works Contrac	ct 1122 ⁽²⁾					
Works Contrac	et 1123 ⁽³⁾					
Works Contrac	ct 1124 ⁽²⁾					
Works Contrac	ct 1123 and 1128					
AM2 Wan Chai Sports 37.9 – 77.9 160 260 No Ground ⁽⁴⁾⁽⁵⁾					No	
Works Contract 1128						
AM4	Pedestrian Plaza	53.0 – 111.4	198	260	No	

Note:

- (1) The setup of the impact dust monitoring station at Harbourfront Horizon and the impact monitoring is currently carried out under Works Contract 1112. Upon termination of their EM&A programmes, the impact monitoring works would be taken up by Works Contract 1121.
- (2) No TSP monitoring is required under this works contract.
- Dust monitoring at AM3 (Existing Harbour Road Sports Centre) was handed over from Works Contract 1126 to Works Contract 1123 in June 2015 and terminated on 6 May 2017 as demolition of Existing Harbour Road Sports Centre commenced on 8 May 2017.
- (4) The spectator stand at Wan Chai Sports Ground was not available for impact dust monitoring, therefore impact monitoring was conducted at the existing water pump room area at Wan Chai Sports Ground.
- (5) Dust monitoring at AM2 (Wan Chai Sports Ground) was handed over to Works Contract 1123 from Works Contract 1128 on 28 October 2015.

Table 2.3 Summary of Construction Noise Monitoring Results in the Reporting Period

		Noise L	Noise Level (L _{Aeq,30mins} , dB(A))			Exceedance
Monitoring Station ID	Location	Measured	Baseline	Corrected ⁽¹⁾	Limit Level (dB(A))	due to the Project Construction (Yes/No)
Works Contract 1121 ⁽²⁾						

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		Noise L	evel (L _{Aeq,30r}	mins, dB(A))	Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)	
Monitoring Station ID	Location	Measured	Baseline	Corrected ⁽¹⁾			
Works Cont	ract 1122 ⁽²⁾						
Works Cont	ract 1123						
NM2 ⁽³⁾⁽⁴⁾⁽⁵⁾	Harbour Centre	64.8 – 68.6	69.6	< Baseline	75	No	
Works Cont	ract 1124 ⁽²⁾						
Work Contra	Work Contract 1128 ⁽⁶⁾						
NM1	Hoi Kung Court	68.9 – 70.0	71	< Baseline	75	No	

Note:

- (1) The measured noise levels are corrected against the corresponding baseline noise levels.
- (2) No construction noise monitoring is required under this works contract.
- (3) The impact monitoring at NM2 was handed over from Works Contract 1126 to Works Contract 1123 in June 2015.
- (4) Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring under Works Contract 1126. Alternative noise monitoring location proposed at Harbour Centre was approved by the ER and agreed by IEC. It was approved by EPD on 18 December 2017. Impact noise monitoring was carried out at Harbour Centre from 20 August 2014 onwards.
- (5) Impact noise monitoring has been carrying out on 7/F of Harbour Centre between 20 August and 15 December 2014, and on 8/F from 19 December 2014 onwards.
- (6) Noise monitoring at NM1 (Hoi Kung Court) was handed over from Works Contract 1129 to Works Contract 1128 in August 2015.

Table 2.4 Summary of Impact Marine Water Quality Monitoring Results in the Reporting Period (1)

			Parameters	
Loca	tions	Depth-averaged Dissolved Oxygen (mg/L)	Depth-averaged Turbidity (NTU)	Depth-averaged Suspended Solids (mg/L)
Shek O C	asting Bas	sin (Dry Season) ⁽²⁾		
Victoria I	Harbour (D	ry Season) ⁽³⁾		
21	Mean	7.8	1.7	5.7
21	Range	7.0 – 9.5	0.6 - 3.0	3.3 – 7.3
34	Mean	7.6	2.4	6.1
34	Range	7.2 – 9.4	0.7 – 4.1	4.0 – 7.5
9	Mean	6.7	2.1	5.2
9	Range	5.1 – 8.5	0.7 – 3.6	3.0 – 7.0
Action	Level	3.3	12.2	8.0
Limit Level		3.2	18.5	10.4
Exceedance (Yes/No)		No	No	No
Α	Mean	7.7	1.8	5.8
A	Range	7.1 – 8.9	0.5 – 3.0	4.0 – 6.8
WSD17	Mean	7.9	1.9	5.6
WSDII	Range	7.4 – 9.2	0.7 - 3.7	3.7 – 6.7
WSD9	Mean	8.0	1.6	5.4
พงอบฮ	Range	7.4 – 9.6	0.4 - 3.0	3.5 – 6.7
Action Level		<2.1	5.0	6.9
Limit Level		<2	7.0	6.9
Exceedance		No	No	No

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Locations		Parameters		
		Depth-averaged Dissolved Oxygen (mg/L)	Depth-averaged Turbidity (NTU)	Depth-averaged Suspended Solids (mg/L)
(Yes	s/No)			
C1	Mean	7.9	1.6	5.4
	Range	7.2 – 8.9	0.5 – 2.8	3.0 - 6.8
C2	Mean	8.1	1.6	5.1
	Range	7.5 – 9.1	0.4 - 2.8	3.7 – 6.5

Notes:

- (1) Marine water quality monitoring was conducted in the reporting period under Works Contract 1121.
- (2) Removal of earth bunds at Shek O Casting Basin under Works Contract 1121 commenced on 17 March 2017 and the removal of dock gate at Shek O Casting Basin was completed on 30 April 2017. Removal of southern dock gate at Shek O under Works Contract 1121 commenced on 8 November 2017 and was completed on 20 November 2017. A post-project water quality monitoring was hence conducted from 22 November 2017 to 18 December 2017 according to Section 9.25 of the EM&A Manual.
- (3) Dredging / filling works within the Victoria Harbour commenced on 22 April 2015. Water Quality Monitoring at Station 8 and 14 is suspended as these water intakes are not in use.
- 2.1.4 No environmental complaints, notification of summons and successful prosecutions were recorded in the reporting period. Log for environmental complaints, notification of summons and successful prosecutions is provided in **Table 2.5**.

Table 2.5 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
1121	0	0	0
1122	0	0	0
1123	0	0	0
1124	0	0	0
1128	0	0	0

2.1.5 Regular site inspections were conducted by the Contractor's ET on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance was identified in the reporting period.

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3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The respective Contractors have implemented all mitigation measures and requirements as stated in the EIA Report, EM&A Manual and EP (EP-436/2012/F). The status of required submissions under the EP as of the reporting period are summarised in **Table 3.1**.

Table 3.1 Summary of EP Submissions Status

EP Condition (EP-436/2012/F)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	19 Dec 2012
Condition 2.3	Notification of Setup of Community Liaison Group	22 Jun 2016
Condition 2.5	Management Organisation of Main Construction Companies	5 Jan 2017
Condition 2.6	Construction Programme and EP Submission Schedule	5 Jan 2017
	Construction Noise Mitigation Measures Plan (CNMMP)	
Condition 2.7	Works Contract 1126: Construction Noise Mitigation Measures Plan (CNMMP)	9 Jun 2014 (1 st Submission)
	Works Contract 1123: Construction Noise Mitigation Measures Plan (CNMMP)	24 Apr 2015 (1st Submission) 7 Jul 2015 (2nd Submission) 2 Oct 2015 (3rd Submission) 2 June 2016 (4th Submission)
	Continuous Noise Monitoring Plan (CNMP)	
Condition 2.8	Works Contract 1126: Continuous Noise Monitoring Plan (CNMP)	9 Jun 2014 (1 st Submission)
	Works Contract 1123: Continuous Noise Monitoring Plan (CNMP)	24 Apr 2015 (1 st Submission) 7 Jul 2015 (2 nd Submission) 2 June 2016 (3 rd Submission)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1 st Submission) 12 Sep 2012 (2 nd Submission) 15 Oct 2012 (approved)
	Works Contract 11227: Silt Curtain Deployment Plan for Trial Trenching in Victoria Harbour	11 Jul 2014
Condition 2.10	Works Contract 1121: Silt Curtain Deployment Plan for Hung Hom Landfall and Trial Trench in Victoria Harbour	17 Feb 2015 (1st Submission) 2 Apr 2015 (2nd Submission) 27 Oct 2015 (3rd Submission) 29 March 2016 (4th Submission) 19 December 2017 and 15 January 2018 (5th Submission)
	Works Contract 1128: Silt Curtain Deployment Plan	21 March 2018 (1 st Submission) 13 April 2018 (2 nd Submission) 17 Apri 2018 (Approved)
Condition 2.44	Works Contract 11227: Silt Screen Deployment Plan	11 Jul 2014
Condition 2.11	Works Contract 1121: Silt Screen Deployment Plan	13 Feb 2015
Condition 2.12	Sediment Management Plan	6 Jul 2012 (1st Submission) 12 Sep 2012 (2nd Submission) 5 Oct 2012 (3rd Submission) 15 Oct 2012 (approved)

EP Condition (EP-436/2012/F)	Submission	Submission date	
, , ,		3 Jul 2014 (4 th Submission)	
Condition 2.14	Visual, Landscape, Tree Planting & Tree Protection Plan	14 Nov 2012 (1st Submission) 3 Dec 2013 (2nd Submission) 21 Aug 2014 (3rd Submission) 9 Feb 2015 (4th Submission) 27 May 2016 (5th Submission) 29 Nov 2016 (6th Submission) 19 Jan 2017 (7th Submission) 11 Apr 2017 (8th Submission) 20 Apr 2017 (approved) 7 Feb 2018 (9th Submission on 1122 revised landscape plans) 7 Mar 2018 (10th Submission) 9 Mar 2018 (approved)	
Condition 2.23.1	Works Contract 11227: Silt Curtain Deployment Plan for Shek O Works Contract 1121:	23 Jul 2014 (1st Submission) 31 Jul 2014 (approved) 4 Feb 2015 (1st Submission)	
	Silt Curtain Deployment Plan for Shek O	4 Mar 2015 (2 nd Submission) 9 Mar 2015 (approved)	
Condition 2.24	Contamination Assessment Plan (CAP) and Contamination Assessment Report (CAR)Remedial Action Plan (RAP) for the above-ground diesel tanks for Wan Chai Swimming Pool	CAP: 25 Sep 2012 (1st Submission) 12 Nov 2012 (2nd Submission) 22 Nov 2012 (approved) CAR: 19 Mar 2013 (1st Submission) 16 Apr 2013 (2nd Submission)	
		21 May 2013 (3 rd Submission) 7 Jun 2013 (approved)	
Condition 2.26	As-built Drawings for Landscape and Visual Mitigation Measures	5 th Jan 2018 (1 st submission)	
Condition 2.28	Operational Ground-borne Noise Mitigation Measures Plan – Batch 1	26 th June 2018 (1 st submission)	
Condition 3.3	Baseline Monitoring Report (for noise and air quality) Baseline Water Quality Monitoring Report Baseline Water Quality Monitoring Report for Temporary Marine Works at Shek O Casting Basin	4 Dec 2013 (1st Submission) 5 Feb 2014 (2nd Submission) 23 Sep 2014 (1st Submission) 18 Dec 2014 (2nd Submission) 8 Jul 2014 (1st Submission) 11 Aug 2014 (2nd Submission)	
Condition 3.4	Monthly EM&A Reports No.1 - 56 Final EM&A Review Report for Works Contract 11227 Final EM&A Review Report for Works Contract 1126 Final EM&A Review Report for Works Contract 1129	Reported in previous Monthly EM&A Reports 12 Feb 2015 25 Jun 2015 (1st Submission) 4 Sep 2015 (2nd Submission) 30 Sep 2015	
	Monthly EM&A Report No.57	14 Feb 2019	

Appendix A

Monthly EM&A Report for February 2019 – SCL Works Contract 1128 South Ventilation Building to Admiralty Tunnels



Dragages Bouygues J.V.

Shatin to Central Link - Hung Hom to Admiralty Section

Works Contract 1128 - South Ventilation Building (SOV) to Admiralty Tunnels

Monthly EM&A Report for February 2019

[March 2019]

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Reviewed, Approved & Certified:	Y T Tang (Contractor's Environmental Team Leader)	- Completing

Version: 0	Date:	7 March 2019

Disclaimer

This Environmental Monitoring and Audit Report is prepared for Dragages Bouygues J.V. and is given for its sole benefit in relation to and pursuant to SCL1128 and may not be disclosed to, quoted to or relied upon by any person other than Dragages Bouygues J.V. without our prior written consent. No person (other than Dragages Bouygues J.V. into whose possession a copy of this Manual comes may rely on this plan without our express written consent and Dragages Bouygues J.V. may not rely on it for any purpose other than as described above.

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EXECUTIVE SUMMARY

Shatin to Central Link Contract 1128 – South Ventilation Building (SOV) to Admiralty Tunnels (hereafter called "the Project") covers part of the construction of the Shatin to Central Link (SCL).

The Project comprises the Permanent Works and the associated temporary works necessary for TBM tunnels between SOV and Admiralty Tunnels, short sections of cut and cover tunnels near SOV and Fenwick Pier Emergency Egress Point (FPP), Re-provisioning, Remedial and Improvement Works (RRIW) for government and public bodies facilities.

The EM&A programme commenced on 17 November 2014. The impact EM&A for the Project includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 and 28 February 2019. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Area W2	 POC Structure Works, Retaining Wall SOV Structure Works, Layer S1 strut removal, Corbel works
Area W3 – Percival Footbridge	Reinstatement Works
Area W4 – Tunnel Approach Rest Garden	Reinstatement Works
Area W8 (FPP)	EEP Structure Works, D-wall Opening
Area W8 (Area2)	NIL Works, pre-bored H-piles
Area W8 – SP1 at Down-track	RC lining

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action / Limit Level of air quality was recorded in the reporting month.

Breaches of Action and Limit Levels for Noise

Noise monitoring was handed-over from SCL Contract 1129 in August 2015.

No Action Level exceedance was recorded since no noise related complaint was received in the reporting month.

No exceedance of Limit Level of noise was recorded in the reporting month.

Breaches of Action and Limit Levels for Water Quality

No Action and Limit Level exceedance was recorded by the ET of Contract SCL1121 for water quality monitoring in the reporting month.

Complaint, Notification of Summons and Successful Prosecution

No environmental related complaint, notification of summons and successful prosecution was received in the reporting month. The summary and cumulative statistics on environmental complaints is provided in **Appendix J**.

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Reporting Changes

There was no reporting change in the reporting month.

Future Key Issues

Key issues to be considered in the coming month included:

Location	Site Activities
Area W2	POC Structure Works, Retaining Wall
Area W2 – SOV Shaft	SOV Structure Works, Layer S3 strut removal, Corbel works
Area W3 – Percival Footbridge	Reinstatement Works
Area W4 –Rest Garden Reinstatement	Reinstatement Works
Area W8 (Area1)	Walkway and EEP Structure Works, D-wall Opening
Area W8 (Area 2)	NIL Works, pre-bored H-piles
Area W8 – SP1 at Down-track	RC Works
ADM – Down-track	Walkway concreting

Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

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1 INTRODUCTION

Dragages Bouygues J.V. (JV) was commissioned by MTR as the Civil Contractor for Works Contract 1128. AECOM Asia Company Limited (AECOM) was appointed by JV as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1 Purpose of the Report

1.1.1 This is the fifty - second monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between 1 and 28 February 2019.

1.2 Report Structure

- 1.2.1 This monthly EM&A Report is organized as follows:
 - Section 1: Introduction
 - Section 2: Project Information
 - Section 3: Environmental Monitoring Requirement
 - Section 4: Implementation Status of Environmental Mitigation Measures
 - Section 5: Monitoring Results
 - Section 6: Environmental Site Inspection and Audit
 - Section 7: Environmental Non-conformance
 - Section 8: Future Key Issues
 - Section 9: Conclusions and Recommendations

2 PROJECT INFORMATION

2.1 Background

- 2.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2012, which covers SCL (HUH-ADM) EP No.: EP-436/2012), for the construction and operation. Variation of EP (VEP) was subsequently applied and the latest EP (EP No. EP-436/2012/F) was issued by the Director of Environmental Protection (DEP) on 23 January 2019.
- 2.1.3 The construction of the SCL is divided into different civil construction works contracts and the Project comprises the Permanent Works and the associated temporary works necessary for TBM tunnels between SOV and Admiralty Tunnels, short sections of cut and cover tunnels near SOV and Fenwick Pier Emergency Egress Point (FPP), Re-provisioning, Remedial and Improvement Works (RRIW) for government and public bodies facilities under the EP.
- 2.1.4 The site layout plan of the Project is shown in **Figure 1.1**.

2.2 Site Description

- 2.2.1 The major construction activities under Works Contract 1128 include:
 - (a) Taking over the 160m section of the SCL tunnels (ME4 Tunnel) constructed under the Central Wan Chai Bypass (CWB) project and construction of walkways, sealing, connection and various finishing works inside the tunnels;
 - (b) Construction of cut and cover tunnels connecting from South Ventilation Building (SOV) to the ME4 Tunnel;
 - (c) Removal of temporary reclamation and reinstatement of seawall;
 - (d) Construction of SOV;
 - (e) Bored tunnels between SOV and Exhibition Station (EXH);
 - (f) Construction of cut and cover tunnels connecting from the SCL tunnels under Convention Avenue by Contract 1123 to the bored tunnels as stated in sub-clause
 - (g) Construction of Fenwick Pier Emergency Egress Point (FPP);
 - (h) Bored tunnels between Fenwick Pier Emergency Egress Point (FPP) and Admiralty Station (ADM);
 - (i) Pile/obstruction detections and removals for construction of SCL running tunnels and for future North Island Line (NIL) running tunnels;
 - (j) Demolition of existing Police Officer's Club (POC);
 - (k) Reprovisioning of new POC;
 - (I) Other RRIW;
 - (m) Essential piling works at future Government, Institution and Community (GIC) site
 - (n) Diversion and modification of utilities and services;
 - (o) Modification, re-provisioning or reinstatement of footpath, carriageway or road features;
 - (p) Provisions for Designated and Interfacing Contracts;
 - (q) Tree felling, tree compensation, transplanting works and landscaping works;
 - (r) Permanent reprovisioning works at the Fleet Arcade;
 - (s) Miscellaneous signage; and
 - (t) External works comprising new and reinstated roads, footpaths, drains, landscaping, staircase, street furniture and the like.

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2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarised below:

Location	Site Activities
Area W2	 POC Structure Works, Retaining Wall SOV Structure Works, Layer S1 strut removal, Corbel works
Area W3 – Percival Footbridge	Reinstatement Works
Area W4 - Tunnel Approach Rest Garden	Reinstatement Works
Area W8 (FPP)	EEP Structure Works, D-wall Opening
Area W8 (Area2)	NIL Works, pre-bored H-piles
Area W8 – SP1 at Down-track	RC lining

2.3.2 The construction programme is presented in **Appendix A**.

2.4 Project Organisation

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarised in **Table 2.1.**

Table 2.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
	Residential	Construction Manager	Mr. Mike Bezzano	2171 3610	2171 3609
MTR Residential Engineer (ER)		SCL Project Environmental Team Leader	Ms. Lisa Poon	3127 6295	3127 6422
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
JV	Contractor	Project Director	Mr. Lee Ka-Leung	9745 5533	2171 3715
JV	Environmental Manager		Mr. Marcus Cheung	6628 2685	21/13/15
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	2317 7609

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2.5 Status of Environmental Licences, Notification and Permits

2.5.1 Relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 2.2**.

Table 2.2 Status of Environmental Licenses, Notifications and Permits

Permit / License	Valid Period		Ctatura	Domostro		
No. / Notification/ Reference No.	From	То	Status	Remarks		
Environmental Perm	Environmental Permit					
EP-436/2012/F	23 Jan 2019	End of the Project	Valid	SCL (HUH - ADM)		
Construction Noise I	Permit					
GW-RS0852-18	21 Sept 2018	20 Mar 2019	Valid	Construction Site at Gloucester Road near Hung Hing Road (W4)		
GW-RS1075-18	24 Nov 2018	22 May 2019	Valid	Construction site near Lung King Street and Convention Avenue (W8, W11, W14, W21)		
GW-RS1126-18	29 Nov 2018	27 May 2019	Valid	Construction site near Ex-Police Officers' Club, Causeway Bay, Hong Kong		
GW-RS0038-19	23 Jan 2019	21 Jul 2019	Valid	Construction site between Percival Street Footbridge and Causeway / Hung Hing Road Flyover (W3)		
Wastewater Discharg	ge License	,				
WT00020473-2014	9 Dec 2014	31 Dec 2019	Valid	Gloucester Road near Hung Hing Road (W4)		
WT00021519-2015	4 May 2015	31 May 2020	Valid	Between Percival Street Footbridge and Hung Hing Road Flyover (W3)		
WT00022781-2015	3 Nov 2015	30 Nov 2020	Valid	Works Area at Green Zone		
WT00023987-2016	10 Mar 2016	31 Mar 2020	Valid	Junction of Lung King Street and Convention Avenue (W8)		
WT00023989-2016	10 Mar 2016	31 Dec 2019	Valid	Lung King Street near DSD Screening Plant (W14)		
WT00024759-2016	21 Jun 2016	31 Dec 2019	Valid	Works Area at POC (W1 + W2)		
Chemical Waste Producer Registration						
5213-135-D2551-01	16 Dec 2014	End of the Project	Valid	Gloucester Road near Hung Hing Road (W4)		
5213-134-D2552-01	16 Dec 2014	End of the Project	Valid	Lung King Street near DSD Screening Plant (W14)		
5111-151-D2552-02	05 Jan 2015	End of the Project	Valid	Victoria Park Road near POC (W1)		

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Permit / License No. / Notification/ Reference No.	Valid Period		Ctatura	Remarks	
	From	То	Status	Veillal V2	
Billing Account for C	onstruction Wa	ste Disposal			
7020686	15 Sep 2014	End of Contract	Valid	For disposal of C&D waste to public fills and landfills	
Notification Under A	ir Pollution Con	trol (Constructio	n Dust) Regulation		
378806	2 Sep 2014	End of Contract	Valid	For Wan Chai, Causeway Bay, Hong Kong Island	
380227	7 Oct 2014	End of Contract	Valid	For Gloucester Road near Cross Harbour Tunnel	
380228	7 Oct 2014	End of Contract	Valid	Near Convention Avenue and Fenwick Pier Street, HK Island	

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3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Dust Monitoring

Monitoring Requirements

3.1.1 In accordance with the approved EM&A Manuals, 24-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required. Impact 24-hour TSP monitoring should be carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in **Appendix D**.

Monitoring Equipment

3.1.2 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at the designated monitoring stations. The HVS meets all the requirements of the EM&A Manual. Brand and model of the equipment is given in **Table 3.1**.

Table 3.1 Air Quality Monitoring Equipment

Equipment	Brand and Model	
High Volume Sampler	Andersen Total Suspended Particulate Mass Flow	
High Volume Sampler (24-hour TSP)	Controlled High Volume Air Sampler	
	(Model No. GS 2310 (S/N:10273))	
	TISCH Environmental Orifice	
Calibration Kit	(Model TE-5025A (S/N: 0988))	
	, , , , , , , , , , , , , , , , , , , ,	

Monitoring Locations

3.1.3 Two monitoring station were set up at the proposed location in accordance with the approved EM&A Manuals for SCL(HUH-ADM) as well as the works areas of the Project. The location of the construction dust monitoring stations are summarised in **Table 3.2** and shown in **Figure 3.1**.

Table 3.2 Locations of Construction Dust Monitoring Station

ID	Air Sensitive Receiver (ASR) ID in EIA Report	Dust Monitoring Station	
AM2*	EXA6	Wanchai Sports Ground	
AM4	EXA4	Pedestrian Plaza	

The monitoring station at AM2 was handed-over from Contract SCL1126 in April 2015 and handed-over to Contract SCL1123 on 28 October 2015.

Monitoring Methodology

- 3.1.4 24-hour TSP Monitoring
 - (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS as far as practicable:
 - (i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
 - (ii) Two samplers should not be placed less than 2m apart from each other;
 - (iii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
 - (iv) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.

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- (v) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
- (vi) No furnace or incinerator flues nearby.
- (vii) Airflow around the sampler was unrestricted.
- (viii) The sampler was located more than 20 meters from any dripline.
- (ix) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
- (x) Permission was obtained to set up the samplers and access to the monitoring station.
- (xi) A secured supply of electricity was obtained to operate the sampler.

(b) Preparation of Filter Papers

- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
- (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.
- (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(c) Field Monitoring

- (i) The power supply was checked to ensure the HVS works properly.
- (ii) The filter holder and the area surrounding the filter were cleaned.
- (iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
- (vi) Then the shelter lid was closed and was secured with the aluminium strip.
- (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- (viii) A new flow rate record sheet was set into the flow recorder.
- (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m³/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m³/min).
- (x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
- (xi) The initial elapsed time was recorded.
- (xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
- (xiii) The final elapsed time was recorded.
- (xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- (xv) It was then placed in a clean envelope and sealed.
- (xvi) All monitoring information was recorded on a standard data sheet.
- (xvii) Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.

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- (d) Maintenance and Calibration
 - (i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
 - (ii) HVSs were calibrated using TE-5025A Calibration Kit upon installation and thereafter at bi-monthly intervals.
 - (iii) Calibration certificate of the TE-5025A Calibration Kit and the HVSs are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.1.5 The schedule for environmental monitoring in February 2019 is provided in **Appendix F**.

3.2 Construction Noise Monitoring

Monitoring Requirements

3.2.1 In accordance with the EM&A Manual, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3.3** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit level of the noise monitoring is provided in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. Leq, L ₁₀ and L ₉₀ would be recorded.	At least once per week

Monitoring Equipment

3.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.4**.

Table 3.4 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model	
Integrated Sound Level Meter	Model No. B&K2238 (S/N: 2800927)	
Acoustic Calibrator	Model No. B&K 4231 (S/N: 3006428)	

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Monitoring Locations

3.2.3 The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manual for SCL (HUH-ADM) of the Project. Location of the noise monitoring station is summarised in **Table 3.5** and shown in **Figure 3.1**.

Table 3.5 Noise Monitoring Station during Construction Phase

Identification No.	Noise Sensitive Receiver (NSR) ID in EIA Report	Noise Monitoring Station
NM1*	CH2	Hoi Kung Court

The noise monitoring at NM1 was handed-over from SCL Contract 1129 in August 2015.

Monitoring Methodology

3.2.4 Monitoring Procedure

- (a) Façade measurement was made at NM1.
- (b) The battery condition was checked to ensure the correct functioning of the meter.
- (c) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - (i) frequency weighting: A
 - (ii) time weighting: Fast
 - (iii) time measurement: L_{eq(30-minutes)} during non-restricted hours i.e. 0700 1900 on normal weekdays.
- (d) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (e) During the monitoring period, the L_{eq}, L₁₀ and L₉₀ were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (f) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (g) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

3.2.5 Maintenance and Calibration

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- (c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.2.6 The schedule for environmental monitoring in February 2019 is provided in Appendix F.

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3.3 Water Quality Monitoring

Monitoring Requirements

3.3.1 In accordance with the EM&A Manual, impact water quality monitoring should be conducted during dredging and filling operation. **Table 3.6** summarises the monitoring parameters and frequency of impact water quality monitoring. The Action and Limit level of the impact water quality monitoring is provided in **Appendix D**.

Table 3.6 Water Quality Monitoring Parameters and Frequency

Parameter	Frequency
Turbidity, Suspended Solid, Dissolved Oxygen, Temperature and Salinity	Three days per week, at mid-flood and mid-ebb tides

Monitoring Equipment

3.3.2 The monitoring equipment, monitoring methodology are detailed in the monthly EM&A Reports prepared for Contract SCL1121.

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Monitoring Locations

3.3.3 The monitoring station for impact water quality monitoring has been extracted from the EM&A Manual for SCL (HUH-ADM) of the Project. Location of the water monitoring station is summarised in **Table 3.7**.

Table 3.7 Monitoring Station for Impact Water Quality Monitoring

Monitoring	Decemention	Coordinates	
Station Description		Easting	Northing
Victoria Harbour			
8	Cooling Water Intake for Excelsior Hotel and World Trade Centre / No. 27 – 63 Paterson Street	837036	816008
9	Cooling Water Intake for Windsor House	837223	816150
14	Flushing Water Intake for Kowloon Station	834477	817891
21	Cooling Water Intake for East Rail Extension	836484	817642
34	Cooling Water Intake for Metropolis	836828	817844
А	Wan Chai WSD Flushing Water Intake (Reprovisioned) ⁽¹⁾	836268	816045
WSD9	Tai Wan WSD Flushing Water Intake ⁽²⁾	837930	818357
WSD17	Quarry Bay WSD Flushing Water Intake	839863	817077
C1	Control Station 1	833977	817442
C2	Control Station 2	841088	817223

Note: 1. According to the Baseline Water Quality Monitoring Report for SCL (MKK-HUH & HUH-ADM), the original coordinates of monitoring location A (Easting: 836286, Northing: 816024) is the exact location taken from the design of reprovisioned Wan Chai Salt Water Pumping Station and Salt Water Intake Culvert. Based on actual site condition for taking water sampling, minor adjustment was made on monitoring location.

2. According to the Baseline Water Quality Monitoring Report for SCL (MKK-HUH & HUH-ADM), the original coordinates of monitoring location WSD9 (Easting: 838133, Northing: 817790) as proposed in WQMP were moved closer to sensitive receiver according to the actual site condition.

Monitoring Methodology

3.3.4 The monitoring methodology is detailed in the monthly EM&A Reports prepared for Contract SCL1121.

Monitoring Schedule for the Reporting Month

3.3.5 The monitoring schedule is detailed in the monthly EM&A Reports prepared for Contract SCL1121.

3.4 Landscape and Visual

3.4.1 As per the EM&A Manuals, the landscape and visual mitigation measures shall be implemented and site inspections should be undertaken once every two weeks during the construction period. A summary of the implementation status is presented in **Section 6.**

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4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C.** Status of required submissions under the EP during the reporting period is summarised in **Table 4.1**.

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4 (EP-436/2012/F)	Monthly EM&A Report for January 2019	14 February 2019

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5 MONITORING RESULTS

5.1 Construction Dust Monitoring

5.1.1 The monitoring results for 24-hour TSP are summarised in **Table 5.1**. Detailed air quality monitoring results and wind monitoring data extracted from the nearest Automatic Weather Station are presented in **Appendix G**.

Table 5.1 Summary of 24-hour TSP Monitoring Result in the Reporting Period

ID	Average (μg/m³)	Range (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)
AM2#	59.6	37.6 – 77.9	160	260
AM4	77.4	53.0 – 111.4	198	260

[#] The monitoring station at AM2 was handed-over from Contract SCL1126 in April 2015 and handed-over to Contract SCL1123 on 28 October 2015.

- 5.1.2 No exceedance of Action / Limit Level of air quality was recorded in the reporting month.
- 5.1.3 The event and action plan is annexed in **Appendix I**.
- 5.1.4 Major dust sources during the monitoring included construction dust, nearby traffic emission and other nearby construction sites.

5.2 Construction Noise Monitoring

- 5.2.1 Noise monitoring at NM1 was handed over from SCL Contract 1129 in August 2015.
- 5.2.2 The monitoring results for noise are summarized in **Table 5.2** and the monitoring data is provided in **Appendix H**.

Table 5.2 Summary of Construction Noise Monitoring Results in the Reporting Period

ID	Range, dB(A), L _{eq (30 mins)}	Limit Level, dB(A), L _{eq (30 mins)}	
NM1 ^(*)	<baseline< th=""><th>75</th></baseline<>	75	

^(*) Baseline correction will be made to the measured Leq when the measured noise level exceeded the corresponding baseline noise level and presented in the table.

- 5.2.3 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 5.2.4 No Limit Level exceedance of noise was recorded at the monitoring station in the reporting month.
- 5.2.5 The event and action plan is annexed in **Appendix I**.
- 5.2.6 Major noise sources during the monitoring included construction noise from the Project site, nearby traffic noise and the community.

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5.3 Water Quality Monitoring

- 5.3.1 The monitoring results are reported in the monthly EM&A Report prepared for Contract SCL1121.
- 5.3.2 No Action and Limit Level exceedance was recorded by the ET of Contract SCL1121 for water quality monitoring in the reporting month.

5.4 Waste Management

- 5.4.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.
- 5.4.2 As advised by the Contractor, 649.5 m³ of inert C&D material was generated in the reporting month. 649.5 m³ was disposed of as fill bank at TKO137. 79.0 m³ of general refuse was generated in the reporting month. No paper/cardboard packaging material, metals and plastic was collected by recycling contractor in the reporting month. No chemical waste was collected by licensed contractor. No marine dumping was undertaken in the reporting period.
- 5.4.3 SCL1128 delivered the spoil to WDII C1, CWB, SCL 1121, SCL 1103, WDII C3, WDII C2, 8217, HY/2010/08, PSK226, SCL1112, Area 56A, M+ and XRL810B for beneficial use. If spoil could not be fully utilized at these sites, the spoil will be transported to Mainland China for reuse. The waste flow table is annexed in **Appendix K**.
- 5.4.4 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 5.4.5 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practise on the Packaging, Labelling and Storage of Chemical Wastes.

5.5 Landscape and Visual

5.5.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 February 2019. A summary of the site inspection is provided in **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

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6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

- 6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.
- 6.1.2 In the reporting month, 4 site inspections were carried out on 8, 11, 18 ad 25 February 2019. Joint inspection with the IEC, ER, the Contractor and the ET was conducted on 11 February 2019. No non-compliance was recorded during the site inspections. Details of observations recorded during the site inspections are presented in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	18 February 2019	Reminder The Contractor was reminded to fully cover the stockpile stored in exposed area of W4.	The item was rectified by the Contractor on 18 February 2019.
	18 February 2019	Reminder The Contractor was reminded to cover the dusty material stored in W4.	The item was rectified by the Contractor on 18 February 2019.
Noise	Nil	Nil	Nil
Water Quality	Nil	Nil	Nil
	11 February 2019	 Spillage of stain was observed in W8 (entrance near to Lung King Street). The Contractor was advised to provide the drip tray to prevent spillage. 	The item was rectified by the Contractor on 15 February 2019.
Waste/ Chemical Management	11 February 2019	Reminder Chemical container stored without drip tray was observed in W8. The Contractor was advised to provide drip tray to chemical container.	The item was rectified by the Contractor on 15 February 2019.
	11 February 2019	Reminder Chemical waste stored with general refuse was observed in W8. The Contractor was advised to store general refuse and chemical separately.	The item was rectified by the Contractor on 15 February 2019.
Landscape & Visual	Nil	Nil	Nil
Permits/ Licenses	11 February 2019	Missing environmental permits in vehicle entrance (entrance near to Convention Avenue) was observed in W8. The Contractor was advised to post relevant environmental permit at all vehicle entrance/ exit.	The item will be followed up in next reporting month.

- 6.1.3 No follow-up actions were requested by Contractor's ET during site inspections carried out on 8 and 25 February 2019.
- 6.1.4 Most of the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

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7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

- 7.1.1 No exceedance of Action / Limit Level of air quality was recorded in the reporting month.
- 7.1.2 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 7.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 7.1.4 No Action and Limit Level exceedance was recorded by the ET of Contract SCL1121 for water quality monitoring in the reporting month.

7.2 Summary of Environmental Non-Compliance

7.2.1 No environmental non-compliance was recorded in the reporting month.

7.3 Summary of Environmental Complaints

7.3.1 No environmental related complaint was received in the reporting month. The summary and cumulative statistics on environmental complaints is provided in **Appendix J**.

7.4 Summary of Environmental Summon and Successful Prosecutions

7.4.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix J**.

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8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works in between March and May 2019 will be:

Location	Site Activities
Area W2	POC Structure Works, Retaining Wall
Area W2 – SOV Shaft	SOV Structure Works, Layer S3 strut removal, Corbel works
Area W3 – Percival Footbridge	Reinstatement Works
Area W4 –Rest Garden Reinstatement	Reinstatement Works
Area W8 (Area1)	Walkway and EEP Structure Works, D-wall Opening
Area W8 (Area 2)	NIL Works, pre-bored H-piles
Area W8 – SP1 at Down-track	RC Works
ADM – Down-track	Walkway concreting

8.2 Key Issues for the Coming Month

8.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

8.3 Monitoring Schedule for the Next Three Month

8.3.1 The tentative schedules for environmental monitoring between March and May 2019 are provided in **Appendix F**.

AECOM Asia Co. Ltd. 19 March 2019

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

- 9.1.1 24-hour TSP and noise monitoring were carried out in the reporting month.
- 9.1.2 All 24-hour TSP monitoring result complied with the Action / Limit Level at in the reporting month.
- 9.1.3 No noise complaint was received in the reporting month. Hence, no Action Level exceedance was recorded.
- 9.1.4 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 9.1.5 No Action and Limit Level exceedance was recorded by the ET of Contract SCL1121 for water quality monitoring in the reporting month.
- 9.1.6 4 nos. of environmental site inspections were carried out in February 2019. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.
- 9.1.7 Referring to the Contractor's information, no environmental related complaint, notification of summons and successful prosecution was received in the reporting month.

9.2 Recommendations

9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- The Contractor was reminded to fully cover the stockpile stored in exposed area.
- The Contractor was reminded to cover the dusty material stored in exposed area.

Construction Noise Impact

No specific observation was identified in the reporting month.

Water Quality Impact

No specific observation was identified in the reporting month.

Chemical and Waste Management

- The Contractor was advised to store the chemical container with the drip tray to prevent spillage.
- The Contractor was advised to store general refuse and chemical waste separately.

Landscape & Visual Impact

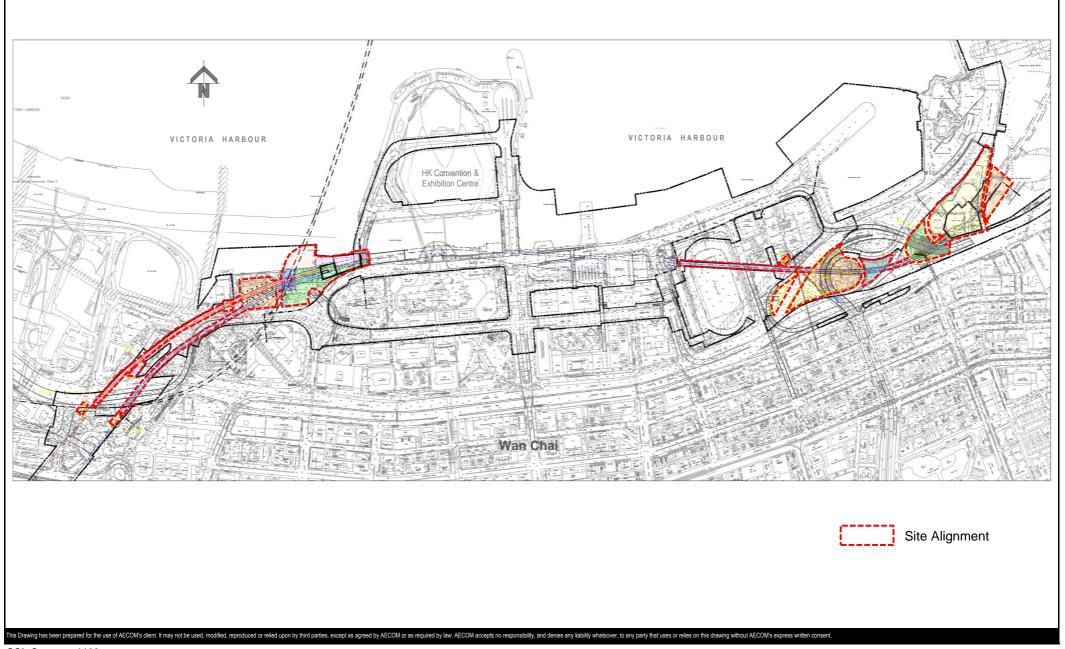
No specific observation was identified in the reporting month.

Permits/licenses

• The Contractor was advised to post relevant environmental permit at all vehicle entrance/ exit.

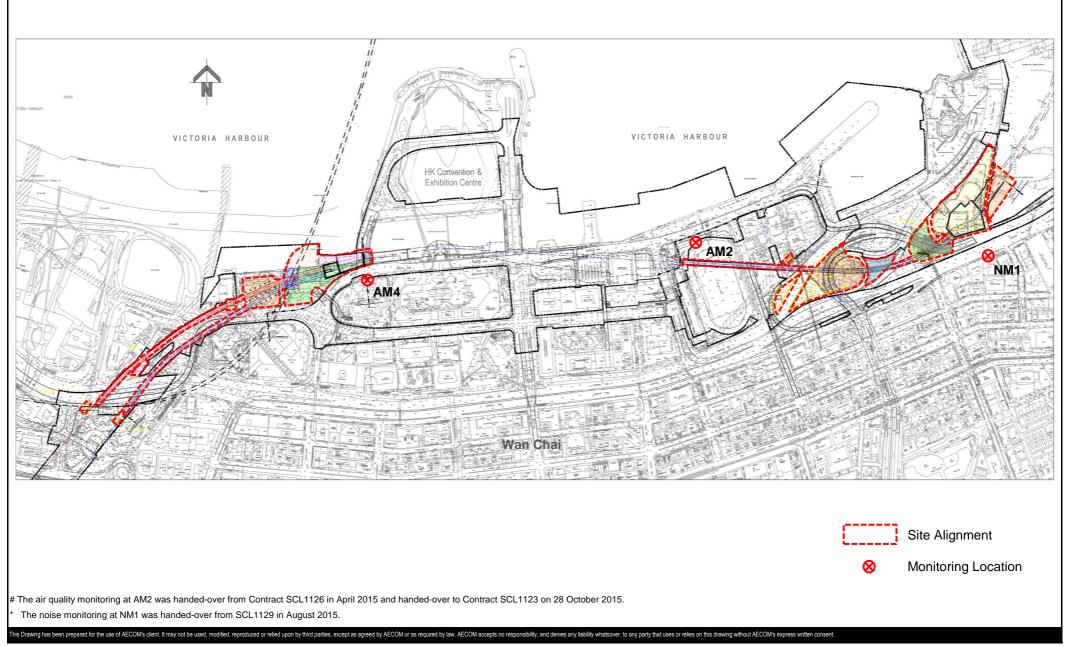
AECOM Asia Co. Ltd. 20 March 2019





SCL Contract 1128
South Ventilation Building to Admiralty Tunnels





SCL Contract 1128

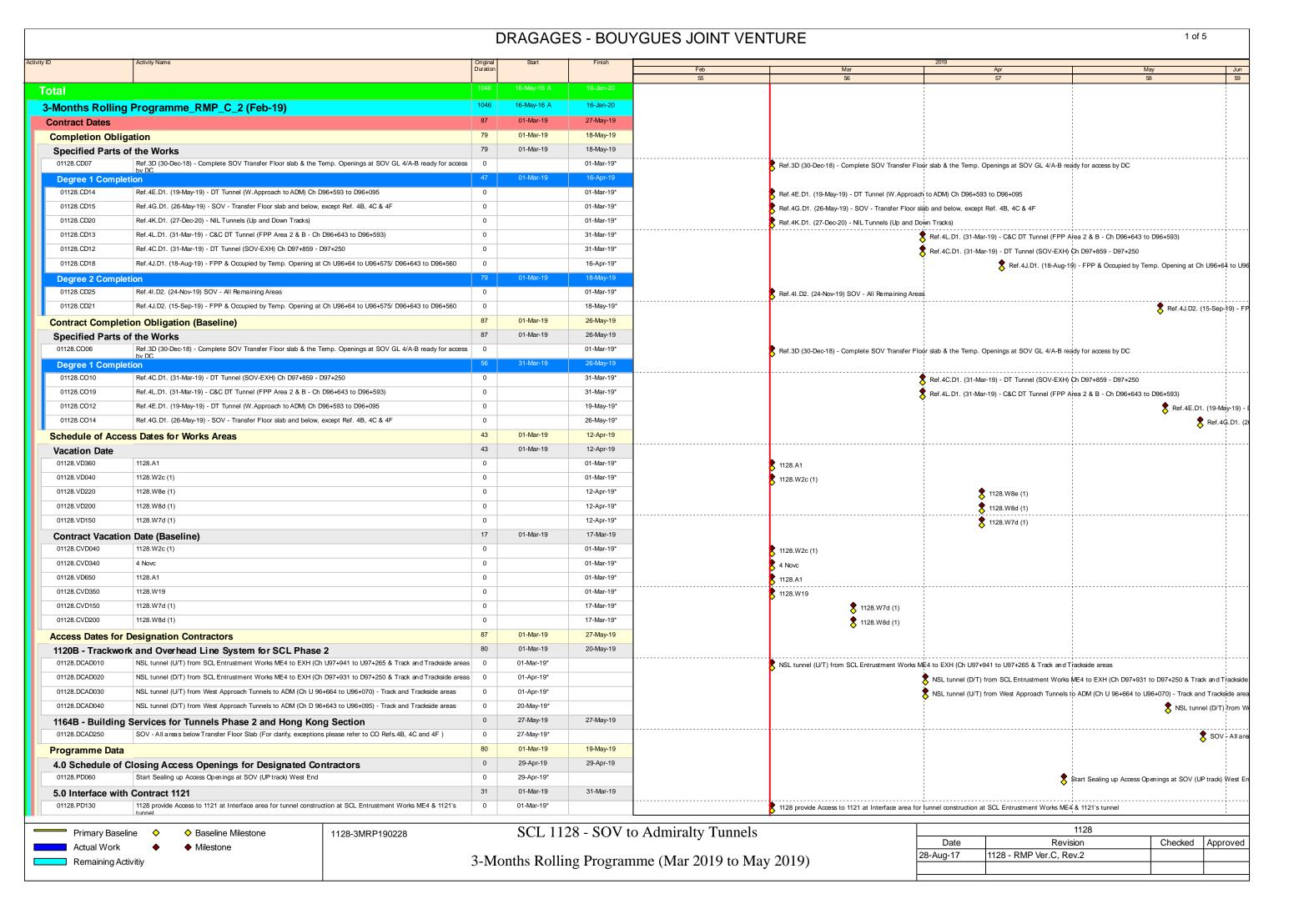
South Ventilation Building to Admiralty Tunnels

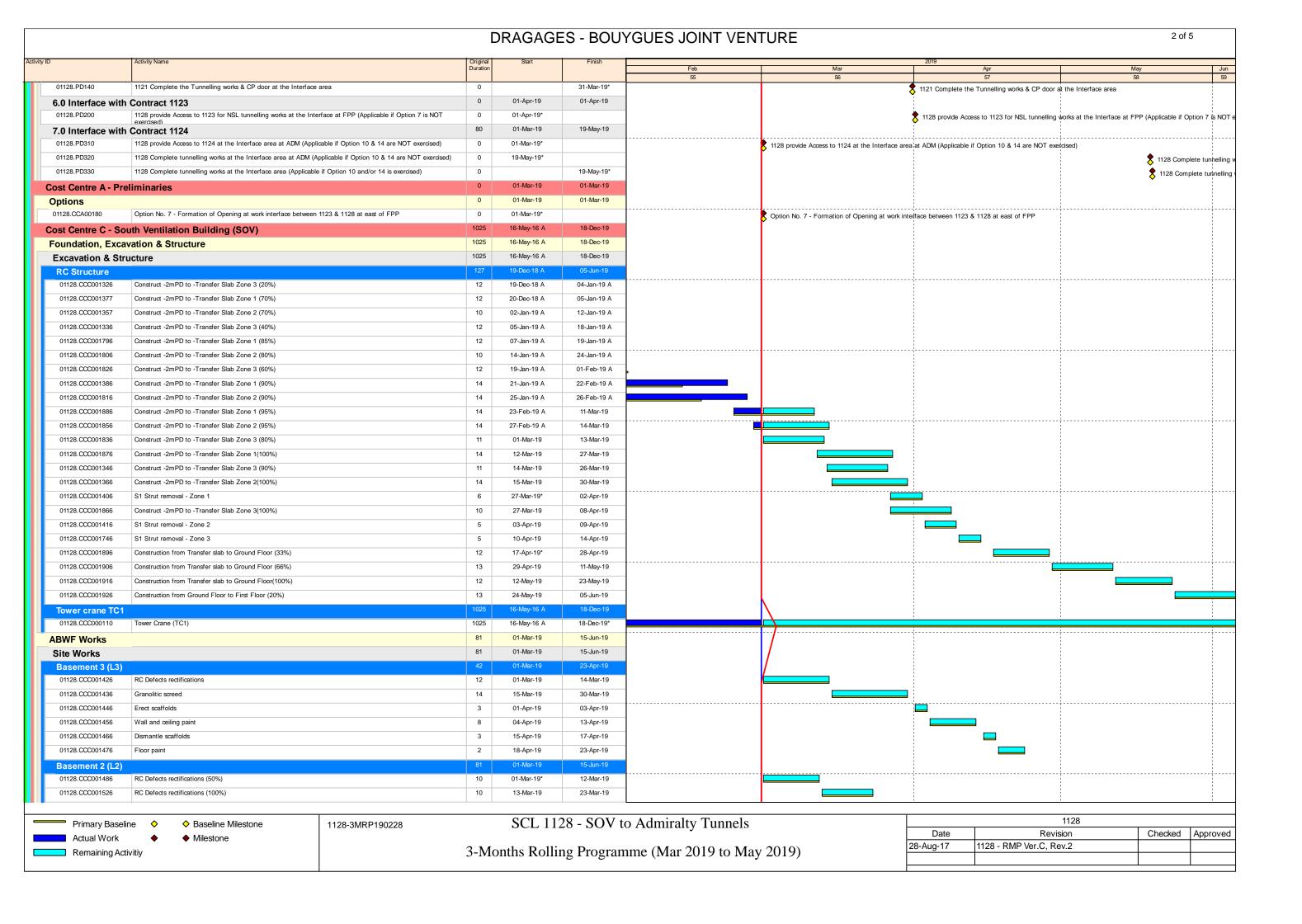
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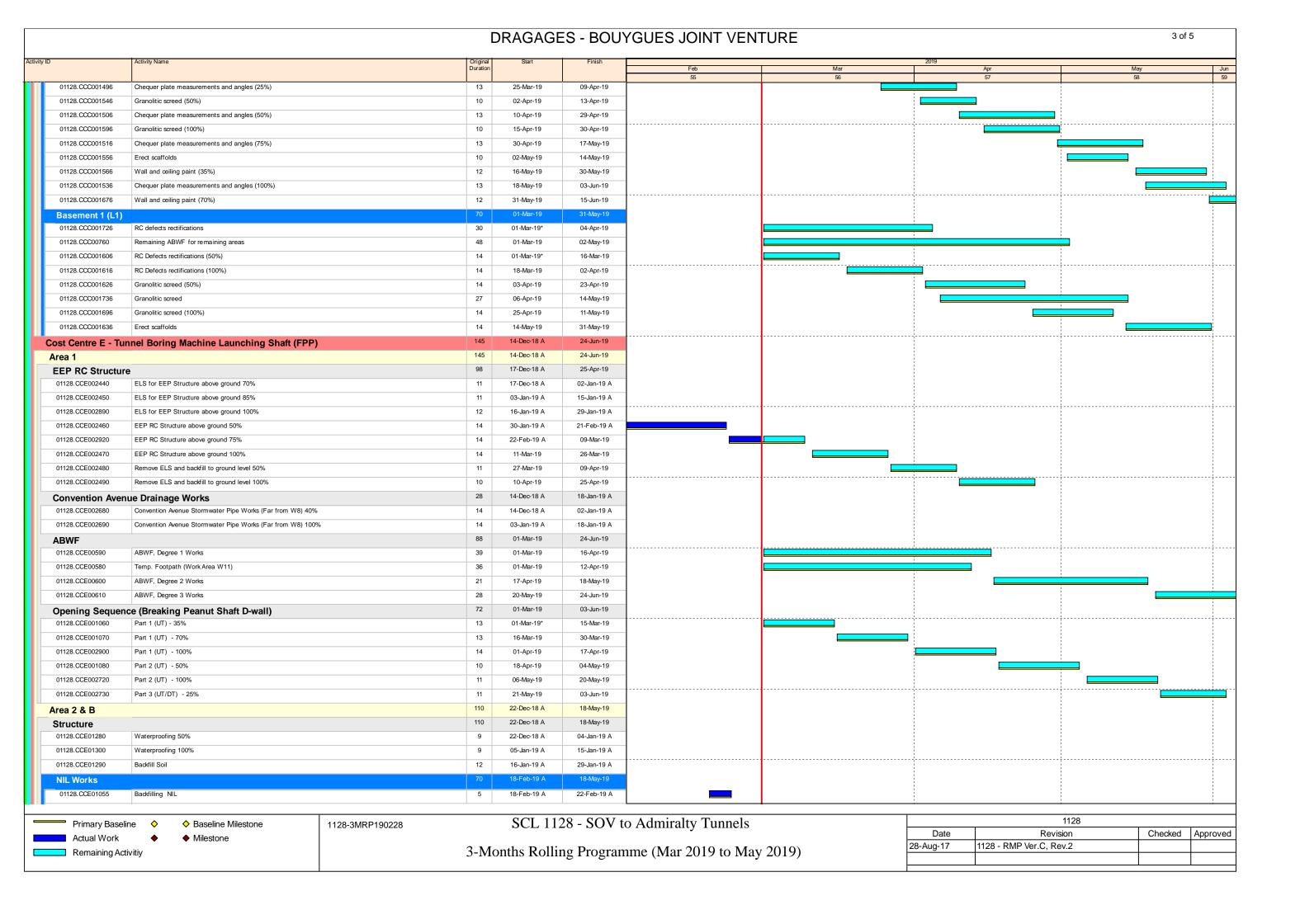
Project No.: 60331173 Date: February 2016 Figure 3.1

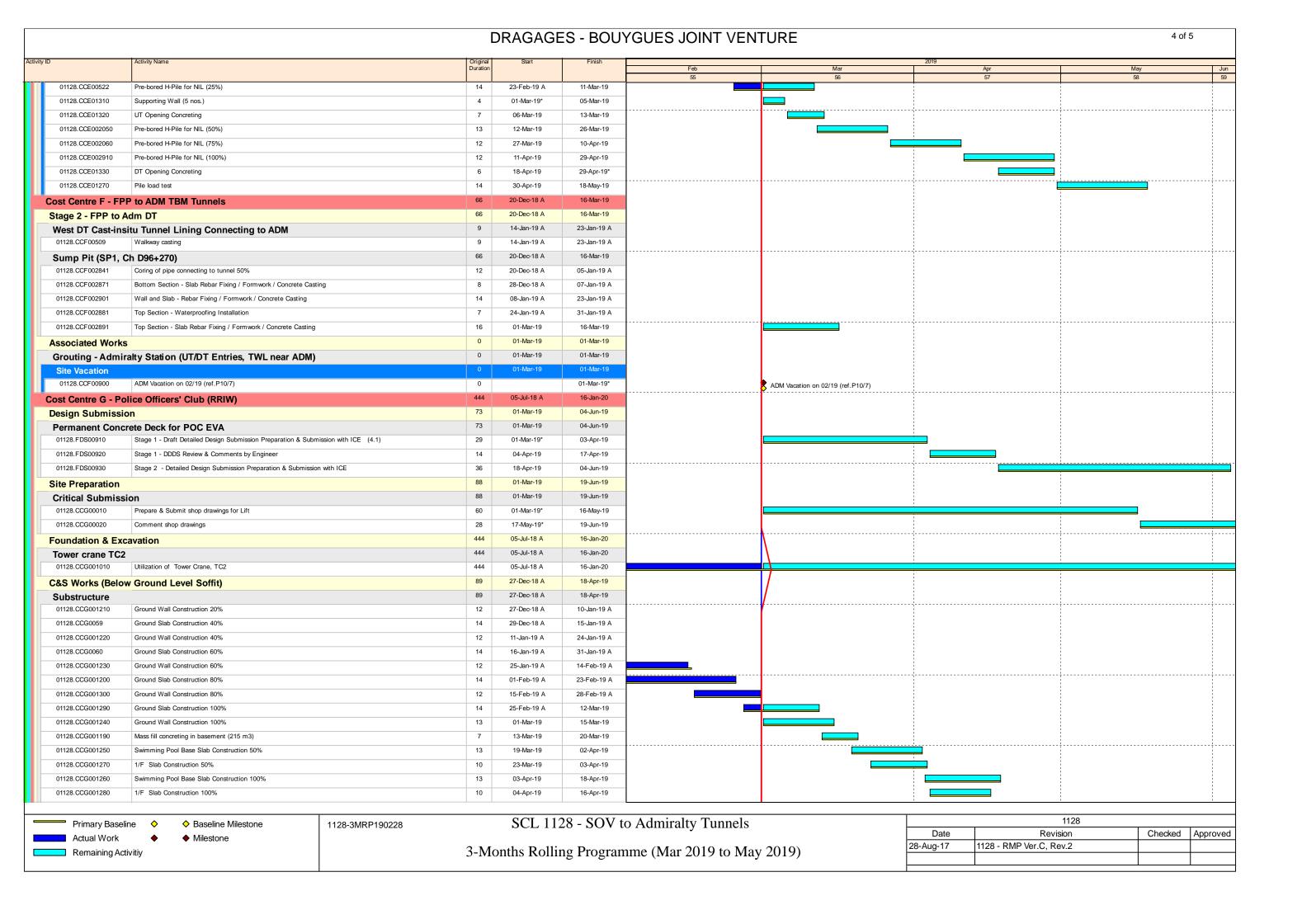
APPENDIX A

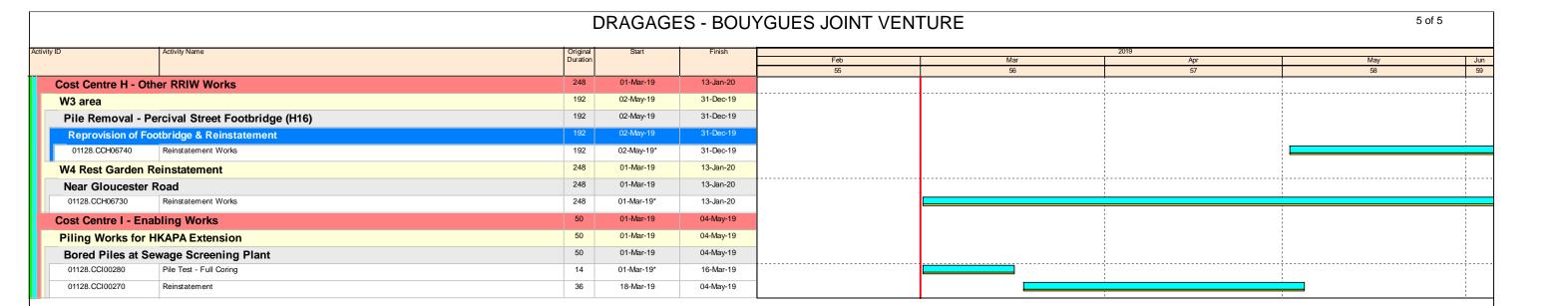
Construction Programme











1128-3MRP190228

Baseline Milestone

Milestone

SCL 1128 - SOV to Admiralty Tunnels

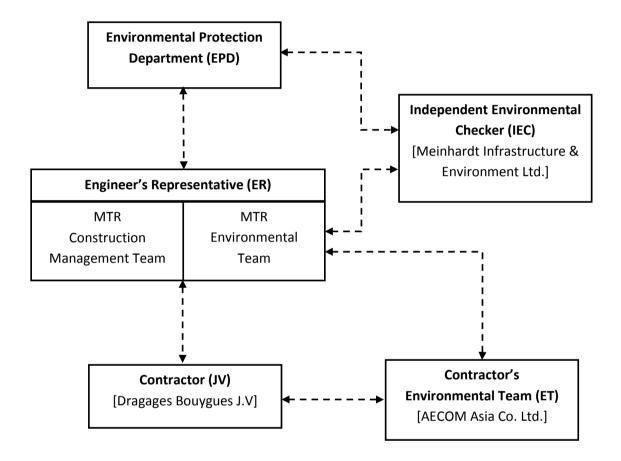
3-Months Rolling Programme (Mar 2019 to May 2019)

	1128		
Date	Revision	Checked	Approved
28-Aug-17	1128 - RMP Ver.C, Rev.2		

APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure



Appendix B AECOM

APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Cultural He	ritage Impact					
S4.93 & Table 4.2	Erection of decorative and sensibly designed hoarding along the boundary of the works area	To mitigate the temporary visual impact due to surface works.	Contractor	Works Areas in Causeway Bay and Wan Chai, and Works Shaft in Admiralty	Construction Phase	V
Ecological	Impact					
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted.	To minimize the contamination of wastewater discharge	Contractor	All land based works areas	Construction Phase	N/A
Landscape	and Visual Impact					
Construction	on Phase					
Table 7.9	CM1 - Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with ETWB TC(W) 3/2006 – Tree Preservation.	Transplanting and reuse of affected trees.	MTR	Works Sites	Construction Phase	V
Table 7.9	CM2a - Compensatory tree planting shall be provided in accordance with ETWB TC(W) 3/2006 – Tree Preservation to compensate for felled trees and maintained until end of the establishment period.	Compensation for the removal of existing trees due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM2b - Compensatory shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	Compensation for the removal of existing shrub planting due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time glare due to the Project during construction phase	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM4 - Erection of decorative screen hoarding compatible with the surrounding setting.	Minimize the visual impact of the Project during construction phase	MTR	Works Sites	Construction Phase	V
Table 7.9	CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs	Control of height and deposition/ arrangement of temporary facilities in works areas	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM6 - All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis to the satisfaction of the relevant Government Departments.	Reinstatement of temporary works areas.	MTR	Works Sites	Construction Phase	N/A
/	All retained/exist trees shall be properly protected during construction period.	Tree protection	Contractor	Works areas	Construction phase	V
Air Quality		,	1	•		
/	 Emission from Vehicles and Plants All vehicles shall be shut down in intermittent use. Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. All diesel fuelled construction plant within the works areas shall be powered by ultra low 	Reduce air pollution emission from construction vehicles and plants	Contractor	Works areas	Construction phase	V V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Construction	on Dust Impact					
Table 8.5	Barging facilities: (i) Transportation of spoils to the barging point – Pave all road surfaces within the barging facilities and provide watering once along with the haul road for every working hours to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.0 L/m² once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.0L/m² to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.	To minimize dust impacts	Contractor	All barging points	Construction phase	N/A
	 (ii) Unloading of spoil materials – Undertake the unloading process within a 3-sided screen with top tipping hall. Provide water spraying and flexible dust curtains at the discharge point for dust suppression. (iii) Vehicles leaving the barging facilities – Pass vehicles through the wheel washing facilities 					N/A N/A
S8.63	provided at site exits. For concrete batching plant, the requirements and mitigation measures stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93)	To minimize dust impact	Contractor	Concrete Batching Plant	Construction phase	N/A
Table 8.6	 shall be followed and implemented. During operation of concrete batching plant: Unloading of aggregates from the tipper trucks to receiving hopper – unload the aggregates from the tipper trucks to the receiving hopper equipped with enclosures on 3 sides and top cover, and water spraying system. Unloading of cement and PFA from tankers into the silo – Directly load the cement and PFA into the silo via a flexible duct. Install dust collectors at cement/PFA silos. Storage of aggregates in overhead storage bins – Store the aggregates in fully enclosed overhead storage bins. Cover the top of overhead storage bins with cladding. Install water spraying system at the top of storage bins for watering the aggregates, and fully enclose aggregates storage bins. Weighing and batching of cementitious materials – Perform the whole process of weighing and mixing in a fully enclosed environment. Equip all the mixers with dust collectors. Loading of concrete from mixer into transit mixer of a truck – Directly load the concrete from the mixer into the transit mixer of a truck in "wet form". Tipper trucks and cement tankers leaving the Concrete Batching Plant – Haul road within the site is unpaved. Install wheel washing pit at the gate of the concrete batching plant. Transportation of materials within the plant – Provide watering twice a day would be provided. 	To minimize dust impacts	Contractor	Concrete Batching Plant	Construction phase	N/A
S8.89	Watering once every working hour on active works areas, exposed areas and paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.	To minimize dust impact	Contractor	Works areas	Construction Phase	V

FIA Dof /	December ded Mitigation Managemen	Objectives of the	Whata	Location of the	When to	Implementation
EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S8.89	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall, provision of water spraying and flexible dust curtains to reduce dust emission	To minimize dust impact	Contractor	All barging points	Construction phase	N/A
S8.90	 Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. 	To minimize dust impacts	Contractor	Works areas	Construction phase	V
	 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. 					V
	 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 					V
	 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/ 					V
	 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. 					V
	 Imposition of speed controls for vehicles on site haul roads. Where possible, routing of vehicles and positioning of construction plant shall be at the maximum possible distance from ASPs. 					V
	 maximum possible distance from ASRs. Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. 					@
	 Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise 					V
/	 Dust suppression measures (con't) De-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement 	To minimize dust impacts	Contractor	Works areas	Construction phase	V
Airborne No	pise Impact					
Construction	on Phase					
S9.55	The following good site practices shall be implemented: Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction pragram.	To minimize construction noise	Contractor	Works areas	Construction phase	V
	 during the construction program Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program 	impact				V
	 Mobile plant, if any, shall be sited as far from NSRs as possible Machines and plant (such as trucks) that may be in intermittent use shall be shut down 					V
	 between work periods or shall be throttled down to a minimum Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs 					V
	 Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities 					N/A
/	 Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants during operation 	To minimize construction noise	Contractor	Works areas	Construction phase	V
	Air compressors shall be fitted with valid noise emission labels during operation	impact				V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S9.56 & Table 9.16	The following quiet PME shall be used: Crane lorry, mobile Asphalt paver Backhoe with hydraulic breaker Breaker, excavator mounted (hydraulic) Hydraulic breaker Concrete lorry mixer Poker, vibrator, hand-held Concrete pump Crawler crane, mobile Mobile crane Dump truck Excavator Truck Rock drill Lorry Wheel loader Roller vibratory	To minimize construction noise impact	Contractor	Works areas at: Hung Hom Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel	Construction phase	N/A V N/A V N/A N/A N/A N/A V V V V V V N/A N/A N/A
S9.58 – S9.59 & Table 9.17	Movable noise barrier shall be used for the following PME:	To minimize construction noise impact	Contractor	 Works areas at: Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel 	Construction phase	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
S9.60 & Table 9.17	Noise insulating fabric shall be used for Drill rig, rotary type Piling, diaphragm wall, bentonite filtering plant Piling, diaphragm wall, grab and chisel Piling, diaphragm wall, hydraulic extractor Piling, large diameter bored, grab and chisel Piling, hydraulic extractor Piling, earth auger, auger Rock drill, crawler mounted (pneumatic)	To minimize construction noise impact	Contractor	Works areas at:	Construction phase	N/A N/A N/A N/A N/A N/A N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Water Qual	ity Impact					
Construction	on Phase					
S11.216	The following mitigation measures are proposed to minimize the potential water quality impacts from the construction works at or close to the seafront: • Temporary storage of construction materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction and demolition materials shall be located well	To minimize release of construction wastes from construction works at or close to the seafront	Contractor	Construction works at or close to the seafront	Construction Phase	V
	away from the seawater front and storm drainage during carrying out of the works. • Stockpiling of construction and demolition materials and dusty materials shall be covered and	the Seanont				V
	located away from the seawater front and storm drainage. • Construction debris and spoil shall be covered up and/or disposed of as soon as possible to					N/A
	avoid being washed into the nearby receiving waters.					
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable. Surface Run-off Surface run-off from construction sites shall be discharged into storm drains via adequately designed application and solid transport for the property of t	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction Phase	V
	sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks.	construction activities				
	 Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit shall 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 shall comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains. Minimum distances of 100 m shall be maintained between the discharge points of construction site runoff and 					V
	 the existing saltwater intakes. Construction works shall be programmed to minimize 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 					V
	rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels shall be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces.					
	Arrangements shall 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.					N/A
	Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where					V
	 necessary. Measures shall be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal 					v
	facilities. • Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be					V
	covered with tarpaulin or similar fabric during rainstorms. • Manholes (including newly constructed ones) shall always be adequately covered and temporarily					V
	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. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.					V
	 Good site practices shall 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. 					

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	 Boring and Drilling Water Water used in ground boring and drilling for site investigation or rock / soil anchoring shall as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater shall be discharged into storm drains via silt removal facilities. 					V
	 Wheel Washing Water All vehicles and plant shall be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing bay shall be provided at every site exit if practicable and wash-water shall have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road shall be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains. 					V
	 Bentonite Slurries Bentonite slurries used in diaphragm wall and bore-pile construction shall be reconditioned and used again wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the 					V
	 bentonite slurries shall either be dewatered or mixed with inert fill material for disposal to a public filling area. If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the TM-DSS. 					V
	 Water for Testing & Sterilization of Water Retaining Structures and Water Pipes Water used in water testing to check leakage of structures and pipes shall be used for other purposes 					N/A
	 as far as practicable. Surplus unpolluted water will be discharged into storm drains. Sterilization is commonly accomplished by chlorination. Specific advice from EPD shall be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing 					N/A
	 water shall be used again wherever practicable. Acid Cleaning, Etching and Pickling Wastewater Acidic wastewater generated from acid cleaning, etching, pickling and similar activities shall be 					N/A
	neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater shall be tankered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters. Wastewater from Site Facilities					N/A
	 Wastewater collected from any temporary canteen kitchens, including that from basins, sinks and floor drains, shall be discharged into foul sewer via grease traps. In case connection to the public foul sewer is not feasible, wastewater generated from kitchens or canteen, if any, shall be collected in a temporary storage tank. A licensed waste collector shall be deployed to clean the temporary storage 					
	tank on a regular basis. • Drainage serving an open oil filling point shall be connected to storm drains via petrol interceptors					N/A
	 with peak storm bypass. Vehicle and plant servicing areas, vehicle wash bays and lubrication bays shall as far as possible be located within roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor. Oil leakage or spillage shall be contained and cleaned up immediately. Waste oil shall be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. 					V
S11.246 & 11.247	Construction work force sewage discharges on site are expected to be discharged to the nearby existing trunk sewer or sewage treatment facilities. If disposal of sewage to public sewerage system is not feasible, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment. The Contractor shall also be responsible for waste disposal and maintenance practices. Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.	To minimize water quality impacts due to sewage generated from construction workforce	Contractor	Works areas	Construction Phase	N/A
S11.248	In case seepage of uncontaminated groundwater occurs, groundwater shall be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process shall also be discharged into the storm system via silt traps.	To minimize impact from discharge of uncontaminated groundwater	Contractor	Works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.249	If land contaminated site is identified from the Stage 2 SI work (refer to Sections 11.188 to 11.191 of the EIA Report), the following mitigation measures shall be implemented for the identified contaminated area. Any transient pile of contaminated soil / material shall be minimized and shall be bottom-lined, bunded and covered with impervious membrane during rain event to avoid generation of contaminated runoff. Appropriate intercepting channels and partial shelters shall be provided where necessary to prevent rainwater from collecting within trenches or footing excavations. Any contaminated water and wastewater generated from the decontamination process shall not be directly discharged to public sewers or site drainage. They shall be treated or tanked away as necessary for proper disposal in compliance with the TM-DSS.	To control site run-off generated from any potential contaminated works areas.	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.250 & S11.251	No direct discharge of groundwater from contaminated areas shall be adopted. If land contamination impact and generation of contaminated groundwater is identified from the Stage 2 SI works (refer to Sections 11.189 to 11.192 of the EIA Report), the following mitigation measures shall be adopted. Any contaminated groundwater shall be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground. If wastewater treatment is 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 TPH) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and shall be discharged into the foul sewers. If groundwater recharging wells are deployed, the recharging wells shall be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells shall 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 shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substance such as TPH products shall be removed as necessary by installing the petrol interceptor. The Contractor shall apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	To minimize potential water quality impact from discharge of contaminated groundwater	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.252	 The following good site practices shall be adopted for the proposed barging points: all vessels shall be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash all hopper barges shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material construction activities shall not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site loading of barges and hoppers shall be controlled to prevent splashing of material into the surrounding water. Barges or hoppers shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation 	To minimize water quality impacts generated from the barging points.	Contractor	Barging points	Construction Phase	N/A N/A N/A
S11.253	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 runoff and wastewater generated from the works areas shall be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distances of 100 m shall be maintained between the discharge points of construction site effluent and the existing seawater intakes. 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 shall be carried out in accordance with the WPCO license which is under the ambit of Regional Office (RO) of EPD.	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.254	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 shall be observed and complied with for control of chemical wastes.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	V
S11.255	Any service shop and maintenance facilities shall be located on hard standings within a bunded area, and sumps and oil interceptors shall be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken within the areas appropriately equipped to control these discharges.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	N/A
S11.256	Disposal of chemical wastes shall 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: • Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	V
	 during storage, handling and transport. Chemical waste containers shall be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. Storage area shall be selected at a safe location on site and adequate space shall be 					V
Masta Man	allocated to the storage area.					
	agement Implications					
Construction		T - .		TARINA LOS		
S12.75	 Good Site Practices and Waste Reduction Measures Prepare a Waste Management Plan (WMP) approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites; 	To reduce waste management impacts	Contractor	All Work Sites	Construction Phase	V
	 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; 					V
	 Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; Regular cleaning and maintenance programme for drainage systems, sumps and oil 					N/A N/A
	interceptors; andSeparation of chemical wastes for special handling and appropriate treatment.					@
S12.76	 Good Site Practices and Waste Reduction Measures (con't) Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); 	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A
	 Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; 					V
	 Encourage collection of aluminum cans by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the workforce; 					N/A
	 Proper storage and site practices to minimize the potential for damage or contamination of construction materials; 					V
	Plan and stock construction materials carefully to minimize amount of waste generated and					V
	 avoid unnecessary generation of waste; and Training shall be provided to workers about the concepts of site cleanliness and appropriate 					V
S12.77	waste management procedures, including waste reduction, reuse and recycle. Good Site Practices and Waste Reduction Measures (con't) The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.					
S12.78	Good Site Practices and Waste Reduction Measures (con't) C&D materials would be reused in other local concurrent projects as far as possible. If all reuse outlets are exhausted during the construction phase, the C&D materials would be disposed of at Taishan, China as a last resort.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V
S12.79	Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:	To minimize potential adverse environmental	Contractor	Work Sites	Construction Phase	
	 Waste, such as soil, shall be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; 	impacts arising from waste storage				V
	 Maintain and clean storage areas routinely; Stockpiling area shall be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and 					V
S12.80	Different locations shall be designated to stockpile each material to enhance reuse. Storage, Collection and Transportation of Waste (con't) Waste haulier with appropriate permits shall be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following suggestions shall be enforced to minimize the potential adverse impacts:	To minimize potential adverse environmental impacts arising from waste	Contractor	Work Sites	Construction Phase	V
	 Remove waste in timely manner Waste collectors shall only collect wastes prescribed by their permits Impacts during transportation, such as dust and odour, shall be mitigated by the use of 	collection and disposal				V V V
	 covered trucks or in enclosed containers Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28) 					V
	 Waste shall be disposed of at licensed waste disposal facilities Maintain records of quantities of waste generated, recycled and disposed 					V
S12.81	 Storage, Collection and Transportation of Waste (con't) Implementation of trip ticket system with reference to DevB TC(W) No.6/2010 to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) shall be proposed. 	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	Work Sites	Construction Phase	V
S12.83 – 12.86	Sorting of C&D Materials Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.	To minimize potential adverse environmental impacts	Contractor	Work Sites	Construction Phase	V
	 Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. 	during the handling, transportation and				V
	 The C&D materials shall at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled as far as practicable before delivery to PFRFs as mentioned for beneficial use in other projects. While opportunities for reusing the non-inert portion shall be investigated before disposal of at designated landfills. 	disposal of C&D materials				V
	Possibility of reusing the spoil in the Project will be continuously investigated in the detailed design and construction stages, it includes backfilling to cut and cover construction works for the Hung Hom south and north approach tunnels.					V
S12.88	 Sediments The basic requirements and procedures for excavated / dredged sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is managing the disposal facilities in Hong Kong for the dredged and excavated sediment, while EPD is the authority of issuing marine dumping permit under the Dumping at Sea Ordinance. 	To ensure the sediment to be disposed of in an authorized and least impacted way	Contractor	All works areas with sediments concern	Construction Phase	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.89	 Sediments (con't) The contractor for the excavation / dredging works shall apply for the site allocations of marine sediment disposal based on the prior agreement with MFC/CEDD. A request for reservation of sediment disposal space have been submitted to MFC for onward discussions of disposal approach and feasible disposal sites and the letter is attached in Appendix 12.6. The Project proponent shall also be responsible for the application of all necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged and excavated sediment prior to the commencement of the excavation works. 	To determine the best handling and disposal option of the sediments	MTR / Contractor	All works areas with sediments concern	Detailed Design Stage and Construction Phase	N/A
S12.91 – 12.94	 Sediments (con't) Stockpiling of contaminated sediments shall be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment shall be covered by tarpaulin and the area shall be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiling areas shall be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas shall be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). In order to minimise the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP. In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
S12.95	 Sediments (con't) A possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
1	 Accidental spillage To prevent accidental spillage of chemicals, the following is recommended: Proper storage and handling facilities will be provided. All the tanks, containers, storage area will be bunded and the locations will be locked as far as possible from the sensitive watercourse and stormwater drains. The contractor will register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities will be stored with suitable labels and warnings. Disposal of chemical wastes will be conducted in compliance with the requirements as stated 	To minimize potential adverse environmental impacts arising from accidental spillage	Contractor	Work Sites	Construction Phase	@ V V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.97	Containers for Storage of Chemical Waste The Contractor shall register with EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for storage of chemical waste shall:	To register with EPD as a Chemical waste producer and store chemical waste in	Contractor	Work Sites	Construction Phase	
	 Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; 	appropriate containers				@
	 Have a capacity of less than 450 litters unless the specifications have been approved by EPD; and 					N/A
	 Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation. 					V
S12.98	 Chemical Waste Storage Area Be clearly labeled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; Be enclosed on at least 3 sides; 	To prepare appropriate storage areas for chemical waste at works areas	Contractor	Work Sites	Construction Phase	V
	 Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; 	wasto at works arous				V
	 Have adequate ventilation; Be covered to prevent rainfall from entering; and Be properly arranged so that incompatible materials are adequately separated. 					V V V
S12.99	 Chemical Waste Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants shall be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. 	To clearly label the chemical waste at works areas	Contractor	Work Sites	Construction Phase	N/A
S12.100	Collection and Disposal of Chemical Waste A trip-ticket system shall be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical waste. The Contractor shall employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To monitor the generation, reuse and disposal of chemical waste	Contractor	Work Sites	Construction Phase	N/A
S12.101	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes. Preferably, an enclosed and covered area shall be provided to reduce the occurrence of wind-blown light material.	To properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	Work Sites	Construction Phase	V
S12.102	General Refuse (con't) The recyclable component of general refuse, such as aluminum cans, paper and cleansed plastic containers shall be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	Contractor	Work Sites	Construction Phase	V
S12.103	General Refuse (con't) The Contractor shall carry out an education programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins shall also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	Contractor	Work Sites	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Land Conta	amination Impact					
S13.23– 13.24	 For construction works at sites under the current stage of site investigation (Stage 1 SI): Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process shall involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination. If soil materials suspected to be contaminated are encountered during excavation, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during demolition, excavation and cut & cover construction shall be temporary stockpiled. Shall concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the Contamination Assessment Report (CAR) and Remediation Action Plans (RAP). 	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Within Project Boundary where signs of contamination is identified	During excavation works for Cut-and- Cover	N/A
S13.30	For some sites with currently no SI proposed (i.e. sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28), to be conservative, visual inspection shall be conducted during demolition and excavation to detect any abnormal colour, smell or other characteristics of the soil, due to the nearby land use and/ or construction method. If abnormal colour, smell or other characteristics of contamination are identified for any of these sites, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during demolition, excavation and cut & cover construction shall be temporary stockpiled. Should the concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the CAR and RAP.	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Areas with no SI proposed (Sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28)	During excavation works for Cut-and- Cover	N/A
S13.36 – 13.38	 For areas inaccessible for proper site appraisal and investigation (Stage 2 SI) (i) Site 2-15 Upon site access being granted, visual inspection shall be carried out where intrusive works and soil excavation is encountered, for attention on any potential contamination due to its current operation A supplementary CAP shall then be submitted to EPD for endorsement. A CAR/RAP shall be prepared and submitted to EPD for endorsement on completion of the SI and analytical testing. Shall remediation be undertaken a Remediation Report (RR) shall be prepared and submitted to EPD for endorsement to demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/ disposal records (including trip tickets), confirmatory sampling results, and photographs shall be included in the aforesaid RR. No construction work shall be carried out prior to the endorsement of the RR by EPD. 	To identify areas with land contamination concern, report laboratory results and propose remediation measures if necessary. To ensure remediation works have been undertaken to before the commencement of any construction works of the Project.	Contractor	Areas unable to be accessed during Stage 1 SI (Site 2-15)	After land resumption and prior to the construction works commencement at the site	N/A
S13.39	 Potential Remediation of Contaminated Soil Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; Supply of suitable clean backfill material is needed after excavation; If remediation is required with chemical oxidation proposed as a contaminant mass reduction technology, chemicals will be securely and separately stored away from sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and personal protective equipment (PPE). Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions; Speed control for the trucks carrying contaminated materials shall be enforced; Vehicle wheel and body washing facilities at the site's exit points shall be established and used; and Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control shall be implemented and complied with relevant regulations and guidelines. 	To remediate contaminated soil	Contractor	Identified contaminated sites	Site remediation	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S13. 40	In order to minimize the potential adverse effects on health and safety of construction workers during the course of site remediation, the Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations shall be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures shall be implemented as far as possible: • Set up a list of safety measures for site workers; • Provide written information and training on safety for site workers; • Keep a log-book and plan showing the contaminated zones and clean zones; • Maintain a hygienic working environment; • Avoid dust generation; • Provide face and respiratory protection gear to site workers; • Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers; and • Provide first aid training and materials to site workers.	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	Identified contaminated sites	Site remediation and prior to construction phase	N/A

Legend: V

: V = implemented; x = not implemented; @ = partially implemented; N/A = not applicable

APPENDIX D

Summary of Action and Limit Levels

Appendix D - Summary of Action and Limit Levels

Table 1 Action and Limit Levels for 24-hour TSP

ID	Location	Action Level	Limit Level
AM4	Pedestrian Plaza	198 μg/m³	260 μg/m³

Table 2 Action and Limit Levels for Construction Noise (0700 – 1900 hrs of normal weekdays)

ID	Location	Action Level	Limit Level
NM1*	Hoi Kung Court	When one documented complaint is received	75 dB(A)

^{*} The noise monitoring at NM1 was handed-over from SCL Contract 1129 in August 2015.

Table 3 Action and Limit Levels for Water Quality (Dry Season)

Parameter	Action Level	Limit Level					
WSD Salt Water Intake (Station	WSD Salt Water Intake (Station 14, A, WSD9 & WSD17)						
DO in mg/L	<2.1	<2					
SS in mg/L	6.9	6.9					
Turbidity in NTU	5.0	7.0					
Cooling Water Intake (Station 8	3, 9, 21 & 34)						
DO in mg/L	3.3	3.2					
SS in mg/L	8.0	10.4					
Turbidity in NTU	12.2	18.5					

Appendix D AECOM

Table 4 Action and Limit Levels for Water Quality (Wet Season)

Parameter	Action Level	Limit Level				
WSD Salt Water Intake (Station 14, A, WSD9 & WSD17)						
DO in mg/L	<2.1	<2				
SS in mg/L	6.0	6.0				
Turbidity in NTU	4.7	6.5				
Cooling Water Intake (Station 8	3, 9, 21 & 34)					
DO in mg/L	2.8	2.7				
SS in mg/L	6.9	9.1				
Turbidity in NTU	11.3	17.2				

Appendix D AECOM

APPENDIX E

Calibration Certificates of Equipments

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

Station	Pedestrian Plaza	3		Operator:	Choi W	/ing Ho	_
Cal. Date:	4-Jan-19			Next Due Date:	4-Ma	ar-19	
Equipment No.:	A-001-70T			Serial No.	102	273	-
				Condition			
Tanana	uro. To (I/)	293		Condition		765.8	
Temperatu	ire, ra (N)	293	Pressure, F	ra (IIIIIIng)		700.0	
			Orifice Transfer S	tandard Informatio	on		
Seria	al No:	988	Slope, mc	2.01	1748	Intercept, bc	-0.0265
Last Calibra	ation Date:	22-May-18			(TV (D) (T(A)	(200/TE \1/2	
Next Calibration Date:		22-May-19		mc x Qstd + bc =	= [H x (Pa/760) x	(298/1a)j	
				of TSP Sampler	шу	S Flow Recorder	
Resistance		-T	Orfice	 			
Plate No.	DH (orifice), in. of water	[DH x (Pa/7	'60) x (298/Ta)] ^{1/2}	Qstd (m³/min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Reading IC (CF	
18	7.1		2.70	1.35	45.0	45.56	3
13	5.8		2.44	1.22	38.0	38.47	7
10	4.4		2.12	1.07	30.0	30.37	7
7	3.5		1.89	0.95	25.0	25.31	1
5	2.5		1.60	0.81	17.0	17.2	1
Slope , mw =	ession of Y on X	_		Intercept, bw =	-24.2	2070	-
Correlation Coe			.9991				
*If Correlation Co	oefficient < 0.990	, check and recal	ibrate.				
			Set Point	Calculation			
From the TSP Fi	ield Calibration C	urve, take Qstd =	: 1.30m³/min	41.44.4			
From the Regres	ssion Equation, th	e "Y" value acco	rding to				
					4/2		
		mv	x Qstd + bw = IC	x [(Pa/760) x (298/	Ta)] ^{1/2}		
Therefore Cat C	Point: IC = / mw v	Oetd + hw \ v I/	760 / Pa) x (Ta / 29	98 \1 ^{1/2} =		42.24	
merelore, Set P	onit, io – (iliw x	√siα τυw) X [(1001Fa]X(18128	, , , , , , , , , , , , , , , , , , ,		42.24	-
Remarks:							
	LIS CHA	201.9	Signature:) 1		Date: 04/0 (/ ^



RECALIBRATION
DUE DATE:

May 22, 2019

Certificate of Calibration

Calibration Certification Information

Cal. Date: May 22, 2018

Rootsmeter S/N: 438320

Ta: 296 Pa: 749.3 °K

Operator: Jim Tisch

mm Hg

Calibration Model #: TE-5025A

Calibrator S/N: 0988

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3840	3.2	2.00
2	3	4	1	0.9840	6.4	4.00
3	5	6	1	0.8790	7.9	5.00
4	7	8	1	0.8420	8.7	5.50
5	9	10	1	0.6900	12.7	8.00

	Data Tabulation								
Vstd	Qstd	$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$		Qa	√∆H(Ta/Pa)				
(m3)	(x-axis)	(y-axis)	Va	(x-axis)	(y-axis)				
0.9883	0.7141	1.4090	0.9957	0.7195	0.8889				
0.9841	1.0001	1.9926	0.9915	1.0076	1.2570				
0.9821	1.1173	2.2278	0.9895	1.1257	1.4054				
0.9811	1.1652	2.3365	0.9884	1.1739	1.4740				
0.9758	1.4141	2.8179	0.9831	1.4247	1.7777				
	m=	2.01748		m=	1.26331				
QSTD[b=	-0.02651	QA	b=	-0.01673				
	r=	0.99988		r=	0.99988				

	Calculation	S		
Vstd=	ΔVoI((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)	
Qstd=	Qstd= Vstd/ΔTime		Qa= Va/ΔTime	
	For subsequent flow rat	e calculatio	ns:	
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	Qa=	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$	

	Standard Conditions	***
Tstd:	298.15 °K	
Pstd:	760 mm Hg	
	Key	****
ΔH: calibrator	manometer reading (in H2O)	
ΔP: rootsmete	er manometer reading (mm H	g)
Ta: actual abs	olute temperature (°K)	
Pa: actual bare	ometric pressure (mm Hg)	
b: intercept		
m: slope		-

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc. 145 South Miami Avenue Village of Cleves, OH 45002

www.tisch-env.com

TOLL FREE: (877)263-7610

FAX: (513)467-9009



綜 合 試 驗 有 限 公 司 SOILS & MATERIALS ENGINEERING CO., LTD.

香港黃竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

18CA0914 03

Page

of

2

Item tested

Description:

Sound Level Meter (Type 1)

Microphone

B&K

Manufacturer: Type/Model No.: Serial/Equipment No.: B & K 2238 2800927

4188

Adaptors used:

2791211

Item submitted by Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No.: Date of receipt:

14-Sep-2018

Date of test:

17-Sep-2018

Reference equipment used in the calibration

Description:

Model:

DS 360

Serial No.

Expiry Date:

Traceable to:

Multi function sound calibrator Signal generator Signal generator

B&K 4226 DS 360

2288444 33873 61227

23-Aug-2019 24-Apr-2019 23-Apr-2019

CIGISMEC CEPREI CEPREI

Ambient conditions

Temperature:

Relative humidity: Air pressure:

21 ± 1 °C 55 ± 10 %

1005 ± 5 hPa

Test specifications

The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 1, and the lab calibration procedure SMTP004-CA-152

The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2, replaced by an equivalent capacitance within a tolerance of +20%.

The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3. between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Fena Jungi

Approved Signatory:

Date:

18-Sep-2018

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

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Form No CARP152-1/Issue 1/Rev C/01/02/2007



綜合試驗有限公司 SOILS & MATERIALS ENGINEERING CO., LTD.

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Tel: (852) 2873 6860 Fax: (852) 2555 7533





CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA0914 03

1, **Electrical Tests**

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertanity (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
3	C	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leg	At reference range . Step 5 dB at 4 kHz	Pass	0.3	L.L
, , , ,	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
. , , , ,	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated

Calibrated by:

Date:

Fung Chi Yip 17-Sep-2018 Checked by:

Date:

Shek Kwong Tal 18-Sep-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP152-2/Issue 1/Rev C/01/02/2007



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CERTIFICATE OF CALIBRATION

Certificate No.:

18CA0406 02-02

Page:

of

2

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer:

E

Type/Model No.:

B & K 4231

Serial/Equipment No.:

3006428 / N004.03

Adaptors used:

-

Item submitted by

Curstomer:

AECOM ASIA CO LIMITED

Address of Customer:

1170

Request No.: Date of receipt:

06-Apr-2018

Date of test:

09-Apr-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2743150	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

Ambient conditions

Test specifications

Temperature:

21 ± 1 °C

Relative humidity: Air pressure:

50 ± 10 % 1005 ± 5 hPa

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B
 and the lab calibration procedure SMTP004-CA-156.
- 2. The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate

Fena Jun O

Approved Signatory:

Date:

11-Apr-2018

Company Chop:

综合試驗 come 有限公司 Was store of the come

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.

Soils & Materials Engineering Co. Ltd

Form No CARP156-1/Issue 1/Rev D/01/03/2007



綜 合 試 驗 有 限 公 司 SOILS & MATERIALS ENGINEERING CO., LTD.

港黄竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA0406 02-02

Page:

1. Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties

			(Output level in dB re 20 μPa)
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.20	0.10

2. Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.015 dB

Estimated expanded uncertainty

0.005 dB

Actual Output Frequency 3.

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 999.96 Hz

Estimated expanded uncertainty

0.1 Hz

Coverage factor k = 2.2

Total Noise and Distortion 4.

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.4 %

Estimated expanded uncertainty

0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

End

Fung Chi Yip

Checked by:

Lam Tze Wa

Ф9-Apr-2018 Date:

Date:

11-Apr-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level

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Form No CARP156-2/Issue 1/Rev C/01/05/2005

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1128 - South Ventilation Building to Admiralty Tunnels Impact Monitoring Schedule for February 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Feb	2-Feb
3-Feb	4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb
					Air Quality ¹ Noise	Air Quality
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
	Noise					
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
	Air Quality ¹			Air Quality	Noise	
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
			Air Quality	Noise		

Remark

1. Due to the accident of electricity supply, the scheduled monitoring date on 4 and 15 February 2019 were postponed to 8 and 18 February 2019 respectively.

Air Quality Monitoring Station

AM4 Pedestrian Plaza

Noise Monitoring Station

NM1

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency
Once per week

Shatin to Central Link Contract 1128 - South Ventilation Building to Admiralty Tunnels Tentative Impact Monitoring Schedule for March 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
		Air Quality	Noise			
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
	Air Quality	Noise				Air Quality
17-Mar	40 Mar	10 Mar	20-Mar	21-Mar	22-Mar	22 Mar.
17-IVIAI	18-Mar	19-Mar	ZU-IVIAI	Z I-IVIAI	ZZ-IVIAI	23-Mar
	Noise				Air Quality	
					. ,	
2414	07.11	22.14	0= 1.1	20.11	22.14	22.11
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
				Air Quality	Noise	
				7 iii Quanty	140100	
31-Mar						

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station

AM4 Pedestrian Plaza

Monitoring Frequency
24-hr TSP Once every 6 days

Noise Monitoring Station

NM1

Monitoring Frequency

Once per week

Shatin to Central Link Contract 1128 - South Ventilation Building to Admiralty Tunnels Tentative Impact Monitoring Schedule for April 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr
			Air Quality	Noise		
7-Apr	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr
		Air Quality	Noise			
14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr
	Air Quality	Noise		Air Quality		
21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr
			Air Quality	Noise		
28-Apr	29-Apr	30-Apr				
		Air Quality				

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station

AM4 Pedestrian Plaza

Noise Monitoring Station

NM1

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency
Once per week

Shatin to Central Link Contract 1128 - South Ventilation Building to Admiralty Tunnels Tentative Impact Monitoring Schedule for May 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-May	2-May	3-May	4-May
				Noise		
5-May	6-May	7-May	8-May	9-May	10-May	11-May
	Air Quality	Noise				Air Quality
12-May	13-May	14-May	15-May	16-May	17-May	18-May
		Noise			Air Quality	
19-May	20-May	21-May	22-May	23-May	24-May	25-May
				Air Quality	Noise	
26-May	27-May	28-May	29-May	30-May	31-May	
			Air Quality	Noise		

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station
AM4 Pedestrian Plaza

Noise Monitoring Station

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency Once per week

APPENDIX G

Air Quality Monitoring Results and their Graphical Presentations

Appendix G Air Quality Monitoring Results

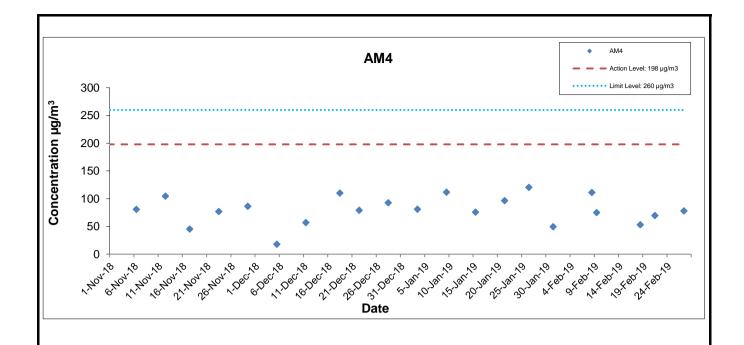
24-hour TSP Monitoring Results at Station AM4 (Pedestrian Plaza)

	End		Weather	Air	Atmospheric	Flow Rate (m³/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Time	Date	Time	Condition	Temp. (°C)	Pressure (hPa)	Initial	Final	(m³/min)	(m ³)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	(µg/m³)
15:00	9-Feb-2019 ¹	15:00	Fine	25.1	1015.3	1.34	1.34	1.34	1933.9	2.6673	2.8828	0.2155	23385.00	23409.00	24.00	111.4
15:30	10-Feb-2019	15:30	Sunny	20.1	1017.9	1.31	1.31	1.31	1890.7	2.6291	2.7707	0.1416	23409.00	23433.00	24.00	74.9
9:00	19-Feb-2019 ¹	9:00	Rainy	19.3	1015.4	1.31	1.31	1.31	1890.7	2.6887	2.7889	0.1002	23433.00	23457.00	24.00	53.0
0:00	22-Feb-2019	0:00	Sunny	23.2	1017.4	1.31	1.31	1.31	1890.7	2.6446	2.7763	0.1317	23457.00	23481.00	24.00	69.7
0:00	28-Feb-2019	0:00	Sunny	23.6	1015.5	1.31	1.31	1.31	1890.7	2.6822	2.8299	0.1477	23481.00	23505.00	24.00	78.1
	15:00 15:30 9:00 0:00	Time Date 15:00 9-Feb-2019¹ 15:30 10-Feb-2019 9:00 19-Feb-2019¹ 0:00 22-Feb-2019	Time Date Time 15:00 9-Feb-2019¹ 15:00 15:30 10-Feb-2019 15:30 9:00 19-Feb-2019¹ 9:00 0:00 22-Feb-2019 0:00	Time Date Time Condition 15:00 9-Feb-2019¹ 15:00 Fine 15:30 10-Feb-2019¹ 15:30 Sunny 9:00 19-Feb-2019¹ 9:00 Rainy 0:00 22-Feb-2019 0:00 Sunny	Time Date Time Condition Temp. (°C) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 15:30 10-Feb-2019 15:30 Sunny 20.1 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 0:00 22-Feb-2019 0:00 Sunny 23.2	Time Date Time Condition Temp. (°C) Pressure (hPa) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 15:30 10-Feb-2019 15:30 Sunny 20.1 1017.9 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 15:30 10-Feb-2019 15:30 Sunny 20.1 1017.9 1.31 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 15:30 10-Feb-2019 15:30 Sunny 20.1 1017.9 1.31 1.31 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 15:30 10-Feb-2019 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 15:30 10-Feb-2019 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³) Initial 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³) Initial Final 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 2.8828 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 2.7707 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 2.7889 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446 2.7763	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³) Initial Final weight(g) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 2.8828 0.2155 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 2.7707 0.1416 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 2.7889 0.1002 0:00 22-Feb-2019¹ 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446 2.7763 0.1317	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³/min) (m³/min) (m³/min) Initial Final weight(g) Initial 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 2.8828 0.2155 23385.00 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 2.7707 0.1416 23409.00 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 2.7889 0.1002 23433.00 0:00 22-Feb-2019 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446 2.7763 0.1317 23457.00	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³/min) (m³/min) Initial Final weight(g) Initial Final 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 2.8828 0.2155 23385.00 23409.00 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 2.7707 0.1416 23409.00 23433.00 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 2.7889 0.1002 23433.00 23457.00 0:00 22-Feb-2019¹ 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446 2.7763 0.1317 23457.00 23481.00	Time Date Time Condition Temp. (°C) Pressure (hPa) Initial Final (m³/min) (m³/min) (m³/min) (m³/min) Initial Final weight(g) Initial Final Time(hrs.) 15:00 9-Feb-2019¹ 15:00 Fine 25.1 1015.3 1.34 1.34 1.34 1933.9 2.6673 2.8828 0.2155 23385.00 23409.00 24.00 15:30 10-Feb-2019¹ 15:30 Sunny 20.1 1017.9 1.31 1.31 1.31 1890.7 2.6291 2.7707 0.1416 23409.00 23433.00 24.00 9:00 19-Feb-2019¹ 9:00 Rainy 19.3 1015.4 1.31 1.31 1.31 1890.7 2.6887 2.7889 0.1002 23433.00 23457.00 24.00 0:00 22-Feb-2019¹ 0:00 Sunny 23.2 1017.4 1.31 1.31 1.31 1890.7 2.6446 2.7763 0.1317 23457.00 23481.00

Average 77.4 Minimum 53.0 Maximum 111.4

Remark:

1. Due to the accident of electricity supply, the scheduled monitoring date in 4 and 15 February 2019 were postponed to 8 and 18 February 2019 respectively.

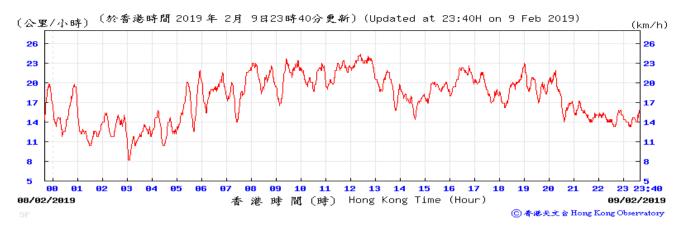


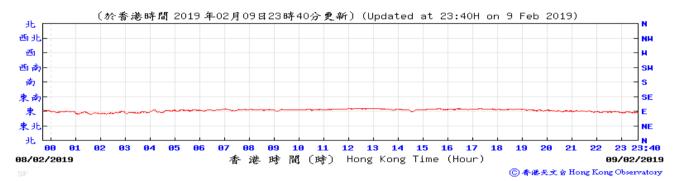
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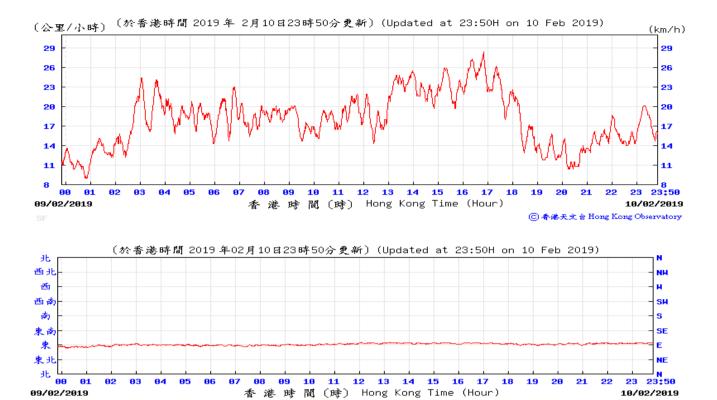
Shatin Central Link Contract No. 1128 South Ventilation Building to Admiralty Tunnels **AECOM**

Graphical Presentation of Impact 24-hr TSP Monitoring Results

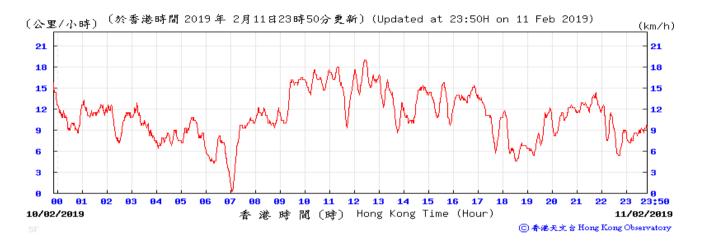
Date: March 2019 Appendix G

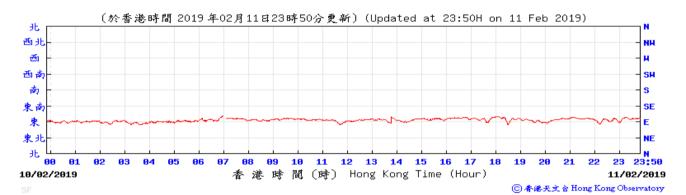






⑥春港天文台 Hong Kong Observatory



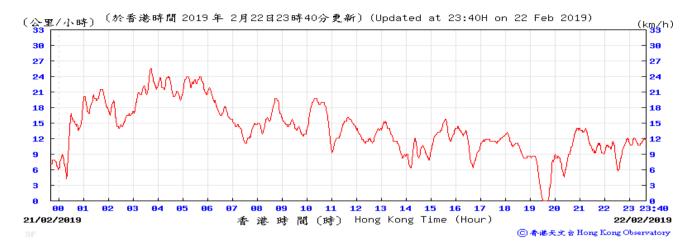


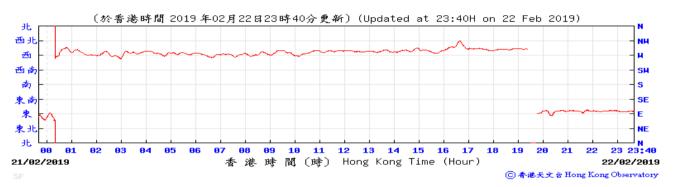


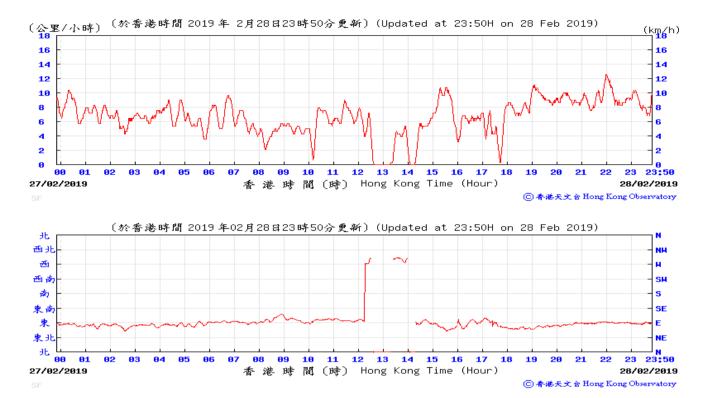












APPENDIX H

Noise Monitoring Results and their Graphical Presentations

Appendix H Regular Construction Noise Monitoring Results

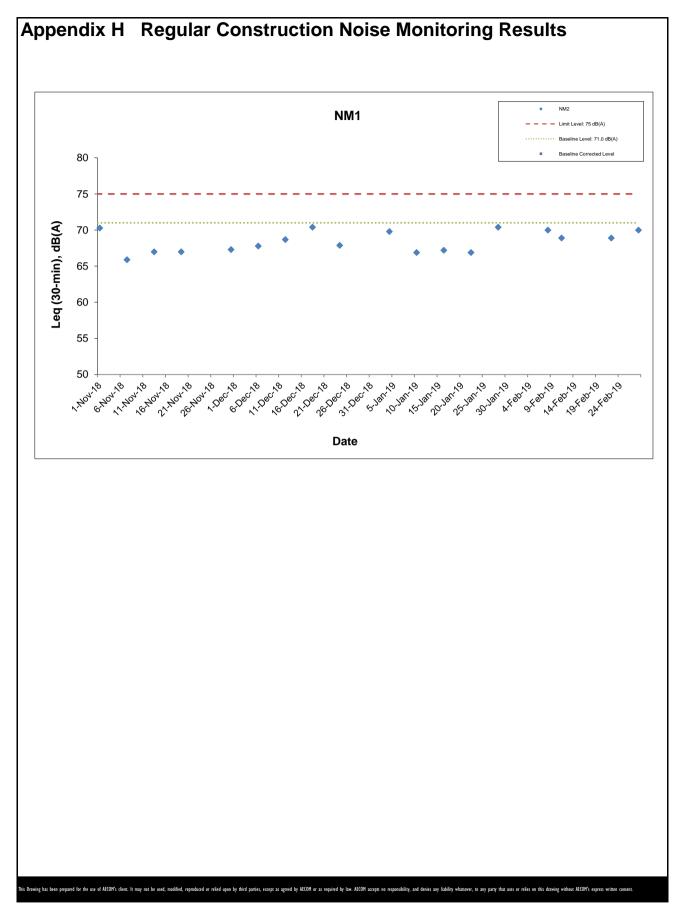
Daytime Noise Monitoring Results at Station NM1 (Hoi Kung Court)

Date	Weather	Nois	e Level fo	r 30-min, c	IB(A) ⁺	Baseline Corrected	Baseline Noise	Limit Level,	Exceedance
Buto	Condition	Time	L90	L10	Leq	Level, dB(A)	Level, dB(A)	dB(A)	(Y/N)
8-Feb-2019	Fine	15:20	68.2	72.7	70.0	<baseline< td=""><td>71.0</td><td>75</td><td>N</td></baseline<>	71.0	75	N
11-Feb-2019	Fine	11:10	66.3	70.3	68.9	<baseline< td=""><td>71.0</td><td>75</td><td>N</td></baseline<>	71.0	75	N
22-Feb-2019	Sunny	13:00	64.5	70.5	68.9	<baseline< td=""><td>71.0</td><td>75</td><td>N</td></baseline<>	71.0	75	N
28-Feb-2019	Sunny	13:30	68.0	72.5	70.0	<baseline< td=""><td>71.0</td><td>75</td><td>N</td></baseline<>	71.0	75	N

⁺ - Façade measurement

^{++ -} Free field measurement

^{* -} Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.



Shatin Central Link Contract No. 1128 South Ventilation Building to Admiralty Tunnels

Date: March 2019 Appendix H

APPENDIX I

Event Action Plan

Appendix I Event Action Plan

Event / Action Plan for Construction Dust Monitoring

EVENT.		AC	TION	
EVENT	ET	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	 Inform the Contractor, IEC and ER; Discuss with the Contractor and IEC on the remedial measures required; Repeat measurement to confirm findings; Increase monitoring frequency 	 Check monitoring data submitted by the ET; Check Contractor's working method; Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	Confirm receipt of notification of exceedance in writing.	Identify source(s), investigate the causes of exceedance and propose remedial measures; Implement remedial measures; Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples	 Inform the Contractor, IEC and ER; Discuss with the ER, IEC and Contractor on the remedial measures required; Repeat measurements to confirm findings; Increase monitoring frequency to daily; If exceedance continues, arrange meeting with the IEC, ER and Contractor; If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by the ET; Check Contractor's working method; Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	Confirm receipt of notification of exceedance in writing; Review and agree on the remedial measures proposed by the Contractor; Supervise Implementation of remedial measures.	 Identify source and investigate the causes of exceedance; Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; Implement the agreed proposals; Amend proposal as appropriate.

Appendix I Event Action Plan

Appendix I	Event Action Plan			
EVENT		ACT	TION	
EVENT	ET	IEC	ER	Contractor
LIMIT LEVEL				
Exceedance for one sample	 Inform the Contractor, IEC, EPD and ER; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. 	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with the ET, ER and Contractor on possible remedial measures; Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	 Confirm receipt of notification of exceedance in writing; Review and agree on the remedial measures proposed by the Contractor; Supervise implementation of remedial measures. 	 Identify source(s) and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
Exceedance for two or more consecutive samples	 Notify Contractor, IEC, EPD and ER; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented; Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with ET, ER, and Contractor on the potential remedial measures; Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	 Confirm receipt of notification of exceedance in writing; In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; 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. 	 Identify source(s) and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; Implement the agreed proposals; Revise and resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix I Event Action Plan

Event and Action Plan for Construction Noise Monitoring

=1/=1-		ACT	TION	
EVENT	ET	IEC	ER	Contractor
Exceedance of Action Level	 Notify the Contractor, IEC and ER; Discuss with the ER, IEC and Contractor on the remedial measures required; and Increase monitoring frequency to check mitigation effectiveness. 	Review the investigation results submitted by the contractor; and Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	 Confirm receipt of notification of complaint in writing; Review and agree on the remedial measures proposed by the Contractor; and Supervise implementation of remedial measures. 	 Investigate the complaint and propose remedial measures; Report the results of investigation to the IEC, ET and ER; Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification; and Implement noise mitigation proposals.
Exceedance of Limit Level	1. Notify the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Review the effectiveness of Contractor's remedial measures and keep IEC, EPD and ER informed of the results; and 8. If exceedance stops, cease additional monitoring.	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with the ER, ET and Contractor on the potential remedial measures; and Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	 Confirm receipt of notification of exceedance in writing; In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; and 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. 	 Identify source and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification; Implement the agreed proposals; Revise and resubmit proposals if problem still not under control; and Stop the relevant portion of works as determined by the ER until the exceedance is abated.

APPENDIX J

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix J Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental				monu	Commencement
complaints	-	-	-	0	10
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

Appendix J AECOM

APPENDIX K

Waste Flow Table

SCL Contract 1128 Appendix K - Monthly Summary C&D Material Flow Table

								(Quantity for off	-site disposal	of / reused In	ert C&D mat	erials (m³)								Quant	tity for off-site o	lisposal of Nor	ı-inert C&D ma	aterials	Quantities of Marine Dumping (Sediment)	
Latest Programme for Generation & Import of Ma in each Reporting Perio	terials									Inert C&	&D material (m	n³)									Metals (kg)	Paper / Cardboard (kg)	Plastics (kg)	Chemical Waste (kg)	General Waste (m ³)	Disposed as Hom Bar	s MD at Hung ging Point
in cach reporting rene											Reused in C	Other Project	s						Reused in							Type 1	Type 2
	TKC	O137FB(1)	TKO137SF(2)	TM38FB(3)	CWPFBP(4)	WDII C1 (5)	CWB (6)	SCL1121 (7)	SCL 1103 (8)	WDII C3 (9)	WDII C2 (10)	8217 (11)	HY/2010/08 (12)	SCL 1112 (13)	Area 56A (14)	M+ (15)	XRL 810B (16)	PSK226 (17)	Mainland	Total (m ³)	Total	Total	Total	Total	Total	(m ³)	(m ³)
2019/01		800.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	800.7	0	0	0	0	90.6	0	0
2019/02		649.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	649.5	0	0	0	0	79.0	0	0
2019/03																											
2019/04																											
2019/05																											
2019/06																											
2019 Sub	b-total '	1,450.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,450.2	0.0	0.0	0.0	0.0	169.6	0.0	0.0
2019/07																											
2019/08																											
2019/09																											
2019/10																											
2019/11																											<u> </u>
2019/12																											
2019	Total	1,450.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,450.2	0.0	0.0	0.0	0.0	169.6	0.0	0.0

Remark:	*Assume the	density is 2 tonnes per cubic metre for inert C&D materials, general waste and marine sediment.
1	TKO137FB	Fill Bank at Tseung Kwan O Area 137
2	TKO137SF	Sorting Facilities at Tseung Kwan O Area 137
3	TM38FB	Fill Bank at Tuen Mun
4	CWPFBP	Chai Wan Public Fill Barging Point
5	WDII C1	HK/2009/01 Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre
6	CWB	HK/2009/15 Central – Wan Chai Bypass - Tunnel (Causeway Bay Typhoon Shelter Section)
7	SCL1121	Cross Harbour Tunnels
8	SCL1103	Hin Keng to Diamond Hill tunnels and Fung Tak Public Transport Interchange
9	WDII C3	Wan Chai development Phase II - Central-Wan Chai Bypass at Wan Chai West
10	WDII C2	HK/2009/02 Wan Chai Development Phase 2, Central - WanChai Bypass at Wan Chai East
11	8217	Backfilling of the Shek Yam Construction Adit
40	CWB-	-
12	HY/2010/08	Wan Chai Bypass — Tunnel (Slip Road 8 Section)
13	SCL 1112	Hung Hom Station & Stabling Sidings
14	Area 56A	Construction site at Area 56A, Kau To, Sha Tin
15	M+	Main Works Contract for M+ Museum Project
16	XRL 810B	West Kowloon Terminus Station South
17	PSK226	J3698 PSK226 - Proposed Residential Development at T.P.T.L. 226 Pak Shek Kok (Gammon)

Appendix B

Monthly EM&A Report for February 2019 – SCL Works Contract 1121 NSL Cross Harbour Tunnels

MTR Corporation Limited

Shatin to Central Link – Hung Hom to Admiralty Section

Monthly EM&A Report No. 47

[Period from 1 to 28 February 2019]

Works Contract 1121 - NSL Cross Harbour Tunnels

(March 2019)

Certified by:	Dr. Priscilla Choy
Position:	Environmental Team Leader
Date	12 th March 2019

Shatin to Central Link – Contract 1121 NSL Cross Harbour Tunnels

Monthly Environmental Monitoring and Audit Report for February 2019

(version 1.0)

Certified By

Dr. Priscilla Choy (Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

WELLAB accepts no responsibility for changes made to this report by third parties.

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EXECUTIVE SUMMARY

Introduction

1. This is the 48th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Wellab Limited for MTR Shatin to Central Link (SCL) Works Contract 1121 – NSL Cross Harbour Tunnels. This report documents the findings of EM&A Works conducted from 1 to 28 February 2019.

Summary of Construction Works undertaken during Reporting Month

2. The major site activities undertaken in the reporting month include:

Victoria Harbour

- External Works around NOV at Hung Hom;
- Internal Finishes at NOV at Hung Hom;
- External Wall Finishes at NOV at Hung Hom;
- Building Services Installation at NOV at Hung Hom;
- Construction of walkway inside the Immersed Tube Tunnels;
- Sand Blasting at Immersion Joints inside the Immersed Tube Tunnels;
- Immersion Joints Construction inside the Immersed Tube Tunnels;
- Re-provision of Finger Pier at Hung Hom;
- Backfilling for as-installed IMT elements at Victoria Harbour;
- Reinstatement of Breakwater at CBTS; and
- Demolition of Wall 2 at ME4 Tunnel

Environmental Monitoring and Audit Progress

3. A summary of the monitoring activities in this reporting period is listed below:

Regular Water Quality Monitoring

- Water Quality Monitoring at each monitoring station (Shek O Casting Basin)⁽¹⁾
- 0 times
- Water Quality Monitoring at each monitoring station (Victoria Harbour) Remarks:
- 9 times
- (1) Removal of southern dock gate had been completed on 20 November 2017. No water quality monitoring was carried out in Shek O during the reporting month.

Post-Project Water Quality Monitoring

• Post-Project Water Quality Monitoring at each monitoring station (Shek O Casting Basin)⁽²⁾

0 times

Remarks:

(2) A post-project water quality monitoring had been completed on 18 December 2017 in Shek O for four weeks.

Waste Management

4. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix K**.

1

Landscape and Visual

5. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 4 and 18 February 2019. Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor. Details of the audit findings and implementation status are presented in Section 6.

Environmental Site Inspection

6. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 4, 11, 18 and 25 February 2019. The representative of the IEC joined the site inspection on 18 February 2019. Details of the audit findings and implementation status are presented in Section 6.

Environmental Exceedance/Non-conformance/Complaint/Summons and Successful Prosecution

- 7. No exceedance of the Action and Limit Levels of regular water quality monitoring was recorded during the reporting period.
- 8. No exceedance of the Action and Limit Levels of post-project water quality monitoring was recorded during the reporting period.
- 9. No non-compliance event was recorded during the reporting period.
- 10. No environmental complaint and no notification of summon / successful prosecutions were received in this reporting period.

Reporting Changes

11. No reporting changes in this reporting period.

Future Key Issues

12. Major site activities for the coming reporting month will include:

Victoria Harbour

- External Works around NOV at Hung Hom;
- Internal Finishes at NOV at Hung Hom;
- External Wall Finishes at NOV at Hung Hom;
- Building Services Installation at NOV at Hung Hom;
- Construction of walkway inside the Immersed Tube Tunnels;
- Immersion Joints Construction inside the Immersed Tube Tunnels
- Re-provision of Finger Pier at Hung Hom;
- Backfilling for as-installed IMT elements at Victoria Harbour;
- Reinstatement of Breakwater at CBTS; and
- 13. Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, noise, water quality and waste management.

1 INTRODUCTION

1.1 Wellab Limited was appointed by Penta Ocean – China State Joint Venture (PCJV) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL)Works Contract 1121 – NSL Cross Harbour Tunnels (hereafter referred to as the Project).

Purpose of the Report

1.2 This is the 48th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 28 February 2019. The major construction works for Contract 1121 commenced on 2 March 2015.

Structure of the Report

- 1.3 The structure of the report is as follows:
 - Section 1: **Introduction** details the scope and structure of the report.
 - Section 2: **Project Information** summarises background and scope of the project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.
 - Section 3: **Environmental Monitoring Requirement -** summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.
 - Section 4: **Implementation Status on Environmental Mitigation Measures -** summarises the implementation of environmental protection measures during the reporting period.
 - Section 5: **Monitoring Results** summarises the monitoring results obtained in the reporting period.
 - Section 6: **Environmental Site Inspection -** summarises the audit findings of the weekly site inspections undertaken within the reporting period.
 - Section 7: **Environmental Non-conformance** summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
 - Section 8: **Future Key Issues -** summarises the impact forecast and monitoring schedule for the next three months.

Section 9: Conclusions and Recommendations

2 PROJECT INFORMATION

Background

- 2.1 The Shatin to Central Link Hung Hom to Admiralty Section (hereafter referred to as SCL (HUH-ADM)) is an approximately 6km extension of the East Rail Line including a rail harbor crossing from Hung Hom across the harbor to Admiralty on Hong Kong Island. It is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO).
- 2.2 The Environmental Impact Assessment (EIA) Report for SCL Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, Environmental Permits (EP) (EP No: EP-436/2012) was granted on 22 March 2012 for their construction and operation.
- 2.3 Various Environmental Review Reports (ERR) / Supplementary Information Paper had been submitted for the following purposes:

Table 2.1 Environmental Review Reports/Supplementary Information Paper for this Project

Environmental Review Reports / Supplementary Information Paper	Date of Submission to EPD	Purpose(s)
Environmental Review Report – Design Changes of North Ventilation Building and Shek O Casting Basin	February 2014	To identify and assess the likely environmental issues pertinent to the proposed design changes at North Ventilation (NOV) Building and Shek O Casting Basin, and to identify any additional environmental mitigation measures that may be required for compliance with environmental standards.
Environmental Review Report – Variation for IMT Extension	February 2015	To identify and assess the likely environmental issues pertinent to the proposed alternative scheme of IMT extension.
Supplementary Information Paper for Optimized Scheme for IMT Construction in CBTS	January 2016	To demonstrate that no unacceptable impacts would be resulted from the Optimized Scheme in CBTS.
Environmental Review Report of Dredging Scenarios	November 2016	To demonstrate that unacceptable water quality impact is not anticipated from an alternative dredging option (including (i) using two smaller closed grab dredgers instead of one large closed grab dredger; and (ii) proposed daily production rate) within the open Victoria Harbour outside Causeway Bay Typhoon Shelter (CBTS)

Environmental Review	31	December	To update the Fixed Plant Noise Sources at
Report – Arrangement of	2018		North Ventilation Building, Plant Rooms
the fixed plant noise			and Emergency Access (NOV)
Sources at NOV			

- 2.4 Variation of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/F) was issued by Director of Environmental Protection (DEP) on 23 January 2019.
- 2.5 The construction of the SCL (HUH-ADM) has been divided into a series of civil construction Works Contracts and this Works Contract 1121 comprises of the Permanent Works and the associated Temporary works required for the construction of the North Ventilation Building (NOV) at the Hung Hom Landfall, and construction of cut & cover tunnel and Immersed Tunnel (IMT) sections extending across the harbour from the NOV to the Causeway Bay Typhoon Shelter (CBTS). This construction contract was awarded to Penta Ocean China State Joint Venture (PCJV) in December 2014.

General Site Description

2.6 The site layout plans for the Works Contract 1121 are shown in **Figure 1a-1b**.

Construction Programme and Activities

2.7 A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.

Victoria Harbour

- External Works around NOV at Hung Hom;
- Internal Finishes at NOV at Hung Hom;
- External Wall Finishes at NOV at Hung Hom;
- Building Services Installation at NOV at Hung Hom;
- Construction of walkway inside the Immersed Tube Tunnels;
- Sand Blasting at Immersion Joints inside the Immersed Tube Tunnels;
- Immersion Joints Construction inside the Immersed Tube Tunnels;
- Re-provision of Finger Pier at Hung Hom;
- Backfilling for as-installed IMT elements at Victoria Harbour;
- Reinstatement of Breakwater at CBTS; and
- Demolition of Wall 2 at ME4 Tunnel

Project Organisation

2.8 The project organizational chart and contact details are shown in **Figure 2**.

Status of Environmental Licences, Notification and Permits

2.9 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 2.2**.

Table 2.2 Summary of the Status of Environmental Licences, Notification and Permits

B ://I: N	Valid	G					
Permit / License No.	From	To	Status				
Environmental Permit (EP)							
EP-436/2012/F	23/01/2019	N/A	Valid				
SP License							
L-3-248(1)	10/09/2015	09/09/2017	Expired				
Notification pursuant to Air Pollution Control (Construction Dust) Regulation							
EPD Ref no.: 384777	28/01/2015	N/A	Valid				
EPD Ref no.: 384550	21/01/2015	N/A	Valid				
EPD Ref no.: 384281	14/01/2015	N/A	Valid				
Billing Account for Construction	ı Waste Disposal						
Account No. 7021499	20/01/2015	N/A	Valid				
Registration of Chemical Waste	Producer						
Waste Producer No. 5213-147- P3174-03	02/03/2015	N/A	Valid				
Waste Producer No. 5213-213- P3172-01	09/02/2015	N/A	Valid				
Waste Producer No. 5111-197- P3174-01	27/02/2015	N/A	Valid				
Marine Dumping Permit							
-	-	-	-				
Effluent Discharge License unde	T Water Pollution C	ontrol Ordinance					
WT00021844-2015	25/06/2015	30/06/2020	Valid				
WT00021891-2015	19/08/2015	31/08/2020	Valid				
WT00022449-2015	29/09/2015	30/06/2020	Valid				
Construction Noise Permit (CNP)							
GW-RS-0723-18	18/08/2018	15/02/2019	Valid				
GW-RS-0084-19	16/02/2018	15/08/2019	Valid				
GW-RE0800-18	05/12/2018	04/06/2019	Valid				

Summary of EM&A Requirements

2.10 The EM&A programme under Works Contract 1121 requires regular dust and water quality monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirements in contract documents.
- 2.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.
- 2.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely marine water quality monitoring as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Dust Monitoring

3.1 In accordance with the EM&A Manual, the setup of the impact dust monitoring station at Harbourfront Horizon and the impact monitoring is currently carried out by the MTR Contract 1112. Upon termination of their EM&A programmes, the impact monitoring works would be taken up by this Project.

Regular Water Quality Monitoring

- 3.2 In accordance with the EM&A Manual and the ERRs, marine water quality monitoring should be carried out during the dredging and filling operation, and IMT construction within CBTS (for Station 9 only); and throughout the construction period of removal of earth bunds at Northern and Southern gates.
- 3.3 Water Quality Monitoring at Station 8 and 14 is suspended as the water intakes are not in use. The statuses of the intakes will be kept in view such that once the water intakes are occupied, water quality monitoring will resume. In the presence of temporary reclamation in the Causeway Bay Typhoon Shelter (CBTS) under this Project, only Dissolved Oxygen (DO) level monitoring would be maintained at Station 8 for checking of potential odour concern.
- The water quality monitoring stations and control stations of Project are shown in **Figure 3**. The co-ordinates of the monitoring stations are listed in **Table 3.1**. As shown in **Table 3.1**, the locations are classified as Impact Station and Control Station according to their functions.

Table 3.1 Water Quality Monitoring Stations

Station	Description	Coord	linates
		Easting	North
Shek O Ca.	sting Basin		
GB3	Turtle Cove Beach	841120	810280
C3	Control Station for ebb tide	841200	806210
C4	Control Station for flood tide	843330	807320
Victoria H	arbour		
8	Cooling Water Intake for Excelsior Hotel and World Trade Centre / No. 27 – 63 Paterson Street	837036	816008
9	Cooling Water Intake for Windsor House	837223	816150
14	Flushing Water Intake for Kowloon Station	834477	817891
21	Cooling Water Intake for East Rail Extension	836484	817642
34	Cooling Water Intake for Metropolis	836828	817844
A	Wan Chai WSD Flushing Water Intake (Reprovisioned) ⁽¹⁾	836268	816045
WSD9	Tai Wan WSD Flushing Water Intake ⁽²⁾	837930	818357
WSD17	Quarry Bay WSD Flushing Water Intake	839863	817077
C1	Control Station 1	833977	817442
C2	Control Station 2	841088	817223

Note:

- (1) According to the Baseline Water Quality Monitoring Report for SCL (MKK-HUH & HUH-ADM), the original coordinates of monitoring location A (Easting: 836286, Northing: 816024) is the exact location taken from the design of reprovisioned Wan Chai Salt Water Pumping Station and Salt Water Intake Culvert. Based on actual site condition for taking water sampling, minor adjustment was made on monitoring location.
- (2) According to the Baseline Water Quality Monitoring Report for SCL (MKK-HUH & HUH-ADM), the original coordinates of monitoring location WSD9 (Easting: 838133, Northing: 817790) as proposed in WQMP were moved closer to sensitive receiver according to the actual site condition.

Monitoring Parameter, Frequency and Programme

3.5 Water quality monitoring was conducted in accordance with the requirements stipulated in the approved SCL(HUH-ADM) EM&A Manual and the ERRs. **Table 3.2** summarized the monitoring frequency and water quality parameters for the impact monitoring. The monitoring schedule for this reporting period is shown in **Appendix C**.

Table 3.2 Water Quality Impact Monitoring Programme

	Impact Monitoring
	Victoria Harbour During the dredging and filling operation
Monitoring Period	CBTS (Station 9 only) During IMT construction within CBTS
	Shek O Casting Basin Throughout the construction period of removal of earth bunds at Northern and Southern gates.
Monitoring Frequency ⁽¹⁾	3 Days in a Week, at mid-flood and mid-ebb tides
Monitoring Locations ⁽³⁾	GB3, C3, C4, 8, 9, 14, 21, 34, A, WSD9, WSD17, C1 and C2
Monitoring Parameters ⁽²⁾	DO, temperature, turbidity, pH, salinity and SS
Intervals between 2 Sets of Monitoring	Not less than 36 hours
Tidal Range	Individual flood and ebb tides not less than 0.5m

Notes:

- 1. For selection of tides for in-situ measurement and water sampling, tidal range of individual flood and ebb tides should be not less than $0.5\ \mathrm{m}$.
- 2. Turbidity, DO, pH, temperature and salinity should be measured in situ whereas SS should be determined by laboratory.
- 3. Water Quality Monitoring at Station 8 and 14 is suspended as the water intakes are not in use.

Monitoring Equipment and Methodology pH Measurement Instrument

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

Dissolved Oxygen and Temperature Measuring Equipment

- 3.7 The Dissolved Oxygen (DO) measuring equipment is portable and weatherproof. It is completed with cable and senor, and a DC power source. The equipment is capable of measuring:
 - a DO level in the range of $0 20 \text{ mg} \cdot \text{L}^{-1}$ and 0 200% saturation; and
 - a temperature of 0 45 degree Celsius (°C).
- 3.8 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 3.9 Should salinity compensation not be built-in to the DO equipment, in-situ salinity should be measured to calibrate the DO measuring equipment prior to each DO measurement.

Turbidity Measurement Instrument

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

Sampler

3.11 A water sampler was required for SS monitoring. It comprises 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 has 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

3.12 A portable, battery-operated echo sounder is used for the determination of water depth at each monitoring station. This unit can either be hand-held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

Salinity

3.13 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) is provided for measuring salinity of the water at each monitoring station.

Sample Containers and Storage

3.14 Water samples for SS monitoring were 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 analyzed as soon as possible after collection.

Monitoring Position Equipment

3.15 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message "screen pop-up" facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, was provided and used during marine water monitoring to ensure the monitoring vessel at the correct location before taking measurements.

Calibration of In-Situ Instruments

- 3.16 The pH meter, DO meter and turbidimeter was checked and calibrated before use. DO meter and turbidimeter was certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring location.
- 3.17 **Table 3.3** summarizes the equipment used in the water quality monitoring program. The calibration certificates for the in-situ instruments are presented in **Appendix E**.

Table 3.3 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	2
YSI EXO1 Multiparameter Sondes	SW-08-09	1
YSI EXO1 Multiparameter Sondes	SW-08-15	1
YSI EXO1 Multiparameter Sondes	SW-08-132	1
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS- 320	2
Water Depth Detector	Fishfinder 140	2

3.18 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment were made available so that monitoring can proceed uninterrupted even when some equipment are under maintenance, calibration, etc.

Laboratory Measurement / Analysis for Marine Water

3.19 Duplicate samples from each independent sampling event are required by EPD for all parameters. Analysis of suspended solids was carried out in a HOKLAS or other international accredited laboratory. Sufficient water samples were collected at the monitoring stations for carrying out the laboratory SS determinations, with detection limit shown in **Table 3.4**. The SS determination work was started within 24 hours after collection of the water samples. The analyses followed the standard methods according to **Table 3.4** and as described in "American Public Health Association (APHA) Standard Methods for the Examination of Water and Wastewater", 19th edition, unless otherwise specified.

Table 3.4 Analytical Methods to be applied to Marine Water Quality Samples

Determinant	Standard Method	Detection Limit
Suspended Solids (mg/L)	APHA 2540 D	0.1 mg/L

3.20 Quality Control Reports as attached in **Appendix F** are available for the SS analyzed in the HOKLAS-accredited laboratory, WELLAB Ltd.

Action and Limit Levels

3.21 The action and limit levels for water quality monitoring are presented in **Appendix B**.

Event and Action Plan

3.22 Should non-compliance of the criteria occur, action in accordance with the Event and Action Plan in **Appendix I** shall be carried out.

Landscape and Visual

3.23 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The implementation status is summarised in **Table 6.1** of Section 6.

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit, EM&A Manual and the ERR. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix J**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (January 2019)	14 February 2019

5 MONITORING RESULTS

Water Quality Monitoring

- 5.1 All water quality monitoring was conducted as scheduled in the reporting month. Nine (9) sets of water quality monitoring was carried out at the designated monitoring stations in Victoria Harbour in this reporting period.
- 5.2 A post-project water quality monitoring had been completed on 18 December 2017 in Shek O for four weeks.
- 5.3 The water quality impact monitoring schedule for this reporting period is shown in **Appendix C**.
- 5.4 The monitoring results together with graphical presentations are shown in **Appendix D**.
- 5.5 Under consultancy agreement no. C11033B, Action and Limit Levels for water quality monitoring at the monitoring stations in **Table 3.2** were established in the baseline water quality monitoring conducted by AECOM during June and July 2014. Action and Limit Levels for water quality is summarised in **Appendix B**.
- 5.6 No exceedance of Action and Limit Levels of regular water quality monitoring was recorded during the reporting period.
- 5.7 No exceedance of Action and Limit Levels of post-project water quality monitoring was recorded during the reporting period.

Waste Management

- 5.8 Waste generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and marine sediments. Non-inert C&D materials are made up of C&D waste which cannot be reused or recycled and has to be disposed of at the designated landfill sites. With reference to relevant handling records of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.1**. Details of waste management data is presented in **Appendix K**
- 5.9 0 m³ inert C&D materials were generated during the reporting month by this Project. No inert C&D materials were received from SCL Contract 1111 and 1112 respectively. No inert C&D materials were received from SCL Contract 1114, 1123 and 1128. Inert C&D materials received from SCL Contracts was collected and stored on-site and 0 m³ of these inert C&D materials were reused in the other Projects. No chemical waste was collected by licensed collector during the reporting month. 0 kg metal, 0 kg paper/cardboard packaging and no plastics were generated during the reporting month.
- 5.10 0 m³ Type 1 sediments (Category L) were generated from construction activities of this Project during this reporting period. No Type 1 sediments (Category L) were received from SCL Contract 1111, 1112 and 1128. Such materials were collected and 0 m³ was disposed at Capping of the exhausted Confined Marine Disposal Facility at South Cheung Chau in the reporting period.
- 5.11 No contaminated materials Type 1 (dedicated sites) and 0 m³ Type 2 Confined Marine Disposal (Category M) sediments were generated from construction activities of this Project during this reporting period. No contaminated materials Type 1 (dedicated sites) and Type 2 Confined Marine Disposal (Category M) sediments were received

- from SCL Contract 1111, 1112 and 1128. Such materials were collected and 0 m³ was disposed at Capping of the exhausted Confined Marine Disposal Facility at South of The Brothers (or East of Sha Chau) in the reporting period.
- 5.12 No contaminated materials Type 3 (Special Treatment Disposal) sediments were generated from construction activities of this Project during this reporting period.

Table 5.1 Quantities of Waste Generated from the Project

				Quantity										
D 4				C&D Materials (non-inert) ^(b)										
Reporting Month	C&D	Sediments			Recy	ycled mate	rials							
Month	Materials (inert) (a)	(in bulk volume)	General Refuse	Chemical Waste	Paper/ cardboard	Plastics	Metals							
February 2019	$0 m^3$	0 m ³	52 tonne	0 kg	717 kg	0 kg	0 kg							

Notes:

- (a) Inert C&D materials include soft materials, rocks and artificial hard materials to be delivered to TKO 137 and TM 38 public fill reception sites or, alternatively, receptor sites to be identified for beneficial reuse as proposed by the Contractor.
- (b) Non-inert C&D materials include C&D waste which cannot be reused or recycled and has to be disposed of at North East New Territories (NENT) Landfill. It also includes steel, paper/cardboard packaging waste, plastics. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

Landscape and Visual

5.13 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 4 and 18 February 2019. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

6 ENVIRONMENTAL SITE INSPECTIONA

Site Audit

- 6.1 Site audit was carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audit are attached in **Appendix H**.
- 6.2 Site audits were conducted on 4, 11, 18 and 25 February 2019 by ET. A joint site audit with the representative with IEC, ER, the Contractor was carried out on 18 February 2019. The details of observations during site audit can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

- 6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix J**.
- 6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	18 February 2019	Reminder: Sandbag bunding at the discharge point should be repaired to avoid surface runoff discharging into discharge point.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 February 2019.
Noise			
Landscape and Visual			
Ain Ovalita	28 January, 4 February 2019	Reminder: A fading NRMM label on the excavator should be replaced near the NOV building at Hung Hom site.	The observation was observed to be improved/rectified by the Contractor during the audit session on 11 February 2019.
Air Quality	18 February 2019	Reminder: A fading NRMM label on the forklift should be replaced near the Aqua-Sed at Hung Hom site.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 February 2019.
Waste / Chemical Management	25 February 2019	Reminder: To clear the stagnant water inside the drip tray appropriately.	Follow up action will be reported in the next reporting month.
Permits/ Licenses			

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No exceedance of Action and Limit Levels of water quality was recorded during the reporting period. The summary of exceedance is provided in **Appendix G**.

Summary of Environmental Non-Compliance

7.2 No environmental non-compliance was recorded in the reporting month.

Summary of Environmental Complaint

7.3 No environmental complaint was received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**. The investigation status and result is also reported in **Appendix L**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no successful environmental prosecution and no notification of summons received in this reporting period. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix** L.

8 FUTURE KEY ISSUES

Construction Programme for the Next Month

8.1 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:

Victoria Harbour

- External Works around NOV at Hung Hom;
- Internal Finishes at NOV at Hung Hom;
- External Wall Finishes at NOV at Hung Hom;
- Building Services Installation at NOV at Hung Hom;
- Construction of walkway inside the Immersed Tube Tunnels;
- Immersion Joints Construction inside the Immersed Tube Tunnels
- Re-provision of Finger Pier at Hung Hom;
- Backfilling for as-installed IMT elements at Victoria Harbour;
- Reinstatement of Breakwater at CBTS; and

Key Issues in the Next Month

8.2 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, noise, water quality and waste management in Hung Hom.

Monitoring Schedule in the Next Month

8.3 The tentative schedule of regular water quality monitoring at all the monitoring locations in the next reporting period is presented in **Appendix** C. The regular water quality monitoring will be conducted at the same monitoring locations in the next reporting period. Also, a post-project water quality monitoring had been completed on 18 December 2017 in Shek O for four weeks.

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 28 February 2019 in accordance with EM&A Manual and the requirement under EP.
- 9.2 No exceedance of the Action and Limit Levels of regular water quality monitoring was recorded at the designated monitoring stations during the reporting month.
- 9.3 4 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.
- 9.4 No environmental complaint and no notification of summon / successful prosecution were received during the reporting month.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

9.6 According to the environmental audit performed in the reporting month, the following recommendations were made:

Air Ouality

• Fading Non-road Mobile Machinery (NRMM) labels should be replaced to regulated machines.

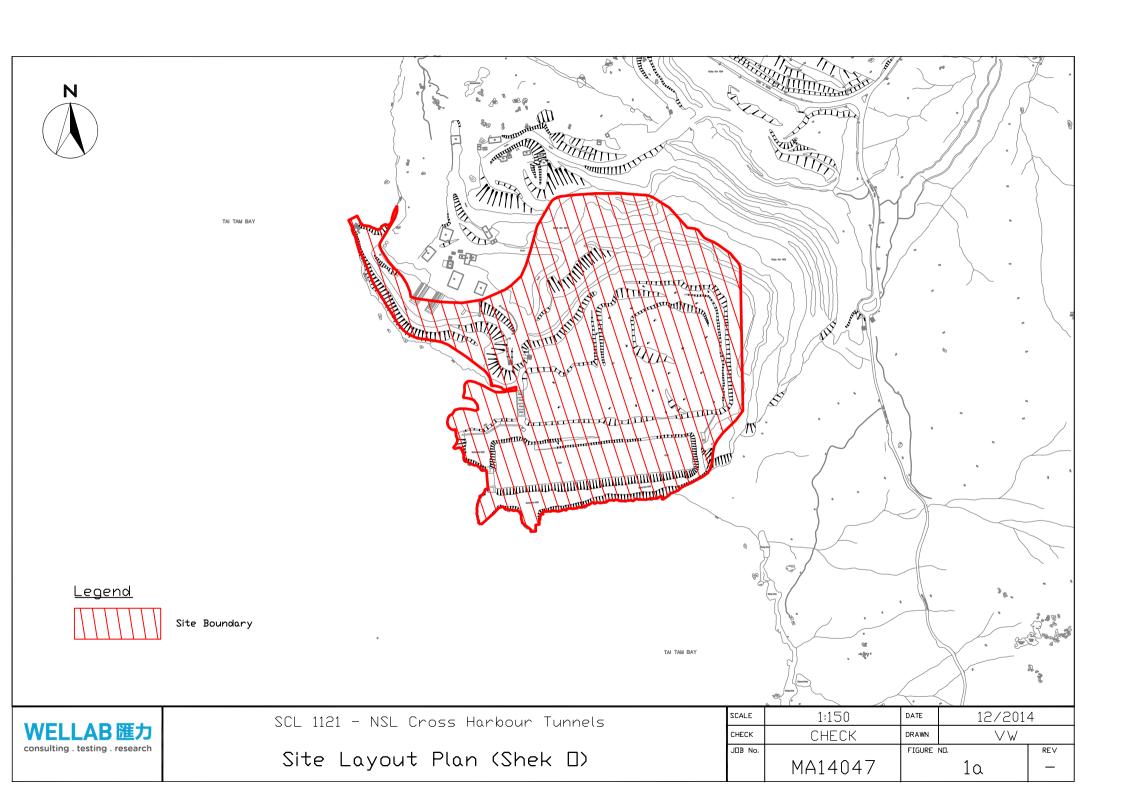
Water Quality

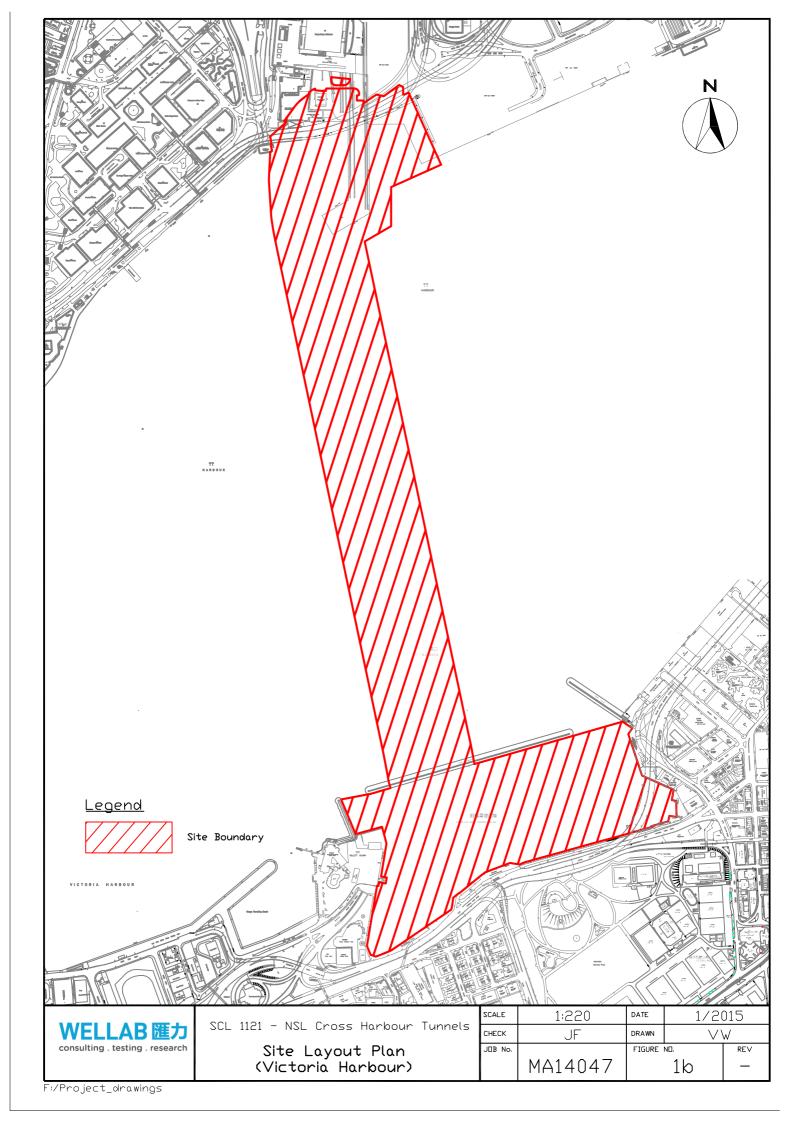
• Sandbag bunding at the discharge point should be repaired to avoid surface runoff discharging into discharge point.

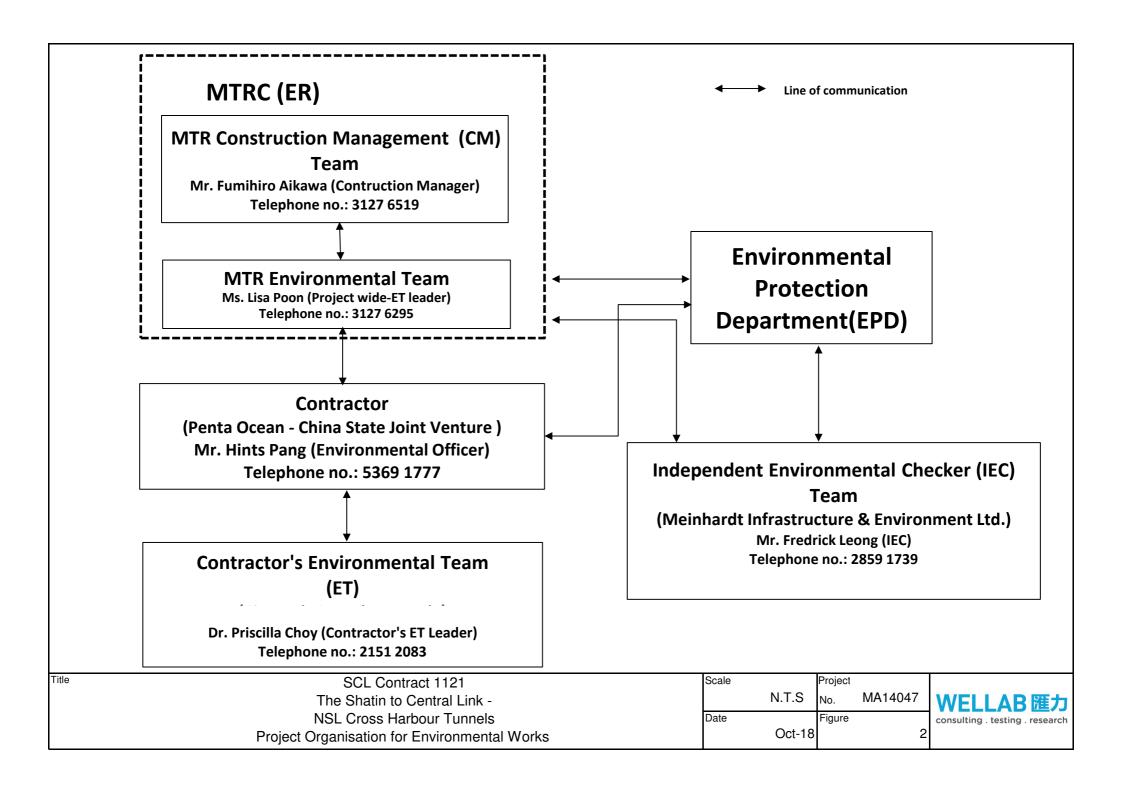
Waste & Chemical Management

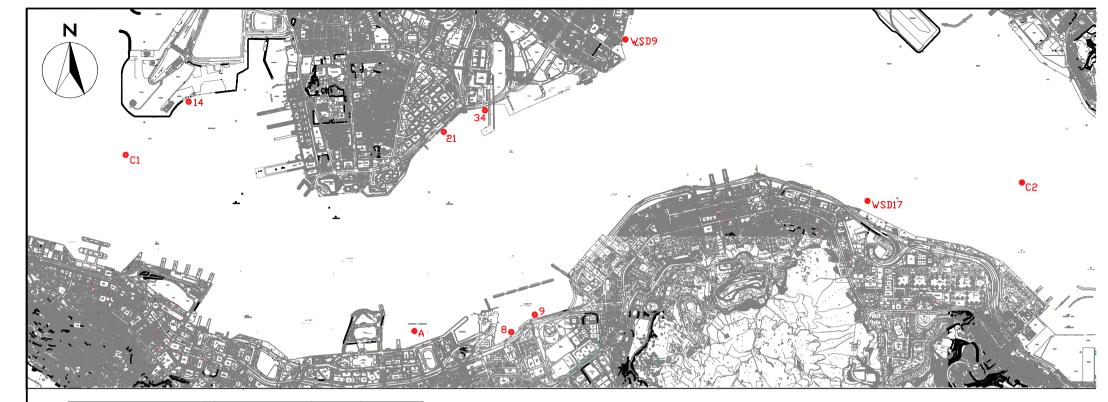
• To clear the stagnant water inside the drip tray appropriately.

FIGURES









COORDINATE	EASTING	NORTHING
А	836268	816045
14	834477	817891
WSD9	837930	818357
WSD17	839863	817077
C1	833977	817442
C2	841088	817223
8	837036	816008
9	837223	816150
21	836484	817642
34	836828	817844

LEGEND

Water Quality Monitoring Station



SCL 1121 - NSL Cross Harbour Tunnels

Locations of Water Quality Monitoring station in the Victoria Harbour

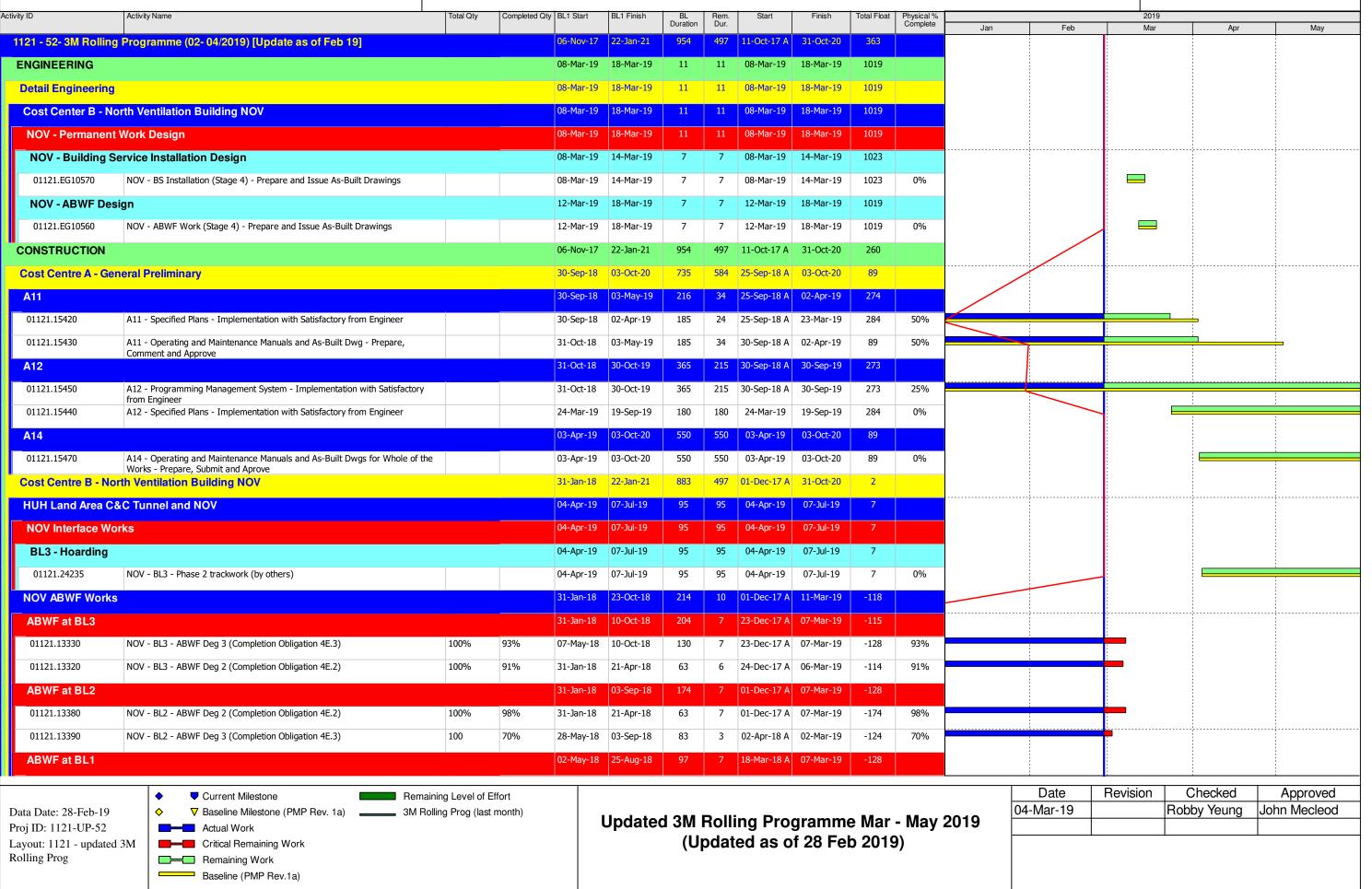
SCALE	1:30	DATE	1/2015	
CHECK	IF.	DRAWN	VW	·
J□B No.	<u> </u>	FIGURE	L	REV
	MA14047		3	_

APPENDIX A TENTATIVE CONSTRCUTION PROGRAMME



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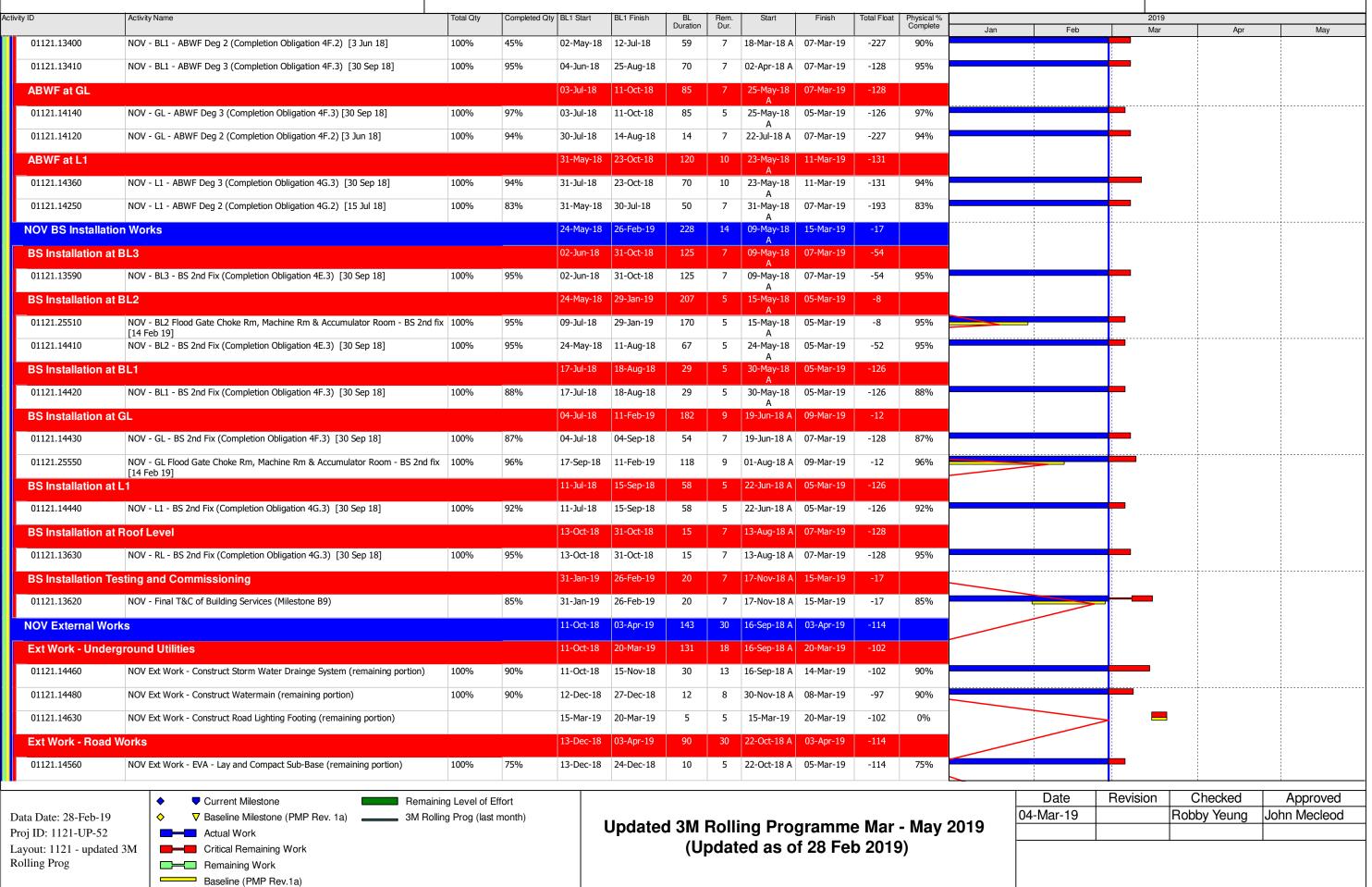
MTRC Shatin to Central Link Contract 1121
NSL Cross Harbour Tunnel



五洋建設-中國建築聯營

Penta-Ocean - China State Joint Venture

MTRC Shatin to Central Link Contract 1121 **NSL Cross Harbour Tunnel**





Rolling Prog

Remaining Work
Baseline (PMP Rev.1a)

五洋建設-中國建築聯營 Penta-Ocean - China State Joint Venture

MTRC Shatin to Central Link Contract 1121
NSL Cross Harbour Tunnel

Activity Name Total Qtv Physical % Complete Completed Qty BL1 Start 01121.14580 NOV Ext Work - EVA - Cast Concrete Paving 100% 70% 31-Dec-18 22-Jan-19 19 15 04-Nov-18 A 16-Mar-19 -124 70% 01121.14600 NOV Ext Work - Construct Pavement 100% 0% 28-Feb-19 0% 03-Apr-19 30 30 28-Feb-19 03-Apr-19 -114 01121.14610 NOV Ext Work - Construct Fencing 100% 0% 28-Feb-19 16-Mar-19 28-Feb-19 16-Mar-19 0% 15 15 -114 01121.14650 NOV Ext Work - Landscaping Work 100% 22-Mar-19 20 20 22-Mar-19 0% 28-Feb-19 28-Feb-19 -119 01121.14590 NOV Ext Work - EVA - Road Marking and Road Sign 100% 0% 18-Mar-19 28-Mar-19 10 10 18-Mar-19 28-Mar-19 -124 0% Ext Work - Testing and Commissioning 14-Jan-19 01121.14800 08-Feb-19 80% NOV External Work - Testing and Commissioning 100% 80% 14-Jan-19 20 14 02-Dec-18 A 15-Mar-19 -113 01121.14790 NOV External Work - Prepare and Submit As-Built Drawings 100% 0% 28-Feb-19 28-Mar-19 25 25 28-Feb-19 28-Mar-19 -113 0% Maintenance and Demolition of Existing Engineer Site Accomodation 22-Jan-21 31-Oct-20 30-Jul-18 Site Office - Maintain the Office Building 01121.14740 30-Jul-18 22-Jan-21 740 497 06-May-18 31-Oct-20 0% 2 **Demolition of Existing Footbridge** 01121.14660 Footbridge - Maintain the Existing Footbridge 05-Nov-20 30-Jul-18 13-Aug-20 0% 675 432 06-May-18 3 196 27-Oct-19 **Cost Centre C - Hung Hom Cut and Cover Tunnels** 30-Jul-18 27-Oct-19 30-Jul-18 A **HUH Submerged Tunnel (Area B)** 28-Feb-19 50 15-Feb-19 A 02-May-19 -23 **HUH Area B - Dismantle Temporary Working Platform and Cofferdam** 28-Feb-19 15-Feb-19 A 30-Mar-19 01121.10640 HUH Area B - Remove Platform A1 and piles after IMT1 sinking 100% 0% 28-Feb-19 22-Mar-19 20 12 15-Feb-19 A 13-Mar-19 -391 0% 14-Mar-19 30-Mar-19 14-Mar-19 30-Mar-19 01121.10650 HUH Area B - Remove Platform A2 and piles after IMT1 sinking 100% 0% 15 15 -391 0% **HUH Area B - Civil Provision Works** 07-Mar-19 **HUH Area B - Invert Concrete** 07-Mar-19 27-Mar-19 18 18 07-Mar-19 27-Mar-19 -23 01121.13656 HUH Area B - Deg 1 - Formwork for Invert Concrete (1st portion) 100% 0% 07-Mar-19 18-Mar-19 10 10 07-Mar-19 18-Mar-19 -30 0% 01121.13660 HUH Area B - Deg 1 - Formwork for Invert Concrete (remaining portion) 100% 0% 19-Mar-19 20-Mar-19 19-Mar-19 20-Mar-19 -23 0% 2 01121.13670 HUH Area B - Deg 1 - Concrete Casting of Invert Concrete 100% 0% 21-Mar-19 27-Mar-19 21-Mar-19 27-Mar-19 -23 0% **HUH Area B - Walkways** 14-Mar-19 11-Apr-19 24 14-Mar-19 11-Apr-19 -23 01121.13700 HUH Area B - Deg 1 - Rebars for Walkways 100% 0% 14-Mar-19 27-Mar-19 12 12 14-Mar-19 27-Mar-19 -21 0% 01121.13720 HUH Area B - Deg 1 - FormWork for Walkways 100% 21-Mar-19 03-Apr-19 12 12 21-Mar-19 03-Apr-19 -23 0% 01121.13730 HUH Area B - Deg 1 - Concrete Casting of Walkways 100% 0% 02-Apr-19 11-Apr-19 02-Apr-19 11-Apr-19 -23 0% **HUH Area B - Civil Provision** 02-May-19 02-May-19 12-Apr-19 14 12-Apr-19 -23 01121.14210 HUH Area B - Deg 3 - Install Cross Wall Door and Ironmongery 100% 12-Apr-19 02-May-19 14 14 12-Apr-19 02-May-19 -23 0% **Hung Hom Finger Pier** 30-May-19 30-Jul-18 A **Reinstatement of Finger Pier** 30-Jul-18 30-May-19 73 | 30-Jul-18 A | 30-May-19 -182 30-Jul-18 23-May-19 **Bored Pile** 241 30-Jul-18 A 23-May-19 -212 67 01121.15627 HUH Finger Pier - Construct bored piles (Stage 2b) 10 nos. 8 nos. 30-Jul-18 22-Sep-18 15 30-Jul-18 A 16-Mar-19 -240 Date Revision Checked Approved Current Milestone Remaining Level of Effort John Mecleod _____ 3M Rolling Prog (last month) 04-Mar-19 Robby Yeung Data Date: 28-Feb-19 ▼ Baseline Milestone (PMP Rev. 1a) **Updated 3M Rolling Programme Mar - May 2019** Proj ID: 1121-UP-52 (Updated as of 28 Feb 2019) Layout: 1121 - updated 3M Critical Remaining Work

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MTRC Shatin to Central Link Contract 1121 **NSL Cross Harbour Tunnel**

Activity ID	Activity Name	Total Qty	Completed Qty	BI 1 Start	BL1 Finish	BL	Rem	Start	Finish	Total Float	Physical %		2019	
Activity ID	Polivily realito	Total Qty	Completed Qty	BET Start	DET T IIII311	Duration	Rem. Dur.	Otart	1 111311	Total Float	Complete	Jan Feb		Apr May
01121.15630	HUH Finger Pier - interface core, BD inspection, through core test			19-Mar-19	08-May-19	39	21	13-Feb-19 A	12-Apr-19	-182	0%			
01121.15644	HUH Finger Pier - remove steel platform and temp. pipe piles			01-Apr-19	23-May-19	40	40	01-Apr-19	23-May-19	-240	0%			
Seawall				24-May-19	30-May-19	6	6	24-May-19	30-May-19	-240				
01121.15646	HUH Finger Pier - backfill E2 site won			24-May-19	30-May-19	6	6	24-May-19	30-May-19	-240	0%			=
R.C. Deck				13-Apr-19	30-May-19	36	36	13-Apr-19	30-May-19	-182				
01121.15632	HUH Finger Pier - prepare consent application for deck construction			13-Apr-19	30-Apr-19	12	12	13-Apr-19	30-Apr-19	-182	0%			
01121.15634	HUH Finger Pier - BD issue consent for deck construction			02-May-19	30-May-19	24	24	02-May-19	30-May-19	-182	0%			
HUH Land bas	se Tunnel (Area C)			28-Feb-19	27-Oct-19	196	196	28-Feb-19	27-Oct-19	0				
HUH Area C -	- Construction of C&C Tunnel (On Land)			28-Feb-19	27-Oct-19	196	196	28-Feb-19	27-Oct-19	0				
HUH Area C	- Temporary Access Shaft - Interface to DC			28-Feb-19	27-Oct-19	196	196	28-Feb-19	27-Oct-19	0				
01121.23180	HUH Area C - Dismantle Temporary Working Platform after Flood Gate Installation [4C Deg 1]			28-Feb-19	03-Apr-19	30	30	28-Feb-19	03-Apr-19	-3	0%			
01121.23190	HUH Area C - [LOA] 1120B (Phase 2) for Track & Works Train Delivery (PS P10.31) [from 4C to 27/10/19]			04-Apr-19	27-Oct-19	207	207	04-Apr-19	27-Oct-19	0	0%			
HUH Area C -	- Civil Provision Works			07-Mar-19	10-May-19	51	51	07-Mar-19	10-May-19	-30				
Walkways				07-Mar-19	10-May-19	51	51	07-Mar-19	10-May-19	-30				
01121.11998	HUH Area C - Deg 1 - Rebars for Walkways (1st portion)	100%	0%	07-Mar-19	20-Mar-19	12	12	07-Mar-19	20-Mar-19	-30	0%			
01121.12000	HUH Area C - Deg 1 - Rebars for Walkways (remaining portion)	100%	0%	21-Mar-19	30-Mar-19	9	9	21-Mar-19	30-Mar-19	-15	0%			
01121.12404	HUH Area C - Deg 1 - Formwork for Walkways (1st portion)	100%	0%	21-Mar-19	08-Apr-19	15	15	21-Mar-19	08-Apr-19	-30	0%			
01121.12426	HUH Area C - Deg 1 - Concrete Casting of Walkways (1st portion)	100%	0%	09-Apr-19	18-Apr-19	9	9	09-Apr-19	18-Apr-19	-30	0%		=	=
01121.12410	HUH Area C - Deg 1 - Formwork for Walkways (remaining portion)	100%	0%	09-Apr-19	18-Apr-19	9	9	09-Apr-19	18-Apr-19	-30	0%		_	_
01121.12430	HUH Area C - Deg 1 - Concrete Casting of Walkways (remaining portion)	100%	0%	23-Apr-19	10-May-19	15	15	23-Apr-19	10-May-19	-30	0%			
Cost centre D	- Immersed Tunnels			06-Nov-17	04-Apr-19	419	20	11-Oct-17 A	22-Mar-19	7				
IMT - Immerse	ed Tunnel Installation			06-Nov-17	04-Apr-19	419	20	11-Oct-17 A	22-Mar-19	7				
IMT General F	Fill			28-Feb-19	05-Mar-19	5	5	28-Feb-19	05-Mar-19	-131				
01121.29724	ME4 - general backfill			28-Feb-19	05-Mar-19	5	5	28-Feb-19	05-Mar-19	-131	0%			
IMT Backfill o	of Filter Layer, Protective Layer & Site Won			06-Nov-17	11-Mar-19	398	15	11-Oct-17 A	16-Mar-19	12				
01121.33690	E3 - backfill filter layer, protective layer & site won [16,830 m3]	16,830 m3	69%	06-Nov-17	15-Nov-17	9		11-Oct-17 A		6	69%			
01121.33700	E4 - backfill filter layer, protective layer & site won [13,931 m3]	13,931 m3	84%	15-Nov-17	22-Nov-17	7	7	23-Oct-17 A		6	84%			
01121.33750	E9 - backfill filter layer, protective layer & site won	20,671 m3	78%	19-Jun-18	24-Jul-18	30	15	25-May-18 A	16-Mar-19	12	78%			
01121.33650-10		20,000 m3	90%	21-Jan-19	29-Jan-19	8	6	01-Dec-18 A		6	90%			
01121.33650-10		14,500 m3	80%	28-Feb-19	07-Mar-19	7	7	07-Jan-19 A		6	80%		7_	
01121.33652	ME4 - backfill filter layer, protective layer & site won			06-Mar-19	11-Mar-19	5	5	06-Mar-19	11-Mar-19	-131	0%			
Closure Join	t E9/E10			28-Feb-19	04-Apr-19	31	20	28-Jan-19 A	22-Mar-19	7				
Data Date: 28-Feb Proj ID: 1121-UP- Layout: 1121 - upo Rolling Prog	o-19 ♦ ▼ Baseline Milestone (PMP Rev. 1a) 3M Rev. 52 Actual Work	nining Level of E		•	Updated			ng Prog ed as o	_		_	Date 04-Mar-19	Revision Checke Robby Yeu	- 11

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MTRC Shatin to Central Link Contract 1121 **NSL Cross Harbour Tunnel**

Total Otv Activity Name Completed Qtv 01121.30220 E9/E10 Connection Joint - complete remaining backfill 94% 28-Feb-19 04-Apr-19 31 20 28-Jan-19 A 22-Mar-19 94% **Cost Centre E - CBTS Tunnels** 16-Mar-18 A 28-Jun-19 12-Apr-18 28-Jun-19 660 South Section at VH3E (Inside Typhoon Shelter - Interface with 1128) 14-Mar-19 16-Mar-18 A 23-Mar-19 12-Apr-18 **MDN Application & Phase 4A Mooring** 01121.27983-280 CBTS - phase 4a final stage mooring 28-Feb-19 14-Mar-19 30% 13 11-Feb-19 A 23-Mar-19 -18 Removal of ME4 D-wall 12-Apr-18 30-Jun-18 01121.13060 [LOE] CBTS complete reinstate breakwater 0% 12-Apr-18 30-Jun-18 66 14 16-Mar-18 A 15-Mar-19 -135 **CBTS & ME4 Tunnel Civil Provision** ME4 - Internal Fitting Out Works 18-Feb-19 A 25-May-19 28-Feb-19 69 01121.12910 ME4 Tunnel - Deg 1 Work - Construct Maintenance and Evacuation Walkway 28-Feb-19 11-Mar-19 12 18-Feb-19 A 13-Mar-19 -42 30% 10 01121.12920 ME4 Tunnel - Deg 2 Work - Install Steel Cross Wall Door Frame 14-Mar-19 21-Mar-19 14-Mar-19 21-Mar-19 0% 01121.12930 ME4 Tunnel - Deg 2 Work - Install Cat-Ladder, Steel Handrail 22-Mar-19 02-Apr-19 10 10 22-Mar-19 02-Apr-19 -42 0% 01121.12940 ME4 Tunnel - Deg 3 Work - Install Permanent Cross Wall Door and Related 03-Apr-19 10-Apr-19 03-Apr-19 10-Apr-19 -42 0% 01121.12950 ME4 Tunnel - Deg 3 Work - Seal Up Opening If Any 11-Apr-19 30-Apr-19 14 14 11-Apr-19 30-Apr-19 -42 0% 01121.12960 ME4 Tunnel - Deg 3 Work - Miscellaneous Works 02-May-19 25-May-19 20 20 02-May-19 25-May-19 -42 0% **Final Phase Mooring** 28-Feb-19 8-Jun-19 11-Feb-19 A 28-Jun-19 01121.33770 Relocation of RHKYC Pontoon - relocate and install new pontoon 28-Feb-19 13-Apr-19 45 10 11-Feb-19 A 09-Mar-19 818 80% 30-Mar-19 01121.33780 Relocation of Vessels - hydrographic after ME4/E11 joint backfill complete 25-Mar-19 30-Mar-19 6 25-Mar-19 0% 01121.33790 Relocation of Vessels - Stage 1 - RHKYC mooring area 63 nos. 31-Mar-19 29-Apr-19 30 31-Mar-19 29-Apr-19 797 0% 01121.33800 Relocation of Vessels - Stage 2 - Private mooring area 23 nos. 30 29-May-19 0% 30-Apr-19 29-May-19 30 30-Apr-19 797 01121.33810 Relocation of Vessels - Stage 3 - RHKYC mooring area 69 nos. 30-May-19 30 30 30-May-19 28-Jun-19 797 0% 28-Jun-19 **Cost Centre F - Associated Works** 31-Oct-18 25-Oct-19 07-Oct-18 A 25-Oct-19 01121.15570 F8 - Management, Maintenance and Operation of Barging Point Facility 31-Oct-18 28-Apr-19 180 60 07-Oct-18 A 28-Apr-19 429 49% 01121.15590 F9 - Management, Maintenance and Operation of Barging Point Facility 29-Apr-19 25-Oct-19 180 180 29-Apr-19 25-Oct-19 429 0% **Cost Centre G - RRIW** 19-Feb-19 19-Jan-19 **Reprovisioning of CBTS Breakwater** 01121.12820 RRIW - CBTS - Reinstate breakwater [final stage after pipe pile across 12,000 m3 85% 19-Jan-19 24-Jan-19 14 05-Nov-18 A 15-Mar-19 -135 85% breakwater removed1 **Reprovisioning of Fender Pile** 21-Jan-19 19-Feb-19 15 17-Dec-18 A 16-Mar-19 -391 01121.14860 RRIW - HUH Area B - Fender Pile - Construct Fender Pile (remaining portion 21-Jan-19 19-Feb-19 17-Dec-18 A 16-Mar-19 33% 23 15 -391 **Statutory Inspection** 01-Mar-19 14-Jun-19 01-Mar-19 14-Jun-19 01121.15664 NOV - WSD inspection and issue water cert 01-Mar-19 11-Apr-19 35 35 01-Mar-19* -60 0% 11-Apr-19 01121.15666 NOV - Application for FSD (FSI & DG) / inspection 01-Mar-19 26-Apr-19 45 01-Mar-19 26-Apr-19 -60 Date Revision Checked Approved Current Milestone Remaining Level of Effort John Mecleod 04-Mar-19 Robby Yeung Data Date: 28-Feb-19 ▼ Baseline Milestone (PMP Rev. 1a) _____ 3M Rolling Prog (last month) **Updated 3M Rolling Programme Mar - May 2019** Proj ID: 1121-UP-52 Actual Work (Updated as of 28 Feb 2019) Layout: 1121 - updated 3M Critical Remaining Work Rolling Prog Remaining Work Baseline (PMP Rev.1a)

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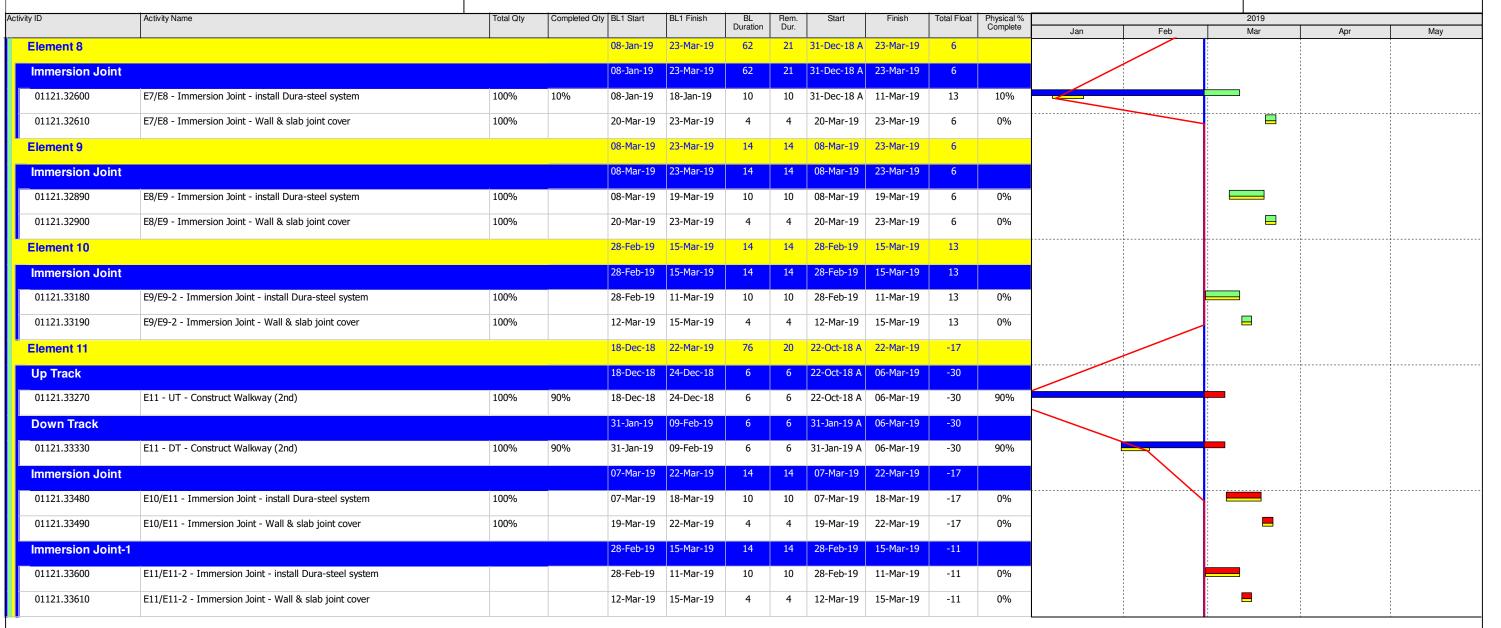
MTRC Shatin to Central Link Contract 1121 NSL Cross Harbour Tunnel

/ ID	Activity Name	Total Qty	Completed Qty BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete	Jan	Fe	eb I	2019 Mar	Apr I
1121.15667	NOV - FSD Certificate		27-Apr-19	30-Apr-19	3	3	27-Apr-19	30-Apr-19	-60	0%	Jan	16	1	iviai	- Pι
121.15670	NOV - Application for BD inspection		01-May-19	28-May-19	28	28	01-May-19	28-May-19	-75	0%					
1121.15680	NOV - BD Inspection & OP		29-May-19	14-Jun-19	14	14	29-May-19	14-Jun-19	-58	0%					
T Internal Work	s Programme		07-Dec-18	23-Mar-19	86	21	22-Oct-18 A	23-Mar-19	6						
lement 1			28-Feb-19	23-Mar-19	21	21	28-Feb-19	23-Mar-19	6						
mmersion Joint			28-Feb-19	23-Mar-19	21	21	28-Feb-19	23-Mar-19	6						
01121.30560	CCT/E1 - Immersion Joint - install Dura-steel system		28-Feb-19	11-Mar-19	10	10	28-Feb-19	11-Mar-19	13	0%			i 	3	
01121.30570	CCT/E1 - Immersion Joint - Wall & slab joint cover		20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
lement 2		1	07-Dec-18	19-Mar-19	82	12	19-Nov-18 A	19-Mar-19	10						
mmersion Joint			07-Dec-18	19-Mar-19	82	12	19-Nov-18 A	19-Mar-19	10						
01121.30860	E1/E2 - Immersion Joint - install Dura-steel system	100%	70% 07-Dec-18	18-Dec-18	10	8	19-Nov-18 A	14-Mar-19	10	70%					
01121.30870	E1/E2 - Immersion Joint - Wall & slab joint cover	100%	15-Mar-19	19-Mar-19	4	4	15-Mar-19	19-Mar-19	10	0%					
lement 3			06-Mar-19	23-Mar-19	16	14	11-Feb-19 A	23-Mar-19	6						
mmersion Joint			06-Mar-19	23-Mar-19	16	14	11-Feb-19 A	23-Mar-19	6				\		
01121.31150	E2/E3 - Immersion Joint - install Dura-steel system	100%	10% 06-Mar-19	16-Mar-19	10	10	11-Feb-19 A	19-Mar-19	6	10%		_			
01121.31160	E2/E3 - Immersion Joint - Wall & slab joint cover	100%	20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
lement 4			08-Jan-19	23-Mar-19	62	14	17-Dec-18 A	23-Mar-19	6						
mmersion Joint			08-Jan-19	23-Mar-19	62	14	17-Dec-18 A	23-Mar-19	6						
01121.31440	E3/E4 - Immersion Joint - install Dura-steel system	100%	25% 08-Jan-19	18-Jan-19	10	8	17-Dec-18 A	16-Mar-19	8	25%					
01121.31450	E3/E4 - Immersion Joint - Wall & slab joint cover	100%	20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
lement 5		'	08-Jan-19	23-Mar-19	62	14	24-Dec-18 A	23-Mar-19	6						
mmersion Joint			08-Jan-19	23-Mar-19	62	14	24-Dec-18 A	23-Mar-19	6						
01121.31730	E4/E5 - Immersion Joint - install Dura-steel system	100%	25% 08-Jan-19	18-Jan-19	10	8	24-Dec-18 A	16-Mar-19	8	25%		!			
01121.31740	E4/E5 - Immersion Joint - Wall & slab joint cover	100%	20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
lement 6			06-Mar-19	23-Mar-19	16	14	22-Jan-19 A	23-Mar-19	6				\		
mmersion Joint			06-Mar-19	23-Mar-19	16	14	22-Jan-19 A	23-Mar-19	6				\		
01121.32020	E5/E6 - Immersion Joint - install Dura-steel system	100%	25% 06-Mar-19	16-Mar-19	10	10	22-Jan-19 A	19-Mar-19	6	25%		1	7		
01121.32030	E5/E6 - Immersion Joint - Wall & slab joint cover	100%	20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
lement 7			06-Mar-19	23-Mar-19	16	21	12-Feb-19 A	23-Mar-19	6						
mmersion Joint			06-Mar-19	23-Mar-19	16	21	12-Feb-19 A	23-Mar-19	6				\		
01121.32310	E6/E7 - Immersion Joint - install Dura-steel system	100%	5% 06-Mar-19	16-Mar-19	10	10	12-Feb-19 A	11-Mar-19	13	5%					
01121.32320	E6/E7 - Immersion Joint - Wall & slab joint cover	100%	20-Mar-19	23-Mar-19	4	4	20-Mar-19	23-Mar-19	6	0%					
a Date: 28-Feb-19 j ID: 1121-UP-52 out: 1121 - update ling Prog	Actual Work	Remaining Level of E 3M Rolling Prog (last	month)	Update			_	gramme f 28 Fel		- May 20 9))19	Date 04-Mar-19	Revis	sion Checke Robby Yeu	



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MTRC Shatin to Central Link Contract 1121 **NSL Cross Harbour Tunnel**



Data Date: 28-Feb-19 Proj ID: 1121-UP-52 Layout: 1121 - updated 3M Rolling Prog

Current Milestone Remaining Level of Effort ▼ Baseline Milestone (PMP Rev. 1a) 3M Rolling Prog (last month) Actual Work Critical Remaining Work Remaining Work

Baseline (PMP Rev.1a)

Updated 3M Rolling Programme Mar - May 2019 (Updated as of 28 Feb 2019)

Date	Revision	Checked	Approved
)4-Mar-19		Robby Yeung	John Mecleod

APPENDIX B ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

Derived Action and Limit Levels for Water Quality (Wet Season)

Parameters	Action Level	Limit Level									
WSD Salt Water Intak	e (Station 14, A, WSD9, WSD1	7)									
DO in mg/L	<2.1	<2									
SS in mg/L	6.0	6.0									
Turbidity in NTU	4.7	6.5									
Cooling Water Intake (Station 8, 9, 21 & 34)											
DO in mg/L	2.8	2.7									
SS in mg/L	6.9	9.1									
Turbidity in NTU	11.3	17.2									
GB3											
DO in mg/L	5.5	5.3									
SS in mg/L	4.5	4.5									
Turbidity in NTU	2.1	2.4									

Notes:

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

Derived Action and Limit Levels for Water Quality (Dry Season)

Parameters	Action Level	Limit Level									
WSD Salt Water Intak	e (Station 14, A, WSD9, WSD1	7)									
DO in mg/L	<2.1	<2									
SS in mg/L	6.9	6.9									
Turbidity in NTU	5.0	7.0									
Cooling Water Intake (Station 8, 9, 21 & 34)											
DO in mg/L	3.3	3.2									
SS in mg/L	8.0	10.4									
Turbidity in NTU	12.2	18.5									
GB3											
DO in mg/L	6.8	6.5									
SS in mg/L	9.3	9.3									
Turbidity in NTU	5.0	5.6									

Notes:

^{1.} For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

^{2.} For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

APPENDIX C WATER QUALITY MONITORING SCHEDULE

Shatin to Central Link - Contract No. 1121 NSL Cross Harbour Tunnels Impact Water Quality Monitoring Schedule (February 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Feb	2-Feb
					Mid-Ebb 10:36 Mid-Flood 15:41	
3-Feb	4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
		Mid-Flood 11:16 Mid-Ebb 17:52		Mid-Ebb 6:40 Mid-Flood 12:41		Mid-Ebb 9:34 Mid-Flood 14:42
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
	Mid-Ebb 11:33 Mid-Flood 16:54		Mid-Ebb 13:03 Mid-Flood 18:43		Mid-Flood 8:39 Mid-Ebb 14:26	
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
	Mid-Flood 10:31 Mid-Ebb 16:50		Mid-Ebb 6:24 Mid-Flood 12:02			

Water Quality Monitoring Stations

C1, C2, 9, 21, 34, A, WSD9, WSD17

Remark: 1) Reference was made to the tidal information of Hong Kong Observatory (Quarry Bay Station)

- 2) The reasons for choosing the monitoring day in which the tidal ranges are less than 0.5m include:
 - a) The tidal range of less than 0.5m occurs for 2 or more consecutive days
 - b) In compliance with the requirement of (i) three days per week at mid-ebb and mid-flood tide and (ii) the interval between two sets of monitoring not less than 36 hours

^{*} indicates that the tidal range of individual flood or ebb tide is less than 0.5m

Shatin to Central Link - Contract No. 1121 NSL Cross Harbour Tunnels

Tentative Impact Water Quality Monitoring Schedule (March 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday		
		•	•		1-Mar	2-Mar		
						Mid-Ebb 10:23 Mid-Flood 15:13		
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar		
		Mid-Ebb 12:14 Mid-Flood 17:31		Mid-Ebb 13:11 Mid-Flood 18:49		Mid-Flood 8:11 Mid-Ebb 14:09		
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar		
	Mid-Flood 9:04 Mid-Ebb 15:20		Mid-Flood 9:56 Mid-Ebb 16:47		Mid-Flood 11:33 Mid-Ebb 19:29	23-Mar		
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar		
	Mid-Ebb 10:34 Mid-Flood 15:49		Mid-Ebb 12:02 Mid-Flood 17:48		Mid-Flood 7:22 Mid-Ebb 13:19			
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar		
	Mid-Flood 9:00 Mid-Ebb 15:21		Mid-Flood 10:05 Mid-Ebb 17:17			Mid-Flood 8:27 Mid-Ebb N/A		
31-Mar								

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Water Quality Monitoring Stations

C1, C2, 9, 21, 34, A, WSD9, WSD17

Remark: 1) Reference was made to the tidal information of Hong Kong Observatory (Quarry Bay Station)

- 2) The reasons for choosing the monitoring day in which the tidal ranges are less than 0.5m include:
 - a) The tidal range of less than 0.5m occurs for 2 or more consecutive days
 - b) In compliance with the requirement of (i) three days per week at mid-ebb and mid-flood tide and (ii) the interval between two sets of monitoring not less than 36 hours

^{*} indicates that the tidal range of individual flood or ebb tide is less than 0.5m

APPENDIX D
WATER QUALITY MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS

Water Quality Monitoring Results at 21 - Mid-Ebb Tide

Date	Weather	Sea	Sampling	Depth (m)		Tempera	ture (°C)	ţ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	Turbidity(NTU)			Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	.11 (111)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.8 18.8	18.8	8.3 8.3	8.3	30.2 30.2	30.2	116.8 118.2	117.5	9.1 9.2	9.2		1.8 1.9	1.9		4	4.0	
1-Feb-19	Sunny	Calm	11:19	Middle	4	18.7 18.7	18.7	8.3 8.3	8.3	30.2 30.2	30.2	116.9 117.5	117.2	9.1 9.2	9.2	9.2	1.6 1.6	1.6	1.7	3	3.0	3.3
				Bottom	7	18.6 18.6	18.6	8.3 8.3	8.3	30.3 30.3	30.3	116.5 116.5	116.5	9.1 9.1	9.1		1.6 1.7	1.7		3	3.0	
				Surface	1	19.6 19.3	19.5	8.7 8.7	8.7	31.2 31.3	31.3	98.8 101.0	99.9	7.5 7.7	7.6		2.1 2.0	2.1		5 5	5.0	
12-Feb-19	Sunny	Moderate	16:54	Middle	4	19.3 19.2	19.3	8.7 8.7	8.7	31.3 31.4	31.4	99.5 100.1	99.8	7.6 7.7	7.7	7.7	2.5 2.5	2.5	2.4	6 6	6.0	5.7
				Bottom	7	19.2 19.2	19.2	8.7 8.7	8.7	31.4 31.4	31.4	100.5 100.5	100.5	7.7 7.7	7.7		2.6 2.5	2.6		6 6	6.0	
				Surface	1	19.4 19.4	19.4	8.4 8.3	8.4	30.7 30.9	30.8	94.4 96.4	95.4	7.2 7.4	7.3		0.6 0.6	0.6		3 3	3.0	
14-Feb-19	Cloudy	Moderate	07:08	Middle	4	19.4 19.4	19.4	8.4 8.3	8.4	30.9 30.9	30.9	96.0 97.0	96.5	7.4 7.4	7.4	7.4	0.6 0.6	0.6	0.6	3 3	3.0	3.3
				Bottom	7	19.4 19.4	19.4	8.4 8.4	8.4	30.9 30.9	30.9	96.9 97.0	97.0	7.4 7.4	7.4		0.7 0.7	0.7		4	4.0	
				Surface	1	19.4 19.4	19.4	8.2 8.2	8.2	32.0 32.0	32.0	102.2 103.2	102.7	7.8 7.9	7.9		0.8	0.8		8	8.0	
16-Feb-19	Sunny	Moderate	10:02	Middle	4	19.2 19.2	19.2	8.3 8.3 8.3	8.3	32.0 32.0 32.0	32.0	102.1 102.3 103.4	102.2	7.8 7.8 7.9	7.8	7.9	0.8 0.8 1.0	0.8	0.9	4 4 5	4.0	5.7
				Bottom	7	19.2 19.2	19.2	8.3	8.3	32.0	32.0	103.8	103.6	7.9	7.9		1.0	1.0		5	5.0	
				Surface	1	19.2 19.2	19.2	8.3 8.3	8.3	31.8 32.0	31.9	105.9 107.6	106.8	8.1 8.2	8.2	8.2	0.9 0.9	0.9	ĺ	6	6.0	
18-Feb-19	Rainy	Moderate	12:08	Middle	4	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.5 107.8	107.7	8.2 8.2	8.2		0.8	0.8	0.9	5 5	5.0	6.3
				Bottom	7	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	108.0 108.6	108.3	8.3 8.3	8.3		0.9	0.9		8	8.0	
				Surface	1	20.0	20.0	8.0	8.0	31.2 31.2	31.2	99.0 100.5	99.8	7.5 7.6	7.6		2.8	2.8		4	4.0	
20-Feb-19	Sunny	Moderate	13:53	Middle	4	19.9 20.0	20.0	8.1 8.0	8.1	31.2 31.2	31.2	100.1	100.2	7.6 7.6	7.6	7.6	2.6	2.7	2.8	5 5	5.0	7.0
				Bottom	7	19.8 19.9	19.9	8.1 8.0	8.1	31.3 31.3	31.3	100.4 100.5	100.5	7.6 7.6	7.6		3.0 2.9	3.0		12 12	12.0	
				Surface	1	20.1	20.2	8.1 8.1	8.1	31.0 30.9	31.0	98.1 98.6	98.4	7.4 7.5	7.5		0.6	0.6		9	9.5	
22-Feb-19	Fine	Moderate	13:38	Middle	4	19.9 20.0	20.0	8.1 8.1	8.1	31.1 31.1	31.1	98.2 98.0	98.1	7.5 7.4	7.5	7.5	0.6 0.6	0.6	0.6	6	6.0	6.8
				Bottom	7	19.8 19.8	19.8	8.1 8.1	8.1	31.2 31.2	31.2	98.8 98.7	98.8	7.5 7.5	7.5		0.5 0.5	0.5		5	5.0	
				Surface	1	19.6 19.6	19.6	8.4 8.2	8.3	31.2 31.2	31.2	97.6 97.2	97.4	7.4 7.4	7.4		2.4	2.4		5 5	5.0	
25-Feb-19	Cloudy	Moderate	16:00	Middle	4	19.6 19.6	19.6	8.4 8.3	8.4	31.3 31.3	31.3	97.2 96.8	97.0	7.4 7.4	7.4	7.4	2.3	2.4	2.4	4	4.0	5.2
				Bottom	7	19.5 19.5	19.5	8.3 8.3	8.3	31.4 31.4	31.4	98.1 97.3	97.7	7.5 7.4	7.5		2.3 2.2	2.3		6 7	6.5	
				Surface	1	19.3 19.3	19.3	8.1 8.1	8.1	31.4 31.6	31.5	86.6 92.1	89.4	6.6 7.0	6.8		2.5 2.5	2.5		7 8	7.5	6.3
27-Feb-19	Sunny	Moderate	07:20	Middle	4	19.2 19.3	19.3	8.1 8.1	8.1	31.7 31.7	31.7	90.5 91.4	91.0	6.9 7.0	7.0 7.0	2.5	2.5	2.6	2.7	6	6.0	
				Bottom	7	19.2 19.2	19.2	8.1 8.1	8.1	31.9 31.8	31.9	93.6 91.9	92.8	7.2 7.0	7.1		2.9 3.0	3.0		5 6	5.5	

Water Quality Monitoring Results at 21 - Mid-Flood Tide

D-4-	Weather	Sea	Sampling	Depth (m)		Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	urbidity(NTI	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition*	Time	Бері	ın (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.7 18.7	18.7	8.1 8.1	8.1	30.2 30.2	30.2	123.5 122.8	123.2	9.6 9.6	9.6		1.4 1.5	1.5		9	9.0	
1-Feb-19	Sunny	Calm	14:49	Middle	4	18.7 18.6	18.7	8.1 8.1	8.1	30.2 30.3	30.3	123.1 120.8	122.0	9.6 9.4	9.5	9.5	1.4 1.5	1.5	1.6	9	9.0	7.3
				Bottom	7	18.6 18.6	18.6	8.1 8.1	8.1	30.3 30.3	30.3	119.8 119.5	119.7	9.4 9.3	9.4		1.8 1.9	1.9		4	4.0	
				Surface	1	19.2 19.2	19.2	8.5 8.5	8.5	31.2 31.2	31.2	99.8 99.4	99.6	7.7 7.6	7.7		2.7 2.7	2.7		4 4	4.0	
12-Feb-19	Sunny	Moderate	11:24	Middle	4	19.2 19.2	19.2	8.5 8.5	8.5	31.2 31.2	31.2	98.9 99.0	99.0	7.6 7.6	7.6	7.6	2.6 2.6	2.6	2.7	4 4	4.0	4.3
				Bottom	7	19.1 19.1	19.1	8.5 8.5	8.5	31.2 31.2	31.2	98.9 99.1	99.0	7.6 7.6	7.6		2.7 2.7	2.7		5 5	5.0	
				Surface	1	19.7 19.7	19.7	8.3 8.3	8.3	30.8 30.8	30.8	99.0 98.9	99.0	7.6 7.6	7.6		0.7 0.7	0.7		8 7	7.5	
14-Feb-19	Sunny	Moderate	12:44	Middle	4	19.6 19.6	19.6	8.3 8.3	8.3	30.9 30.9	30.9	98.9 98.8	98.9	7.6 7.6	7.6	7.6	0.6 0.6	0.6	0.7	4 4	4.0	6.2
				Bottom	7	19.4 19.4	19.4	8.3 8.3	8.3	31.0 31.0	31.0	99.1 99.0	99.1	7.6 7.6	7.6		0.7 0.7	0.7		7 7	7.0	
				Surface	1	19.8 19.8	19.8	8.2 8.2	8.2	31.9 31.9	31.9	104.4 105.6	105.0	7.9 8.0	8.0		0.9 0.9	0.9		7 8	7.5	
16-Feb-19	Sunny	Moderate	13:59	Middle	4	19.7 19.5	19.6	8.2 8.2	8.2	31.9 31.9	31.9	104.8 105.3	105.1	7.9 8.0	8.0	8.0	0.9 0.9	0.9	1.0	4 4	4.0	5.8
				Bottom	7	19.3 19.3	19.3	8.2 8.2	8.2	32.0 32.0	32.0	105.0 105.3	105.2	8.0 8.0	8.0		1.3 1.3	1.3		6 6	6.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	108.0 108.0	108.0	8.3 8.3	8.3	0.9 1.0	1.0	1.0		8 9	8.5	
18-Feb-19	Rainy	Moderate	16:57	Middle	4	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.9 107.9	107.9	8.3 8.3	8.3	8.3	1.2 1.2	1.2	1.2	6	6.0	5.7
				Bottom	7	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	108.1 108.0	108.1	8.3 8.3	8.3		1.4 1.4	1.4		<2.5 <2.5	<2.5	
				Surface	1	20.1	20.1	8.1 8.1	8.1	31.0 31.0	31.0	103.9 103.6	103.8	7.9 7.8	7.9		2.7	2.7		3	3.0	
20-Feb-19	Cloudy	Moderate	17:53	Middle	4	20.1	20.1	8.1 8.1	8.1	31.0 31.0 31.0	31.0	103.9 103.9 102.8	103.9	7.9 7.9	7.9	7.9	2.6	2.6	2.7	6	6.0	4.3
				Bottom	7	20.1	20.1	8.1 8.1	8.1	31.0	31.0	102.6	102.7	7.8 7.8	7.8		2.7 2.7	2.7		4 4	4.0	
				Surface	1	20.1 20.0 20.1	20.1	8.2 8.1 8.1	8.2	30.9 30.9 30.9	30.9	98.4 98.3 98.1	98.4	7.5 7.5 7.4	7.5		0.8 0.8 0.9	0.8		6 6	6.0	
22-Feb-19	Fine	Moderate	09:16	Middle	4	20.1	20.1	8.1 8.1	8.1	30.9 30.9	30.9	98.1 98.1 97.8	98.1	7.4 7.4 7.4	7.4	7.4	0.9	0.9	0.9	6	6.0	7.3
				Bottom	7	20.1	20.1	8.1 8.1	8.1	30.9 31.0	30.9	97.8 97.8	97.8	7.4	7.4		0.9	0.9		10	10.0	
				Surface	1	19.6 19.6	19.7	8.1 8.1	8.1	31.1 31.1	31.1	95.4 95.9	95.8	7.3 7.3	7.3	_	2.5	2.5		9	9.0	_
25-Feb-19	Cloudy	Moderate	11:20	Middle	4	19.6 19.6	19.6	8.1 8.1	8.1	31.1 31.1	31.1	95.4 95.3	95.7	7.3 7.3	7.3	7.3	2.5	2.5	2.5	10	10.0	7.3
				Bottom	7	19.6	19.6	8.1 8.1	8.1	31.1 31.7	31.1	95.2 94.9	95.3	7.3	7.3		2.5	2.6		3 5	3.0	
07.5 1.42	0	Made	40.04	Surface	1	19.5 19.4	19.5	8.1 8.1	8.1	31.7 31.8	31.7	95.3 94.1	95.1	7.3 7.2		7.3	3.1	3.1		5 5	5.0	. .
27-Feb-19	Sunny	Moderate	12:04	Middle	4	19.3 19.3	19.4	8.1	8.1	31.8 31.8	31.8	94.3 94.5	94.2	7.2			2.9	3.0	6	6.0	5.3	
		<u> </u>		Bottom	7	19.3	19.3	8.1	8.1	31.8	31.8	94.4	94.5	7.2	7.2		3.0	3.0		5	5.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.

The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

Water Quality Monitoring Results at 34 - Mid-Ebb Tide

D-4-	Weather	Sea	Sampling	Depth (m)		Tempera	Temperature (°C) pH			Salin	ity ppt	DO Satu	ıration (%)	Disso	ved Oxygen	(mg/L)		Turbidity(NTI	Turbidity(NTU)			(mg/L)
Date	Condition	Condition**	Time	Depti	n (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.7 18.7	18.7	8.2 8.2	8.2	29.8 29.8	29.8	102.6 102.7	102.7	8.0 8.0	8.0		4.2 4.2	4.2		6 6	6.0	
1-Feb-19	Sunny	Calm	10:58	Middle	-		-	-	-	-	-	-	-	-	-	8.0	-	-	4.1	-	-	5.8
				Bottom	2.5	18.7 18.7	18.7	8.2 8.3	8.3	30.2 30.2	30.2	101.5 101.7	101.6	7.9 7.9	7.9		4.1 3.9	4.0		5 6	5.5	
				0 (_	19.3	40.0	8.7	0.7	31.3	04.0	101.2	404.0	7.8	7.0		2.9	0.0		9	0.0	
	_			Surface	1	19.2	19.3	8.7	8.7	31.3	31.3	101.4	101.3	7.8	7.8		2.8	2.9		9	9.0	
12-Feb-19	Sunny	Moderate	17:00	Middle	-	- 19.2	-	8.7	-	31.3	-	- 101.3	-	7.8	-	7.8	3.1	-	3.0	<u>-</u> 5	-	7.0
				Bottom	3.6	19.2	19.2	8.7	8.7	31.3	31.3	101.4	101.4	7.8	7.8		3.0	3.1		5	5.0	
				Surface	1	19.5 19.5	19.5	8.4 8.4	8.4	30.7 30.7	30.7	93.9 94.0	94.0	7.2 7.2	7.2		0.8 0.8	0.8		6 6	6.0	
14-Feb-19	Cloudy	Moderate	06:56	Middle	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	0.8	-	-	4.3
				Bottom	2.5	19.4 19.5	19.5	8.4 8.4	8.4	30.8 30.8	30.8	93.9 93.6	93.8	7.2 7.2	7.2		0.7 0.7	0.7		<2.5 <2.5	<2.5	
				Surface	1	21.2 21.3	21.3	8.2 8.2	8.2	32.6 32.5	32.6	102.9 103.0	103.0	7.6 7.6	7.6		2.1 2.0	2.1		8 8	8.0	
16-Feb-19	Sunny	Moderate	09:49	Middle	-		-	-	-	-	-	-	-	-	-	7.5	-	-	2.0	-	-	7.3
				Bottom	2.5	20.4 20.4	20.4	8.2 8.2	8.2	32.1 32.1	32.1	98.9 98.9	98.9	7.4 7.4	7.4		1.7 1.8	1.8		6 7	6.5	
				Surface	1	18.7 18.7	18.7	8.3 8.3	8.3	31.9 31.9	31.9	100.7 100.6	100.7	7.8 7.8	7.8		2.0 2.0	2.0		6	6.0	6.0
18-Feb-19	Rainy	Moderate	11:49	Middle	-	-	-	-	-		-		-	-	-	7.8	-	-	1.8	-	-	
				Bottom	2.5	18.8 18.8	18.8	8.3 8.3	8.3	32.0 32.0	32.0	100.7 100.7	100.7	7.8 7.8	7.8		1.4 1.5	1.5		6 6	6.0	
				Surface	1	20.0 20.0	20.0	8.2 8.3	8.3	31.2 31.2	31.2	99.1 99.7	99.4	7.5 7.6	7.6		2.6 2.6	2.6		6	6.0	6.5
20-Feb-19	Sunny	Moderate	13:46	Middle	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	2.6	-	-	
				Bottom	3.6	19.9 20.0	20.0	8.2 8.2	8.2	31.2 31.2	31.2	99.5 99.5	99.5	7.5 7.5	7.5		2.6 2.6	2.6		7	7.0	
				Surface	1	20.3	20.3	8.2 8.2	8.2	31.0 31.1	31.1	100.6 100.9	100.8	7.6 7.6	7.6		0.7 0.7	0.7		6 7	6.5	
22-Feb-19	Fine	Moderate	13:53	Middle	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	0.7	-	-	6.3
				Bottom	2.6	20.3 20.3	20.3	8.2 8.2	8.2	31.1 31.1	31.1	100.7 100.6	100.7	7.6 7.6	7.6		0.7 0.7	0.7		6	6.0	
				Surface	1	19.6 19.6	19.6	8.4 8.4	8.4	31.2 31.2	31.2	96.3 97.9	97.1	7.3 7.5	7.4		2.4	2.4		4 4	4.0	
25-Feb-19	Cloudy	Moderate	16:08	Middle	-	-	-	-	-	-	-	-	-		-	7.4	-	-	2.4	-	-	6.5
				Bottom	3.6	19.6 19.6	19.6	8.4 8.4	8.4	31.3 31.3	31.3	97.2 97.6	97.4	7.4 7.4	7.4		2.4 2.3	2.4		9	9.0	
				Surface	1	19.2 19.2	19.2	8.1 8.1	8.1	31.7 31.7	31.7	93.5 93.4	93.5	7.2 7.2	7.2		3.1	3.1		9	9.0	7.5
27-Feb-19	Sunny	Moderate	te 07:10	Middle	-	-	-	-	-	-	-	-	-	-	-		-	-	3.1	-	-	
				Bottom	3.5	19.2 19.2	19.2	8.1 8.1	8.1	31.8 31.8	31.8	93.3 93.2	93.3	7.1 7.1	7.1		3.1 3.1	3.1	1	6	6.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.

The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

Water Quality Monitoring Results at 34 - Mid-Flood Tide

Date	Weather	Sea	Sampling	Dont	h (m)	Tempera	ture (°C)	F	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	Turbidity(NT	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	(!!!)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.7 18.7	18.7	8.1 8.1	8.1	30.2 30.2	30.2	118.7 120.9	119.8	9.3 9.4	9.4		2.9 2.9	2.9		6 6	6.0	
1-Feb-19	Sunny	Calm	15:04	Middle	-	-	-	-	-	-	-	-	-	-	-	9.4	-	-	2.9	-	-	5.5
				Bottom	2.6	18.7 18.7	18.7	8.2 8.1	8.2	30.2 30.2	30.2	120.0 121.1	120.6	9.4 9.4	9.4		2.8 2.8	2.8		5 5	5.0	
				Surface	1	19.5 19.2	19.4	8.6 8.6	8.6	31.1 31.1	31.1	98.9 99.0	99.0	7.6 7.6	7.6		2.5 2.6	2.6		4 5	4.5	
12-Feb-19	Sunny	Moderate	11:18	Middle	-	-	-	-	-	-	-	-	-		-	7.6	-	-	2.8	-	-	4.3
				Bottom	3.6	19.2 19.2	19.2	8.6 8.6	8.6	31.1 31.1	31.1	98.6 99.1	98.9	7.6 7.6	7.6		3.0 2.9	3.0		4 4	4.0	
				Surface	1	21.2 21.2	21.2	8.4 8.4	8.4	31.0 31.0	31.0	97.6 97.7	97.7	7.2 7.2	7.2		2.9 2.9	2.9		4 4	4.0	
14-Feb-19	Sunny	Moderate	12:57	Middle	-	-	-	-	-		-	-	-	-	-	7.3	-	-	2.6	-	-	5.8
				Bottom	2.5	20.4 20.4	20.4	8.4 8.4	8.4	30.9 30.9	30.9	97.2 97.1	97.2	7.3 7.3	7.3		2.2 2.2	2.2		7 8	7.5	
				Surface	1	20.3 20.3	20.3	8.2 8.2	8.2	32.0 32.0	32.0	100.0 100.0	100.0	7.5 7.5	7.5		1.7 1.7	1.7		6 6	6.0	
16-Feb-19	Sunny	Moderate	14:15	Middle	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	1.7	-	-	7.0
				Bottom	2.5	20.3 20.3	20.3	8.2 8.2	8.2	32.0 32.0	32.0	99.4 99.3	99.4	7.5 7.5	7.5		1.5 1.6	1.6		8 8	8.0	
				Surface	1	18.9 18.9	18.9	8.3 8.3	8.3	32.0 32.0	32.0	101.0 100.9	101.0	7.8 7.8	7.8		1.6 1.5	1.6		7 7	7.0	
18-Feb-19	Rainy	Moderate	17:13	Middle	-	1 1	-	-	-	1 1	-	1 1	-	-	-	7.8	-	-	1.7	-	-	6.8
				Bottom	2.5	18.9 18.9	18.9	8.3 8.3	8.3	32.0 32.0	32.0	101.2 101.1	101.2	7.8 7.8	7.8		1.7 1.7	1.7		7 6	6.5	
				Surface	1	20.1 20.1	20.1	8.1 8.1	8.1	31.1 31.1	31.1	102.2 102.5	102.4	7.7 7.7	7.7		2.6 2.6	2.6		6 6	6.0	
20-Feb-19	Cloudy	Moderate	18:00	Middle	-	-	-	-	-		-		-	-	-	7.7	-	-	2.6	-	-	6.5
				Bottom	3.6	20.1 20.1	20.1	8.1 8.1	8.1	31.1 31.1	31.1	102.4 102.5	102.5	7.7 7.7	7.7		2.6 2.5	2.6		7 7	7.0	
				Surface	1	20.3 20.3	20.3	8.2 8.2	8.2	30.6 30.6	30.6	97.8 97.1	97.5	7.4 7.3	7.4		1.9 1.8	1.9		5 5	5.0	
22-Feb-19	Fine	Moderate	09:03	Middle	-	-	-	-	-		-	-	-	-	-	7.4	-	-	1.9	-	-	4.0
				Bottom	2.6	20.3 20.3	20.3	8.2 8.1	8.2	30.6 30.6	30.6	97.1 97.0	97.1	7.3 7.3	7.3		1.9 1.9	1.9		3	3.0	
				Surface	1	19.8 19.8	19.8	8.1 8.0	8.1	30.8 30.9	30.9	96.5 94.5	95.5	7.4 7.2	7.3		2.4 2.5	2.5		5 5	5.0	
25-Feb-19	Cloudy	Moderate	11:14	Middle	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	2.5	-	-	5.0
				Bottom	3.6	19.7 19.8	19.8	8.1 8.0	8.1	31.0 30.9	31.0	94.6 94.7	94.7	7.2 7.2	7.2		2.5 2.5	2.5		5 5	5.0	
				Surface	1	19.5 19.4	19.5	8.1 8.1	8.1	31.7 31.7	31.7	94.9 94.9	94.9	7.2 7.2	7.2		3.1 3.1	3.1		6 6	6.0	
27-Feb-19	Sunny	Moderate	12:14	Middle	-	-	-	-	-		-	-	-	-	-	7.3	-	-	3.1	-	-	7.5
				Bottom	3.5	19.3 19.3	19.3	8.1 8.1	8.1	31.7 31.7	31.7	94.8 94.9	94.9	7.2 7.3	7.3		3.1 3.1	3.1		9 9	9.0	

Water Quality Monitoring Results at 9 - Mid-Ebb Tide

Date	Weather	Sea	Sampling	Dont	h (m)	Tempera	ature (°C)	ŀ	ЭΗ	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	Turbidity(NT	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	11 (111)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	-	-	-	-	-		-		-	-	-		-	-		-	-	
1-Feb-19	Sunny	Calm	11:59	Middle	1.1	19.0 19.0	19.0	8.1 8.0	8.1	29.7 29.7	29.7	105.6 105.8	105.7	8.2 8.2	8.2	8.2	1.8 1.8	1.8	1.8	5 5	5.0	5.0
				Bottom	-	-	-	-	-	-	-		-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
12-Feb-19	Sunny	Moderate	16:25	Middle	1	19.7 19.7	19.7	8.8 8.8	8.8	30.6 30.6	30.6	92.5 91.9	92.2	7.1 7.0	7.1	7.1	2.6 2.5	2.6	2.6	7 7	7.0	7.0
				Bottom	-	-	-	-	-		-	1 1	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
14-Feb-19	Cloudy	Moderate	08:03	Middle	1	19.7 19.6	19.7	8.3 8.3	8.3	30.5 30.6	30.6	80.8 81.8	81.3	6.2 6.3	6.3	6.3	1.0 1.0	1.0	1.0	5 5	5.0	5.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	1 1	-	1 1	-	-	-		-	-		-	ı	
16-Feb-19	Sunny	Moderate	10:49	Middle	1.1	19.5 19.5	19.5	8.2 8.2	8.2	31.6 31.5	31.6	89.6 89.4	89.5	6.8 6.8	6.8	6.8	2.3 2.4	2.4	2.4	5 5	5.0	5.0
				Bottom	-	-	-	<u>-</u>	-	-	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-		-		-	-	-		-	-			-	
18-Feb-19	Rainy	Moderate	12:53	Middle	1	19.3 19.2	19.3	8.3 8.3	8.3	31.7 31.7	31.7	101.0 101.0	101.0	7.7 7.7	7.7	7.7	1.1 1.0	1.1	1.1	5 5	5.0	5.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-		-		-	-	-		-	-		-	-	
20-Feb-19	Sunny	Moderate	14:31	Middle	1	20.3 20.3	20.3	8.1 8.1	8.1	30.6 30.7	30.7	94.2 94.7	94.5	7.1 7.2	7.2	7.2	3.1 3.0	3.1	3.1	5 5	5.0	5.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	1 1	-	1 1	-	-	-			-			ı	
22-Feb-19	Fine	Moderate	13:00	Middle	1.1	20.7 20.7	20.7	8.1 8.1	8.1	29.5 29.6	29.6	90.1 89.1	89.6	6.8 6.7	6.8	6.8	0.8 0.8	0.8	0.8	4 4	4.0	4.0
				Bottom	-	-	-	-	-	1 1	-	1 1	-	-	-		-	-		-	-	
			_	Surface	-	-	-	-	-		-	-	-	-	-		-	-		-	-	
25-Feb-19	Cloudy	Moderate	15:21	Middle	1.1	19.8 19.8	19.8	8.2 8.2	8.2	30.6 30.6	30.6	85.9 82.2	84.1	6.5 6.3	6.4	6.4	2.5 2.4	2.5	2.5	4 4	4.0	4.0
				Bottom	-	-	-	-	-	1 1	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	1 1	-	1 1	-	-	-		-	-		-	-	
27-Feb-19	Sunny	Moderate	07:52	Middle	1	19.4 19.4	19.4	8.0 8.0	8.0	31.0 31.0	31.0	77.0 75.9	76.5	5.9 5.8	5.9	5.9	2.9 3.0	3.0	3.0	3 3	3.0	3.0
				Bottom	-	-	-	-	-	-	-		-	-	-		-	-		-	-	

Water Quality Monitoring Results at 9 - Mid-Flood Tide

Date	Weather	Sea	Sampling	Dept	h (m)	Tempera	iture (°C)	р	Н	Salin	ity ppt	DO Satu	ration (%)	Disso	ved Oxygen	(mg/L)	7	Turbidity(NTl	J)	Suspe	ended Solids	(mg/L)
Date	Condition	Condition*	Time	Бері	11 (111)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	-	-	-	-	-		-		-	-	-		-	-		-	-	
1-Feb-19	Sunny	Calm	14:13	Middle	1.1	19.1 19.1	19.1	8.1 8.1	8.1	29.7 29.7	29.7	108.2 108.9	108.6	8.4 8.5	8.5	8.5	1.8 1.9	1.9	1.9	7 7	7.0	7.0
				Bottom	-	-	-	-	-		-		-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
12-Feb-19	Sunny	Moderate	11:55	Middle	1.1	19.4 19.4	19.4	8.4 8.4	8.4	30.5 30.6	30.6	84.9 83.8	84.4	6.5 6.4	6.5	6.5	3.3 3.2	3.3	3.3	3 3	3.0	3.0
				Bottom	-	-	-	-	-		-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
14-Feb-19	Sunny	Moderate	11:57	Middle	1.1	20.0 20.0	20.0	8.3 8.3	8.3	30.4 30.4	30.4	81.8 81.0	81.4	6.2 6.2	6.2	6.2	0.7 0.7	0.7	0.7	7 7	7.0	7.0
				Bottom	-	-	-	-	-		-		-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	=	
16-Feb-19	Sunny	Moderate	13:15	Middle	1.1	19.9 19.9	19.9	8.2 8.2	8.2	31.7 31.7	31.7	87.4 87.1	87.3	6.6 6.6	6.6	6.6	1.4 1.2	1.3	1.3	4 4	4.0	4.0
				Bottom	-		-	-	-		-		-	-	-			-			-	
				Surface	-		-	-	-	-	-	-	-	-	-		-	-		-	-	
18-Feb-19	Rainy	Moderate	16:15	Middle	1.1	19.3 19.2	19.3	8.3 8.3	8.3	31.6 31.6	31.6	90.9 90.8	90.9	7.0 7.0	7.0	7.0	1.3 1.3	1.3	1.3	6 6	6.0	6.0
				Bottom	-	-	-	-	-		-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
20-Feb-19	Cloudy	Moderate	17:16	Middle	1.1	20.6 20.6	20.6	7.9 7.9	7.9	30.6 30.6	30.6	90.3 90.4	90.4	6.8 6.8	6.8	6.8	2.9 2.9	2.9	2.9	6 6	6.0	6.0
				Bottom	-	-	-	-	-		-		-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
22-Feb-19	Fine	Moderate	09:57	Middle	1	20.4 20.4	20.4	8.0 8.0	8.0	30.4 30.5	30.5	68.1 67.4	67.8	5.1 5.1	5.1	5.1	1.6 1.6	1.6	1.6	6 6	6.0	6.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
25-Feb-19	Cloudy	Moderate	11:55	Middle	1.1	19.8 19.8	19.8	8.1 8.1	8.1	30.5 30.5	30.5	77.7 77.4	77.6	5.9 5.9	5.9	5.9	2.7 2.7	2.7	2.7	6 6	6.0	6.0
				Bottom	-	-	-	-	-	1 1	-	-	-	-	-		-	-		-	-	
				Surface	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
27-Feb-19	Sunny	Moderate	11:33	Middle	1.1	19.7 19.7	19.7	7.9 7.9	7.9	31.2 31.2	31.2	73.3 74.1	73.7	5.6 5.6	5.6	5.6	3.5 3.7	3.6	3.6	5 5	5.0	5.0
				Bottom	-	-	-	-	-	-	-	-	-		-		-	-		-	-	1

Water Quality Monitoring Results at A - Mid-Ebb Tide

Dete	Weather	Sea	Sampling	Dont	H- ()	Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	urbidity(NTI	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition*	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.9 18.9	18.9	8.1 8.1	8.1	30.0 29.9	30.0	108.1 110.3	109.2	8.4 8.6	8.5		2.2 1.9	2.1		7 6	6.5	
1-Feb-19	Sunny	Calm	11:48	Middle	3.5	18.7 18.8	18.8	8.1 8.1	8.1	30.2 30.1	30.2	110.5 110.6 109.4	110.0	8.6 8.5	8.6	8.6	1.9 1.9 1.9	1.9	1.9	5	5.0	5.8
				Bottom	6	18.7 18.6	18.7	8.2 8.2	8.2	30.2 30.2	30.2	111.0 111.7	111.4	8.7 8.7	8.7		1.7	1.8		6	6.0	
				Surface	1	19.6 19.5	19.6	8.8 8.8	8.8	31.1 31.2	31.2	99.8 100.0	99.9	7.6 7.6	7.6		2.8 2.6	2.7		4 4	4.0	
12-Feb-19	Sunny	Moderate	16:32	Middle	3.5	19.4 19.4	19.4	8.8 8.8	8.8	31.2 31.2	31.2	99.5 99.5	99.5	7.6 7.6	7.6	7.6	2.6 2.6	2.6	2.7	3	3.0	4.8
				Bottom	6	19.3 19.3	19.3	8.8 8.8	8.8	31.2 31.3	31.3	99.2 99.3	99.3	7.6 7.6	7.6		2.7 2.6	2.7		8 7	7.5	
				Surface	1	19.5 19.5	19.5	8.2 8.2	8.2	30.6 30.3	30.5	93.6 91.3	92.5	7.2 7.0	7.1		0.6 0.6	0.6		5 5	5.0	
14-Feb-19	Cloudy	Moderate	07:46	Middle	3.5	19.5 19.5	19.5	8.2 8.2	8.2	30.7 30.7	30.7	93.2 92.7	93.0	7.1 7.1	7.1	7.2	0.5 0.5	0.5	0.5	6	6.0	5.0
				Bottom	6	19.4 19.4	19.4	8.2 8.3	8.3	30.8 30.8	30.8	94.9 94.6	94.8	7.3 7.3	7.3		0.5 0.5	0.5		4 4	4.0	
				Surface	1	19.6 19.6	19.6	8.2 8.2	8.2	31.7 31.5	31.6	100.1 100.3	100.2	7.6 7.6	7.6		0.9 1.1	1.0		10 9	9.5	
16-Feb-19	Sunny	Moderate	10:39	Middle	3.5	19.4 19.4	19.4	8.2 8.2	8.2	31.8 31.8	31.8	100.7 100.9	100.8	7.7 7.7	7.7	7.7	0.9 0.9	0.9	0.9	4 4	4.0	6.8
				Bottom	6	19.3 19.3	19.3	8.3 8.2	8.3	31.9 31.9	31.9	101.4 101.5	101.5	7.8 7.8	7.8		0.9 0.9	0.9		7 7	7.0	
				Surface	1	19.3 19.3	19.3	8.2 8.3	8.3	31.7 31.6	31.7	103.1 102.7	102.9	7.9 7.9	7.9		0.9 0.9	0.9		5 5	5.0	
18-Feb-19	Rainy	Moderate	12:42	Middle	3.5	19.2 19.2	19.2	8.3 8.3	8.3	32.0 32.1	32.1	106.9 107.2	107.1	8.2 8.2	8.2	8.1	0.7 0.7	0.7	0.7	7 7	7.0	5.5
				Bottom	6	19.2 19.1	19.2	8.3 8.3	8.3	32.1 32.1	32.1	107.5 107.6	107.6	8.2 8.2	8.2		0.6 0.6	0.6		5 4	4.5	
				Surface	1	20.3 20.2	20.3	8.1 8.1	8.1	31.0 31.0	31.0	98.3 99.8	99.1	7.4 7.5	7.5		2.8 2.8	2.8		4 4	4.0	
20-Feb-19	Sunny	Moderate	14:23	Middle	3.5	20.1	20.1	8.1 8.1	8.1	31.1 31.0	31.1	99.7 99.1	99.4	7.5 7.5	7.5	7.5	2.6	2.7	2.7	4	4.0	4.0
				Bottom	6	20.0 20.1	20.1	8.1 8.1	8.1	31.1 31.1	31.1	99.5 99.3	99.4	7.5 7.5	7.5		2.7 2.7	2.7		4	4.0	
				Surface	1	20.2	20.2	8.1 8.1	8.1	30.9 30.9	30.9	101.0 101.9	101.5	7.6 7.7	7.7		0.6	0.6		7	7.0	
22-Feb-19	Fine	Moderate	13:08	Middle	3.5	20.0	20.1	8.1 8.1	8.1	31.0 30.9	31.0	101.9	101.8	7.7 7.7	7.7	7.7	0.5 0.5	0.5	0.6	6	6.0	6.3
				Bottom	6	19.9 19.9	19.9	8.1 8.1	8.1	31.1 31.1	31.1	101.6 101.7	101.7	7.7 7.7	7.7		0.6 0.6	0.6		6	6.0	
				Surface	1	19.7 19.7	19.7	8.2 8.3	8.3	31.0 31.1	31.1	97.3 95.8	96.6	7.4 7.3	7.4		2.5	2.4		7	7.0	
25-Feb-19	Cloudy	Moderate	15:28	Middle	3.5	19.7 19.7	19.7	8.2 8.3	8.3	31.1 31.1	31.1	95.7 95.7	95.7	7.3 7.3	7.3	7.3	2.3	2.3	2.3	7	7.0	6.3
				Bottom	6	19.6 19.7	19.7	8.3 8.3	8.3	31.1 31.1	31.1	95.5 95.6	95.6	7.3 7.3	7.3		2.3	2.3		5	5.0	
				Surface	1	19.3 19.3	19.3	8.1 8.1	8.1	31.7 31.7	31.7	94.3 92.5	93.4	7.2 7.1	7.2		2.7	2.7		9	9.0	
27-Feb-19	Sunny	Moderate	07:44	Middle	3.5	19.2 19.3 19.2	19.3	8.1 8.1	8.1	31.7 31.7	31.7	93.1 92.5 92.9	92.8	7.1 7.1 7.1	7.1	7.1	2.5 2.5 2.5	2.5	2.6	4 4 5	4.0	6.0
				Bottom	6	19.2	19.2	8.1 8.1	8.1	31.8 31.8	31.8	92.9	92.6	7.1 7.1	7.1		2.5	2.5		5 5	5.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.

Water Quality Monitoring Results at A - Mid-Flood Tide

Date	Weather	Sea	Sampling	Dont	h (m)	Tempera	ture (°C)	F	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	Turbidity(NT	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	11 (111)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.9 18.9	18.9	8.4 8.4	8.4	30.0 30.1	30.1	112.8 115.0	113.9	8.8 9.0	8.9		1.9 1.9	1.9		6 6	6.0	
1-Feb-19	Sunny	Calm	14:21	Middle	3.5	18.8 18.6	18.7	8.4 8.4	8.4	30.1 30.2	30.2	113.6 114.0	113.8	8.9 8.9	8.9	8.9	1.6 1.5	1.6	1.7	5 5	5.0	5.7
				Bottom	6	18.6 18.6	18.6	8.4 8.4	8.4	30.2 30.3	30.3	113.0 113.3	113.2	8.8 8.9	8.9		1.6 1.6	1.6		6 6	6.0	
				Surface	1	19.2 19.2	19.2	8.4 8.5	8.5	31.0 31.0	31.0	99.0 98.1	98.6	7.6 7.6	7.6		3.2 3.2	3.2		8 8	8.0	
12-Feb-19	Sunny	Moderate	11:47	Middle	3.5	19.2 19.2	19.2	8.4 8.4	8.4	31.0 31.1	31.1	97.4 97.5	97.5	7.5 7.5	7.5	7.6	3.2 3.0	3.1	3.0	4 5	4.5	5.7
				Bottom	6	19.2 19.2	19.2	8.5 8.5	8.5	31.2 31.2	31.2	98.7 98.8	98.8	7.6 7.6	7.6		2.8 2.8	2.8		5 4	4.5	
				Surface	1	19.6 19.5	19.6	8.2 8.2	8.2	30.7 30.8	30.8	96.1 96.7	96.4	7.3 7.4	7.4		0.6 0.6	0.6		4 5	4.5	
14-Feb-19	Sunny	Moderate	12:04	Middle	3.5	19.4 19.4	19.4	8.2 8.2	8.2	30.9 30.9	30.9	97.5 97.9	97.7	7.5 7.5	7.5	7.5	0.5 0.5	0.5	0.6	4 4	4.0	4.2
				Bottom	6	19.4 19.4	19.4	8.1 8.1	8.1	31.0 31.0	31.0	98.8 98.8	98.8	7.6 7.6	7.6		0.7 0.7	0.7		4	4.0	
				Surface	1	19.7 19.8	19.8	8.2 8.2	8.2	31.7 31.6	31.7	100.0 101.7	100.9	7.6 7.7	7.7		1.0 1.0	1.0		5 4	4.5	
16-Feb-19	Sunny	Moderate	13:25	Middle	3.5	19.6 19.5	19.6	8.2 8.2	8.2	31.8 31.8	31.8	101.6 102.0	101.8	7.7 7.8	7.8	7.8	1.0	1.0	1.2	6	6.0	6.2
				Bottom	6	19.4 19.3	19.4	8.2 8.2	8.2	31.9 31.9	31.9	102.2 102.0	102.1	7.8 7.8	7.8		1.5 1.5	1.5		8	8.0	
				Surface	1	19.2 19.2	19.2	8.3 8.3	8.3	31.6 31.5	31.6	101.2 102.4	101.8	7.8 7.9	7.9		1.4 1.4	1.4		7 7	7.0	
18-Feb-19	Rainy	Moderate	16:23	Middle	3.5	19.2 19.2	19.2	8.3 8.3	8.3	31.8 31.8	31.8	101.6 102.4	102.0	7.8 7.8	7.8	7.9	1.1	1.1	1.3	5 5	5.0	6.3
				Bottom	6	19.2 19.2	19.2	8.3 8.3	8.3	31.9 31.9	31.9	102.8 102.9	102.9	7.9 7.9	7.9		1.3 1.3	1.3		7	7.0	
				Surface	1	20.6 20.4	20.5	8.2 8.2	8.2	30.1 30.4	30.3	105.0 106.4	105.7	7.9 8.0	8.0		3.1	3.1		5 5	5.0	
20-Feb-19	Cloudy	Moderate	17:23	Middle	3.5	20.4	20.4	8.2 8.2	8.2	30.6 30.4	30.5	106.9 105.9	106.4	8.1 8.0	8.1	8.0	2.8 3.0	2.9	3.0	5 4	4.5	6.5
				Bottom	6	20.3	20.3	8.2 8.2	8.2	30.6 30.7	30.7	106.6 105.8	106.2	8.0	8.0		2.8 2.9	2.9		10 10	10.0	
				Surface	1	20.2	20.2	8.1 8.1	8.1	30.8 30.8	30.8	98.7 97.6	98.2	7.5 7.4	7.5		0.7	0.7		5 5	5.0	
22-Feb-19	Fine	Moderate	09:46	Middle	3.5	20.2	20.2	8.1 8.1	8.1	30.8 30.8	30.8	97.8 97.5	97.7	7.4 7.4	7.4	7.4	0.7	0.7	0.7	5	5.0	6.7
				Bottom	6	20.1	20.1	8.1 8.1	8.1	30.8 30.8	30.8	97.5 97.5	97.5	7.4 7.4	7.4		0.8	0.8		10 10	10.0	
				Surface	1	19.7 19.6	19.7	8.1 8.2	8.2	31.0 31.1	31.1	94.2 96.1	95.2	7.2 7.3	7.3		2.6	2.7		6	6.0	
25-Feb-19	Cloudy	Moderate	11:47	Middle	3.5	19.6 19.6	19.6	8.1 8.2	8.2	31.1 31.1	31.1	94.6 95.7	95.2	7.2 7.3	7.3	7.3	2.6	2.7	2.7	10 10	10.0	6.7
				Bottom	6	19.6 19.6	19.6	8.2 8.2	8.2	31.2 31.2	31.2	95.5 95.6	95.6	7.3 7.3	7.3		2.6 2.7	2.7		4	4.0	
				Surface	1	19.6 19.6	19.6	8.0 8.1	8.1	31.3 31.3	31.3	93.8 94.2	94.0	7.1 7.2	7.2		2.7	2.8		4	4.0	
27-Feb-19	Sunny	Moderate	11:40	Middle	3.5	19.5 19.5	19.5	8.1 8.1	8.1	31.5 31.5	31.5	93.2 93.0	93.1	7.1 7.1	7.1	7.2	2.7	2.8	2.8	8	8.0	5.3
				Bottom	6	19.3 19.4	19.4	8.1 8.1	8.1	31.7 31.6	31.7	94.0 93.6	93.8	7.2 7.2	7.2		2.8 2.8	2.8		4	4.0	

Water Quality Monitoring Results at C1 - Mid-Ebb Tide

Dete	Weather	Sea	Sampling	Dont	Hr ()	Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	urbidity(NTI	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition*	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.8	18.8	8.3 8.3	8.3	30.1 30.1	30.1	111.3 113.7	112.5	8.7 8.9	8.8		1.8	1.7		7 7	7.0	
1-Feb-19	Sunny	Calm	11:34	Middle	6.5	18.8 18.7 18.7	18.7	8.3 8.3	8.3	30.2 30.2	30.2	113.7 113.9 112.9	113.4	8.9 8.8	8.9	8.9	1.6 1.8 1.9	1.9	1.8	7 8	7.5	6.3
				Bottom	12	18.7 18.7	18.7	8.3 8.3	8.3	30.2 30.2	30.2	115.0 114.7	114.9	9.0 8.9	9.0		1.8 1.7	1.8		4 5	4.5	
				Surface	1	19.6 19.6	19.6	8.8 8.8	8.8	31.2 31.2	31.2	103.0 104.7	103.9	7.9 8.0	8.0		2.4 2.5	2.5		4 4	4.0	
12-Feb-19	Sunny	Moderate	16:42	Middle	6.5	19.4 19.5	19.5	8.8 8.8	8.8	31.3 31.3	31.3	104.2 104.4	104.3	8.0 8.0	8.0	8.0	2.3 2.5	2.4	2.5	3 4	3.5	4.0
				Bottom	12	19.3 19.4	19.4	8.8 8.8	8.8	31.3 31.3	31.3	103.8 104.3	104.1	8.0 8.0	8.0		2.4 2.5	2.5		4 5	4.5	
				Surface	1	19.4 19.4	19.4	8.3 8.2	8.3	30.8 30.8	30.8	96.9 96.6	96.8	7.4 7.4	7.4		0.5 0.5	0.5		5 5	5.0	
14-Feb-19	Cloudy	Moderate	07:26	Middle	6.5	19.4 19.4	19.4	8.2 8.3	8.3	30.8 30.8	30.8	96.4 96.2	96.3	7.4 7.4	7.4	7.4	0.5 0.5	0.5	0.5	5 5	5.0	4.3
				Bottom	12	19.4 19.4	19.4	8.2 8.3	8.3	30.9 30.9	30.9	96.4 96.4	96.4	7.4 7.4	7.4		0.5 0.5	0.5		3	3.0	
				Surface	1	19.3 19.2	19.3	8.2 8.3	8.3	31.9 31.9	31.9	100.6 100.9	100.8	7.7 7.7	7.7		1.0 1.0	1.0		8 8	8.0	
16-Feb-19	Sunny	Moderate	10:22	Middle	6.5	19.2 19.2	19.2	8.3 8.3	8.3	31.9 31.9	31.9	100.5 100.9	100.7	7.7 7.7	7.7	7.7	1.0	1.0	1.0	5 5	5.0	6.3
				Bottom	12	19.2 19.2	19.2	8.3 8.3	8.3	31.9 31.9	31.9	100.4 100.9	100.7	7.7 7.7	7.7		1.0 1.0	1.0		6	6.0	
				Surface	1	19.2 19.2	19.2	8.3 8.3	8.3	32.0 32.0	32.0	105.6 106.3	106.0	8.1 8.1	8.1		0.6 0.6	0.6		8	8.0	
18-Feb-19	Rainy	Moderate	12:23	Middle	6.5	19.2 19.2	19.2	8.3 8.3	8.3	32.0 32.0	32.0	105.7 106.2	106.0	8.1 8.1	8.1	8.1	0.6 0.6	0.6	0.6	4	4.0	5.0
				Bottom	12	19.2 19.2	19.2	8.3 8.3	8.3	32.0 32.0	32.0	105.7 105.8	105.8	8.1 8.1	8.1		0.6 0.6	0.6		3	3.0	
				Surface	1	20.2	20.2	8.1 8.1	8.1	30.8	30.8	105.5 103.9	104.7	8.0 7.9	8.0		2.5 2.5	2.5		8	8.0	
20-Feb-19	Sunny	Moderate	14:09	Middle	6.5	20.0	20.0	8.1 8.1	8.1	31.0 31.0 31.0	31.0	102.5 102.6	102.6	7.8 7.8 7.7	7.8	7.8	2.7 2.8 2.8	2.8	2.7	4 4 8	4.0	6.7
				Bottom	12	20.0 20.0 20.4	20.0	8.1 8.1 8.2	8.1	31.0 31.0 30.7	31.0	101.2 101.4 104.7	101.3	7.7 7.7 7.9	7.7		2.6 2.9	2.9		8	8.0	
				Surface	1	20.4	20.4	8.2 8.2	8.2	30.7 30.7 30.8	30.7	104.7 104.8 103.3	104.8	7.9 7.9 7.8	7.9		0.5 0.6	0.5		7	6.5	
22-Feb-19	Fine	Moderate	13:22	Middle	6.5	20.3	20.3	8.2 8.2	8.2	30.8 31.2	30.8	103.7 98.8	103.5	7.8 7.5	7.8	7.8	0.6	0.6	0.6	<u>6</u>	6.0	6.8
				Bottom	12	19.7 19.7	19.7	8.2 8.3	8.2	31.2 31.2	31.2	99.4 97.7	99.1	7.6 7.4	7.6		0.6	0.6		8	8.0	
	a			Surface	1	19.7 19.7	19.7	8.4 8.3	8.4	31.1 31.1	31.1	96.5 96.2	97.1	7.4	7.4		2.2	2.3		7	7.0	
25-Feb-19	Cloudy	Moderate	15:43	Middle	6.5	19.7 19.7	19.7	8.3 8.4	8.3	31.1 31.1	31.1	96.2 96.3	96.2	7.3 7.3	7.3	7.4	2.2	2.2	2.2	7	7.0	6.0
		<u> </u>		Bottom	12	19.7	19.7	8.4 8.1	8.4	31.1 31.7	31.1	96.4 94.1	96.4	7.4	7.4		2.2	2.2		4	4.0	
07 Feb 40	C. mm.	Madarst	07:24	Surface	1	19.3 19.3	19.3	8.1 8.1	8.1	31.7 31.7	31.7	93.8 93.7	94.0	7.2	7.2	7.0	1.9	2.0	2.0	6 4	6.0	F 2
27-Feb-19	Sunny	Moderate	07:31	Middle	6.5	19.2 19.2	19.3	8.1 8.1	8.1	31.8 31.7	31.8	93.3 93.3	93.5	7.1 7.1	7.2	7.2	2.1	2.1	2.0	6	4.0	5.2
				Bottom	12	19.2	19.2	8.1	8.1	31.8	31.8	93.2	93.3	7.1	7.1		2.0	2.0		5	5.5	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.

Water Quality Monitoring Results at C1 - Mid-Flood Tide

Data	Weather	Sea	Sampling	Dont	'h (m)	Tempera	ature (°C)	p	Н	Salin	ity ppt	DO Satu	uration (%)	Dissol	ved Oxygen	(mg/L)		Turbidity(NT	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.8 18.8	18.8	8.1 8.1	8.1	30.1 30.2	30.2	110.5 115.5	113.0	8.6 9.0	8.8		1.4 1.4	1.4		11 11	11.0	
1-Feb-19	Sunny	Calm	14:33	Middle	6.5	18.7 18.7	18.7	8.1 8.1	8.1	30.2 30.2	30.2	113.9 115.3	114.6	8.9 9.0	9.0	8.9	1.5 1.6	1.6	1.6	3	3.0	5.7
				Bottom	12	18.7 18.6	18.7	8.1 8.2	8.2	30.2 30.2	30.2	114.6 115.4	115.0	8.9 9.0	9.0		1.7 1.7	1.7		3	3.0	
				Surface	1	19.2 19.2	19.2	8.5 8.5	8.5	31.2 31.3	31.3	101.7 101.3	101.5	7.8 7.8	7.8		2.4 2.4	2.4		3 4	3.5	
12-Feb-19	Sunny	Moderate	11:35	Middle	6.5	19.1 19.2	19.2	8.5 8.5	8.5	31.3 31.3	31.3	100.9 101.6	101.3	7.8 7.8	7.8	7.8	2.5 2.4	2.5	2.5	4 5	4.5	5.7
				Bottom	12	19.1 19.1	19.1	8.5 8.5	8.5	31.3 31.3	31.3	100.4 100.8	100.6	7.7 7.8	7.8		2.7 2.5	2.6		9	9.0	
				Surface	1	19.5 19.5	19.5	8.2 8.2	8.2	31.0 30.9	31.0	102.7 102.8	102.8	7.9 7.9	7.9		0.5 0.5	0.5		9	8.5	
14-Feb-19	Sunny	Moderate	12:22	Middle	6.5	19.4 19.4	19.4	8.3 8.3	8.3	31.0 31.0	31.0	102.5 102.4	102.5	7.8 7.8	7.8	7.8	0.5 0.5	0.5	0.6	3	3.0	5.2
				Bottom	12	19.4 19.4	19.4	8.3 8.3	8.3	31.1 31.1	31.1	100.6 100.7	100.7	7.7 7.7	7.7		0.7 0.7	0.7		4 4	4.0	
				Surface	1	19.5 19.4	19.5	8.2 8.2	8.2	31.9 31.9	31.9	106.0 105.7	105.9	8.1 8.1	8.1		0.8 0.8	0.8		6 6	6.0	
16-Feb-19	Sunny	Moderate	13:42	Middle	6.5	19.3 19.3	19.3	8.2 8.2	8.2	31.9 31.9	31.9	104.9 105.3	105.1	8.0 8.0	8.0	8.0	0.8 0.8	0.8	0.8	6 6	6.0	5.0
				Bottom	12	19.3 19.3	19.3	8.3 8.3	8.3	31.9 31.9	31.9	102.9 102.8	102.9	7.9 7.9	7.9		0.9 0.9	0.9		3	3.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.0 32.1	32.1	106.9 107.2	107.1	8.2 8.2	8.2		0.6 0.6	0.6		4 4	4.0	
18-Feb-19	Rainy	Moderate	16:39	Middle	6.5	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.0 107.1	107.1	8.2 8.2	8.2	8.2	0.7 0.7	0.7	0.8	8 9	8.5	6.5
				Bottom	12	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	106.9 107.2	107.1	8.2 8.2	8.2		1.0 1.1	1.1		7 7	7.0	
				Surface	1	20.3 20.1	20.2	8.2 8.1	8.2	30.7 30.8	30.8	107.9 105.6	106.8	8.2 8.0	8.1		2.6 2.6	2.6		4 4	4.0	
20-Feb-19	Cloudy	Moderate	17:36	Middle	6.5	20.0 20.1	20.1	8.2 8.1	8.2	30.9 30.9	30.9	101.2 102.0	101.6	7.7 7.7	7.7	7.8	2.5 2.5	2.5	2.5	7 7	7.0	5.3
				Bottom	12	20.0 20.0	20.0	8.2 8.1	8.2	30.9 30.9	30.9	100.3 100.8	100.6	7.6 7.6	7.6		2.5 2.5	2.5		5 5	5.0	
				Surface	1	20.2 20.2	20.2	8.2 8.2	8.2	30.8 30.8	30.8	99.9 99.8	99.9	7.6 7.6	7.6		0.6 0.6	0.6		5 5	5.0	
22-Feb-19	Fine	Moderate	09:31	Middle	6.5	20.0 19.8	19.9	8.2 8.2	8.2	31.0 31.1	31.1	99.1 98.9	99.0	7.5 7.5	7.5	7.5	0.7 0.7	0.7	0.7	6 6	6.0	4.8
				Bottom	12	19.7 19.7	19.7	8.2 8.2	8.2	31.2 31.2	31.2	98.6 98.6	98.6	7.5 7.5	7.5		0.8 0.8	0.8		3 4	3.5	
				Surface	1	19.6 19.6	19.6	8.1 8.1	8.1	31.1 31.1	31.1	99.1 97.9	98.5	7.6 7.5	7.6		2.4 2.3	2.4		3	3.0	
25-Feb-19	Cloudy	Moderate	11:34	Middle	6.5	19.6 19.6	19.6	8.1 8.1	8.1	31.2 31.2	31.2	97.9 98.0	98.0	7.5 7.5	7.5	7.5	2.4 2.4	2.4	2.4	3	3.0	3.0
				Bottom	12	19.6 19.6	19.6	8.1 8.1	8.1	31.3 31.3	31.3	97.7 97.7	97.7	7.5 7.5	7.5		2.5 2.4	2.5		3 3	3.0	
				Surface	1	19.4 19.4	19.4	8.1 8.1	8.1	31.8 31.7	31.8	99.2 99.2	99.2	7.6 7.6	7.6		2.7 2.8	2.8		3	3.0	
27-Feb-19	Sunny	Moderate	11:51	Middle	6.5	19.2 19.2	19.2	8.1 8.1	8.1	31.8 31.8	31.8	98.1 98.3	98.2	7.5 7.5	7.5	7.5	2.7 2.7	2.7	2.8	8 8	8.0	6.0
				Bottom	12	19.2 19.2	19.2	8.1 8.1	8.1	31.9 31.9	31.9	97.8 97.6	97.7	7.5 7.5	7.5		2.8 2.8	2.8		7 7	7.0	

Water Quality Monitoring Results at C2 - Mid-Ebb Tide

Dete	Weather	Sea	Sampling	Donat	da ()	Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	lved Oxygen	(mg/L)	1	Turbidity(NTI	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Dept	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.4	18.4	8.2 8.2	8.2	30.4 30.4	30.4	116.6	117.5	9.1	9.2		1.6	1.6		5 5	5.0	
1-Feb-19	Sunny	Calm	10:13	Middle	10.5	18.4 18.4 18.4	18.4	8.1 8.2	8.2	30.4 30.4 30.4	30.4	118.4 114.9 115.4	115.2	9.3 9.0 9.0	9.0	9.1	1.5 1.4 1.6	1.5	1.7	8 7	7.5	5.5
				Bottom	20	18.4 18.3	18.4	8.1 8.3	8.2	30.4 30.4	30.4	113.4 114.3	113.9	8.9 9.0	9.0		2.0	1.9	=	4 4	4.0	
				Surface	1	19.4 19.4	19.4	8.6 8.6	8.6	31.5 31.6	31.6	104.2 104.4	104.3	8.0 7.9	8.0		2.3 2.3	2.3		6	6.0	
12-Feb-19	Sunny	Moderate	17:43	Middle	11	19.2 19.2	19.2	8.6 8.6	8.6	31.6 31.6	31.6	102.9 102.9	102.9	7.9 7.9	7.9	7.9	2.6 2.6	2.6	2.6	<2.5 <2.5	<2.5	4.2
				Bottom	21	19.2 19.2	19.2	8.6 8.6	8.6	31.6 31.6	31.6	102.4 102.3	102.4	7.9 7.8	7.9		2.7 2.8	2.8		4 4	4.0	
				Surface	1	19.4 19.4	19.4	8.2 8.3	8.3	31.1 31.1	31.1	102.3 102.3	102.3	7.8 7.8	7.8		0.5 0.5	0.5		5 5	5.0	
14-Feb-19	Cloudy	Moderate	06:10	Middle	9.5	19.4 19.4	19.4	8.2 8.2	8.2	31.2 31.2	31.2	101.1 101.0	101.1	7.7 7.7	7.7	7.7	0.4 0.4	0.4	0.6	5 5	5.0	4.7
				Bottom	18	19.4 19.4	19.4	8.3 8.3	8.3	31.3 31.3	31.3	99.8 99.6	99.7	7.6 7.6	7.6		1.0 1.0	1.0		4 4	4.0	
				Surface	1	19.2 19.2	19.2	8.3 8.3	8.3	31.9 31.9	31.9	113.4 113.4	113.4	8.7 8.7	8.7		0.8 0.8	0.8		5 5	5.0	
16-Feb-19	Sunny	Moderate	09:07	Middle	9	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	110.2 110.2	110.2	8.4 8.4	8.4	8.5	0.7 0.7	0.7	0.8	5 5	5.0	5.3
				Bottom	17	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	109.5 109.3	109.4	8.4 8.4	8.4		0.9 0.9	0.9		6 6	6.0	
				Surface	1	19.0 19.0	19.0	8.3 8.3	8.3	32.1 32.2	32.2	111.4 111.7	111.6	8.5 8.6	8.6		0.4 0.4	0.4		3	3.0	
18-Feb-19	Rainy	Moderate	11:04	Middle	9	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	111.6 111.6	111.6	8.6 8.6	8.6	8.6	0.4 0.4	0.4	0.4	4 5	4.5	3.8
				Bottom	17	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	111.4 111.3	111.4	8.5 8.5	8.5		0.5 0.5	0.5		4 4	4.0	
				Surface	1	19.8 19.8	19.8	8.1 8.1	8.1	31.3 31.3	31.3	102.5 102.8	102.7	7.8 7.8	7.8		2.1 2.2	2.2		4 4	4.0	
20-Feb-19	Sunny	Moderate	13:09	Middle	11	19.7 19.8	19.8	8.2 8.2	8.2	31.3 31.3	31.3	103.9 104.0	104.0	7.9 7.9	7.9	7.9	2.6 2.6	2.6	2.5	5	5.0	4.3
				Bottom	21	19.8 19.8	19.8	8.2 8.2	8.2	31.3 31.3	31.3	104.4 104.4	104.4	7.9 7.9	7.9		2.6 2.6	2.6		4 4	4.0	
				Surface	1	19.7 19.7	19.7	8.1 8.1	8.1	31.3 31.3	31.3	99.3 99.4	99.4	7.6 7.6	7.6		0.8	0.8		6	6.0	
22-Feb-19	Fine	Moderate	14:24	Middle	9.5	19.6 19.6	19.6	8.1 8.1	8.1	31.3 31.3	31.3	98.7 98.5	98.6	7.5 7.5	7.5	7.5	1.1	1.1	1.0	6	6.0	5.7
				Bottom	18	19.6 19.6	19.6	8.1 8.1	8.1	31.3 31.4	31.4	98.3 98.2	98.3	7.5 7.5	7.5		1.1 1.2	1.2		5 5	5.0	
				Surface	1	19.6 19.6	19.6	8.2 8.2	8.2	31.4 31.4	31.4	103.0 103.0	103.0	7.9 7.9	7.9		2.3	2.3		5	5.0	
25-Feb-19	Cloudy	Moderate	16:51	Middle	11	19.5 19.5	19.5	8.2 8.2	8.2	31.6 31.6	31.6	101.5	101.5	7.7 7.7	7.7	7.8	2.3	2.3	2.3	4	4.0	4.0
				Bottom	21	19.5 19.5	19.5	8.2 8.2	8.2	31.7 31.7	31.7	100.7 100.7	100.7	7.7 7.7	7.7		2.3	2.3		3 3	3.0	
				Surface	1	19.1 19.1	19.1	8.0 8.0	8.0	31.8 31.9	31.9	98.1 98.2	98.2	7.5 7.5	7.5		2.7	2.7		9 8	8.5	
27-Feb-19	Sunny	Moderate	06:22	Middle	11	19.1 19.1	19.1	8.1 8.1	8.1	32.0 32.0	32.0	98.9 98.9	98.9	7.6 7.6	7.6	7.6	2.7 2.7 2.6	2.7	2.7	5 5	5.0	6.3
				Bottom	21	19.1 19.1	19.1	8.1 8.1	8.1	32.1 32.1	32.1	98.8 98.8	98.8	7.6 7.6	7.6		2.6	2.6		6 5	5.5	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.

The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

Water Quality Monitoring Results at C2 - Mid-Flood Tide

Date	Weather	Sea	Sampling	Dont	:h (m)	Tempera	ture (°C)	F	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	ved Oxygen	(mg/L)	1	Turbidity(NT	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	.11 (111)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.4 18.4	18.4	8.1 8.3	8.2	30.4 30.4	30.4	119.6 117.9	118.8	9.4 9.2	9.3		1.2 1.1	1.2		5 5	5.0	
1-Feb-19	Sunny	Calm	15:51	Middle	10.5	18.2 18.2	18.2	8.1 8.3	8.2	30.4 30.4	30.4	112.0 112.9	112.5	8.8 8.9	8.9	9.0	1.3 1.4	1.4	1.5	7	7.0	5.5
				Bottom	20	18.2 18.2	18.2	8.2 8.3	8.3	30.4 30.4	30.4	111.1 111.5	111.3	8.7 8.8	8.8		2.0 1.9	2.0		4 5	4.5	
				Surface	1	19.1 19.1	19.1	8.2 8.4	8.3	31.4 31.4	31.4	102.3 102.5	102.4	7.9 7.9	7.9		2.4 2.4	2.4		5 4	4.5	
12-Feb-19	Sunny	Moderate	10:38	Middle	11	19.1 19.1	19.1	8.3 8.4	8.4	31.5 31.4	31.5	101.9 102.4	102.2	7.8 7.9	7.9	7.9	2.3	2.3	2.4	3	3.0	4.2
				Bottom	21	19.1 19.1	19.1	8.4 8.4	8.4	31.5 31.5	31.5	101.6 101.7	101.7	7.8 7.8	7.8		2.5 2.4	2.5		5 5	5.0	
				Surface	1	19.4 19.4	19.4	8.3 8.3	8.3	31.1 31.1	31.1	102.0 102.2	102.1	7.8 7.8	7.8		0.4 0.4	0.4		4 4	4.0	
14-Feb-19	Sunny	Moderate	11:20	Middle	9.5	19.4 19.4	19.4	8.3 8.3	8.3	31.2 31.2	31.2	101.6 101.5	101.6	7.8 7.8	7.8	7.8	0.4	0.4	0.5	3	3.0	5.7
				Bottom	18	19.4 19.4	19.4	8.3 8.3	8.3	31.2 31.2	31.2	100.2 99.8	100.0	7.7 7.6	7.7		0.7	0.7		10 10	10.0	
				Surface	1	19.1 19.1 19.0	19.1	8.3 8.3	8.3	32.1 32.1 32.2	32.1	112.3 112.7	112.5	8.6 8.6	8.6		0.8	0.8		3 3 5	3.0	
16-Feb-19	Sunny	Moderate	15:09	Middle	9	19.0 19.0 19.0	19.0	8.3 8.3 8.3	8.3	32.2 32.2 32.2	32.2	111.4 111.1 109.9	111.3	8.5 8.5 8.4	8.5	8.5	0.8 0.8 0.9	0.8	0.9	5 5 11	5.0	6.3
				Bottom	17	19.0	19.0	8.3	8.3	32.2	32.2	109.7	109.8	8.4	8.4		1.0	1.0		11	11.0	
				Surface	1	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	112.0 112.1	112.1	8.6 8.6	8.6		0.6	0.6		6	6.0	
18-Feb-19	Rainy	Moderate	15:29	Middle	9	19.0 19.0 19.0	19.0	8.3 8.3 8.3	8.3	32.2 32.2 32.2	32.2	112.0 111.9 111.5	112.0	8.6 8.6 8.5	8.6	8.6	0.6 0.6 0.6	0.6	0.6	4 4 9	4.0	6.3
				Bottom	17	19.0	19.0	8.3 8.2	8.3	32.2 32.2 31.3	32.2	111.5 111.5 105.9	111.5	8.5 8.0	8.5		0.6	0.6		9	9.0	
				Surface	1	19.8 19.8	19.8	8.2 8.1	8.2	31.3 31.3	31.3	106.0 106.1	106.0	8.0 8.1	8.0		2.6	2.6	_	3	3.0	
20-Feb-19	Cloudy	Moderate	18:33	Middle	11	19.8 19.7	19.8	8.1 8.1	8.1	31.3 31.3	31.3	105.8 104.6	106.0	8.0	8.1	8.0	2.6	2.6	2.6	3	3.0	3.7
				Bottom	21	19.8	19.8	8.1 8.1	8.1	31.3 31.3	31.3	105.1 99.3	104.9	8.0 7.6	8.0		2.7	2.7		5	5.0	
				Surface	1	19.7 19.7 19.5	19.7	8.1 8.1	8.1	31.3 31.4	31.3	99.4 98.5	99.4	7.6 7.5	7.6		0.7	0.7		4 7	4.0	
22-Feb-19	Fine	Moderate	08:23	Middle	9.5	19.6 19.5	19.6	8.1 8.1	8.1	31.4 31.4	31.4	98.6 98.0	98.6	7.5 7.5	7.5	7.5	1.0	1.0	1.0	7 5	7.0	5.3
				Bottom	18	19.5	19.5	8.1	8.1	31.4	31.4	98.1 99.4	98.1	7.5	7.5		1.2	1.2		5	5.0	
				Surface	1	19.5 19.5	19.5	8.1 8.1	8.1	31.6 31.6	31.6	99.4	99.4	7.6 7.6	7.6		2.4	2.4		3	3.0	
25-Feb-19	Cloudy	Moderate	10:31	Middle	11	19.5 19.5 19.5	19.5	8.1 8.1 8.2	8.1	31.6 31.7 31.7	31.7	99.3 99.2 99.1	99.3	7.6 7.6 7.5	7.6	7.6	2.4 2.4 2.5	2.4	2.4	3 3 7	3.0	4.3
				Bottom	21	19.5	19.5	8.2	8.2	31.7	31.7	99.0	99.1	7.5	7.5		2.5	2.5		7	7.0	
				Surface	1	19.2 19.2	19.2	8.2 8.2	8.2	32.0 32.0	32.0	100.2 100.5	100.4	7.7 7.7	7.7		2.2	2.2		8	8.0	
27-Feb-19	Sunny	Moderate	13:05	Middle	11	19.1 19.1	19.1	8.2 8.2	8.2	32.1 32.1	32.1	100.0 100.2	100.1	7.7 7.7	7.7	7.7	3.0	3.0	2.8	5 5	5.0	6.5
				Bottom	21	19.1 19.1	19.1	8.2 8.2	8.2	32.1 32.1	32.1	99.5 99.4	99.5	7.6 7.6	7.6		3.2 3.3	3.3		7 6	6.5	

Water Quality Monitoring Results at WSD17 - Mid-Ebb Tide

Data	Weather	Sea	Sampling	Dont	'h (m)	Tempera	ature (°C)	p	Н	Salin	ity ppt	DO Satu	ıration (%)	Dissol	ved Oxygen	(mg/L)		Turbidity(NT	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.4 18.4	18.4	8.2 8.2	8.2	30.3 30.3	30.3	115.7 118.4	117.1	9.1 9.3	9.2		1.5 1.4	1.5		4 4	4.0	
1-Feb-19	Sunny	Calm	10:00	Middle	6	18.4 18.4	18.4	8.2 8.2	8.2	30.4 30.4	30.4	114.0 115.2	114.6	8.9 9.0	9.0	9.0	1.7 1.7	1.7	1.7	3	3.0	4.0
				Bottom	11	18.3 18.4	18.4	8.2 8.2	8.2	30.4 30.4	30.4	112.7 113.4	113.1	8.8 8.9	8.9		1.8 2.0	1.9		5 5	5.0	
				Surface	1	19.4 19.4	19.4	8.7 8.7	8.7	31.5 31.5	31.5	102.5 103.9	103.2	7.8 7.9	7.9		2.5 2.3	2.4		4 3	3.5	
12-Feb-19	Sunny	Moderate	17:11	Middle	4.5	19.4 19.4	19.4	8.7 8.7	8.7	31.5 31.5	31.5	103.7 104.7	104.2	7.9 8.0	8.0	8.0	2.4 2.3	2.4	2.4	4 4	4.0	4.8
				Bottom	8	19.3 19.4	19.4	8.7 8.7	8.7	31.5 31.5	31.5	103.6 104.7	104.2	7.9 8.0	8.0		2.4 2.4	2.4		7 7	7.0	
				Surface	1	19.3 19.3	19.3	8.3 8.3	8.3	31.2 31.2	31.2	100.7 100.6	100.7	7.7 7.7	7.7		0.9 0.9	0.9		3	3.0	
14-Feb-19	Cloudy	Moderate	06:26	Middle	6	19.4 19.4	19.4	8.2 8.2	8.2	31.2 31.2	31.2	99.9 99.8	99.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7	0.8	4 4	4.0	3.7
				Bottom	11	19.4 19.4	19.4	8.3 8.3	8.3	31.3 31.3	31.3	99.9 99.8	99.9	7.6 7.6	7.6		0.9 0.9	0.9		4 4	4.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	105.4 105.5	105.5	8.1 8.1	8.1		0.8 0.8	0.8		4 4	4.0	
16-Feb-19	Sunny	Moderate	08:52	Middle	6	19.1 19.1	19.1	8.3 8.3	8.3	32.2 32.2	32.2	109.6 109.6	109.6	8.4 8.4	8.4	8.3	0.7 0.7	0.7	1.1	6 7	6.5	6.2
				Bottom	11	19.1 19.1	19.1	8.3 8.3	8.3	32.2 32.2	32.2	108.8 108.7	108.8	8.3 8.3	8.3		1.8 1.7	1.8		8 8	8.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.9 108.0	108.0	8.3 8.3	8.3		0.9 0.9	0.9		7 7	7.0	
18-Feb-19	Rainy	Moderate	10:52	Middle	6	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	109.1 109.0	109.1	8.4 8.4	8.4	8.4	0.7 0.7	0.7	0.8	6 6	6.0	6.7
				Bottom	11	19.0 19.0	19.0	8.3 8.3	8.3	32.1 32.1	32.1	109.6 109.7	109.7	8.4 8.4	8.4		0.7 0.7	0.7		7 7	7.0	
				Surface	1	19.8 19.8	19.8	8.0 8.0	8.0	31.2 31.2	31.2	97.1 97.1	97.1	7.4 7.4	7.4		3.3 3.4	3.4		4	4.0	
20-Feb-19	Sunny	Moderate	13:00	Middle	6	19.6 19.6	19.6	8.2 8.2	8.2	31.4 31.4	31.4	100.2 100.5	100.4	7.6 7.7	7.7	7.6	3.6 3.7	3.7	3.7	7 7	7.0	6.2
				Bottom	11	19.6 19.6	19.6	8.2 8.2	8.2	31.4 31.4	31.4	100.6 100.6	100.6	7.7 7.7	7.7		3.9 3.8	3.9		7 8	7.5	
				Surface	1	19.6 19.5	19.6	8.1 8.1	8.1	31.3 31.4	31.4	99.7 99.5	99.6	7.6 7.6	7.6		0.7 0.7	0.7		5 6	5.5	
22-Feb-19	Fine	Moderate	14:32	Middle	6	19.5 19.5	19.5	8.1 8.1	8.1	31.4 31.4	31.4	99.2 99.3	99.3	7.6 7.6	7.6	7.6	1.1 1.1	1.1	1.0	6 7	6.5	5.7
				Bottom	11	19.5 19.5	19.5	8.1 8.1	8.1	31.4 31.4	31.4	98.8 98.8	98.8	7.5 7.5	7.5		1.3 1.2	1.3		5 5	5.0	
				Surface	1	19.5 19.5	19.5	8.1 8.2	8.2	31.1 31.2	31.2	95.2 96.8	96.0	7.3 7.4	7.4		2.9 2.7	2.8		6 6	6.0	
25-Feb-19	Cloudy	Moderate	16:41	Middle	6	19.5 19.5	19.5	8.1 8.2	8.2	31.5 31.4	31.5	97.1 97.3	97.2	7.4 7.4	7.4	7.4	2.5 2.4	2.5	2.6	5 5	5.0	6.0
				Bottom	11	19.5 19.5	19.5	8.2 8.2	8.2	31.6 31.5	31.6	97.8 97.5	97.7	7.4 7.4	7.4		2.4 2.5	2.5		7 7	7.0	
				Surface	1	19.1 19.1	19.1	8.1 8.1	8.1	31.8 31.9	31.9	93.8 95.5	94.7	7.2 7.3	7.3		2.3	2.3		6	6.0	
27-Feb-19	Sunny	Moderate	06:36	Middle	6	19.1 19.1	19.1	8.1 8.2	8.2	32.0 32.0	32.0	96.3 97.0	96.7	7.4 7.4	7.4	7.4	2.2	2.3	2.4	7 7	7.0	6.7
				Bottom	11	19.1 19.1	19.1	8.2 8.2	8.2	32.0 32.0	32.0	97.1 97.3	97.2	7.4 7.4	7.4		2.5 2.6	2.6		7 7	7.0	

Water Quality Monitoring Results at WSD17 - Mid-Flood Tide

Data	Weather	Sea	Sampling	Dont	th (m)	Tempera	ature (°C)	p	Н	Salin	ity ppt	DO Satu	uration (%)	Dissol	ved Oxygen	(mg/L)		Turbidity(NTI	J)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.6 18.5	18.6	8.3 8.3	8.3	30.3 30.3	30.3	122.6 123.9	123.3	9.6 9.7	9.7		1.5 1.4	1.5		4 4	4.0	
1-Feb-19	Sunny	Calm	16:02	Middle	6	18.4 18.4	18.4	8.2 8.3	8.3	30.4 30.4	30.4	115.3 115.6	115.5	9.0 9.1	9.1	9.2	3.0 3.0	3.0	2.6	5 5	5.0	5.5
				Bottom	11	18.3 18.4	18.4	8.2 8.3	8.3	30.4 30.4	30.4	112.9 113.9	113.4	8.9 8.9	8.9		3.4 3.3	3.4		8 7	7.5	
				Surface	1	19.2 19.1	19.2	8.5 8.5	8.5	31.4 31.4	31.4	100.1 100.7	100.4	7.7 7.7	7.7		2.0 2.2	2.1		5 5	5.0	
12-Feb-19	Sunny	Moderate	10:50	Middle	6	19.1 19.1	19.1	8.5 8.5	8.5	31.5 31.5	31.5	100.5 100.5	100.5	7.7 7.7	7.7	7.7	2.8 3.0	2.9	2.7	5 4	4.5	5.0
				Bottom	11	19.1 19.1	19.1	8.5 8.5	8.5	31.5 31.5	31.5	100.5 100.6	100.6	7.7 7.7	7.7		3.1 3.1	3.1		6 5	5.5	
				Surface	1	19.3 19.3	19.3	8.2 8.2	8.2	31.2 31.2	31.2	100.4 100.3	100.4	7.7 7.7	7.7		0.5 0.5	0.5		3	3.0	
14-Feb-19	Sunny	Moderate	11:38	Middle	6.5	19.4 19.4	19.4	8.3 8.3	8.3	31.3 31.3	31.3	100.4 100.7	100.6	7.7 7.7	7.7	7.7	0.5 0.5	0.5	0.7	4	4.0	4.3
				Bottom	12	19.4 19.4	19.4	8.3 8.3	8.3	31.3 31.3	31.3	100.1 100.0	100.1	7.7 7.7	7.7		1.2 1.2	1.2		6 6	6.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.0 32.1	32.1	106.0 105.9	106.0	8.1 8.1	8.1		1.0 1.0	1.0		5 5	5.0	
16-Feb-19	Sunny	Moderate	14:54	Middle	6	19.1 19.1	19.1	8.3 8.3	8.3	32.2 32.2	32.2	109.0 109.3	109.2	8.3 8.4	8.4	8.3	0.8 0.8	0.8	1.1	9	9.0	6.7
				Bottom	11	19.0 19.0	19.0	8.3 8.3	8.3	32.2 32.2	32.2	109.1 109.1	109.1	8.4 8.4	8.4		1.5 1.5	1.5		6 6	6.0	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.0 32.0	32.0	107.4 107.5	107.5	8.2 8.2	8.2		0.8 0.8	0.8		6 6	6.0	
18-Feb-19	Rainy	Moderate	15:48	Middle	6	19.0 19.0	19.0	8.3 8.3	8.3	32.1 32.1	32.1	108.8 109.1	109.0	8.3 8.4	8.4	8.3	0.7 0.7	0.7	0.8	5 5	5.0	5.7
				Bottom	11	19.0 19.0	19.0	8.3 8.3	8.3	32.1 32.1	32.1	110.0 110.1	110.1	8.4 8.4	8.4		0.8 0.8	0.8		6 6	6.0	
				Surface	1	19.7 19.7	19.7	8.1 8.1	8.1	31.3 31.3	31.3	97.9 98.2	98.1	7.4 7.5	7.5		2.9 3.0	3.0		5 5	5.0	
20-Feb-19	Cloudy	Moderate	18:24	Middle	6	19.7 19.6	19.7	8.1 8.1	8.1	31.3 31.4	31.4	99.5 100.1	99.8	7.6 7.6	7.6	7.6	3.0 2.9	3.0	2.9	4 4	4.0	4.7
				Bottom	11	19.6 19.6	19.6	8.1 8.1	8.1	31.4 31.4	31.4	100.8 100.8	100.8	7.7 7.7	7.7		2.8 2.7	2.8		5 5	5.0	
				Surface	1	19.5 19.6	19.6	8.1 8.1	8.1	31.4 31.4	31.4	99.3 99.6	99.5	7.6 7.6	7.6		0.8 0.8	0.8		5 5	5.0	
22-Feb-19	Fine	Moderate	08:08	Middle	6	19.5 19.5	19.5	8.1 8.1	8.1	31.4 31.4	31.4	99.1 99.2	99.2	7.6 7.6	7.6	7.6	0.9 0.9	0.9	1.0	8 8	8.0	6.7
				Bottom	11	19.5 19.5	19.5	8.1 8.1	8.1	31.4 31.4	31.4	98.8 99.0	98.9	7.5 7.6	7.6		1.3 1.3	1.3		7 7	7.0	
				Surface	1	19.5 19.5	19.5	8.1 8.1	8.1	31.5 31.5	31.5	98.6 98.6	98.6	7.5 7.5	7.5		2.8 2.8	2.8		3 3	3.0	
25-Feb-19	Cloudy	Moderate	10:41	Middle	6	19.5 19.5	19.5	8.1 8.1	8.1	31.6 31.6	31.6	98.6 98.2	98.4	7.5 7.5	7.5	7.5	2.7 2.8	2.8	2.9	5 5	5.0	6.7
				Bottom	11	19.5 19.5	19.5	8.1 8.1	8.1	31.7 31.7	31.7	98.6 98.6	98.6	7.5 7.5	7.5		3.0 3.0	3.0		12 12	12.0	
				Surface	1	19.2 19.2	19.2	8.2 8.1	8.2	32.0 32.0	32.0	97.6 97.6	97.6	7.5 7.5	7.5		2.4 2.4	2.4		8 8	8.0	
27-Feb-19	Sunny	Moderate	12:52	Middle	6	19.2 19.2	19.2	8.1 8.1	8.1	32.0 32.0	32.0	97.2 97.2	97.2	7.4 7.4	7.4	7.4	2.6 2.7	2.7	2.6	4	4.0	5.7
				Bottom	11	19.1 19.1	19.1	8.1 8.1	8.1	32.0 32.0	32.0	96.9 97.0	97.0	7.4 7.4	7.4		2.7 2.7	2.7		5 5	5.0	

Water Quality Monitoring Results at WSD9 - Mid-Ebb Tide

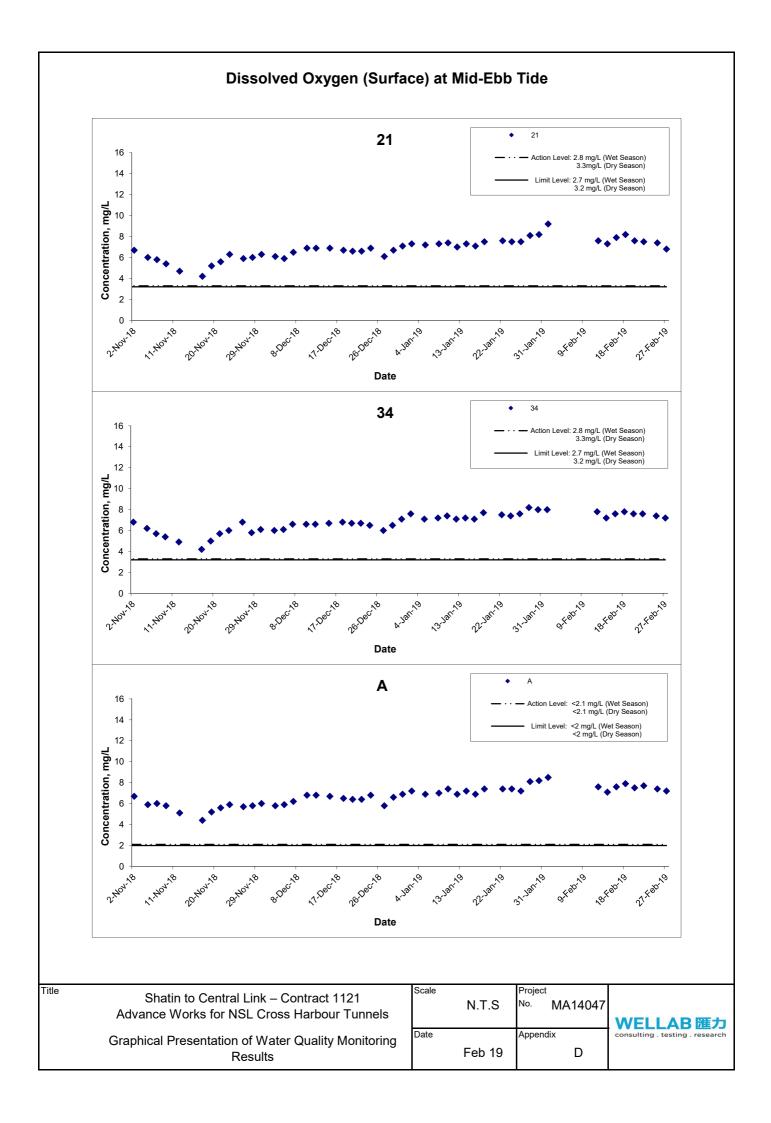
Data	Weather	Sea	Sampling	Dont	th (m)	Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	uration (%)	Disso	ved Oxygen	(mg/L)		Turbidity(NT	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Бері	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.7 18.6	18.7	8.1 8.1	8.1	30.2 30.2	30.2	116.0 115.5	115.8	9.1 9.0	9.1		1.7 1.5	1.6		7 8	7.5	
1-Feb-19	Sunny	Calm	10:39	Middle	4.5	18.6 18.6	18.6	8.2 8.1	8.2	30.2 30.3	30.3	114.9 114.9	114.9	9.0 9.0	9.0	9.0	1.6 1.7	1.7	1.8	4 4	4.0	5.8
				Bottom	8	18.5 18.5	18.5	8.1 8.2	8.2	30.3 30.3	30.3	114.6 114.8	114.7	9.0 9.0	9.0		2.0 2.0	2.0		6 6	6.0	
				Surface	1	19.3 19.2	19.3	8.7 8.7	8.7	31.3 31.5	31.4	98.1 101.0	99.6	7.5 7.7	7.6		2.8 2.8	2.8		3	3.0	
12-Feb-19	Sunny	Moderate	17:33	Middle	6	19.2 19.2	19.2	8.7 8.7	8.7	31.6 31.5	31.6	100.4 100.3	100.4	7.7 7.7	7.7	7.7	2.7 2.8	2.8	2.7	6 7	6.5	4.3
				Bottom	11	19.2 19.2	19.2	8.7 8.7	8.7	31.6 31.6	31.6	100.8 100.7	100.8	7.7 7.7	7.7		2.6 2.6	2.6		3 4	3.5	
				Surface	1	19.4 19.4	19.4	8.2 8.3	8.3	30.8 30.8	30.8	96.3 97.2	96.8	7.4 7.5	7.5		0.5 0.5	0.5		3	3.0	
14-Feb-19	Cloudy	Moderate	06:40	Middle	4	19.4 19.4	19.4	8.3 8.3	8.3	30.9 31.0	31.0	97.9 98.1	98.0	7.5 7.5	7.5	7.5	0.6 0.6	0.6	0.5	4 4	4.0	3.7
				Bottom	7	19.4 19.4	19.4	8.3 8.3	8.3	31.0 31.0	31.0	98.7 98.6	98.7	7.6 7.6	7.6		0.5 0.5	0.5		4 4	4.0	
				Surface	1	19.2 19.2	19.2	8.3 8.3	8.3	32.0 32.0	32.0	107.7 107.7	107.7	8.2 8.2	8.2		0.8 0.8	0.8		8 8	8.0	
16-Feb-19	Sunny	Moderate	09:29	Middle	4	19.2 19.1	19.2	8.3 8.3	8.3	32.1 32.1	32.1	107.1 107.3	107.2	8.2 8.2	8.2	8.2	0.8 0.8	0.8	0.8	5 5	5.0	6.5
				Bottom	7	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.1 107.4	107.3	8.2 8.2	8.2		0.8 0.8	0.8		6 7	6.5	
				Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.0 108.0	107.5	8.2 8.3	8.3		0.7 0.7	0.7		6 6	6.0	
18-Feb-19	Rainy	Moderate	11:23	Middle	4	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	108.2 108.3	108.3	8.3 8.3	8.3	8.3	0.8 0.8	0.8	0.7	5 5	5.0	6.7
				Bottom	7	19.1 19.1	19.1	8.3 8.3	8.3	32.2 32.2	32.2	108.7 108.7	108.7	8.3 8.3	8.3		0.7 0.7	0.7		9	9.0	
				Surface	1	20.0 19.9	20.0	8.2 8.1	8.2	31.2 31.3	31.3	101.7 104.9	103.3	7.7 8.0	7.9		2.5 2.6	2.6		8	8.0	
20-Feb-19	Sunny	Moderate	13:32	Middle	4.5	19.9 19.9	19.9	8.2 8.1	8.2	31.3 31.3	31.3	101.6 105.1	103.4	7.7 8.0	7.9	7.9	2.6 2.6	2.6	2.6	4	4.0	5.5
				Bottom	8	19.9 19.8	19.9	8.2 8.1	8.2	31.3 31.3	31.3	101.5 103.9	102.7	7.7 7.9	7.8		2.6 2.5	2.6		5 4	4.5	
				Surface	1	20.1 20.0	20.1	8.1 8.1	8.1	31.2 31.2	31.2	100.4 101.1	100.8	7.6 7.7	7.7		0.5 0.5	0.5		9	9.0	
22-Feb-19	Fine	Moderate	14:13	Middle	4.5	19.9 20.0	20.0	8.1 8.1	8.1	31.2 31.2	31.2	100.5 100.8	100.7	7.6 7.6	7.6	7.6	0.5 0.5	0.5	0.5	5 5	5.0	6.3
				Bottom	8	19.7 19.7	19.7	8.1 8.1	8.1	31.3 31.3	31.3	99.5 99.8	99.7	7.6 7.6	7.6		0.5 0.5	0.5		5 5	5.0	
				Surface	1	19.7 19.7	19.7	8.2 8.2	8.2	31.4 31.4	31.4	97.5 97.3	97.4	7.4 7.4	7.4		2.4 2.3	2.4		7 7	7.0	
25-Feb-19	Cloudy	Moderate	16:21	Middle	4.5	19.6 19.6	19.6	8.2 8.2	8.2	31.6 31.5	31.6	97.7 96.5	97.1	7.4 7.3	7.4	7.4	2.3	2.3	2.3	5 5	5.0	5.3
				Bottom	8	19.5 19.5	19.5	8.2 8.2	8.2	31.6 31.6	31.6	98.3 98.0	98.2	7.5 7.5	7.5		2.3 2.3	2.3		4 4	4.0	
				Surface	1	19.2 19.2	19.2	8.1 8.2	8.2	31.8 31.9	31.9	94.2 96.8	95.5	7.2 7.4	7.3		2.5 2.5	2.5		5 5	5.0	
27-Feb-19	Sunny	Moderate	06:53	Middle	4.5	19.1 19.2	19.2	8.1 8.1	8.1	32.0 31.9	32.0	96.2 95.7	96.0	7.4 7.3	7.4	7.4	2.6 2.6	2.6	2.6	7 8	7.5	5.5
				Bottom	8	19.1 19.1	19.1	8.2 8.1	8.2	32.0 32.0	32.0	97.0 95.9	96.5	7.4 7.3	7.4		2.6 2.6	2.6		4 4	4.0	

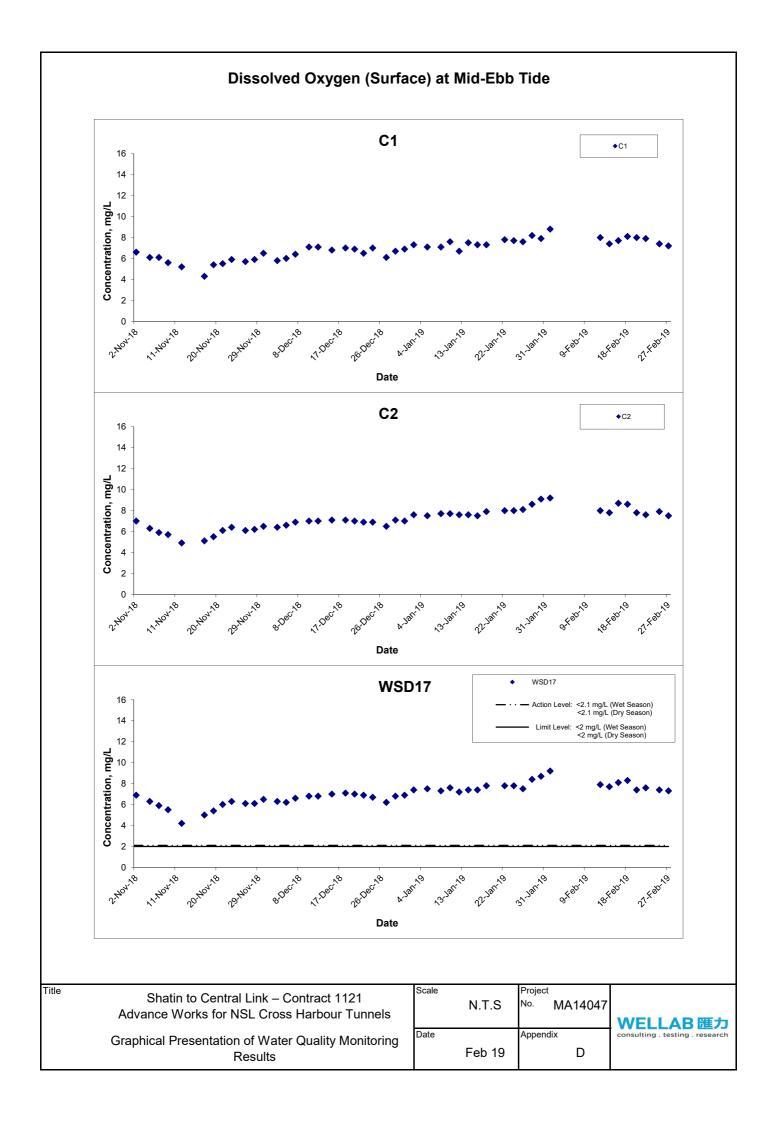
Water Quality Monitoring Results at WSD9 - Mid-Flood Tide

Dete	Weather	Sea	Sampling	Donat	da ()	Tempera	ature (°C)	ŗ	Н	Salin	ity ppt	DO Satu	ration (%)	Dissol	lved Oxygen	(mg/L)	1	Turbidity(NTI	U)	Suspe	nded Solids	(mg/L)
Date	Condition	Condition**	Time	Dept	th (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
				Surface	1	18.8 18.8	18.8	8.2 8.2	8.2	30.2 30.2	30.2	123.9 124.6	124.3	9.7 9.7	9.7		1.3 1.3	1.3		5 5	5.0	
1-Feb-19	Sunny	Calm	15:25	Middle	4.5	18.7 18.8	18.8	8.1 8.2	8.2	30.2 30.2	30.2	125.1 125.5	125.3	9.8 9.8	9.8	9.6	1.5 1.4	1.5	1.5	3	2.5	3.5
				Bottom	8	18.6 18.7	18.7	8.1 8.2	8.2	30.3 30.3	30.3	116.9 118.3	117.6	9.1 9.2	9.2		1.7 1.6	1.7	=	3	3.0	
				Surface	1	19.3 19.2	19.3	8.6 8.6	8.6	31.1 31.1	31.1	100.7 100.8	100.8	7.7 7.7	7.7		2.3 2.4	2.4		5 6	5.5	
12-Feb-19	Sunny	Moderate	11:06	Middle	4.5	19.2 19.2	19.2	8.6 8.6	8.6	31.1 31.1	31.1	101.5 100.8	101.2	7.8 7.7	7.8	7.8 2.3 2.5 2.4 2.6	2.4	2.4	5 5	5.0	5.3	
				Bottom	8	19.2 19.2	19.2	8.6 8.5	8.6	31.1 31.1	31.1	100.9 99.8	100.4	7.8 7.7	7.8			2.5	6 5		5.5	
				Surface	1	19.7 19.7	19.7	8.3 8.2	8.3	31.0 30.9	31.0	103.8 104.4	104.1	7.9 8.0	8.0		0.4 0.4	0.4		3 3	3.0	
14-Feb-19	Sunny	Moderate	13:19	Middle	4	19.7 19.7	19.7	8.3 8.3	8.3	30.9 30.9	30.9	103.9 104.1	104.0	7.9 7.9	7.9	7.9	0.4 0.4	0.4	0.4	4 5	4.5	4.2
				Bottom	7	19.7 19.7	19.7	8.2 8.2	8.2	30.9 30.9	30.9	103.5 103.6	103.6	7.9 7.9	7.9		0.4 0.4	0.4		5 5	5.0	
				Surface	1	19.7 19.7	19.7	8.2 8.2	8.2	32.0 32.0	32.0	111.9 112.8	112.4	8.5 8.6	8.6		0.8 0.8	0.8		6 6	6.0	
16-Feb-19	Sunny	Moderate	14:33	Middle	4	19.6 19.6	19.6	8.2 8.2	8.2	32.0 32.0	32.0	113.1 113.2	113.2	8.6 8.6	8.6	8.6	0.8 0.8	0.8	0.9	4 4	4.0	5.2
				Bottom	7	19.3 19.4	19.4	8.2 8.2	8.2	32.0 32.0	32.0	111.0 112.7	111.9	8.5 8.6	8.6		1.1 1.1	1.1		6 5	5.5	
18-Feb-19 Rair			17:32	Surface	1	19.1 19.1	19.1	8.3 8.3	8.3	32.0 31.9	32.0	104.9 104.5	104.7	8.0 8.0	8.0	8.2	0.9 0.9	0.9	0.8	7 7	7.0	5.8
	Rainy	Moderate		Middle	4	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	107.7 107.8	107.8	8.2 8.3	8.3		0.9 0.9	0.9		5 5	5.0	
				Bottom	7	19.1 19.1	19.1	8.3 8.3	8.3	32.1 32.1	32.1	109.1 109.0	109.1	8.4 8.3	8.4		0.7 0.7	0.7		5 6	5.5	
				Surface	1	20.0 20.0	20.0	8.1 8.1	8.1	31.1 31.1	31.1	101.1 102.3	101.7	7.7 7.7	7.7		2.6 2.7	2.7		8 8	8.0	
20-Feb-19	Cloudy	Moderate	18:12	Middle	4.5	20.0 19.9	20.0	8.2 8.1	8.2	31.2 31.2	31.2	103.4 102.5	103.0	7.8 7.8	7.8	7.8 2 2 3	2.7	2.8	2.8	6	6.0	6.0
				Bottom	8	19.9 19.8	19.9	8.2 8.1	8.2	31.2 31.2	31.2	103.0 102.2	102.6	7.8 7.8	7.8		2.9 3.1	3.0		4 4	4.0	
				Surface	1	20.2	20.2	8.1 8.1	8.1	30.6 30.6	30.6	100.5 99.2	99.9	7.6 7.5	7.6		0.6	0.6		5	5.0	
22-Feb-19	Fine	Moderate	08:40	Middle	4.5	20.2	20.2	8.1 8.1	8.1	30.7 30.7	30.7	98.9 99.2	99.1	7.5 7.5	7.5	7.5	0.5 0.5	0.5	0.6	6	6.0	6.0
				Bottom	8	20.0	20.1	8.1 8.1	8.1	30.9 30.8	30.9	98.0 98.4	98.2	7.4 7.5	7.5		0.6 0.6	0.6		7 7	7.0	
25-Feb-19	Cloudy	Moderate	10:57	Surface	1	19.6 19.6	19.6	8.3 8.3	8.3	31.0 31.0	31.0	98.6 98.0	98.3	7.5 7.5	7.5	7.5	2.3	2.3	2.3	6	6.0	5.2
				:57 Middle	4.5	19.6	19.6	8.3 8.3	8.3	31.0 31.0	31.0	97.9 97.9	97.9	7.5 7.5	7.5		2.4	2.4		5 5	5.0	
				Bottom	8	19.6 19.6	19.6	8.3 8.2	8.3	31.0 31.0	31.0	97.5 97.0	97.3	7.4 7.4	7.4		2.3 2.3	2.3		5 4	4.5	
				Surface	1	19.3 19.3	19.3	8.1 8.1	8.1	31.8 31.8	31.8	99.3 99.3 98.8	99.3	7.6 7.6	7.6		3.0 3.0 3.1	3.0		7 7 7	7.0	
27-Feb-19	Sunny	Moderate	12:32	Middle		19.3 19.3 19.3	9.3	8.1 8.1	8.1	31.8 31.8 31.7	31.8	99.1	99.0 7	7.6 7.6	7.6	7.6	3.1	3.1	3.0	7 7	7.0	6.2
				Bottom	8	19.3	19.3	8.1 8.1	8.1	31.7	31.7	98.1 98.4	98.3	7.5 7.5	7.5		3.0	3.0		5	4.5	

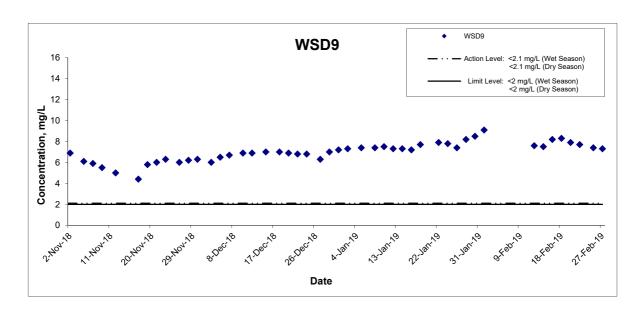
Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher.





Dissolved Oxygen (Surface) at Mid-Ebb Tide

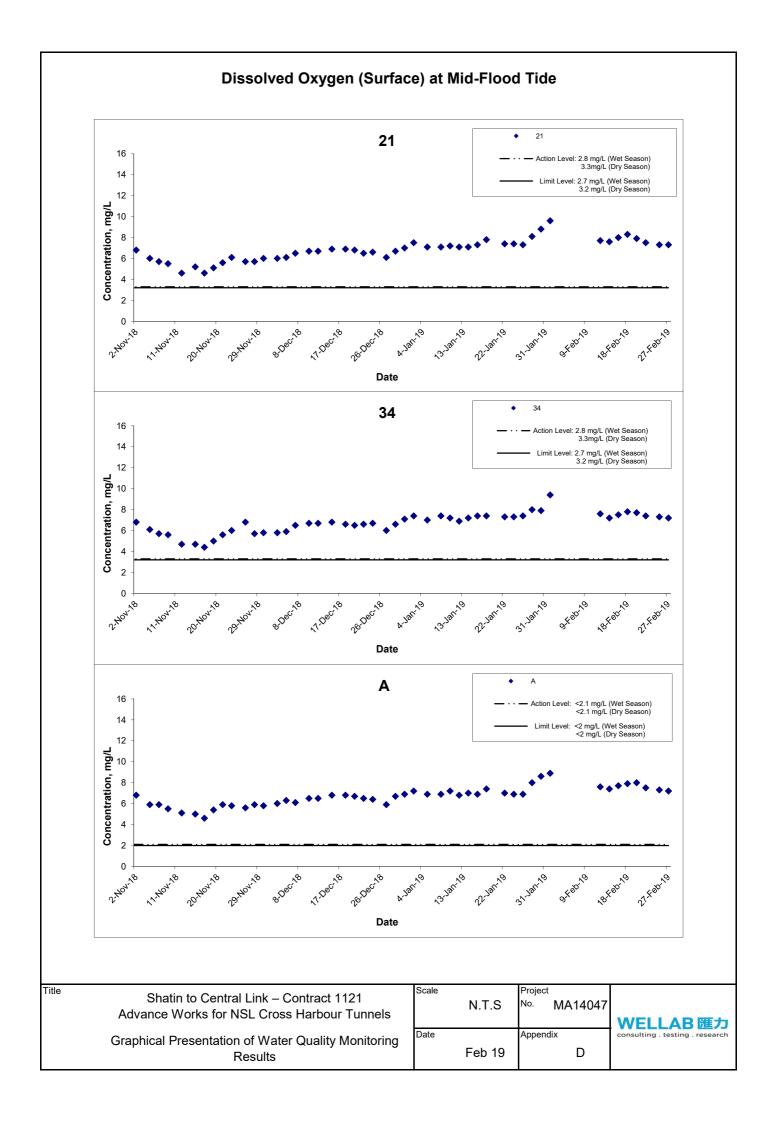


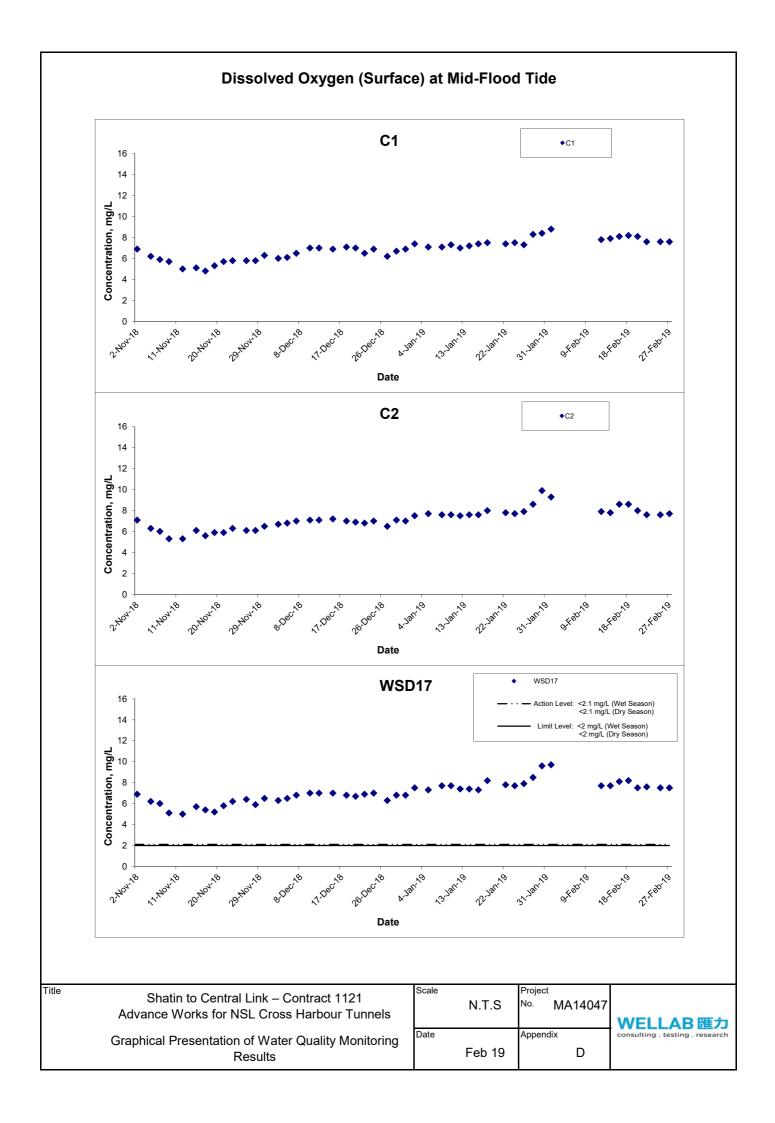
Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

Title

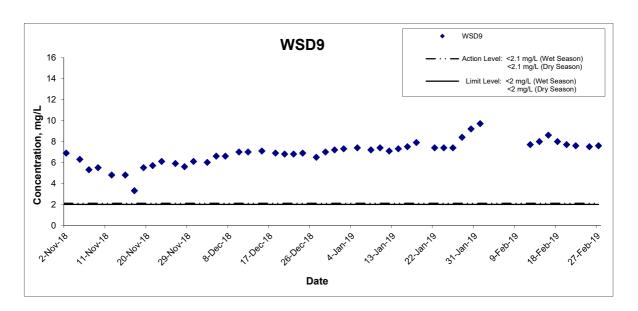
Scale		Project					
	N.T.S	No. MA14047					
Date		Appendix					
	Feb 19	D					







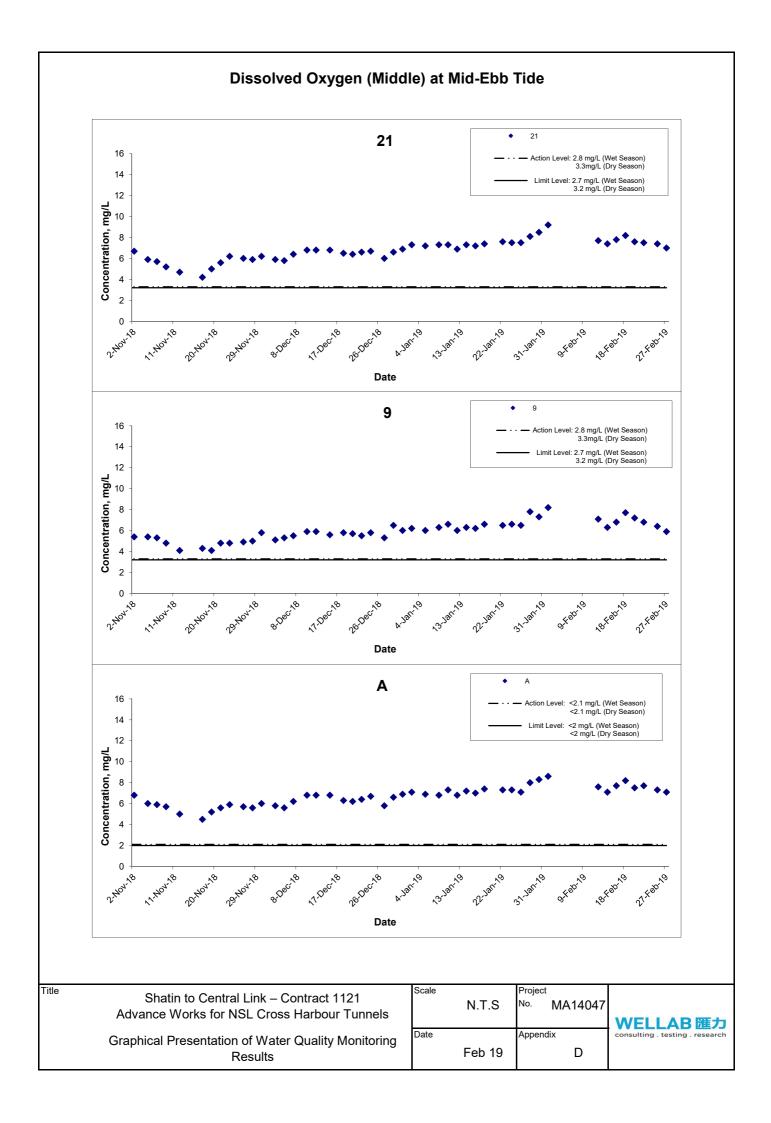
Dissolved Oxygen (Surface) at Mid-Flood Tide

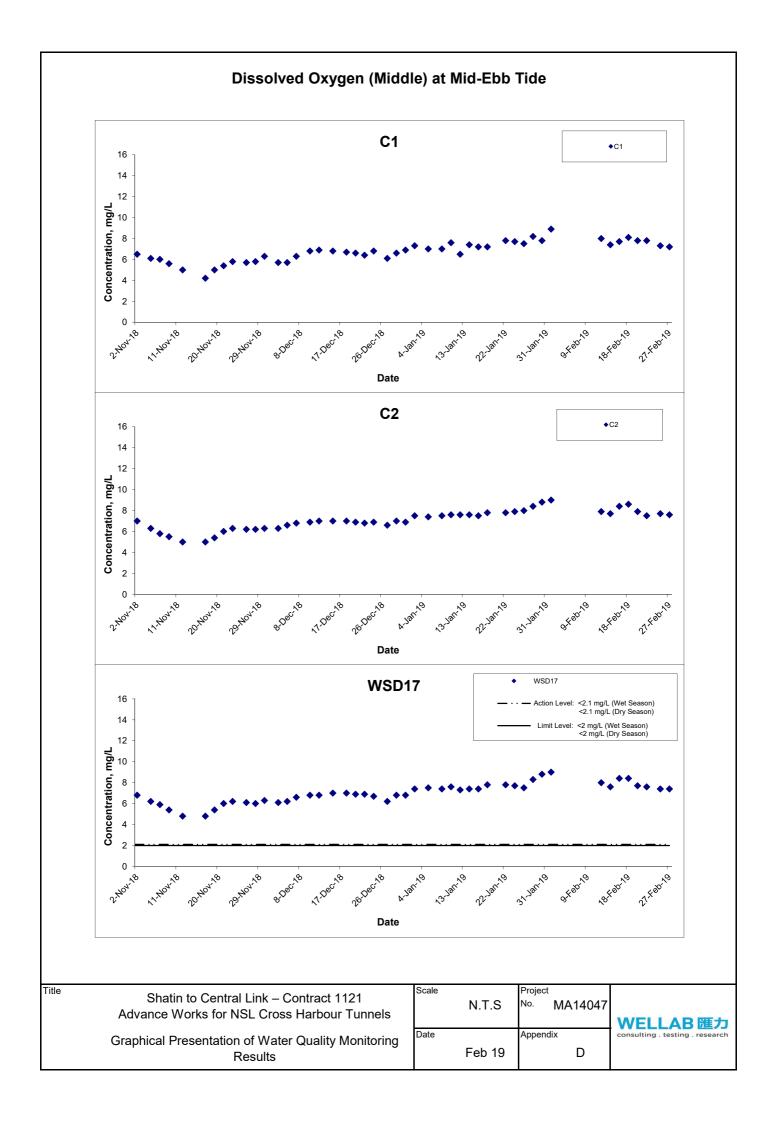


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

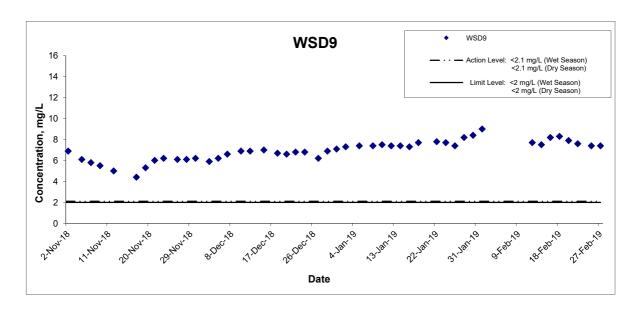
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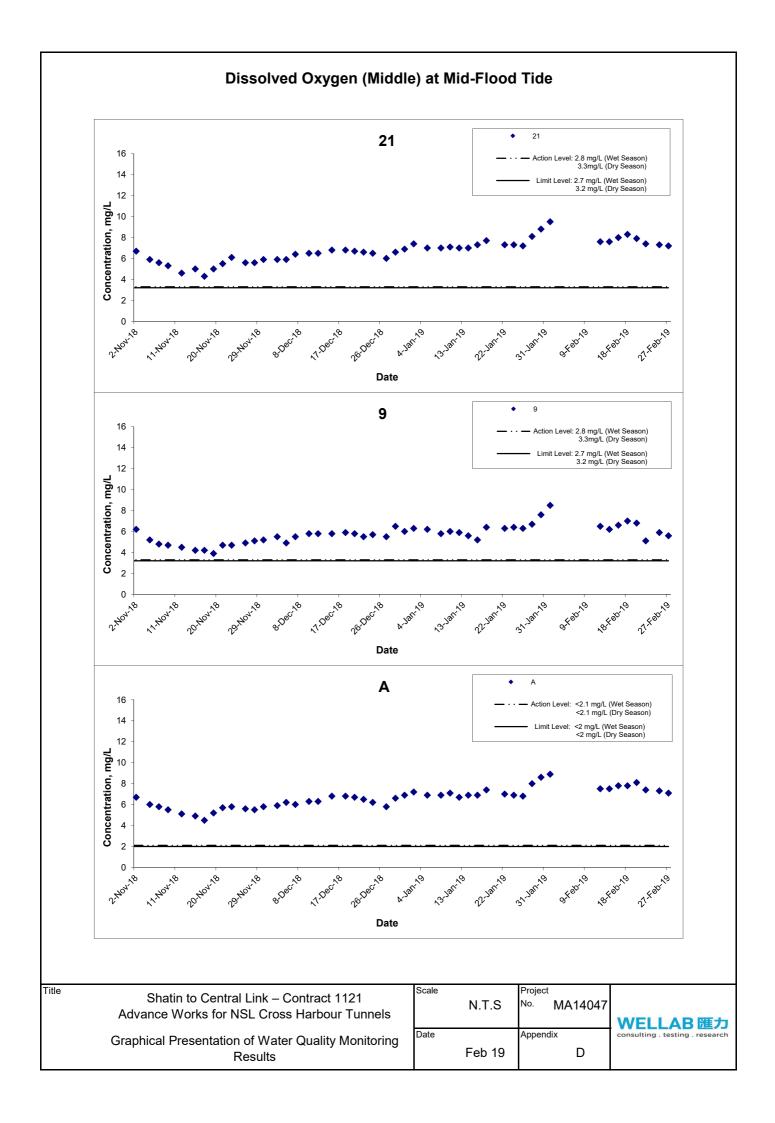
Dissolved Oxygen (Middle) at Mid-Ebb Tide

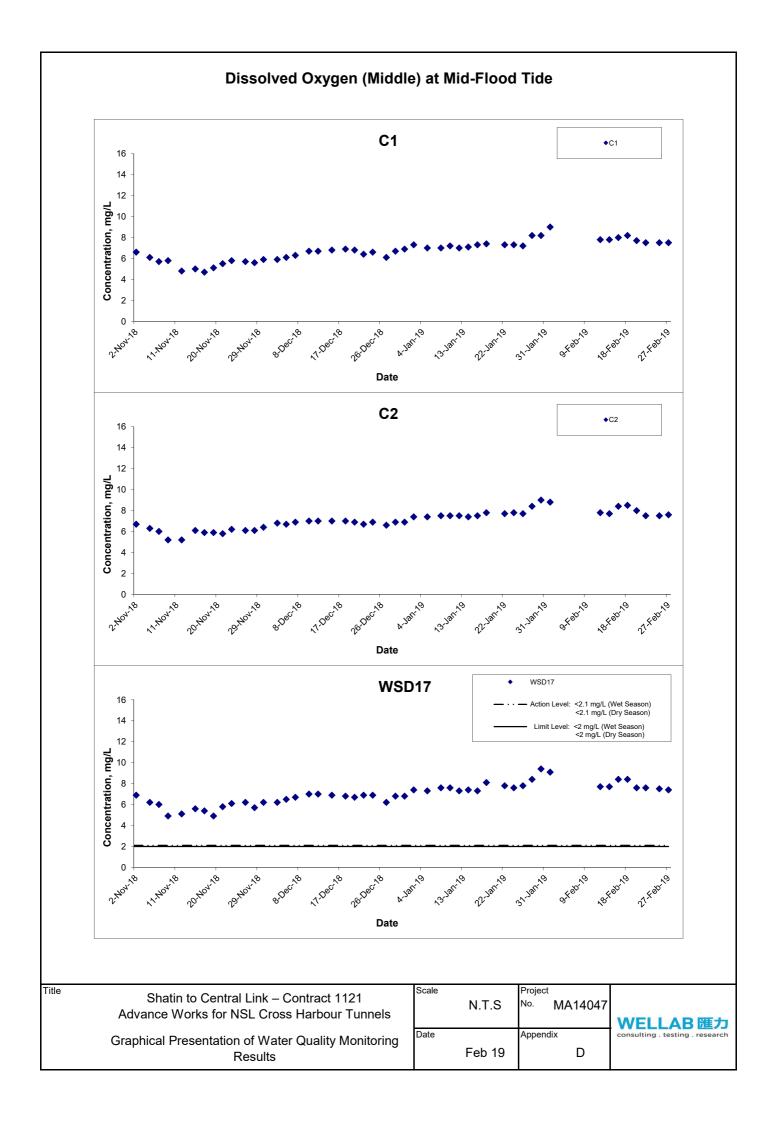


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

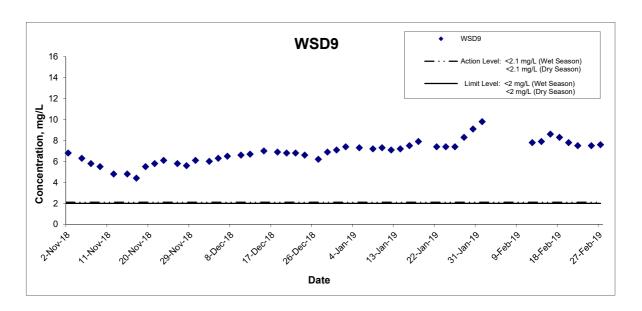
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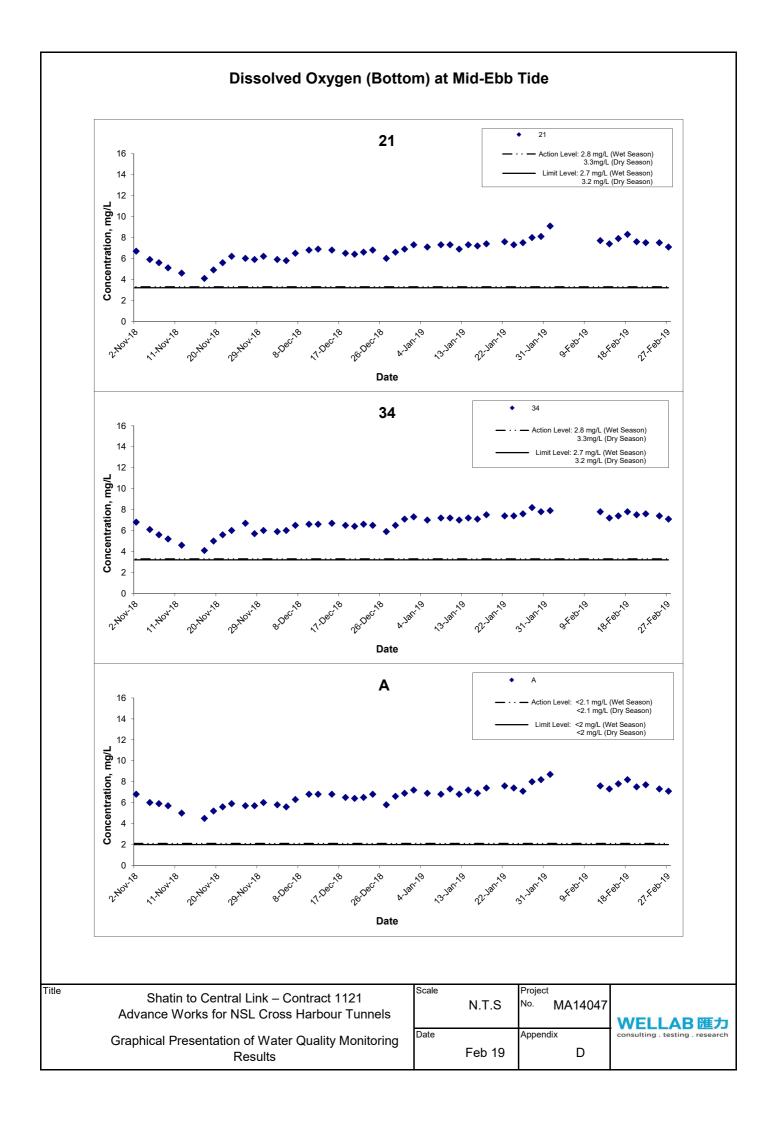
Dissolved Oxygen (Middle) at Mid-Flood Tide

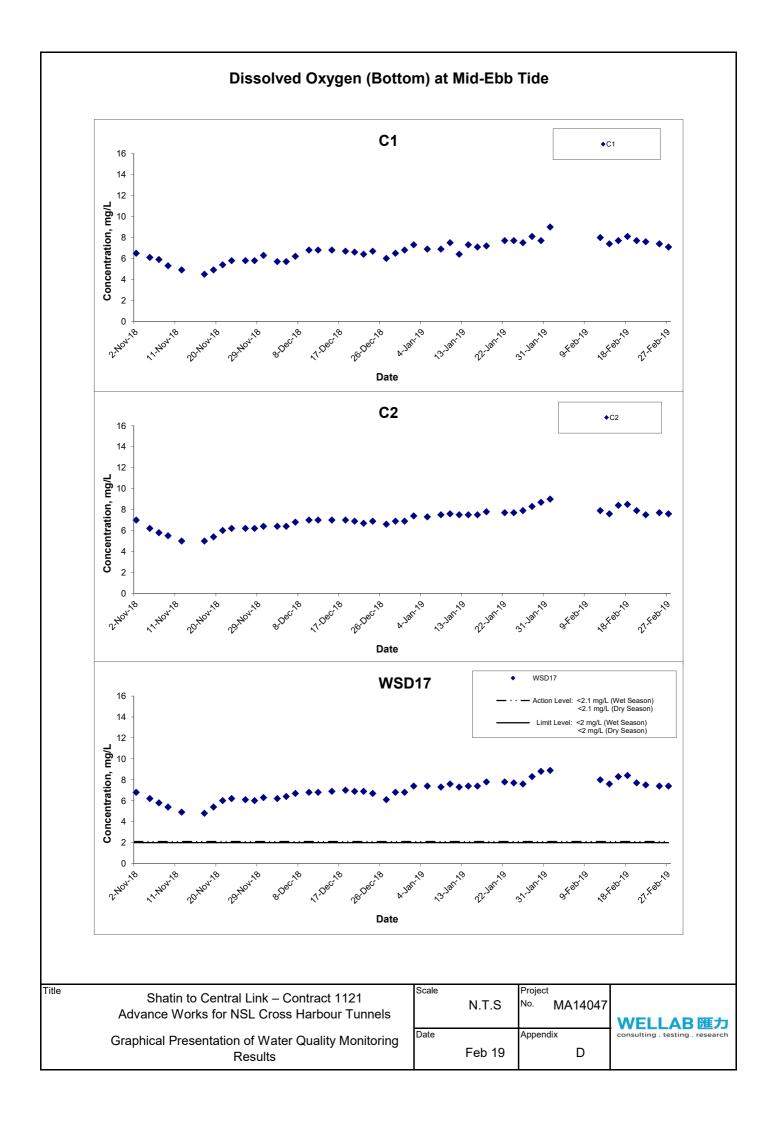


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

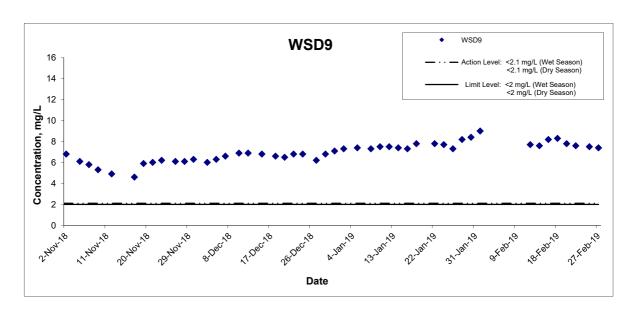
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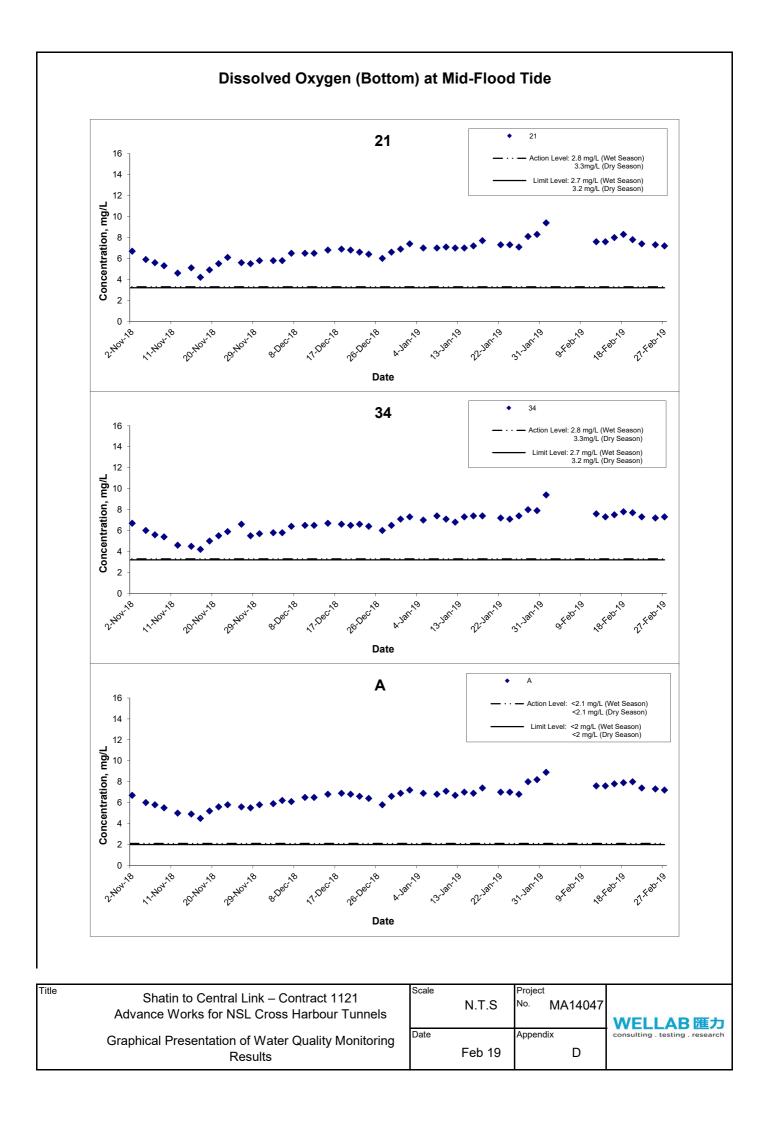
Dissolved Oxygen (Bottom) at Mid-Ebb Tide

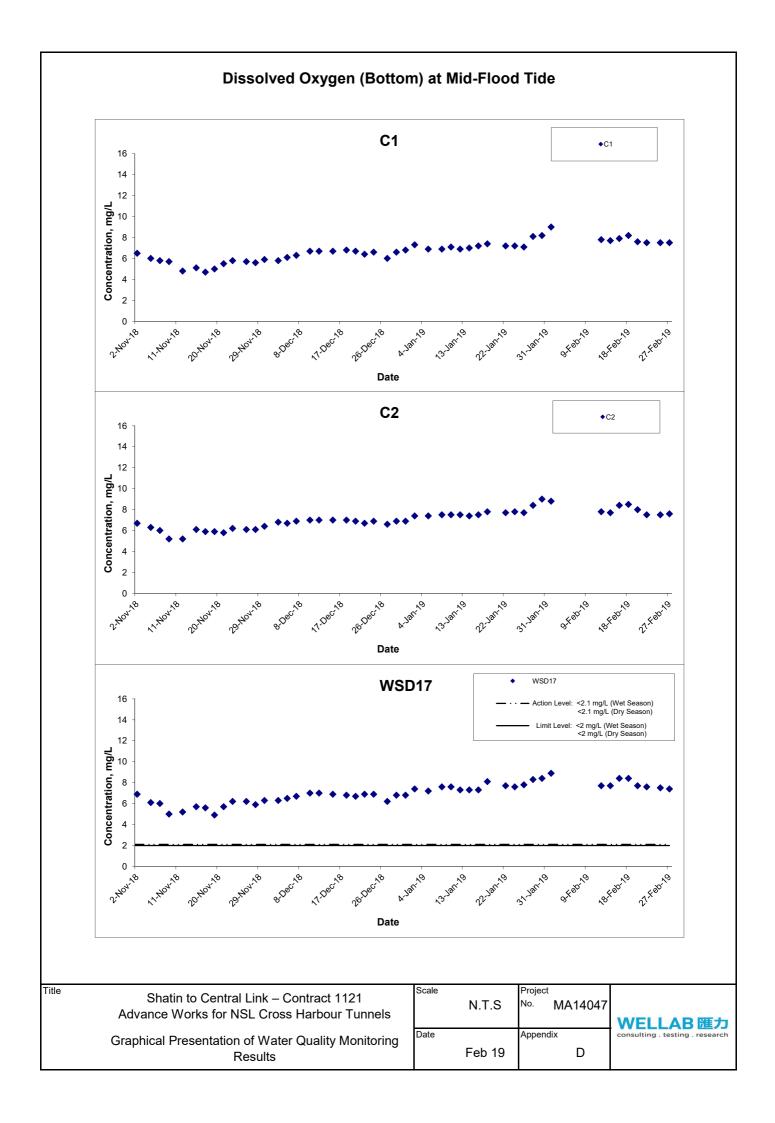


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

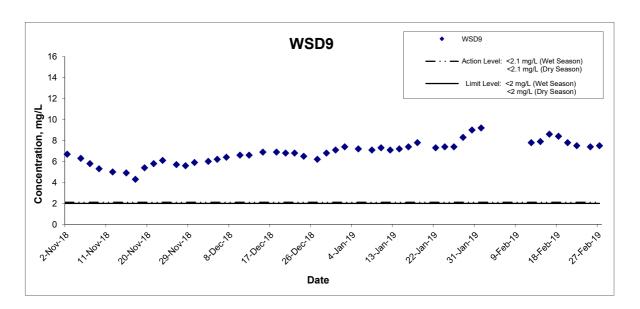
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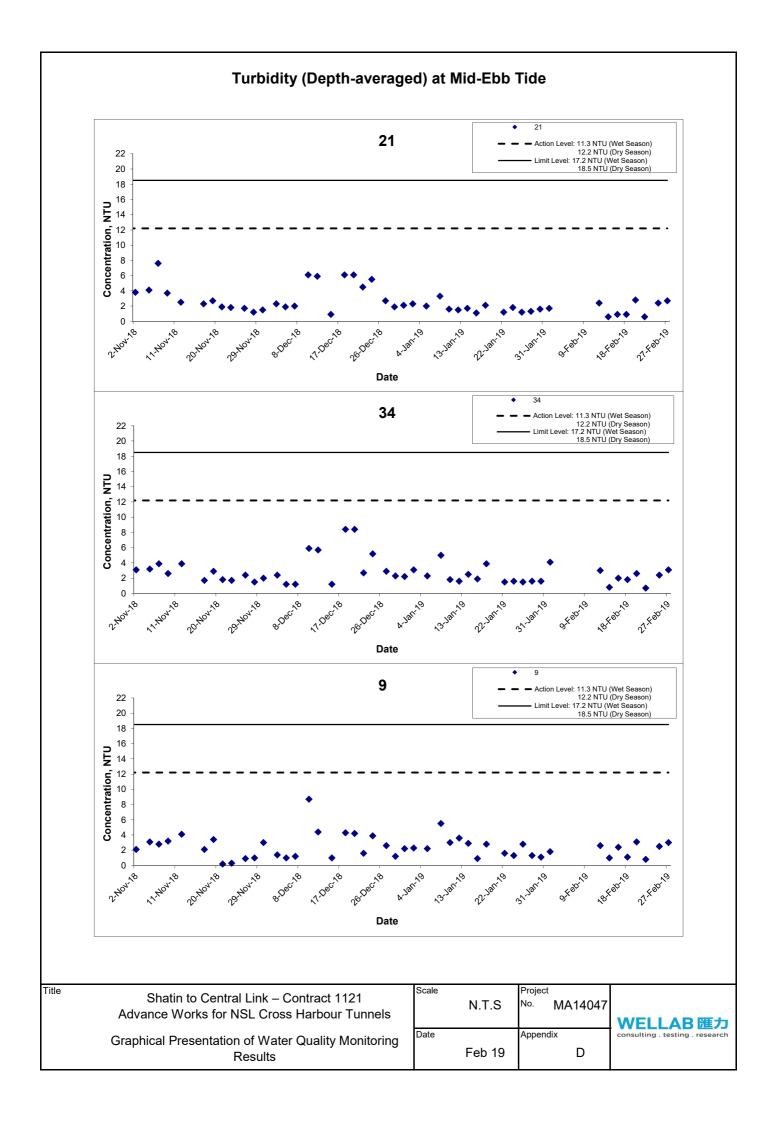
Dissolved Oxygen (Bottom) at Mid-Flood Tide

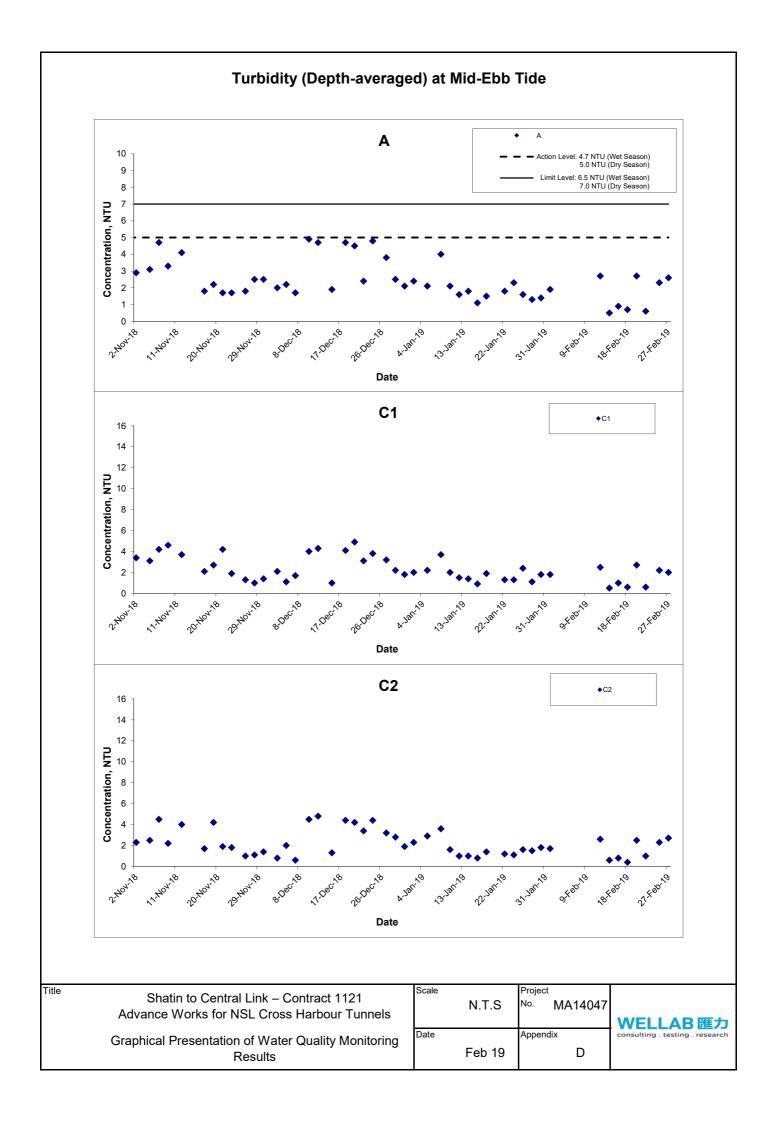


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results

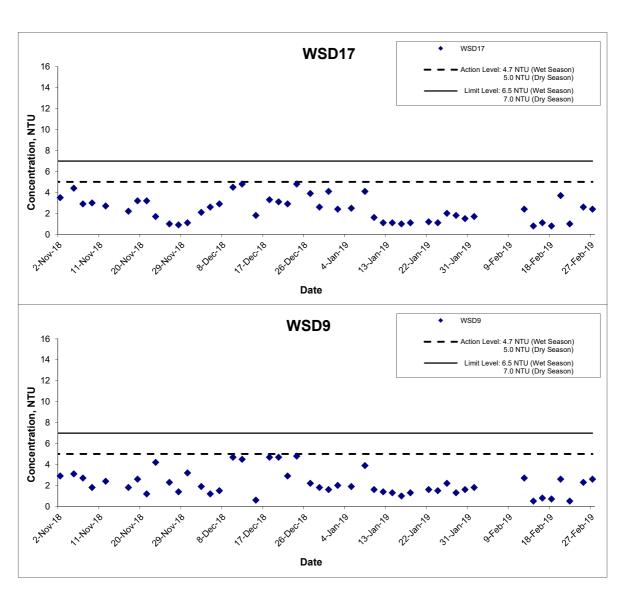
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Turbidity (Depth-averaged) at Mid-Ebb Tide



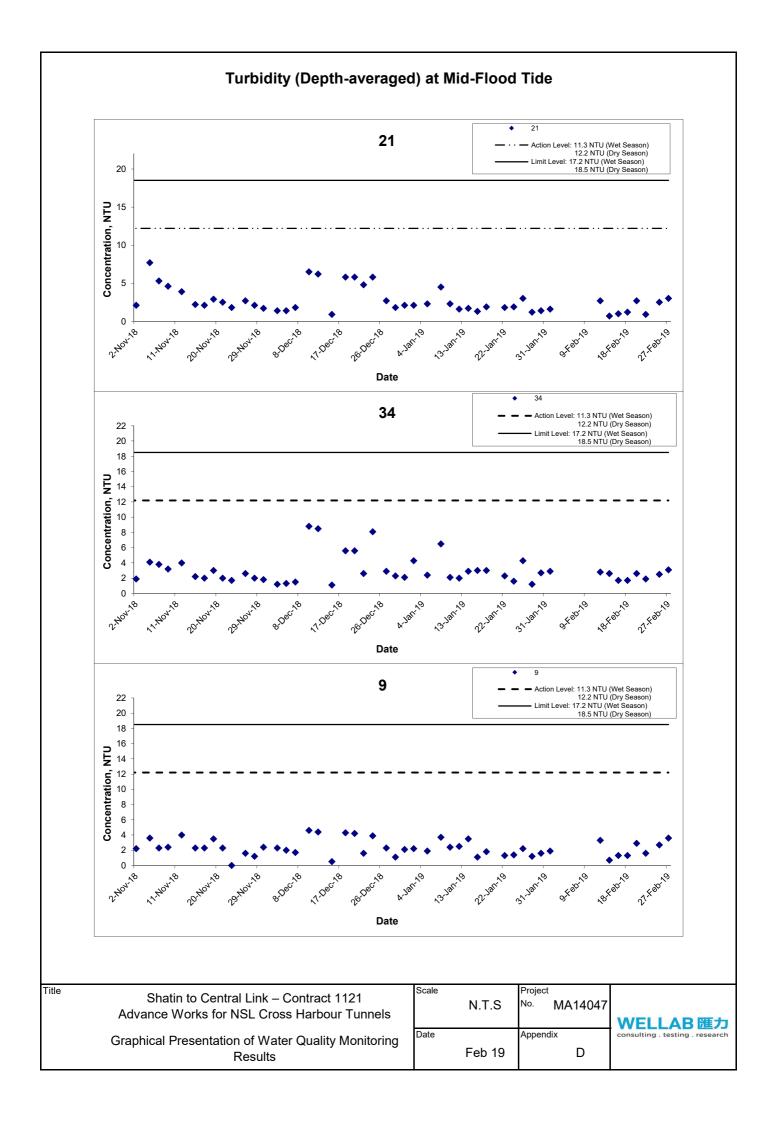
Shatin to Central Link – Contract 1121
Advance Works for NSL Cross Harbour Tunnels
Graphical Presentation of Water Quality Monitoring
Results

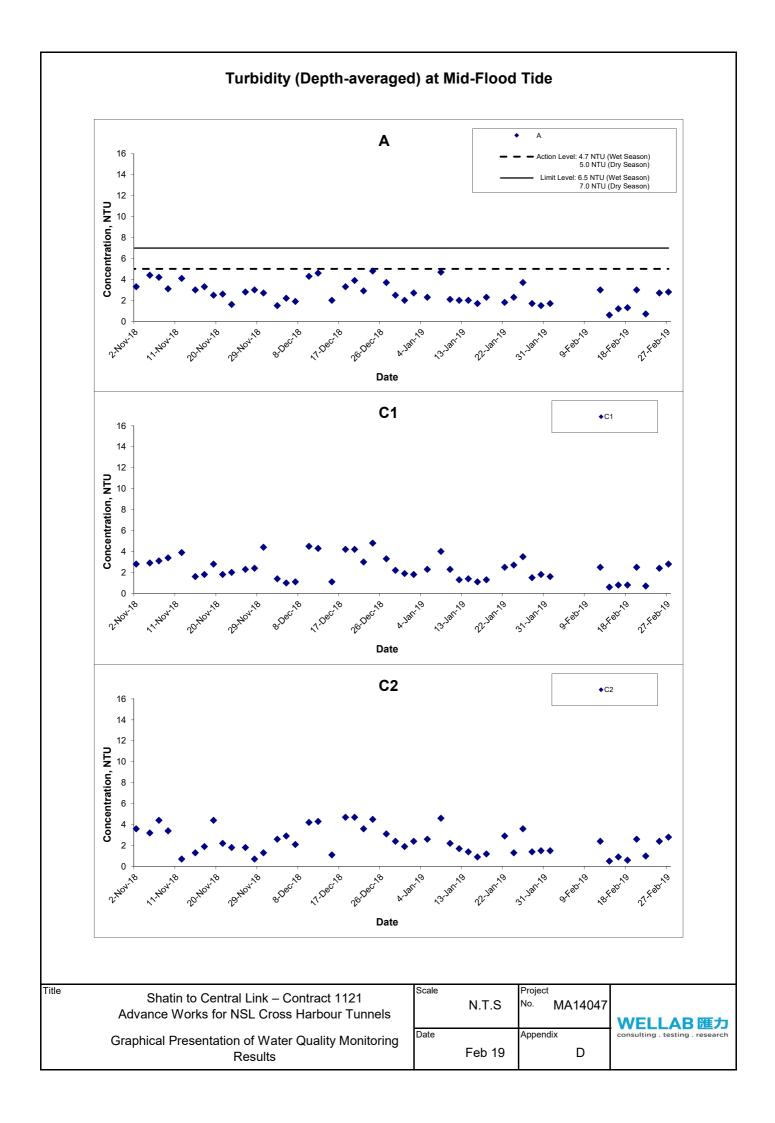
 N.T.S
 Project No.
 MA14047

 Date
 Appendix

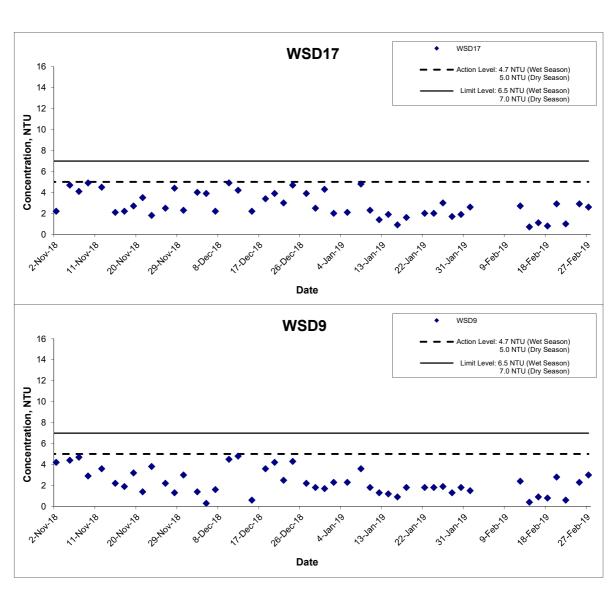
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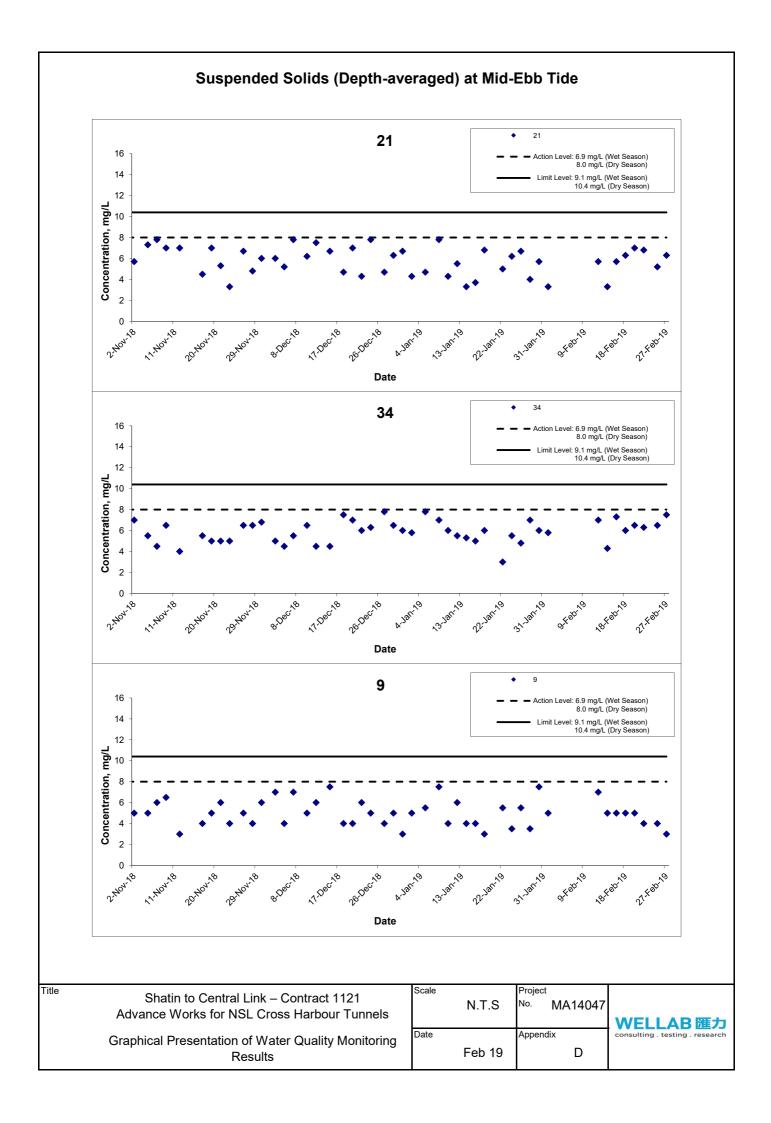


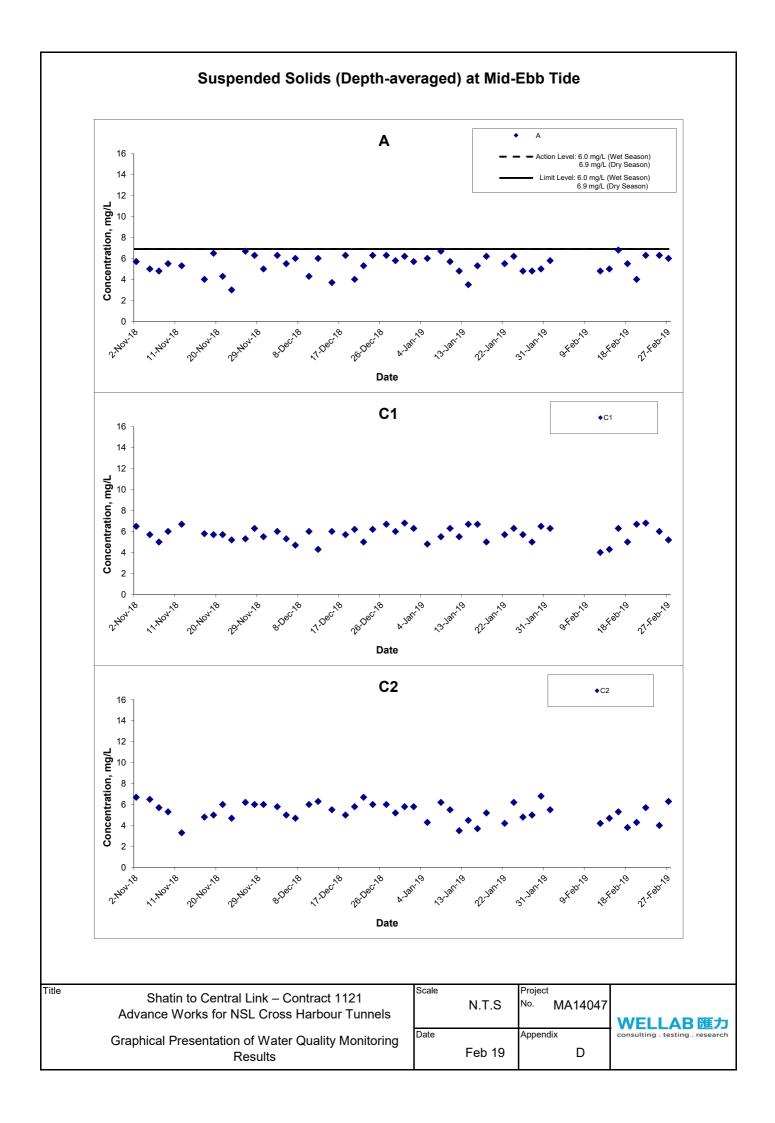


Turbidity (Depth-averaged) at Mid-Flood Tide

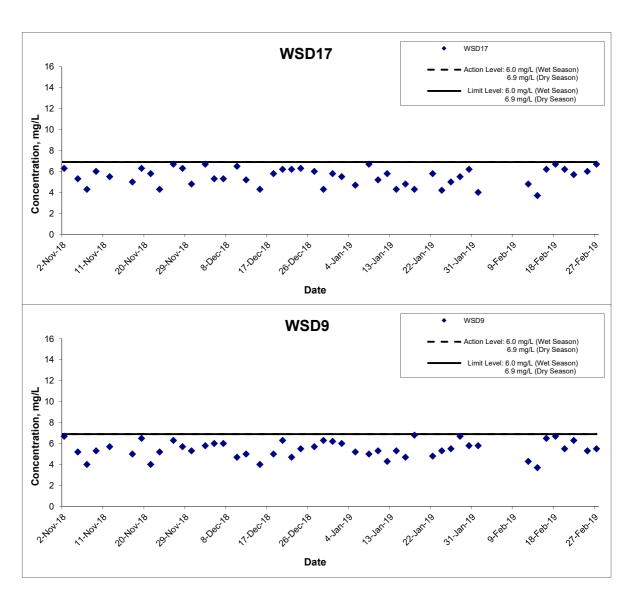


Shatin to Central Link – Contral Lin			Project No.	MA14047	WELLAB 匯力
Graphical Presentation of Water Results	Quality Monitoring Date	Feb 19	Append	D D	consulting . testing . research

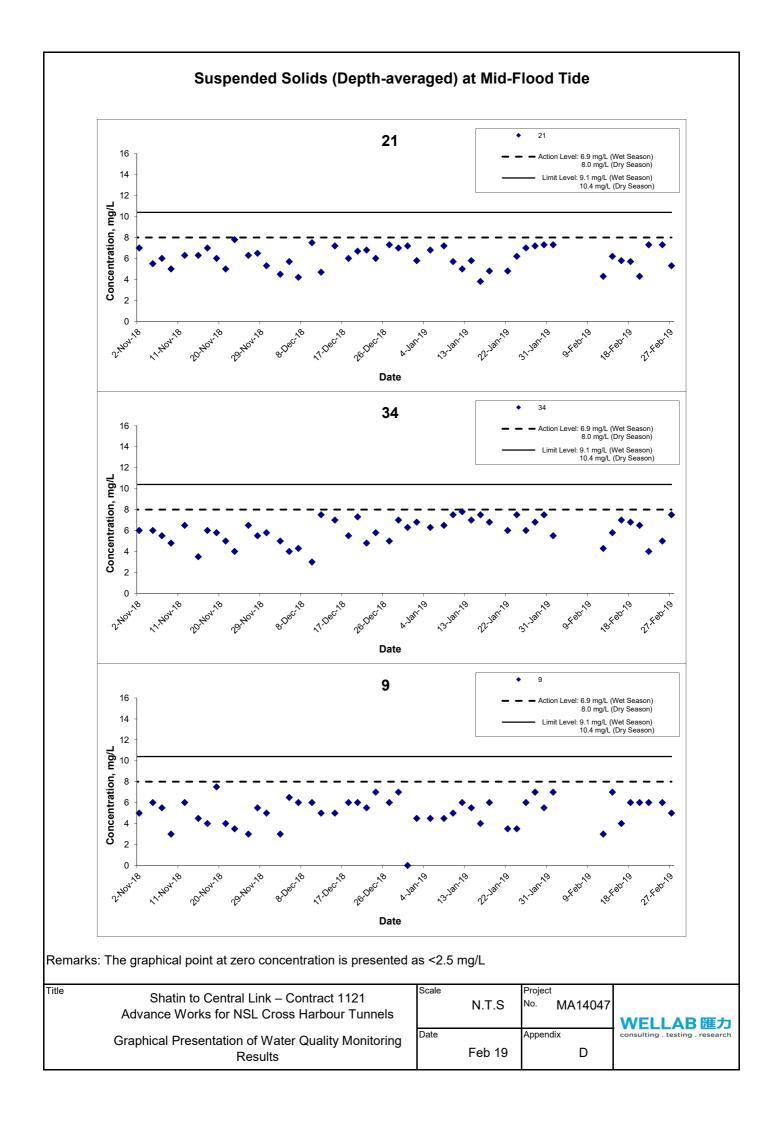


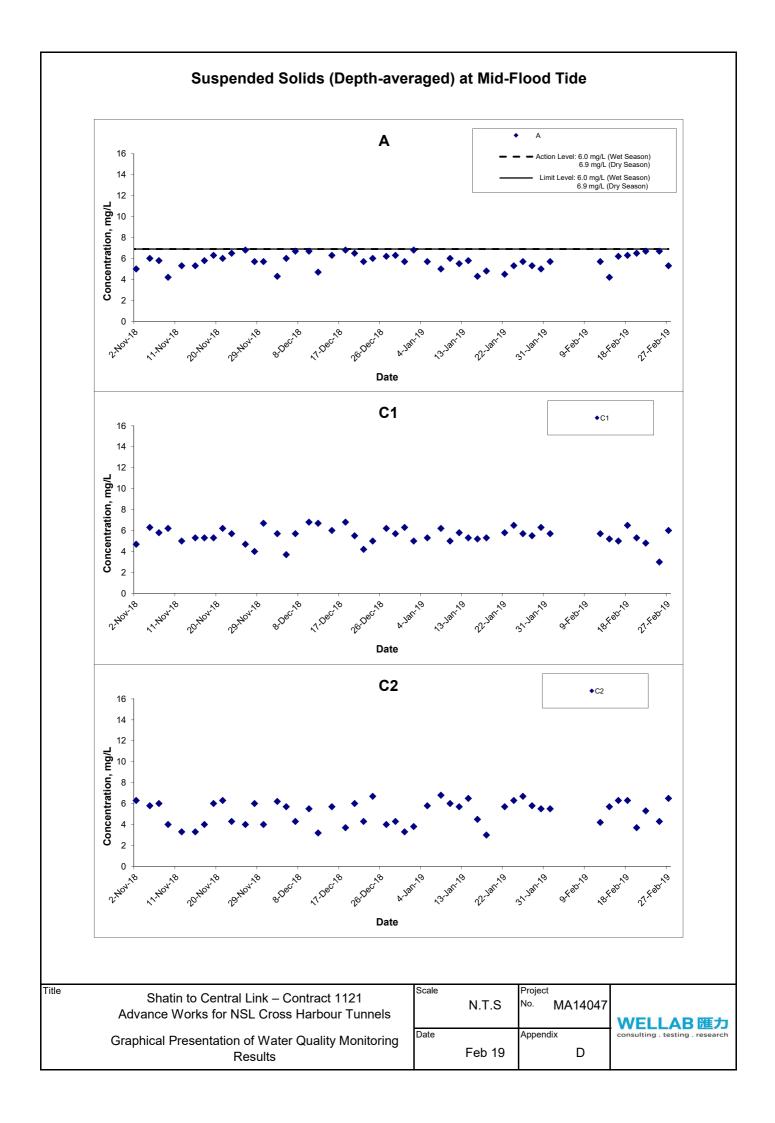


Suspended Solids (Depth-averaged) at Mid-Ebb Tide

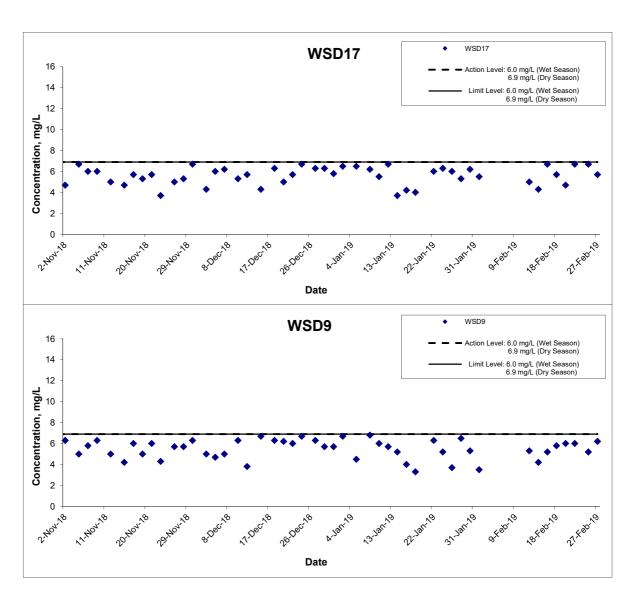


Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels	Scale		Project No.	MA14047	WELLAB確力
Graphical Presentation of Water Quality Monitoring	Date	Feb 19	Append	xib D	consulting , testing , research
Results		1 00 10			





Suspended Solids (Depth-averaged) at Mid-Flood Tide



Shatin to Central Link – Co Advance Works for NSL Cross I			Project No.	MA14047	WELLAB匯力
Graphical Presentation of Water (Results	Quality Monitoring Date	Feb 19	Append	dix D	consulting . testing . research

APPENDIX E COPIES OF CALIBRATION CERTIFICATES



WELLAB LIMITED

Rms 1214, 1502, 1516, 1701 & 1716, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

TEST REPORT

APPLICANT:

Wellab Limited

(EM&A Department)

Room 1701, Technology Park,

18 On Lai Street,

Shatin, NT, Hong Kong

Test Report No.:	30912
Date of Issue:	2019-02-02
Date Received:	2019-02-02
Date Tested:	2019-02-02
Date Completed:	2019-02-02
Next Due Date:	2019-05-01

ATTN:

Mr. W. K. Tang

'a	ge:	

1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-09
Manufacturer:	YSI Incorporate	d, a Xylem brand
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102988
- EXO conductivity/Temperature Sensor, Ti	599870	16G102310
- EXO Turbuduty Sensor, Ti	599101-01	16H102467
- EXO pH Sensor Assembly, Guarded, Ti	599701	18C102842

Test conditions:

Room Temperature

: 17-22 degree Celsius

Relative Humidity

: 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

 $PREPARED\ AND\ CHECKED\ BY:$

For and On Behalf of WELLAB Ltd.

PATRICK TSE



WELLAB LIMITED

Rms 1214, 1502, 1516, 1701 & 1716, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

TEST REPORT

 Test Report No.:
 30912

 Date of Issue:
 2019-02-02

 Date Received:
 2019-02-02

 Date Tested:
 2019-02-02

 Date Completed:
 2019-02-02

 Next Due Date:
 2019-05-01

Page:

2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (μS/cm)	Accetance Criteria	Comment
KCl stock solution	13000	12246-13534	Pass
(12890 μS/cm)			

Temperature performance checking

Reference thermometer-	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings	Accetance Criteria	Comment
	(pH unit)		
pH QC buffer 4.00	4.01	4.00 <u>+</u> 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.08	<0.1mg/L	Pass

Winkler Titration value	Instrument Readings (mg/L)	Accetance Criteria	Comment
(mg/L)			
8.00	8.00	Difference between	Pass
		Titration value and	
		instrument reading	
		<0.2mg/L	

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.01	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	100.6	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass



TEST REPORT

APPLICANT:

Cinotech Consultants Limited

RM 1710, Technology Park,

18 On Lai Street,

Shatin, N.T., Hong Kong

Test Report No.: 30298
Date of Issue: 2018-11-24

Date Received: 2018-11-24

Date Tested: 2018-11-24 Date Completed: 2018-11-24

Next Due Date:

2019-02-23

ATTN:

Miss Mei Ling Tang

Page:

1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-15
Manufacturer:	YSI Incorporated	d, a Xylem brand
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B101545
- EXO conductivity/Temperature Sensor, Ti	599870	17B100792
- EXO Turbuduty Sensor, Ti	599101-01	17B102247
- EXO pH Sensor Assembly, Guarded, Ti	599701	17B103623

Test conditions:

Room Temperature

: 17-22 degree Celsius

Relative Humidity

: 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

PATRICK TSE



WELLAB LIMITED

Rms 1214, 1502, 1516, 1701 & 1716, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

TEST REPORT

 Test Report No.:
 30298

 Date of Issue:
 2018-11-24

 Date Received:
 2018-11-24

 Date Tested:
 2018-11-24

 Date Completed:
 2018-11-24

 Next Due Date:
 2019-02-23

Page: 2 of 2

Results:

Conductivity performance checking

	Instrument Readings (µS/cm)	Accetance Criteria	Comment
KCl stock solution	13000	12246-13534	Pass
(12890 μS/cm)			

Temperature performance checking

Reference thermometer-	Instrument Readings (°C)	Correction (°C)	Comment
E431 Readings (°C)			
20.0	20.001	-0.001	N/A

pH performance checking

	Instrument Readings	Accetance Criteria	Comment
	(pH unit)		
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.14	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.08	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.10	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.00	9.0-11.0	Pass
50 NTU	50.02	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment	
0.5 meter	0.50	0.45-0.55	Pass	



TEST REPORT

APPLICANT:

Cinotech Consultants Limited

RM 1710, Technology Park,

18 On Lai Street,

Shatin, N.T., Hong Kong

Test Report No.: 30301 Date of Issue: 2018-11-24 Date Received: 2018-11-24 Date Tested: 2018-11-24

Date Completed: Next Due Date:

2018-11-24 2019-02-23

ATTN:

Miss Mei Ling Tang

Page:

1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-132
Manufacturer:	YSI Incorporated	d, a Xylem brand
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B102219
- EXO conductivity/Temperature Sensor, Ti	599870	17B100807
- EXO Turbuduty Sensor, Ti	599101-01	17B102262
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	16J101314

Test conditions:

Room Temperature

: 17-22 degree Celsius

Relative Humidity

: 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.)

and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.



TEST REPORT

Test Report No.: 30301 Date of Issue: 2018-11-24 Date Received: 2018-11-24 Date Tested: 2018-11-24 Date Completed: 2018-11-24 Next Due Date: 2019-02-23

Page:

2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (µS/cm)	Accetance Criteria	Comment
KCl stock solution	13000	12246-13534	Pass
(12890 μS/cm)	·		

Temperature performance checking

Reference thermometer- E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.001	-0.001	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.89	6.86 + 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

F	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.07	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.04	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.01	9.0-11.0	Pass
50 NTU	50.00	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment	
0.5 meter	0.50	0.45-0.55	Pass	
*******	**************************************	T*********	*****	



WELLAB LIMITED

Rms 1214, 1502, 1516, 1701 & 1716, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

TEST REPORT

APPLICANT: Wellab Limited

(EM&A Department)

Room 1701, Technology Park,

18 On Lai Street,

Shatin, NT, Hong Kong

Test Report No.:	30915D
Date of Issue:	2019-02-23
Date Received:	2019-02-23
Date Tested:	2019-02-23
Date Completed:	2019-02-23
Next Due Date:	2019-05-22

ATTN:

Mr. W. K. Tang

Page: 1 of 2

	cate of Cal		

T /			•••			
Item	for	ca	lib	rati	on	:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-132
Manufacturer:	YSI Incorporate	d, a Xylem brand
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B102219
- EXO conductivity/Temperature Sensor, Ti	599870	17B100807
- EXO Turbuduty Sensor, Ti	599101-01	17B102262
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	17B103629

Test conditions:

Room Temperature

: 17-22 degree Celsius

Relative Humidity

: 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PATRICK TSE
Laboratory Manager

This report may not be reproduced, except in full, without prior written approval from WELLAB LIMITED and the results relate only to the items calibrated or tested.



WELLAB LIMITED

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TEST REPORT

 Test Report No.:
 30915D

 Date of Issue:
 2019-02-23

 Date Received:
 2019-02-23

 Date Tested:
 2019-02-23

 Date Completed:
 2019-02-23

 Next Due Date:
 2019-05-22

Page:

2 of 2

		Conti	finate of Calil	bration	
		Gerti	ficate of Calil	bration	
1					

Results:

Conductivity performance checking

	Instrument Readings (µS/cm)	Accetance Criteria	Comment
KCl stock solution	13000	12246-13534	Pass
(12890 μS/cm)			

Temperature performance checking

Reference thermometer-	Instrument Readings (°C)	Correction (°C)	Comment
E431 Readings (°C)			
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings	Accetance Criteria	Comment
	(pH unit)		
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.08	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.09	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.04	45.0-55.0	Pass
100 NTU	99.9	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass

APPENDIX F QUALITY CONTROL REPORTS FOR SS LABORATORY ANALYSIS



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO), Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30771

Date of Issue: 20

2019/2/4

Date Received:

2019/2/1

Date Tested:

2019/2/1

Date Completed:

Page:

2019/2/4 1 of 1

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/1

Number of Sample:

84

Custody No.:

MA14047/190201

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	7	7	5	99

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO),

Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30798

Date of Issue: 2019/2/13 Date Received: 2019/2/12

Date Tested: 2019/2/12

1 of 1

Date Completed: 2019/2/13

Page:

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/12

Number of Sample:

84

Custody No.:

MA14047/190212

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	3	3	5	98

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO),

Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30816 Date of Issue:

2019/2/15

Date Received: 2019/2/14 Date Tested: 2019/2/14

Date Completed: 2019/2/15

1 of 1

Page:

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/14

Number of Sample:

84

Custody No.:

MA14047/190212

	Total Suspended Solids	Duplicate Analysis			QC Recovery, %
ſ	Sampling Point	Trial 1,	Trial 2,	Difference,	
L		mg/L	mg/L	%	
ſ	Abe	4	4	1	98

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO), Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30832

Date of Issue: 2019/2/18

Date Received: 2019/2/16
Date Tested: 2019/2/16

Date Completed: 2019/2/18

1 of 1

ATTN: Mr. Hints Pang

Project Name:

Page: Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/16

Number of Sample:

: 84

Custody No.:

MA14047/190216

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	8	8	0	99

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO),

Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30835

Date of Issue: 2019/2/19

Date Received:

2019/2/18

Date Tested:

2019/2/18 2019/2/19

Date Completed: Page:

1 of 1

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/18

Number of Sample:

: 84

Custody No.:

MA14047/190218

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
C2bf	9	9	1	100

PREPARED AND CHECKED BY:
For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO),

Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30846

Date of Issue: 2019/2/21

Date Received: 2019/2/20 Date Tested: 2019/2/20

Page:

Date Completed: 2019/2/21

1 of 1

ATTN: Mr. Hints Pang

Project Name: Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date: 2019/2/20

Number of Sample: 84

Custody No.; MA14047/190220

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	8	8	0	94

PREPARED AND CHECKED BY:
For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO),

Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30870

Date of Issue: 2019/2/25 Date Received: 2019/2/22

Date Tested: 2019/2/22

Date Completed: 2019/2/25

Page:

l of l

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/22

84

Number of Sample:

MA14047/190222

Custody No.:

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	9	9	3	101

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

PATRICK TSE



TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO), Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30877

Date of Issue: 2019/2/26 Date Received: 2019/2/25

Date Received: 2019/2/25 Date Tested: 2019/2/25

Date Completed: 2019/2/26

Page:

1 of 1

ATTN: Mr. Hints Pang

Project Name: S

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/25

Number of Sample: Custody No.:

MA14047/190225

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
C2bf	7	8	5	103

PREPARED AND CHECKED BY:
For and On Behalf of WELLAB Ltd.

PATRICK TSE



WELLAB LIMITED

Rms 1214, 1502, 1516, 1701 & 1716, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

TEST REPORT

QC REPORT

APPLICANT: Penta-Ocean-China State Joint Venture

2/F, SCL Hung Hom Site Office (HUHSO), Cheong Tung Road South, Hung Hom,

Kowloon, Hong Kong

Report No.: 30894

Date of Issue: 2019/2/28

Date Received: 2019/2/27 Date Tested: 2019/2/27

Date Completed: 2019/2/28

1 of 1

Page:

ATTN: Mr. Hints Pang

Project Name:

Shatin to Central Link - Contract No.1121

- NSL Cross Harbour Tunnels

Sampling Date:

2019/2/27

Number of Sample:

84

Custody No.:

MA14047/190227

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1,	Trial 2,	Difference,	
	mg/L	mg/L	%	
WSD9se	5	5	3	102

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

PATRICK TSE

APPENDIX G SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: February 2019

- a) Exceedance Report for Dust Monitoring (NIL)
- b) Exceedance Report for Water Quality Monitoring (NIL)

APPENDIX H SITE AUDIT SUMMARY

Inspection Information

Checklist Reference Number 190204	
Date	04 February 2019 (Monday)
Time	10:00 – 12:00

Ref. No.	Non-Compliance	Related Item
		No.
1	None identified	н

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality No environmental deficiency was identified during the site inspection.	
	Part C - Ecology / Others	
	No environmental deficiency was identified during the site inspection.	
	Part D - Landscape & Visual	
	No environmental deficiency was identified during the site inspection.	
	Part E - Air Quality	
190204-R01	A fading NRMM label on the excavator should be replaced near the NOV building at Hung Hom site.	E22
	Part F - Construction Noise Impact	
	No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
	No environmental deficiency was identified during the site inspection.	
	Part H – Permits/Licenses	
	No environmental deficiency was identified during the site inspection.	
	Part I - Others	
	• Follow-up on previous audit section (Ref. No.:190128), item 190128-R01 was remarked as 190204-R01 and the follow-up action is needed to be reviewed.	

	Name	Signature	Date
Recorded by	Andy Chan	Audy	04 February 2019
Checked by	Dr. Priscilla Choy	L LI	11 February 2019
		1	

Inspection Information

Checklist Reference Number	190211
Date	11 February 2019 (Monday)
Time	13:30 – 17:00

Ref. No.	Non-Compliance	Related Item
		No.
-	None identified	-

Ref. No.	Remarks/Observations	Related
	D D W A D	Item No
	 Part B – Water Quality No environmental deficiency was identified during the site inspection. 	
	Part C - Ecology / Others	
	No environmental deficiency was identified during the site inspection.	
	Part D – Landscape & Visual	
	No environmental deficiency was identified during the site inspection.	
	Part E - Air Quality	
	No environmental deficiency was identified during the site inspection.	
	Part F - Construction Noise Impact	
	No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
	No environmental deficiency was identified during the site inspection.	
	Part H – Permits/Licenses	
	No environmental deficiency was identified during the site inspection.	
	Part I - Others	
	• Follow-up on previous audit section (Ref. No.:190204), all environmental deficiency was rectified or improved by the Contractor.	

	Name	Signature	Date
Recorded by	Andy Chan	Arely	11 February 2019
Checked by	Dr. Priscilla Choy	W.	12 February 2019

Inspection Information

Checklist Reference Number	190218
Date	18 February 2019 (Monday)
Time	13:30 – 17:00

Ref. No.	Non-Compliance	Related Item
		No.
_	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
190218-R02	Part B – Water Quality Sandbag bunding at the discharge point should be repaired to avoid surface runoff discharging into discharge point.	B20
	Part C – Ecology / Others	
	No environmental deficiency was identified during the site inspection.	
	Part D - Landscape & Visual	
	No environmental deficiency was identified during the site inspection.	
	Part E – Air Quality	
190218-R01	A fading NRMM label on the forklift should be replaced near the Aqua-Sed at Hung Hom site.	E22
	Part F - Construction Noise Impact	
	No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
	No environmental deficiency was identified during the site inspection.	
	Part H – Permits/Licenses	
	No environmental deficiency was identified during the site inspection.	
	Part I - Others	
	• Follow-up on previous audit section (Ref. No.:190211), all environmental deficiency was rectified or improved by the Contractor.	

	Name	Signature	Date
Recorded by	Andy Chan	Andy	18 February 2019
Checked by	Dr. Priscilla Choy	"NTC	19 February 2019

Inspection Information

Checklist Reference Number	190225
Date	25 February 2019 (Monday)
Time	13:30 – 17:00

Ref. No.	Non-Compliance	Related Item
		No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality No environmental deficiency was identified during the site inspection.	110111 ((0)
	Part C – Ecology / Others	-
	No environmental deficiency was identified during the site inspection.	
	Part D – Landscape & Visual	
	No environmental deficiency was identified during the site inspection.	
	Part E – Air Quality	
	No environmental deficiency was identified during the site inspection.	
	Part F - Construction Noise Impact	
	No environmental deficiency was identified during the site inspection.	and the second of the second o
	Part G – Waste/Chemical Management	
90226-R01	To clear the stagnant water inside the drip tray appropriately.	G 10
	Part H – Permits/Licenses	
	No environmental deficiency was identified during the site inspection.	
	Part I - Others	
	• Follow-up on previous audit section (Ref. No.:190218), all environmental deficiency was rectified or improved by the Contractor.	

	Name	Signature	Date
Recorded by	Kinson Poon	A A	25 February 2019
Checked by	Dr. Priscilla Choy	KI	26 February 2019

APPENDIX I EVENT AND ACTION PLANS

Event and Action Plan for Marine Water Quality Monitoring

EVENT.	ACTION				
EVENT	ET	IEC	ER	CONTRACTOR	
ACTION LEVEL					
Action level being exceeded by one sampling day	 Inform the Contractor, IEC and ER; Check monitoring data, all plant, equipment and the Contractor's working methods; and Discuss remedial measures with the IEC and Contractor. 	 Discuss with the ET, ER and Contractor on the implemented mitigation measures; Review proposals on remedial measures submitted by the Contractor and advise the ER accordingly; and Review and advise the ET and ER the effectiveness of the implemented mitigation measures. 	Discuss with the ET, IEC and Contractor on the implemented mitigation measures; Make agreement on the remedial measures to be implemented; and Supervise the implementation of agreed remedial measures.	 Identify source(s) of impact; 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 the ET, IEC and ER and propose remedial measures to IEC and ER; and Implement the agreed remedial measures. 	
Action level being exceeded by more than one consecutive sampling days	 Repeat in-situ measurement to confirm findings; Inform the Contractor, IEC and ER; Check monitoring data, all plant, equipment and the Contractor's working methods; Discuss remedial measures with the IEC and Contractor; and Ensure remedial measures are implemented. 	 Discuss with the ET, ER and Contractor on the implemented mitigation measures; Review proposals on remedial measures submitted by the Contractor and advise the ER accordingly; and Review and advise the ET and ER the effectiveness of the implemented remedial measures. 	1. Discuss with the ET, IEC and Contractor on the implemented mitigation measures; 2. Make agreement on the remedial measures to be implemented; and 3. Discuss with the ET and IEC on the effectiveness of the implemented remedial measures.	 Identify source(s) of impact; 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 the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; and Implement the agreed remedial measures. 	

EVENT.	ACTION				
EVENT	ET	IEC	ER	CONTRACTOR	
LIMIT LEVEL					
Limit level being exceeded by one sampling day	 Repeat in-situ measurement to confirm findings; Inform the Contractor, IEC, EPD and ER; Rectify unacceptable practice; Check monitoring data, all plant, equipment and the Contractor's working methods; Discuss with the ET and IEC and propose remedial measures to the IEC, EPD and ER; and Ensure the agreed remedial measures are implemented. 	1. Discuss with the ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER the effectiveness of the implemented remedial measures.	1. Discuss with the ET, IEC and Contractor on the implemented mitigation measures; 2. Request the Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; and 4. Assess the effectiveness of the implemented remedial measures.	 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 remedial measures to IEC and ER within 3 working days of notification; and Implement the agreed remedial measures. 	
Limit level being exceeded by more than one consecutive sampling days	 Inform the Contractor, IEC, EPD and ER; Check monitoring data, all plant, equipment and the Contractor's working methods; Discuss remedial measures with the IEC, EPD, ER and Contractor; Ensure remedial measures are implemented; and Increase the monitoring frequency to daily until no exceedance of Limit level 	1. Discuss with the ET, ER and Contractor on the implemented measures; 2. Review proposals on remedial measures submitted by the Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER the effectiveness of the implemented remedial measures.	 Discuss with the ET, IEC and Contractor on the implemented mitigation measures; Request the Contractor to critically review the working methods; Make agreement on the remedial measures to be implemented; Discuss with the the ET, IEC and Contractor on the effectiveness of the implemented remedial measures; and Consider and instruct, if necessary, 	 Identify source(s) of impact; 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 the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; Implement the agreed remedial measures; and 	

EVENT		ACTION								
EVENT	ET	IEC	ER	CONTRACTOR						
	for two consecutive days.		the Contractor to slow down or to stop	8. As directed by the ER, to slow down or to						
			all or part of the marine work until	stop all or part of the marine works or						
			no exceedance of Limit level.	construction activities.						

APPENDIX J UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to	Status
						achieve?	
Cultural Herita	ge Impact (Construction Phase)						
S4.93 & Table 4.2	Erection of decorative and sensibly designed hoarding along	To mitigate the temporary	Contractor	Works Areas in	Construction	EIAO	N/A
	the boundary of the works area	visual impact due to		Causeway Bay	phase		
		surface works.		and Wan Chai			
Ecology (Cons	truction Phase)						
S 5.133	The following mitigation measures in controlling water quality	To minimize changes in	Contractor	All reclamation	Construction	• EIAO-TM	
	change shall be implemented:	water quality impact on		and dredging	phase		
	- Installation of silt curtains around the dredgers, where	marine flora and fauna		works areas			٨
	appropriate, during dredging activities;						
	- Use of closed grab dredger during dredging; and						٨
	- Reduction of dredging rate						٨
S5.134	Accidental chemical spillage and construction site run-off to	Minimise the contamination	Contractor	All land based	Construction	• EIAO-TM	٨
	the receiving water bodies, mitigation measures such as	of wastewater discharge		works areas	phase		
	removing the pollutants before discharge into storm drain and						
	paving the section of construction road between the wheel						
	washing bay and the public road as suggested in Sections						
	11.216 and 11.219 to 11.256 of the EIA Report shall be						
	adopted						
ERR \$3.6.3	Installation of floating type silt curtains around the area of	Minimize indirect impact to	Contractor	Shek O Casting	Construction	• EIAO-TM	٨
	construction and removal of earth	the nearby subtidal and		Basin	phase		
		intertidal flora and fauna					

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Fisheries Impa	1	Γ	Π	T		1	T
S5.132	The size of the dredging and underwater blasting areas shall	To minimize loss of fishing	Contractor/	All dredging and	Construction	• EIAO-TM	^
	be minimized as much as possible	ground and fisheries	MTR	underwater	phase		
		resources		blasting works			
				areas			
S5.133	Mitigation measures recommended in Sections 11.200 to	To minimize change in	Contractor	Works Areas	Construction	• EIAO-TM	^
	11.207, 11.209 to 11.211 and 11.213 to 11.256 of the EIA	water quality impact on			phase		
	Report to control water quality, i.e. use of effective site	fisheries resources and					
	drainage in land-based construction site and installation of silt	operation					
	curtain surrounding the dredging point, use of closed grab						
	dredger and reduction of dredging rate shall be implemented.						
S6.59	After completion of armour rock filling, the final surfaces of	To minimize the IMT	Contractor	Along IMT laying	Construction	• EIAO-TM	N/A
	the protective armour tock layer shall be checked by	protrusion above the		works areas	phase		
	ultrasonic sounding survey. Measures such as removing the	seabed					
	rock or breaking the rock into pieces shall be implemented in						
	case of non-compliance						
Landscape &	Visual (Construction Phase)					•	
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time	MTR	All works sites	Construction	• EIAO-TM	٨
		glare due to the Project			phase		
		during construction phase					

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Table 7.9	CM4 - Erection of decorative screen hoarding compatible with the surrounding setting.	Minimize the visual impact of the Project during construction phase	MTR	All works sites	Construction phase	• EIAO-TM	N/A
Table 7.9	CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	Control of height and deposition/arrangement of temporary facilities in works areas	MTR	All works sites	Construction phase	• EIAO-TM	N/A
Table 7.9	CM6 - All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis to the satisfaction of the relevant Government Departments.	Reinstatement of temporary works areas.	MTR	All works sites	Construction phase	• EIAO-TM	N/A
Construction L	Dust Impact						
EP 2.25	All diesel fuelled construction plant used by the contractors within the works areas of the Project shall be powered by ultra-low sulphur diesel fuel.	Mitigating Aerial Emissions from Construction Plant	Contractor	All works areas	Construction phase	• EIAO-TM	٨
Table 8.5	Barging facilities: (i) Pave all road surfaces within the barging facilities and provide watering once along with the haul road for every	To minimize dust impacts	Contractor	Barging facility at Shek O Casting Basin	Construction phase	APCO	٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	working hours to reduce dust emission by 91.7%. This						
	dust suppression efficiency is derived based on the						
	average haul road traffic, average evaporation rate and						
	an assumed application intensity of 1.0 L/m² once every						
	working hour. Any potential dust impact and watering						
	mitigation would be subject to the actual site condition.						
	For example, a construction activity that produces						
	inherently wet conditions or in cases under rainy						
	weather, the above water application intensity may not						
	be unreservedly applied. While the above watering						
	frequency is to be followed, the extent of watering may						
	vary depending on actual site conditions but should be						
	sufficient to maintain an equivalent intensity of no less						
	than 1.0L/m² to achieve the removal efficiency. The dust						
	levels would be monitored and managed under an						
	EM&A programme as specified in the EM&A Manual						
	(ii) Unloading of spoil materials – Undertake the unloading						٨
	process within a 3-sided screen with top tipping hall.						
	Provide water spraying and flexible dust curtains at the						
	discharge point for dust suppression.						
	(iii) Vehicles leaving the barging facilities – Pass vehicles						٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	through the wheel washing facilities provided at site						
	exits.						
S8.63	For concrete batching plant, the requirements and mitigation	To minimize dust impact	Contractor	Concrete	Construction	APCO	N/A
	measures stipulated in the Guidance Note on the Best			Batching Plant	phase		
	Practicable Means for Cement Works (Concrete Batching						
	Plant) BPM 3/2(93) shall be followed and implemented.						
Table 8.6	During operation of concrete batching plant:	To minimize dust impact	Contractor	Concrete	Construction	APCO	
	(i) Unloading of aggregates from the tipper trucks to receiving			Batching Plant	phase		N/A
	hopper – unload the aggregates from the tipper trucks to the						
	receiving hopper equipped with enclosures on 3 sides and						
	top cover, and water spraying system.						
	(ii) Unloading of cement and PFA from tankers into the silo –						N/A
	Directly load the cement and PFA into the silo via a flexible						
	duct. Install dust collectors at cement/PFA silos.						
	(iii) Storage of aggregates in overhead storage bins – Store						N/A
	the aggregates in fully enclosed overhead storage bins.						
	Cover the top of overhead storage bins with cladding. Install						
	water spraying system at the top of storage bins for watering						
	the aggregates, and fully enclose aggregates storage bins.						
	(iv) Weighing and batching of cementitious materials –						N/A
	Perform the whole process of weighing and mixing in a fully						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	enclosed environment. Equip all the mixers with dust						
	collectors.						
	(v) Loading of concrete from mixer into transit mixer of a						N/A
	truck – Directly load the concrete from the mixer into the						
	transit mixer of a truck in "wet form".						
	(vi) Tipper trucks and cement tankers leaving the Concrete						N/A
	Batching Plant – Haul road within the site is unpaved. Install						
	wheel washing pit at the gate of the concrete batching plant.						
	(vii) Transportation of materials within the plant – Provide						N/A
	watering twice a day would be provided.						
S8.89	Watering once every working hour on active works areas,	To minimize dust impact	Contractor	Works areas at:	Construction	APCO	٨
	exposed areas and paved haul roads to reduce dust			Hung Hom	phase		
	emission by 91.7%. This dust suppression efficiency is			Cross Harbour			
	derived based on the average haul road traffic, average			section up to			
	evaporation rate and an assumed application intensity of 1.7			Breakwater of			
	L/m2 for Kowloon side and 1.0 L/m² for Hong Kong side once			CBTS			
	every working hour. Any potential dust impact and watering			Breakwater of			
	mitigation would be subject to the actual site condition. For			CBTS to SOV			
	example, a construction activity that produces inherently wet			• Shek O			
	conditions or in cases under rainy weather, the above water			Casting Basin			
	application intensity may not be unreservedly applied. While						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m² for Kowloon side and 1.0 L/m² for Hong Kong side to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.						
S8.90	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - 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	To minimize dust impact	Contractor	Works areas at: • Hung Hom • Cross Harbour section up to Breakwater of CBTS • Breakwater of CBTS to SOV	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	near ASRs.						
	- Tarpaulin covering of all dusty vehicle loads transported						٨
	to, from and between site locations.						
	- Establishment and use of vehicle wheel and body						N/A
	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						N/A
	ground level along site boundary where adjoins a road,						
	streets or other accessible to the public except for a site						
	entrance or exit.						
	- Imposition of speed controls for vehicles on site haul						٨
	roads.						
	- Where possible, routing of vehicles and positioning of						٨
	construction plant shall be at the maximum possible						
	distance from ASRs.						
	- Every stock of more than 20 bags of cement or dry						٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	pulverised fuel ash (PFA) shall be covered entirely by						
	impervious sheeting or placed in an area sheltered on						
	the top and the 3 sides.						
	- Instigation of an environmental monitoring and auditing						N/A
	program to monitor the construction process in order to						
	enforce controls and modify method of work if dusty						
	conditions arise.						
Air Quality (Co	nstruction Phase)						
1	Emission from Vehicles and Plants	Reduce air pollution	Contractor	All construction	Construction stage	• APCO	
	All vehicles shall be shut down in intermittent use.	emission from construction		sites			٨
	Only well-maintained plant should be operated on-site	vehicles and plants					٨
	and plant should be serviced regularly to avoid						
	emission of black smoke.						
	All diesel fuelled construction plant within the works						٨
	areas shall be powered by ultra low sulphur diesel fuel						
	(ULSD)						
1	Valid Non-road Mobile Machinery (NRMM) labels should be	Reduce air pollution	Contractor	All construction	Construction stage	• APCO	*
	provided to regulated machines	emission from construction		sites			
		vehicles and plants					
Construction N	Noise (Airborne)						
S9.55	Implement the following good site practices:	Control construction	Contractor	Works areas	Construction	• EIAO-TM	

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	only well-maintained plant should be operated on-site	airborne noise			phase		٨
	and plant should be serviced regularly during the						
	construction programme;						
	machines and plant (such as trucks, cranes) that may						٨
	be in intermittent use should be shut down between						
	work periods or should be throttled down to a						
	minimum;						٨
	plant known to emit noise strongly in one direction,						
	where possible, be orientated so that the noise is						
	directed away from nearby NSRs;						٨
	silencers or mufflers on construction equipment should						
	be properly fitted and maintained during the						
	construction works;						٨
	mobile plant should be sited as far away from NSRs as						
	possible and practicable;						٨
	material stockpiles, mobile container site office and						
	other structures should be effectively utilised, where						
	practicable, to screen noise from on-site construction						
	activities.						
S9.56 & Table	The following quiet PME shall be used:	To minimize construction	Contractor	Works areas at:	Construction stage	• EIAO-TM	N/A
9.16	Crane lorry, mobile	noise impact		Hung Hom			

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Crane, mobile			Cross Harbour			
	Asphalt paver			section up to			
	Backhoe with hydraulic breaker			Breakwater of			
	Breaker, excavator mounted (hydraulic)			CBTS			
	Hydraulic breaker			Breakwater of			
	Concrete lorry mixer			CBTS to SOV			
	Poker, vibrator, hand-held						
	Concrete pump						
	Crawler crane, mobile						
	Mobile crane						
	Dump truck						
	Excavator						
	Truck						
	Rock drill						
	• Lorry						
	Wheel loader						
	Roller vibratory						
S9.58 –	Movable noise barrier shall be used for the following PME:	To minimize construction	Contractor	Works areas at:	Construction	• EIAO-TM	N/A
S9.59 &	Air compressor	noise impact		Cross Harbour	stage		
Table	Asphalt paver			section up to			
9.17	Backhoe with hydraulic breaker			Breakwater of			

EIA Ref.	Recommended Mitigation Measures	Objectives of the	Who to	Location of the	When to	What	Status
		recommended Measures	implement	measures	Implement the	requirements or	
		& Main Concerns to	the		measures?	standards for	
		address	measures?			the measures to	
						achieve?	
	Bar bender			CBTS			
	Bar bender and cutter (electric)			Breakwater of			
	Breaker, excavator mounted			CBTS to SOV			
	Concrete pump						
	Concrete pump, stationary/lorry mounted						
	Excavator						
	Generator						
	Grout pump						
	Hand held breaker						
	Hydraulic breaker						
	Saw, concrete						
S9.60 &	Noise insulating fabric shall be used for	To minimize construction	Contractor	Works areas at:	Construction	• EIAO-TM	N/A
Table	Drill rig, rotary type	noise impact		Cross Harbour	stage		
9.17	Piling, diaphragm wall, bentonite filtering plant			section up to			
	Piling, diaphragm wall, grab and chisel			Breakwater of			
	Piling, diaphragm wall, hydraulic extractor			CBTS			
	Piling, large diameter bored, grab and chisel			Breakwater of			
	Piling, hydraulic extractor			CBTS to SOV			
	Piling, earth auger, auger						
	Rock drill, crawler mounted (pneumatic)						
Water Quality (Construction Phase)						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S11.200 &	All excavation and tunnel construction works will be	To minimize release of	Contractor	Marine works at	Construction	• EIAO-TM	N/A
201	undertaken within the cofferdam and there will be no open	sediment and	001111140101	Hung Hom	phase	• WPCO	,, .
	dredging.	contaminants during		Landfall	F.13322		
	Removal of fender piles of Hung Hom Bypass and minor	temporary reclamation.					٨
	marine piling works will be carried out prior to the	, ,					
	construction of the elevated platform adjacent to the						
	cofferdam at Hung Hom Landfall. Reinstatement of the						
	fender piles will be carried out upon completion of tunnel						
	section. Potential release of sediment due to						
	abovementioned works could be minimized by installation of						
	silt curtains surrounding the works area as appropriate. All						
	excavation and tunnel construction works will be undertaken						
	within the cofferdam.						
	No open dredging shall be allowed.						٨
S11.202	All temporary reclamation works will adopt an approach	To minimize loss of fines	Contractor	All temporary	Construction	• EIAO-TM	N/A
	where temporary seawalls will first be formed to enclose each	and contaminants during		reclamation	phase	• WPCO	
	phase of the temporary reclamation. Installation of diaphragm	temporary reclamations		works areas			
	wall on temporary reclamation as well as any bulk filling will						
	proceed behind the completed seawall. Any gaps that may						
	need to be provided for marine access will be shielded by silt						
	curtains to control sediment plume dispersion away from the						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	site.						
	Demolition of temporary reclamation including the demolition						N/A
	of the diaphragm wall and dredging to the existing seabed						
	levels will also be carried out behind the temporary seawall.						
	Temporary seawall will be removed after completion of all						N/A
	excavation and dredging works for demolition of the						
	temporary reclamation.						
S11. 202	During construction of the temporary reclamation, temporary	To minimize water quality	Contractor	Temporary	Construction	• EIAO-TM	N/A
	seawall will be partially constructed to protect the nearby	impact upon the cooling		reclamation	phase	• WPCO	
	seawater intakes from further dredging activities. For	water intakes in CBTS from		works areas in			
	example, the seawalls along the southeast and northeast	temporary reclamation		CBTS			
	boundaries of PW1.1 shall be constructed first (above high	works					
	water mark) so that the seawater intake at the inner water						
	would be protected from the impacts from the remaining						
	dredging activities along the northwest boundary.						
S11. 202	Dredging will be carried out by closed grab dredger to	To minimize loss of fines	Contractor	All temporary	Construction	• EIAO-TM	٨
	minimize release of sediment and other contaminants during	and contaminants during		reclamation and	phase	• WPCO	
	dredging.	dredging in CBTS		dredging works			
				areas within			
				CBTS			
S11. 202 & Table	Silt curtains will be deployed to fully enclose the closed grab	To minimize loss of fines	Contractor	All temporary	Construction	• EIAO-TM	٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
11.25	dredger and shall be extended from water surface to the seabed, as far as practicable, during any dredging operation.	and contaminants during dredging in CBTS		reclamation and dredging works areas within CBTS	phase	• WPCO	
S11. 202 & Table 11.23	Silt screens will be installed at the cooling water intakes within the CBTS during the temporary reclamation period.	To minimize water quality impact upon the cooling water intakes in CBTS from marine construction activities	Contractor	Cooling water intakes inside CBTS	Construction phase	• EIAO-TM • WPCO	^
S11. 203 & Table 11.24	No more than two dredgers (of about 8 m³ capacity each) shall be operated for dredging within the typhoon shelter at any time for the tunnel construction works. Moreover, the combined dredging rate for all concurrent dredging works (include dredging works for concurrent projects such as WDII and CWB) to be undertaken within the CBTS shall not exceed 4,500 m³ per day (and 281 m³ per hour with a maximum working period of 16 hours per day) throughout the entire construction period.	To minimize loss of fines and contaminants during dredging in CBTS	Contractor	All dredging works areas within CBTS	Construction phase	• EIAO-TM • WPCO	^
ERR 6.7.1	Closed grab dredger shall be used for any dredging operations, except at for removal of fill material at the gap at the IMT/ME4 interface, which will be carried out by air lift or	To minimize water quality impact in CBTS from marine construction	Contractor	All marine works areas within CBTS	Construction phase	• EIAO-TM • WPCO	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	sand pump method	activities					
ERR 6.7.1	Fill materials removed by air lift or sand pumping method	To minimize water quality	Contractor	All marine works	Construction	• EIAO-TM	N/A
	shall be stored inside impermeable compartment of the barge	impact in CBTS from		areas within	phase	• WPCO	
		marine construction		CBTS			
		activities					
ERR 6.7.1	Bulk filling operation within CBTS shall be carried out by	To minimize water quality	Contractor	All marine works	Construction	• EIAO-TM	N/A
	closed grab dredger and/or by feeding the fill material into a	impact in CBTS from		areas within	phase	• WPCO	
	down pipe for placing of fill materials	marine construction		CBTS			
		activities					
EP 2.18.1a	Pipe piles shall be used to form temporary seawalls for IMT	To minimize water quality	Contractor	IMT construction	Construction	• EIAO-TM	٨
	construction within CBTS.	impact in CBTS from IMT		works within	phase	• WPCO	
		construction		CBTS			
EP 2.18.1b	The temporary seawalls shall not be removed before	To minimize water quality	Contractor	IMT construction	Construction	• EIAO-TM	٨
	completion of all dredging or filling works for IMT	impact in CBTS from IMT		works within	phase	• WPCO	
	construction, except for a small section of pipe piles adjoining	construction		CBTS			
	IMT11 to facilitate the necessary dredging works for						
	placing the IMT11.						
EP 2.18.1j	Water quality monitoring shall be conducted at cooling water	To minimize water quality	Contractor	IMT construction	Construction	• EIAO-TM	٨
	intake 9 for Windsor House during IMT construction within	impact in CBTS from IMT		works within	phase	• WPCO	
	CBTS. The monitoring frequency, parameters, equipment	construction		CBTS			
	and methodology shall follow those for dredging and filling as						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	stipulated in the EM&A Manual.						
S11. 204	Bulk filling along the IMT tunnel alignment for SCL shall be carried out after the bulk dredging works along the IMT alignment are completed. Hence, bulk dredging and bulk filling along the IMT alignment shall not be undertaken at the same time.	To minimize loss of fines and contaminants during IMT construction	Contractor	Marine works areas in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	N/A
S11. 204	Dredging for IMT and SCL2 construction shall be carried out by closed grab dredger to minimize release of sediment and other contaminants during dredging.	To minimize loss of fines and contaminants during dredging in the Victoria Harbour	Contractor	Marine works areas in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	۸
S11.204	No more than one closed grab dredger shall be operated outside the CBTS in the open harbor for SCL construction.	To minimize loss of fines and contaminants from dredging in the Victoria Harbour	Contractor	Marine works areas in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	٨
S11. 204	Dredging for temporary reclamation outside the CBTS (at SCL2) shall not be carried out concurrently with the dredging / filling works for IMT construction.	To minimize loss of fines and contaminants from dredging / filling in the Victoria Harbour	Contractor	Marine works areas in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	N/A
S11. 205	Floating type or frame type silt curtains shall be deployed around the dredging operations within 200m from the Hung Hom landfall.	To minimize loss of fines and contaminants from dredging in the Victoria	Contractor	Construction of northern IMT segment in the	Construction phase	• EIAO-TM • WPCO	۸

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		Harbour		near shore region within 200 m from the Hung Hom landfall			
EP 2.19e	Frame type silt curtains shall be deployed around the dredging operations for the remaining IMT segments outside 200 m from the Hung Hom landfall.	To minimize water quality impacts in Victoria Harbour from IMT construction	Contractor	Construction of northern IMT segment in Victoria Harbour outside 200m from the Hung Hom landfall	Construction phase	• EIAO-TM • WPCO	^
S11. 205 & Table 11.23	Silt screens shall be installed at the cooling water intakes for East Rail Extension, Metropolis and Hong Kong Coliseum (namely 21, 34 and 35 respectively) which are in close vicinity of the northern IMT segment.	To protect the beneficial use of water intakes along the Kowloon waterfront from dredging / filling activities	Contractor	Construction of northern IMT segment in the near shore region within 200 m from the Hung Hom landfall	Construction phase	• EIAO-TM • WPCO	
S11.207	If underwater blasting is required for SCL construction, the following precautionary / mitigation measures shall be adopted:	To protect the water quality in Victoria Harbour from any possible underwater	Contractor	Marine works areas in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures	Who to	Location of the measures	When to	What requirements or	Status
		& Main Concerns to	the		measures?	standards for	
		address	measures?			the measures to	
						achieve?	
	Charge shall be placed in cores within the rock in order	blasting					
	that there will be no blast directly into the water.						
	In terms of the construction sequence, sediment						
	dredging (within the planned IMT works area) shall be						
	conducted prior to any underwater blasting.						
Table 11.23	Silt screens shall be installed at the WSD Flushing Water	To protect the beneficial	Contractor	Flushing water	Construction	• EIAO-TM	N/A
	Intakes at Kowloon Station, Tai Wan, Quarry Bay and Wan	use of flushing water		intake points in	phase	• WPCO	
	Chai (namely Intakes 14, WSD9, WSD17 and A respectively)	intakes in Victoria Harbour		Victoria Harbour			
	during any dredging / filling works outside the CBTS for	from dredging / filling					
	temporary reclamation at SCL2 or for IMT construction	activities					
S11.210 - S11.211	If the marine works for SCL are to be carried out concurrently	To minimize loss of fines	Contractor	Marine works	Construction	• EIAO-TM	٨
& Table 11.24	with other dredging / filling activities in the Victoria Harbour,	and contaminants from		areas in Victoria	phase	• WPCO	
ERR S6.7.1	the production rates of any dredging / filling work to be	dredging / filling in the		Harbour			
	undertaken outside the CBTS for SCL construction in the	Victoria Harbour					
	open harbour (including temporary reclamation at SCL2 and						
	IMT construction, except for the area within 60m from the						
	southern boundary of the temporary reclamation at Hung						
	Hom Landfall) shall not exceed 2,500 m³ per day at any time						
	throughout the entire construction period. The hourly						
	production rate for dredging or bulk filling within the open						
	Victoria Harbour (outside the breakwater of CBTS, except for						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	the area within 60m from the southern boundary of the						
	temporary reclamation at Hung Hom Landfall) shall not						
	exceed 156 m³ per hour (if there are other concurrent marine						
	works in Victoria Harbour) and the maximum working hour for						
	the dredging / bulk filling works shall be 16 hours per day. Silt						
	screen shall be deployed at the Kowloon Station Intake to						
	minimize the water quality impact. If the marine works for						
	SCL are to be carried out with no other concurrent dredging /						
	filling activities in the Victoria Harbour, the production rates of						
	any dredging / filling work to be undertaken outside the CBTS						
	for SCL construction in the open harbour (including						
	temporary reclamation at SCL2 and IMT construction except						
	for the area within 60m from the southern boundary of the						
	temporary reclamation at Hung Hom Landfall) shall not						
	exceed 4,500 m³ per day at any time throughout the entire						
	construction period. The hourly production rate for dredging						
	or bulk filling within the open Victoria Harbour (outside the						
	breakwater of CBTS except for the area within 60m from the						
	southern boundary of the temporary reclamation at Hung						
	Hom Landfall) shall not exceed 281 m³ per hour (if there is no						
	other concurrent marine works in Victoria Harbour) and the						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	maximum working hour for the dredging / bulk filling works						
	shall be 16 hours per day. Silt screen shall be deployed at the						
	Kowloon Station Intake to minimize the water quality impact.						
	Only one chiseling machine or hydraulic breaker shall be						
	adopted for rock breaking.						
	For any dredging / filling work for IMT construction within 60m						
	from the southern boundary of the temporary reclamation at						
	Hung Hom Landfall:						
	The daily production rate shall not exceed 1,500m³ per						٨
	day						
	the hourly production rate shall not exceed 93m³						٨
S11.215	The following good site practices shall be undertaken during	To minimize loss of	Contractor	Marine works	Construction	• EIAO-TM	
	filling and dredging:	fines and contaminants		areas	phase	• WPCO	
	mechanical grabs, if used, shall be designed and	from dredging / filling					٨
	maintained to avoid spillage and sealed tightly while						
	being lifted;						
	all vessels shall be sized so that adequate clearance is						۸
	maintained between vessels and the seabed in all tide						
	conditions, to ensure that undue turbidity is not						
	generated by turbulence from vessel movement or						
	propeller wash;						

EIA Ref.		Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	•	all hopper barges and dredgers shall be fitted with tight						۸
		fitting seals to their bottom openings to prevent						
		leakage of material;						
	•	construction activities shall not cause foam, oil,						٨
		grease, scum, litter or other objectionable matter to be						
		present on the water within the site or dumping						
		grounds;						
	•	loading of barges and hoppers shall be controlled to						۸
		prevent splashing of dredged material into the						
		surrounding water. Barges or hoppers shall not be						
		filled to a level that will cause the overflow of materials						
		or polluted water during loading or transportation;						
	•	before commencement of the temporary reclamation						٨
		works, the holder of the Environmental Permit shall						
		submit plans showing the phased construction of the						
		reclamation, design and operation of the silt curtain.						
S11.216	The	following mitigation measures are proposed to minimize	minimize release of	Contractor	Construction	Construction	• EIAO-TM	
	the p	potential water quality impacts from the construction	construction wastes		works at or close	phase	• WPCO	
	work	s at or close to the seafront:	from construction		to the seafront			
	• Te	emporary storage of construction materials (e.g.	works at or close to the					٨
	equi	pment, filling materials, chemicals and fuel) and	seafront					

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	temporary stockpile of construction and demolition materials						
	shall be located well away from the seawater front and storm						
	drainage during carrying out of the works.						
	Stockpiling of construction and demolition materials and						٨
	dusty materials shall be covered and located away from the						
	seawater front and storm drainage.						
	Construction debris and spoil shall be covered up and/or						٨
	disposed of as soon as possible to avoid being washed into						
	the nearby receiving waters.						
S11.217	The following mitigation measures are proposed to minimize	To minimize release of	Contractor	Marine piling	Construction	• EIAO-TM	
	the potential water quality impacts from any marine piling	sediment and pollutants		works areas	phase	• WPCO	
	works:	from marine piling activities					
	The potential release of sediment or excavated materials						٨
	could be controlled through the installation of silt curtains						
	surrounding the working area as necessary.						
	Spoil shall be collected by sealed hopper barges for						٨
	proper disposal.						
S11.218	Silt screens are recommended to be deployed at the	To avoid the pollutant and	Contractor	Proposed silt	Construction	• EIAO-TM	٨
	seawater intakes during the construction works period.	refuse entrapment		screens at water	phase	• WPCO	
	Regular maintenance of the silt screens and refuse collection	problems at the silt screens		intakes			
	shall be performed at the silt screens at regular intervals on a	to be installed at the water					

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	daily basis. The Contractor shall be responsible for keeping	intakes.					
	the water behind the silt screen free from floating rubbish and						
	debris during the impact monitoring period.						
S11.219	It is recommended that collection and removal of floating	To minimize water	Contractor	Marine works	Construction	• EIAO-TM	٨
	refuse shall be performed within the marine construction	quality impacts from		area	phase	·WPCO	
	areas at regular intervals on a daily basis. The Contractor	illegal dumping and				·WDO	
	shall be responsible for keeping the water within the site	littering from marine					
	boundary and the neighbouring water free from rubbish	vessels and runoff from					
	during the dredging works.	the coastal area					
S11.220 &	Any wastewater including washdown waters and any	To minimize water	Contractor	Shek O Casting	Construction	• EIAO-TM	٨
221	concrete curing waters generated from the casting basin shall	quality impacts from		Basin	phase	·WPCO	
	be drained to the wastewater treatment unit. Appropriate	the washdown, flooding					
	treatment process such as sedimentation and oil removal	and draining operation					
	shall be employed for the wastewater treatment units so that	at Shek O Casting					
	any discharge from the casting basin will comply with	Basin					
	standards stipulated in the TM-DSS. Recovered oil from any						
	oil interceptor shall be properly contained, labeled and stored						
	on site prior to collection by licensed collectors for disposal.						
	During the flooding of the basin with seawater (accomplished						
	by pumps) no escape of water could occur as the cofferdam						
	will still be in place. Prior to opening a channel through the						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	cofferdam, water inside the basin will be skimmed of floating debris. A period of settling of 24 hours before opening the basin to the sea would allow much of the suspended material to settle out. The channel through the cofferdam will only be opened with the approval of the Site Engineer to the effect that all reasonable steps had been taken to remove contaminants.						
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable.	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction phase	• EIAO-TM • WPCO • TMDSS, • WDO, • ProPECC PN 1/94	^
S11.246 & 11.247	Construction work force sewage discharges on site are expected to be discharged to the nearby existing trunk sewer or sewage treatment facilities. If disposal of sewage to public sewerage system is not feasible, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment. The Contractor shall also be responsible for waste disposal	minimize water quality impacts due to sewage generated from construction workforce	Contractor	All works areas	Construction phase	• EIAO-TM • WPCO • TM-DSS • WDO	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures	Who to	Location of the	When to	What requirements or	Status
		& Main Concerns to	the	illeasures	measures?	standards for	
		address	measures?		illeasures :	the measures to	
		audress	illeasures:			achieve?	
	and maintenance practices.					acineve:	
	Notices shall be posted at conspicuous locations to remind						٨
	, ,						
	the workers not to discharge any sewage or wastewater into						
	the nearby environment.		_				
S11.248	In case seepage of uncontaminated groundwater occurs,	To minimize impact from	Contractor	Works areas	Construction	• EIAO-TM	٨
	groundwater shall be pumped out from the works areas and	discharge of			phase	• WPCO	
	discharged into the storm system via silt removal facilities.	uncontaminated				• TM-DSS	
	Uncontaminated groundwater from dewatering process shall	groundwater				• WDO	
	also be discharged into the storm system via silt traps.						
S11.252	The following good site practices shall be adopted for the	To minimize water quality	Contractor	Barging Points	Construction	• EIAO-TM	
	proposed barging points:	impacts generated from the			phase	• WPCO	
	- all vessels shall be sized so that adequate clearance is	barging points.					٨
	between vessels and the seabed in all tide conditions, to						
	ensure that undue turbidity is not generated by turbulence						
	from vessel movement or propeller wash						
	- all hopper barges shall be fitted with tight fitting seals to						٨
	their bottom openings to prevent leakage of material						
	- construction activities shall not cause foam, oil, grease,						٨
	scum, litter or other objectionable matter to be present on the						
	water within the site						
	- loading of barges and hoppers shall be controlled to						٨
	g c. saiges and heppoid offail be confidented to						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	prevent splashing of material into the surrounding water. Barges or hoppers shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation						
S11.253	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 runoff and wastewater generated from the works areas shall be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distances of 100 m shall be maintained between the discharge points of construction site effluent and the existing seawater intakes. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimize 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 shall be carried out in accordance with the WPCO license which is under the ambit of Regional Office (RO) of EPD.	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction phase	• EIAO-TM • WPCO • TM-DSS	*

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S11.254	Contractor must register as a chemical waste producer if	minimize water quality	Contractor	All construction	Construction	• EIAO-TM	٨
	chemical wastes would be produced from the construction	impact from accidental		works areas	phase	• WPCO	
	activities. The Waste Disposal Ordinance (Cap 354) and its	spillage of chemical				• TM-DSS	
	subsidiary regulations in particular the Waste Disposal					• WDO	
	(Chemical Waste) (General) Regulation shall be observed						
	and complied with for control of chemical wastes.						
S11.255	Any service shop and maintenance facilities shall be located	minimize water quality	Contractor	All construction	Construction	• EIAO-TM	٨
	on hard standings within a bunded area, and sumps and oil	impact from accidental		works areas	phase	• WPCO	
	interceptors shall be provided. Maintenance of vehicles and	spillage of chemical				• TM-DSS	
	equipment involving activities with potential for leakage and					• WDO	
	spillage shall only be undertaken within the areas						
	appropriately equipped to control these discharges.						
S11.256	Disposal of chemical wastes shall be carried out in	minimize water quality	Contractor	All construction	Construction	• EIAO-TM	
	compliance with the Waste Disposal Ordinance. The "Code of	impact from accidental		works areas	phase	• WPCO	
	Practice on the Packaging, Labelling and Storage of	spillage of chemical				• TM-DSS	
	Chemical Wastes" published under the Waste Disposal					• WDO	
	Ordinance details the requirements to deal with chemical						
	wastes. General requirements are given as follows:						
	Suitable containers shall be used to hold the chemical						#
	wastes to avoid leakage or spillage during storage, handling						
	and transport.						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Chemical waste containers shall be suitably labelled, to						٨
	notify and warn the personnel who are handling the wastes,						
	to avoid accidents.						
	Storage area shall be selected at a safe location on site and						۸
	adequate space shall be allocated to the storage area.						
ERR S 8.5.1	Floating type silt curtains would be installed around the area	minimize water quality	Contractor	Shek O Casting	Construction	·WPCO	۸
	of construction and removal of earth bund during the	impact at Shek O Casting		Basin	phase		
	respective works.	Basin					
Waste Manage	ment (Construction Waste)						
S12.75	Good Site Practices and Waste Reduction Measures	reduce waste management	Contractor	All works sites	Construction	Waste Disposal	
	- Prepare a Waste Management Plan	impacts			phase	Ordinance (Cap.	۸
	(WMP) approved by the Engineer/Supervising Officer of the					354)	
	Project based on current practices on construction sites;					• Land	
	- Training of site personnel in, site cleanliness, proper waste					(Miscellaneous	۸
	management and chemical handling procedures;					Provisions)	
	- Provision of sufficient waste disposal points and regular					Ordinance (Cap.	^
	collection of waste;					28)	
	- Appropriate measures to minimize windblown litter and					• DEVB TCW	^
	dust during transportation of waste by either covering trucks					No. 6/2010	
	or by transporting wastes in enclosed containers;						
	- Regular cleaning and maintenance programme for						٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	drainage systems, sumps and oil interceptors; and						
	- Separation of chemical wastes for special handling and						٨
	appropriate treatment.						
S12.76	Good Site Practices and Waste Reduction Measures	achieve waste	Contractor	All works sites	Construction	Waste Disposal	
	(Con't)	reduction			phase	Ordinance (Cap.	
	- Sorting of demolition debris and excavated materials from					354)	٨
	demolition works to recover reusable/ recyclable portions (i.e.					• Land	
	soil, broken concrete, metal etc.);					(Miscellaneous	
	- Segregation and storage of different types of waste in					Provisions)	٨
	different containers, skips or stockpiles to enhance reuse or					Ordinance (Cap.	
	recycling of materials and their proper disposal;					28)	
	- Encourage collection of aluminum cans by providing						٨
	separate labeled bins to enable this waste to be segregated						
	from other general refuse generated by the workforce;						
	- Proper storage and site practices to minimize the potential						٨
	for damage or contamination of construction materials;						
	- Plan and stock construction materials carefully to						٨
	minimize amount of waste generated and avoid unnecessary						
	generation of waste; and						
	- Training shall be provided to workers about the concepts						٨
	of site cleanliness and appropriate waste management						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	procedures, including waste reduction, reuse and recycle.						
S12.77	Good Site Practices and Waste Reduction Measures	achieve waste	Contractor	All works sites	Construction	• ETWB TCW	
	(Con't)	reduction			phase	No. 19/2005	
	- The Contractor shall prepare and implement a WMP as						٨
	part of the EMP in accordance with ETWBTCW No. 19/2005						
	which describes the arrangements for avoidance, reuse,						
	recovery, recycling, storage, collection, treatment and						
	disposal of different categories of waste to be generated from						
	the construction activities. Such a management plan shall						
	incorporate site specific factors, such as the designation of						
	areas for segregation and temporary storage of reusable and						
	recyclable materials. The EMP shall be submitted to the						
	Engineer for approval. The Contractor shall implement the						
	waste management practices in the EMP throughout the						
	construction stage of the Project. The EMP shall be reviewed						
	regularly and updated by the Contractor, preferably in a						
	monthly basis.						
S12.78	C&D materials would be reused in other local concurrent	achieve waste	Contractor	All works sites	Construction	• ETWB TCW	۸
	projects as far as possible. If all reuse outlets are exhausted	reduction			phase	No. 19/2005	
	during the construction phase, the C&D materials would be						
	disposed of at Taishan, China as a last resort.						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S12.79	Storage, Collection and Transportation of Waste	minimize potential	Contractor	All works sites	Construction	-	
	Should any temporary storage or stockpiling of waste is	adverse environmental			phase		
	required,	impacts arising from waste					
	recommendations to minimize the impacts include:	storage					
	- Waste, such as soil, shall be handled and stored well to						٨
	ensure secure containment, thus minimizing the potential of						
	pollution;						
	- Maintain and clean storage areas routinely;						٨
	- Stockpiling area shall be provided with covers and water						٨
	spraying system to prevent materials from wind-blown or						
	being washed away; and						
	- Different locations shall be designated to stockpile each						٨
	material to enhance reuse						
S12.80	Storage, Collection and Transportation of Waste (Con't)	minimize potential adverse	Contractor	All works sites	Construction	-	
	Waste haulier with appropriate permits shall be employed by	environmental impacts			phase		N/A
	the Contractor for the collection and transportation of waste	arising from waste					
	from works areas to respective disposal outlets. The following	collection and disposal					
	suggestions shall be enforced to minimize the potential						
	adverse impacts:						
	- Remove waste in timely manner						٨
	- Waste collectors shall only collect wastes prescribed by						٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	their permits						
	- Impacts during transportation, such as dust and odour,						N/A
	shall be mitigated by the use of covered trucks or in enclosed						
	containers						
	- Obtain relevant waste disposal permits from the						٨
	appropriate authorities, in accordance with the Waste						
	Disposal Ordinance (Cap. 354), Waste Disposal (Charges for						
	Disposal of Construction Waste) Regulation (Cap. 345) and						
	the Land (Miscellaneous Provisions) Ordinance (Cap. 28)						
	- Waste shall be disposed of at licensed waste disposal						٨
	facilities						
	- Maintain records of quantities of waste generated,						٨
	recycled and disposed						
S12.81	Storage, Collection and Transportation of Waste (Con't)	minimize potential adverse	Contractor	All works sites	Construction	• DEVB TCW	
	- Implementation of trip ticket system with reference to	environmental impacts			phase	No. 6/2010	٨
	DevB TC(W) No.6/2010 to monitor disposal of waste and to	arising from waste					
	control fly-tipping at PFRFs or landfills. A recording system	collection and disposal					
	for the amount of waste generated, recycled and disposed						
	(including disposal sites) shall be proposed						
S12.83 – 12.86	Sorting of C&D Materials	minimize potential adverse	Contractor	All works sites	Construction	• DEVB TCW	
	- Sorting to be performed to recover the inert materials,	environmental impacts			phase	No. 6/2010	٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	reusable and recyclable materials before disposal off-site.	during the handling,				• ETWB TCW No.	
	- Specific areas shall be provided by the Contractors for	transportation and disposal				33/2002	٨
	sorting and to provide temporary storage areas for the sorted	of C&D materials				• ETWB TCW	
	materials.					No. 19/2005	
	- The C&D materials shall at least be segregated into inert						٨
	and non-inert materials, in which the inert portion could be						
	reused and recycled as far as practicable before delivery to						
	PFRFs as mentioned for beneficial use in other projects.						
	While opportunities for reusing the non-inert portion shall be						
	investigated before disposal of at designated landfills.						
	- Possibility of reusing the spoil in the Project will be						٨
	continuously investigated in the detailed design and						
	construction stages, it includes backfilling to cut and cover						
	construction works for the Hung Hom south and north						
	approach						
S12.88	Sediments	To ensure the sediment to	Contractor	All works areas	Construction	ETWB TC(W) No.	
	The basic requirements and procedures for excavated /	be disposed of in an		with sediments	Phase	34/2002 &	٨
	dredged sediment disposal specified under ETWB TC(W)	authorized and least		concern		Dumping at Sea	
	No. 34/2002 shall be followed. MFC is managing the disposal	impacted way				Ordinance	
	facilities in Hong Kong for the dredged and excavated						
	sediment, while EPD is the authorityof issuing marine						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	dumping permit under the Dumping at Sea Ordinance						
S12.89	Sediments	To determine the best	Contractor	All works areas	Construction	ETWB TC(W) No.	
	The contractor for the excavation / dredging works shall apply	handling and disposal		with sediments	Phase	34/2002 &	٨
	for the site allocations of marine sediment disposal based on	option of the sediments		concern		Dumping at Sea	
	the prior agreement with MFC/CEDD. A request for					Ordinance	
	reservation of sediment disposal space have been submitted						
	to MFC for onward discussions of disposal approach and						
	feasible disposal sites and the letter is attached in Appendix						
	12.6. The Project proponent shall also be responsible for the						
	application of all necessary permits from relevant authorities,						
	including the dumping permit as required under DASO from						
	EPD, for the disposal of dredged and excavated sediment						
	prior to the commencement of the excavation works.						
S12.91-12.94	Sediments	To ensure handling of	Contractor	Work Sites,	Construction	ETWB TC(W) No.	
	- Stockpiling of contaminated sediments shall be avoided	sediments are in		Sediment	Phase	34/2002 &	٨
	as far as possible. If temporary stockpiling of	accordance to statutory		disposal sites		Dumping at Sea	
	contaminated sediments is necessary, the excavated	requirements				Ordinance	
	sediment shall be covered by tarpaulin and the area shall						
	be placed within earth bunds or sand bags to prevent						
	leachate from entering the ground, nearby drains and/or						
	surrounding water bodies. The stockpiling areas shall be						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	completely paved or covered by linings in order to avoid						
	contamination to underlying soil or groundwater. Separate						
	and clearly defined areas shall be provided for stockpiling						
	of contaminated and uncontaminated materials. Leachate,						
	if any, shall be collected and discharged according to the						
	Water Pollution Control Ordinance (WPCO).						
	- In order to minimise the potential odour / dust emissions						٨
	during excavation and transportation of the sediment, the						
	excavated sediments shall be wetted during excavation /						
	material handling and shall be properly covered when						
	placed on trucks or barges. Loading of the excavated						
	sediment to the barge shall be controlled to avoid						
	splashing and overflowing of the sediment slurry to the						
	surrounding water.						
	- The barge transporting the sediments to the designated						٨
	disposal sites shall be equipped with tight fitting seals to						
	prevent leakage and shall not be filled to a level that						
	would cause overflow of materials or laden water during						
	loading or transportation. In addition, monitoring of the						
	barge loading shall be conducted to ensure that loss of						
	material does not take place during transportation.						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Transport barges or vessels shall be equipped with automatic selfmonitoring devices as specified by the DEP. - In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site.						^
S12.95	Sediments A possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	rupture of the containers and sediment loss due to impact of						
	thecontainer on the seabed have been addressed.						
S12.97	Containers for Storage of Chemical Waste	register with EPD	Contractor	All works sites	Construction	Code of	
	The Contractor shall register with EPD as a chemical waste	as a Chemical waste			phase	Practice on the	
	producer and to follow the guidelines stated in the Code of	producer and store				Packaging,	
	Practice on the Packaging, Labelling and Storage of	chemical waste in				Labelling and	
	Chemical Wastes. Containers used for storage of chemical	appropriate containers				Storage of	
	waste shall:					Chemical Wastes	
	- Be compatible with the chemical wastes being stored,						٨
	maintained in good condition and securely sealed;						
	- Have a capacity of less than 450 litters unless the						٨
	specifications have been approved by EPD; and						
	- Display a label in English and Chinese in accordance with						٨
	instructions prescribed in Schedule 2 of the Waste Disposal						
	(Chemical Waste) (General) Regulation						
S12.98	Chemical Waste Storage Area	prepare appropriate	Contractor	All works sites	Construction	Code of	
	- Be clearly labeled to indicate corresponding chemical	storage areas for chemical			phase	Practice on the	٨
	characteristics of the chemical waste and used for storage of	waste at works areas				Packaging,	
	chemical waste only;					Labelling and	
	- Be enclosed on at least 3 sides;					Storage of	٨
	- Have an impermeable floor and bunding, of capacity to					Chemical Wastes	٨

EIA Ref.	Recommended Mitigation Measures	Objectives of the	Who to	Location of the	When to	What	Status
		recommended Measures	implement	measures	Implement the	requirements or	
		& Main Concerns to	the		measures?	standards for	
		address	measures?			the measures to	
						achieve?	
	accommodate 110% of the volume of the largest container or						
	20% by volume of the chemical waste stored in that area,						
	whichever is the greatest;						
	- Have adequate ventilation;						٨
	- Be covered to prevent rainfall from entering; and						٨
	- Be properly arranged so that incompatible materials are						٨
	adequately separated.						
S12.99	Chemical Waste	clearly label the chemical	Contractor	All works sites	Construction	Code of	
	- Lubricants, waste oils and other chemical wastes would	waste at works areas			phase	Practice on the	٨
	be generated during the maintenance of vehicles and					Packaging,	
	mechanical equipments. Used lubricants shall be collected					Labelling and	
	and stored in individual containers which are fully labelled in					Storage of	
	English and Chinese and stored in a designated secure					Chemical Wastes	
	place.				_		
S12.100	Collection and Disposal of Chemical Waste	To monitor the generation,	Contractor	All works sites	Construction	Waste Disposal	
	A trip-ticket system shall be operated in accordance with the	reuse and disposal of			phase	(Chemical Waste)	٨
	Waste Disposal (Chemical Waste) (General) Regulation to	chemical waste				(General)	
	monitor all movements of chemical waste. The Contractor					Regulation	
	shall employ a licensed collector to transport and dispose of						
	the chemical wastes, to either the approved CWTC at Tsing						
	Yi, or another licensed facility, in accordance with the Waste						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Disposal (Chemical Waste) (General) Regulation						
S12.101	General Refuse	properly store and	Contractor	All works sites	Construction	-	
	General refuse shall be stored in enclosed bins or	separate from other C&D			phase		٨
	compaction units separate from C&D materials and chemical	materials for					
	waste. A reputable waste collector shall be employed by the	subsequent collection and					
	contractor to remove general refuse from the site, separately	disposal					
	from C&D materials and chemical wastes. Preferably, an						
	enclosed and covered area shall be provided to reduce the						
	occurrence of wind-blown light material.						
S12.102	General Refuse (Con't)	facilitate recycling of	Contractor	All works sites	Construction	-	
	The recyclable component of general refuse, such as	recyclable portions of			phase		٨
	aluminum cans, paper and cleansed plastic containers shall	refuse					
	be separated from other waste. Provision and collection of						
	recycling bins for different types of recyclable waste shall be						
	set up by the Contractor. The Contractor shall also be						
	responsible for arranging recycling companies to collect						
	these materials.						
S12.103	General Refuse (Con't)	raise workers' awareness	Contractor	All works sites	Construction	-	
	The Contractor shall carry out an education programme for	on recycling issue			phase		٨
	workers in avoiding, reducing, reusing and recycling of						
	materials generation. Posters and leaflets advising on the						

EIA Ref.	Recommended Mitigation Measures	Objectives of the	Who to	Location of the	When to	What	Status
		recommended Measures	implement	measures	Implement the	requirements or	
		& Main Concerns to	the		measures?	standards for	
		address	measures?			the measures to	
						achieve?	
	use of the bins shall also be provided in the sites as						
	reminders						

Remarks: ^

- Compliance of mitigation measure
- X Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor
- * Observation/reminder was made during site audit but improved/rectified by the contractor.
- # Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
- N/A Not Applicable

APPENDIX K
WASTE GENERATION IN THE REPORTING
MONTH

Monthly Summary Waste Flow Table for 2019 (year)

Contract No: SCL1121

Date Reported: February 2019

				Actual C	Quantities of I	nert C&D Mate	rials Generated	Monthly			Actual Quantities of Non-inert C&D Wastes Generated Month				
Month	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in	Reused in other Projects	Disposed as Public Fill	Imported Fill from 1111	Imported Fill from 1112	Imported Fill from 1114	Imported Fill from 1123	Imported Fill from 1128	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m³)	(in '000m ³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000tonne)				
Jan	0	0	1.324	0	0	0	0	0	0	0	0	0	0	0	0.113
Feb	0	0	0	0	0	0	0	0	0	0	0	0.717	0	0	0.052
Mar															
Apr															
May															
June															
July															
Aug															
Sept															
Oct															
Nov								-							
Dec															
Total	0	0	1.324	0	0	0	0	0	0	0	0	0.717	0	0	0.165

Notes:

- (1) The performance targets are given below:
 - All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
 - All metallic waste to be recovered for collection by recycling contractors;
 - All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
 - All chemical wastes to be collected and properly disposed of by specialist contractors; and
 - All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (3) Broken concrete for recycling into aggregates.
- (4) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (5) All the C&D material come from SCL1111, 1112, 1114, 1121, 1123, 1128 will be reussed in other project



Monthly Summary of Marine Sediment Flow for 2019 (year)

Contract No: SCL1121

Date Reported: February 2019

							Volume o	of Sediment	s Generate	ed Monthl	y Bulk Volu	me)					
Month	Type 1 – Open Sea Disposal					Type 1 – Open Sea Disposal (Dedicated Site)			Type 2 – Confined Marine Disposal				Type 3 – Special Treatment Disposal				
	Generated from 1111	Generated from 1112		Generated from 1128	Disposed	Generated from 1111	Generated from 1112	Generated from 1121	Generated from 1128	Disposed	Generated from 1111	Generated from 1112	Generated from 1121	Generated from 1128	Disposed	Generated from 1121	Disposed
Unit		(iı	n '000m³)				(in '000m³)				((in '000m ³)			(in '00	00m ³)
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar																	
Apr																	
May																	
June																	
Sub- Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
July																	
Aug																	
Sept																	
Oct																	
Nov																	
Dec																	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX L CUMULATIVE LOG FOR COMPLAINT LOGS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed

Cumulative Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement

Cumulative Log for Successful Prosecutions

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
ESS41852/2016	4 May 2016/ CMP Vd at East Sha Chau	Contrary to: Sections 8 (1) (a) and 25 (1) (b) Dumping at Sea Ordinance	One (1) successful prosecution was recorded in August.	0	1

Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecution

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Successful Prosecutions in Reporting Month
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	0	0	0
August 2015	1	0	0
September 2015	1	0	0
October 2015	1	0	0
November 2015	1	0	0
December 2015	0	0	0
January 2016	0	0	0
February 2016	0	0	0
March 2016	1	0	0
April 2016	0	0	0
May 2016	1	0	0
June 2016	1	0	0
July 2016	1	0	0
August 2016	2	0	0
September 2016	0	0	0
October 2016	0	0	0
November 2016	1	1	0
December 2016	0	0	0
January 2017	0	0	0
February 2017	0	0	0
March 2017	0	0	0
April 2017	1	0	0
May 2017	0	0	0
June 2017	0	0	0
July 2017	0	0	0
August 2017	0	0	1
September 2017	0	0	0
October 2017	1	0	0
November 2017	0	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	1	0	0
April 2018	0	0	0
May 2018	0	0	0
June 2018	0	0	0
July 2018	0	0	0
August 2018	0	0	0
September 2018	0	0	0
October 2018	0	0	0
November 2018	0	0	0
December 2018	0	0	0
January 2019	0	0	0
February 2019	0	0	0
Total	14	1	1

Appendix C

Monthly EM&A Report for February 2019 – SCL Works Contract 1123 Exhibition Station and Western Approach Tunnel



Leighton - China State J.V.

Shatin to Central Link - Hung Hom to Admiralty Section

Works Contract 1123 - Exhibition Station and Western Approach Tunnel

Monthly EM&A Report for February 2019

[March 2019]

	Name	Signature
Prepared & Checked:	Ray Cheng	M
Reviewed, Approved & Certified:	Y W Fung (Contractor's Environmental Team Leader)	n/

Date:	08 March	2019
	Date:	Date: 08 March

Disclaimer

This Environmental Monitoring and Audit Report is prepared for Leighton – China State J.V. and is given for its sole benefit in relation to and pursuant to SCL1123 and may not be disclosed to, quoted to or relied upon by any person other than Leighton – China State J.V. without our prior written consent. No person (other than Leighton – China State J.V. into whose possession a copy of this report comes may rely on this plan without our express written consent and Leighton – China State J.V. may not rely on it for any purpose other than as described above.

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AECOM Asia Co. Ltd. ii March 2019

EXECUTIVE SUMMARY

Shatin to Central Link Contract 1123 – Exhibition Station and Western Approach Tunnel (hereafter called "the Project") covers part of the construction of the Shatin to Central Link (SCL).

The Project comprises the construction of an underground station (Exhibition Station) and 300 m of cut and cover tunnel (Western Approach Tunnel) along Convention Avenue.

The EM&A programme commenced on 1 June 2015. The impact EM&A for the Project includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 and 28 February 2019. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Exhibition Station (Zone 1 - PTI Area)	Structure Station/Tunnel
Harbour Road Sport Cenrtre (Zone 2)	Excvation and Lateral Support
Exhibition Station (Zone 4 - Tunnel at Tonnochy Road)	Excavation and Lateral Support
Exhibition Station (Zone 3 - Swimming Pool Area) (including W7a, W7b, W4, W5 and partial W6)	Excavation and Lateral Support
Fleming Road Junction	Excavation and Lateral Support
Area E	Temporary Traffic Management
	Utilities Diversion & Protection
Western Vent Shaft and	Structure Vent Shaft/Tunnel
Western Approach	
Tunnel (WAT) Area C	
WAT Area B	Structure tunnel
WAT Area A	Structure tunnel
Kai Tak Barging Point#	Storage and barging of fill materials

[#] The Kai Tak Barging Point will be for storage and barging of fill materials over the whole contract period.

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level of air quality was recorded in the reporting month.

Breaches of Action and Limit Levels for Noise

Regular Noise Monitoring

No Action Level exceedance was recorded since no noise related complaint was received in the reporting month.

No exceedance of Limit Level of noise was recorded in the reporting month.

Complaint, Notification of Summons and Successful Prosecution

No environmental related complaint, notification of summons and successful prosecution were received in the reporting month.

Reporting Changes

There was no reporting change in the reporting month.

Future Key Issues

Key issues to be considered in the next three month included:

Location	Site Activities
Exhibition Station (Zone 1 - PTI Area)	Structure Station/ Tunnel
Harbour Road Sport Cenrtre (Zone 2)	Excavation and Lateral Support
Exhibition Station (Zone 3 - Swimming Pool Area) (including W7a, W7b, W4, W5 and partial W6)	Excavation and Lateral Support
Exhibition Station (Zone 4	Excavation and Lateral Support
- Tunnel at Tonnochy	Structure Station/Tunnel
Road)	
Fleming Road Junction	Temporary Traffic Management
Area E	Excavation and Lateral Support
Western Vent Shaft and WAT Area C	Structure Ventilation Shaft / Tunnel
WAT Area B	Structure Tunnel
WAT Area A	Structure Tunnel
	Reprovisioning, Remedial and Improvement Works
Kai Tak Barging Point#	Storage and barging of fill materials

^{*} The Kai Tak Barging Point will be for storage and barging of fill materials over the whole contract period.

Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

AECOM Asia Co. Ltd. 2 March 2019

1 INTRODUCTION

Leighton – China State Joint Venture (JV) was commissioned by MTR as the Civil Contractor for Works Contract 1123. AECOM Asia Company Limited (AECOM) was appointed by JV as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1 Purpose of the Report

1.1.1 This is the forty-fifth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between 1 and 28 February 2019.

1.2 Report Structure

- 1.2.1 This monthly EM&A Report is organized as follows:
 - Section 1: Introduction
 - Section 2: Project Information
 - Section 3: Environmental Monitoring Requirement
 - Section 4: Implementation Status of Environmental Mitigation Measures
 - Section 5: Monitoring Results
 - Section 6: Environmental Site Inspection and Audit
 - Section 7: Environmental Non-conformance
 - Section 8: Future Key Issues
 - Section 9: Conclusions and Recommendations

2 PROJECT INFORMATION

2.1 Background

- 2.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2012, which covers SCL (HUH-ADM) EP No.: EP-436/2012), for the construction and operation. Variation of EP (VEP) was subsequently applied and the latest EP (EP No. EP-436/2012/F) was issued by the Director of Environmental Protection (DEP) on 23 January 2019.
- 2.1.3 The construction of the SCL is divided into different civil construction works contracts and Works Contract 1123 Exhibition Station and Western Approach involves the construction of an underground station (Exhibition Station) and 300m of cut and cover tunnel (Western Approach Tunnel) along Convention Avenue.
- 2.1.4 The site layout plan of the Project is shown in **Figure 1.1** and **Figure 1.2**.

2.2 Site Description

- 2.2.1 The major construction activities under Works Contract 1123 include:
 - (a) Site preparation;
 - (b) Demolition works;
 - (c) Utilities works:
 - (d) Box Culvert works;
 - (e) Diaphragm wall construction and piling works;
 - (f) Pile Removal works;
 - (g) Excavation & Lateral Support (ELS) works; and
 - (h) Reprovisioning/ Reinstatement works.

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarised below:

Location	Site Activities
Exhibition Station	Structure Station/Tunnel
(Zone 1 - PTI Area)	
Harbour Road Sport	Excvation and Lateral Support
Cenrtre (Zone 2)	
Exhibition Station	Excavation and Lateral Support
(Zone 4 - Tunnel at	
Tonnochy Road)	
Exhibition Station	Excavation and Lateral Support
(Zone 3 – Swimming	.,
Pool Area) (including	
W7a, W7b, W4, W5	
and partial W6)	
Fleming Road	Excavation and Lateral Support
Junction Area E	Temporary Traffic Management
	Utilities Diversion & Protection
Western Vent Shaft	Structure Vent Shaft/Tunnel
and Western	
Approach Tunnel	
(WAT) Area C	
WAT Area B	Structure tunnel
WAT Area A	Structure tunnel
Kai Tak Barging Point#	Storage and barging of fill materials Storage and barging of fill materials Storage and barging of fill materials

^{*} The Kai Tak Barging Point will be for storage and barging of fill materials over the whole contract period.

2.3.2 The construction programme is presented in **Appendix A**.

2.4 Project Organisation

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarised in **Table 2.1.**

Table 2.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
	Residential	Construction Manager	Mr. Walter Lam	3959 2128	3959 2200
MTR	Engineer (ER)	SCL Project Environmental Team Leader	Ms. Lisa Poon	3127 6295	3127 6422
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
JV	Contractor	Project Director	Mr. Brian Shepstone	3973 0838	31051126
JV	Contractor	Environmental Engineer	Ms. Doris Law	9198 8399	31031120
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y W Fung	3922 9366	2317 7609

2.5 Status of Environmental Licences, Notification and Permits

2.5.1 Relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 2.2**.

Table 2.2 Status of Environmental Licenses, Notifications and Permits

Permit / License No.	Valid Period		Crata	Bd.			
/ Notification/ Reference No.	From	То	Status	Remarks			
Environmental Permit	Environmental Permit						
EP-436/2012/F	23 Jan 2019	-	Valid on 23 Jan 2019				
Construction Noise Pe	ermit						
GW-RS0716-18	20 Aug 2018	19 Feb 2019	Valid until 19 Feb 2019	WAT Area E Box culvert wire cutting, ELS & Tunnel Acceleration Works, formwork & rebar-fixing, ELS at W18, grouting, water barrier replacement, All PCW			
GW-RS0102-19	20 Feb 2019	19 Aug 2019	Valid until 20 Feb 2019	WAT Area E Box culvert wire cutting, ELS & Tunnel Acceleration Works, formwork & rebar-fixing, ELS at W18, grouting, water barrier replacement, All PCW			
GW-RS0896-18	30 Sep 2018	24 Mar 2019	Valid	EXH ELS, Z2 grouting, drilling, W6 lift tower, TTM, rock splitting, water barrier replacement, footbridge erection			
GW-RS1115-18	06 Dec 2018	05 Jun 2019	Valid	EXH, W6 Plant mobilization and demobilization			
GW-RS1154-18	27 Dec 2018	26 Jun 2019	Valid	WAT Plant mobilization and demobilization			
GW-RE0612-18	12 Sep 2018	11 Mar 2019	Valid	Kai Tak Barging Point: routine operations and maintenance for haul road			
GW-RE0722-18	11 Nov 2018	10 May 2019	Valid	Kai Tak Barging point routine operations and maintenance			
GW-RS0025-19	18 Jan 2019	28 Feb 2019	Valid until 28 Feb 2019	RoadP2 Salt watermain connection (Area A&B)			
GW-RS0028-19	18 Jan 2019	28 Feb 2019	Valid until 28 Feb 2019	RoadP2 Salt watermain connection (Area C)			
GW-RS0085-19	31 Jan 2019	28 Jul 2019	Valid	ELS, welding, grouting at Zone 1-4 + Zone1 drilling + Zone2 grout station + Rock Splitting + footbridge erection, impact wrench (general night works) + Tower Crane			
GW-RS0046-19	2 Feb 2019	31 Mar 2019	Valid on 2 Feb 2019	TTM6-2 Changeover			
Wastewater Discharge License							
WT00022480-2015	04 Sep 2015	30 Sep 2020	Valid	For site portion W1a, W1b			
WT00022482-2015	04 Sep 2015	30 Sep 2020	Valid	For site portion W9a, W9b			
WT00025181-2016	03 Aug 2016	30 Apr 2020	Valid	For site portion W12T			
WT00025182-2016	03 Aug 2016	30 Jun 2020	Valid	For site portions W15a, W16, W17 & W18a			

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Permit / License No.	Valid Period		_		
/ Notification/ Reference No.	From	То	Status	Remarks	
WT00026195-2016	30 Nov 2016	30 Nov 2021	Valid	For Kai Tak Barging Point	
WT00031573-2018	23 Jul 2018	31 Jul 2023	Valid	For W15d, W13 & W6	
WT00031235-2018	23 Jul 2018	31 Jul 2023	Valid	For W25	
Chemical Waste Produ	ucer Registratio	n			
5213-135-L2881-01	02 Apr 2015	End of Contract	Valid	For whole site at Wan Chi Area	
5213-247-L2532-02	23 Aug 2016	End of Contract	Valid	Kai Tak Barging Point Area	
Marine Dumping Perm	Marine Dumping Permit				
EP/MD/19-084	24 Jan 2019	23 Jul 2019	Valid	For Type I – Open Sea Disposal	
EP/MD/19-082	23 Jan 2019	22 Feb 2019	Valid until 22 Feb 2019	For Type 1 - Open Sea Disposal (Dedicated Space) & Type 2 - Confined Marine Disposal	
Billing Account for Co	onstruction Was	te Disposal			
7021736	16 Feb 2015	End of Contract	Valid	For Disposal of C&D Waste	
Notification Under Air Pollution Control (Construction Dust) Regulation					
385128	1 Mar 2015	End of Contract	Valid	For whole site at Wan Chi Area	
405660	29 Jul 2016	End of Contract	Valid	Kai Tak Barging Point Area	

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Dust Monitoring

Monitoring Requirements

3.1.1 In accordance with the approved EM&A Manuals, 24-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required. Impact 24-hour TSP monitoring should be carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in **Appendix D**.

Monitoring Equipment

3.1.2 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at the designated monitoring stations. The HVS meets all the requirements of the EM&A Manual. Brand and model of the equipment is given in **Table 3.1**.

Table 3.1 Air Quality Monitoring Equipment

Equipment	Brand and Model
High Volume Sampler (24-hour TSP)	Andersen Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. GS 2310 (S/N:809))
Calibration Kit	TISCH Environmental Orifice (Model TE-5025A (Orifice I.D.: 0988))

Monitoring Locations

3.1.3 The monitoring station for construction dust monitoring pertinent to the Project has been identified based on the approved EM&A Manual for SCL (HUH-ADM) of the Project. The location of the construction dust monitoring stations are summarised in **Table 3.2** and shown in **Figure 3.1**.

Table 3.2 Locations of Construction Dust Monitoring Station

ID	Air Sensitive Receiver (ASR) ID in EIA Report	Dust Monitoring Station
AM2 ^[1]	EXA6	Wanchai Sports Ground
AM3 ^{[2],[3]}	EXA5	Existing Harbour Road Sports Centre

Note:

- [1] The impact monitoring at AM2 was handed over from Contract SCL1128 on 28 October 2015.
- [2] The impact monitoring at AM3 was handed over from Contract SCL1126 in June 2015.
- [3] The impact monitoring at AM3 terminated on 6 May 2017 as demolition of Existing Harbour Road Sports Centre commenced on 8 May 2017.

Monitoring Methodology

3.1.4 24-hour TSP Monitoring

- (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS as far as practicable:-
 - (i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
 - (ii) Two samplers should not be placed less than 2m apart from each others;
 - (iii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
 - (iv) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
 - (v) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
 - (vi) No furnace or incinerator flues nearby.
 - (vii) Airflow around the sampler was unrestricted.

- (viii) The sampler was located more than 20 meters from any dripline.
- (ix) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
- (x) Permission was obtained to set up the samplers and access to the monitoring station.
- (xi) A secured supply of electricity was obtained to operate the sampler.

(b) Preparation of Filter Papers

- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
- (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.
- (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(c) Field Monitoring

- (i) The power supply was checked to ensure the HVS works properly.
- (ii) The filter holder and the area surrounding the filter were cleaned.
- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
- (vi) Then the shelter lid was closed and was secured with the aluminium strip.
- (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- (viii) A new flow rate record sheet was set into the flow recorder.
- (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m³/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m³/min).
- (x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
- (xi) The initial elapsed time was recorded.
- (xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
- (xiii) The final elapsed time was recorded.
- (xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- (xv) It was then placed in a clean envelope and sealed.
- (xvi) All monitoring information was recorded on a standard data sheet.
- (xvii) Filters were then sent to ALS Technichem (HK) Ptv Ltd. for analysis.

(d) Maintenance and Calibration

- (i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- (ii) HVSs were calibrated using TE-5025A Calibration Kit upon installation and thereafter at bi-monthly intervals.
- (iii) Calibration certificate of the TE-5025A Calibration Kit and the HVSs are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.1.5 The schedule for environmental monitoring in February 2019 is provided in **Appendix F**.

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3.2 Construction Noise Monitoring

Monitoring Requirements

3.2.1 In accordance with the EM&A Manual, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3.3** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit level of the noise monitoring is provided in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency	
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. Leq, L ₁₀ and L ₉₀ would be recorded.	At least once per week	

Monitoring Equipment

3.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in Table 3.4.

Table 3.4 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	Model No. B&K2238 (S/N: 2800927), Model No. B&K2250 (S/N: 3001291)
Acoustic Calibrator	Model No. B&K4231 (S/N: 3006428)

Monitoring Locations

3.2.3 The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manual for SCL (HUH-ADM) of the Project. Location of the noise monitoring station is summarised in **Table 3.5** and shown in **Figure 3.1**.

Table 3.5 Noise Monitoring Station during Construction Phase

Identification No.	Noise Sensitive Receiver (NSR) ID in EIA Report	Noise Monitoring Station	Alternative Noise Monitoring Location
NM2 ^[1]	EX1	Causeway Centre, Block A	Harbour Centre ^[2]

Note:

[1] The impact monitoring at NM2 was handed over from Works Contract SCL1126 in June 2015.

Monitoring Methodology

3.2.4 Monitoring Procedure

- (a) Façade measurements were made at NM2.
- (b) The battery condition was checked to ensure the correct functioning of the meter.
- (c) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

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^[2] The Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring under Works Contract 1126. An alternative monitoring location at Harbour Centre was approved by the ER, agreed by IEC. The alternative monitoring location was approved by EPD on 18 December 2017.

- (i) frequency weighting: A
- (ii) time weighting: Fast
- (iii) time measurement: L_{eq(30-minutes)} during non-restricted hours i.e. 0700 1900 on normal weekdays.
- (d) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (e) During the monitoring period, the L_{eq}, L₁₀ and L₉₀ were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (f) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (g) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

3.2.5 Maintenance and Calibration

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- (c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.2.6 The schedule for environmental monitoring in February 2019 is provided in **Appendix F**.

3.3 Continuous noise monitoring

3.3.1 According to EP conditions under EP-436/2012/F (Condition 2.7 and 2.8), the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) were submitted to EPD in June 2016, it is predicted that no residual air-borne construction noise impact exceeding the relevant noise criteria is anticipated. No continuous noise monitoring is required under this Contract.

3.4 Landscape and Visual

3.4.1 As per the EM&A Manuals, the landscape and visual mitigation measures shall be implemented and site inspections should be undertaken once every two weeks during the construction period. A summary of the implementation status is presented in **Section 6.**

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4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C.** Status of required submissions under the EP during the reporting period is summarised in **Table 4.1**.

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4 (EP-436/2012/F)	Monthly EM&A Report for January 2019	14 February 2019

5 MONITORING RESULTS

5.1 Construction Dust Monitoring

- 5.1.1 The monitoring station at AM2 was handed over from Contract SCL1128 on 28 October 2015.
- 5.1.2 The monitoring results for 24-hour TSP are summarised in **Table 5.1**. Detailed air quality monitoring results and wind monitoring data extracted from the nearest Automatic Weather Station are presented in **Appendix G**.

Table 5.1 Summary of 24-hour TSP Monitoring Result in the Reporting Period

ID	Average (μg/m³)	Range (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)
AM2 ^[1]	59.6	37.9 – 77.9	160	260

Note:

- 5.1.3 No Action and Limit Level exceedance were recorded for 24-hour TSP monitoring at the monitoring locations in the reporting month.
- 5.1.4 The event and action plan is annexed in **Appendix I**.
- 5.1.5 Major dust sources during the monitoring included construction dust, nearby traffic emission and other nearby construction sites.

5.2 Regular Construction Noise Monitoring

5.2.1 The monitoring results for noise are summarized in **Table 5.2** and the monitoring data is provided in **Appendix H**.

Table 5.2 Summary of Construction Noise Monitoring Results in the Reporting Period

ID	Range, dB(A), L _{eq (30 mins)}	Limit Level, dB(A), L _{eq (30 mins)}
NM2 (*)	<baseline< th=""><th>75</th></baseline<>	75

^(*) Baseline correction will be made to the measured Leq when the measured noise level exceeded the corresponding baseline noise level and presented in the table.

- 5.2.2 No Action Level exceedance was recorded since no noise related complaint was received in the reporting month.
- 5.2.3 No Limit Level exceedance of noise was recorded at the monitoring station in the reporting month.
- 5.2.4 The event and action plan is annexed in **Appendix I**.
- 5.2.5 Major noise sources during the monitoring included construction noise from the Project site, nearby traffic noise and the community.

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^[1] The impact monitoring at AM2 was handed over from Contract SCL1128 on 28 October 2015.

5.3 Waste Management

- 5.3.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.
- 5.3.2 As advised by the Contractor, 3,812 m³ of inert C&D material was generated, 239 m³ was disposed of as public fill in the reporting month. 3,573 m³ of inert C&D materials were reused in other projects. No inert C&D materials were reused in the Contract. 235 m³ fill material was imported. 88 m³ general refuse was generated in the reporting month. 299,655 kg of metals was collected by recycling contractor in the reporting month. 340 kg paper/cardboard packaging material, 95 kg plastic and 315 kg chemical waste were collected by licensed contractor in the reporting period. No Type 1 and no Type 2 of Marine sediment was disposed were disposed of at Confined Marine Disposal Facility to the East of Sha Chau. The waste flow table is annexed in **Appendix K**.
- 5.3.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 5.3.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.4 Landscape and Visual

5.4.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 15 and 28 February 2019. A summary of the site inspection is provided in **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

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6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

- 6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.
- 6.1.2 In the reporting month, 6 site inspections were carried out on 4, 12, 15, 21, 26 and 28 February 2019. Joint inspections with the IEC, ER, the Contractor and the ET were conducted on 15 February 2019. No non-compliance was recorded during the site inspection. Details of observations recorded during the site inspections are presented in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	31 January 2019	Reminder: • The Contractor was reminded to provide sufficient cover for the cement bags at WAT.	The item was rectified by the Contractor on 04 February 2019.
7 iii Quality		Reminder: The Contractor was reminded to display the NRMM label on the roller at WAT.	The item was rectified by the Contractor on 04 February 2019.
Noise	15 February 2019	 Panels of the concrete pump was observed without closing during operation at WAT. The Contractor was advised to close all the panels of concrete pump during operation. 	The item was rectified by the Contractor on 21 February 2019.
Noise	21 February 2019	Hand-held breaker was observed without noise emission label at WAT. The Contractor was advised to display the proper noise emission label on the hand-held breaker.	The item will follow up in next site inspection
Water Quality	04 February 2019	Reminder: The Contractor was reminded to maintain the wastewater treatment facility properly at WAT.	The item was rectified by the Contractor on 09 February 2019.
Quality	28 February 2019	Reminder: The Contractor was reminded to maintain the wastewater treatment facility properly at WAT.	The item will follow up in next site inspection
Waste/ Chemical	21 February 2019	Chemical waste containers were observed without proper labelling at Zone 4. The Contractor was advised to stick the proper chemical waste label on the containers.	The item was rectified by the Contractor on 28 February 2019.
Management	26 February 2019	Accumulated general refuse was observed without proper collection at Kai Tak Barging Point. The Contractor was advised to provide any receptacles for the waste collection.	The item will follow up in next site inspection
Landscape & Visual	Nil	Nil	Nil
Permits/ Licenses	12 February 2019	Reminder: • The Contractor was reminded to update the environmental permit at Kai Tak Barging Point.	The item was rectified by the Contractor on 20 February 2019.
	15 February 2019	Reminder: The Contractor was reminded to update the environmental permit at the site entrance of WAT.	The item was rectified by the Contractor on 21 February 2019.

6.1.1 Most of the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period. Some outstanding follow-up actions will be reported in the next reporting period.

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7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

- 7.1.1 All 24-hour TSP result was below the Action and Limit level at all monitoring locations in the reporting month.
- 7.1.2 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 7.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.

7.2 Summary of Environmental Non-Compliance

7.2.1 No environmental non-compliance was recorded in the reporting month.

7.3 Summary of Environmental Complaints

7.3.1 No environmental related complaint was received in the reporting month. Cumulative statistics on environmental complaints is provided in **Appendix J**.

7.4 Summary of Environmental Summon and Successful Prosecutions

7.4.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix J**.

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8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works between March and May 2019 will be:

Location	Site Activities
Exhibition Station (Zone 1 - PTI Area)	Structure Station/ Tunnel
Harbour Road Sport Cenrtre (Zone 2)	 Excavation and Lateral Support
Exhibition Station (Zone 3 - Swimming Pool Area) (including W7a, W7b, W4, W5 and partial W6)	Excavation and Lateral Support
Exhibition Station (Zone 4 - Tunnel at Tonnochy Road)	Excavation and Lateral SupportStructure Station/Tunnel
Fleming Road Junction Area E	 Temporary Traffic Management Excavation and Lateral Support
Western Vent Shaft and WAT Area C	Structure Ventilation Shaft / Tunnel
WAT Area B	Structure Tunnel
WAT Area A	Structure TunnelReprovisioning, Remedial and Improvement Works
Kai Tak Barging Point#	Storage and barging of fill materials

[#] The Kai Tak Barging Point will be for storage and barging of fill materials over the whole contract period.

8.2 Key Issues for the Coming Month

8.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

8.3 Monitoring Schedule for the Next Three Month

8.3.1 The tentative schedules for environmental monitoring in between March and May 2019 are provided in **Appendix F**.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

- 9.1.1 24-hour TSP and noise monitoring were carried out in the reporting month.
- 9.1.2 No Action and Limit Level exceedance was recorded for 24-hour TSP monitoring at the monitoring locations in the reporting month.
- 9.1.3 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 9.1.4 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 9.1.5 6 nos. of environmental site inspections were carried out in February 2019. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.
- 9.1.6 Referring to the Contractor's information, no environmental related complaint, notification of summons and successful prosecution was received in the reporting month.

9.2 Recommendations

9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:-

Air Quality Impact

• No specific observation was identified in the reporting month.

Construction Noise Impact

- Panels of the concrete pump should be closed during the operation.
- Proper Noise emission label should be displayed on the hand held breaker.

Water Quality Impact

Waste water treatment facilities should be maintained properly.

Chemical and Waste Management

- Proper labelling should be provided for the chemical waste containers.
- · Accumulated general refuse should be removed.

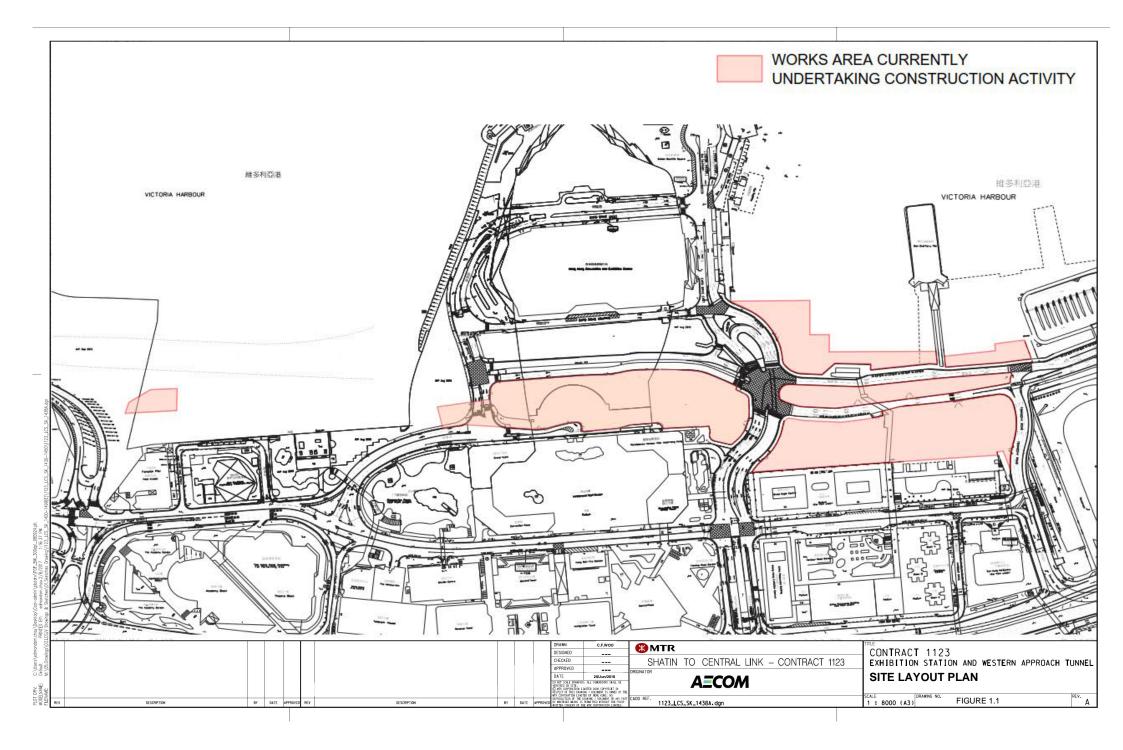
Landscape & Visual Impact

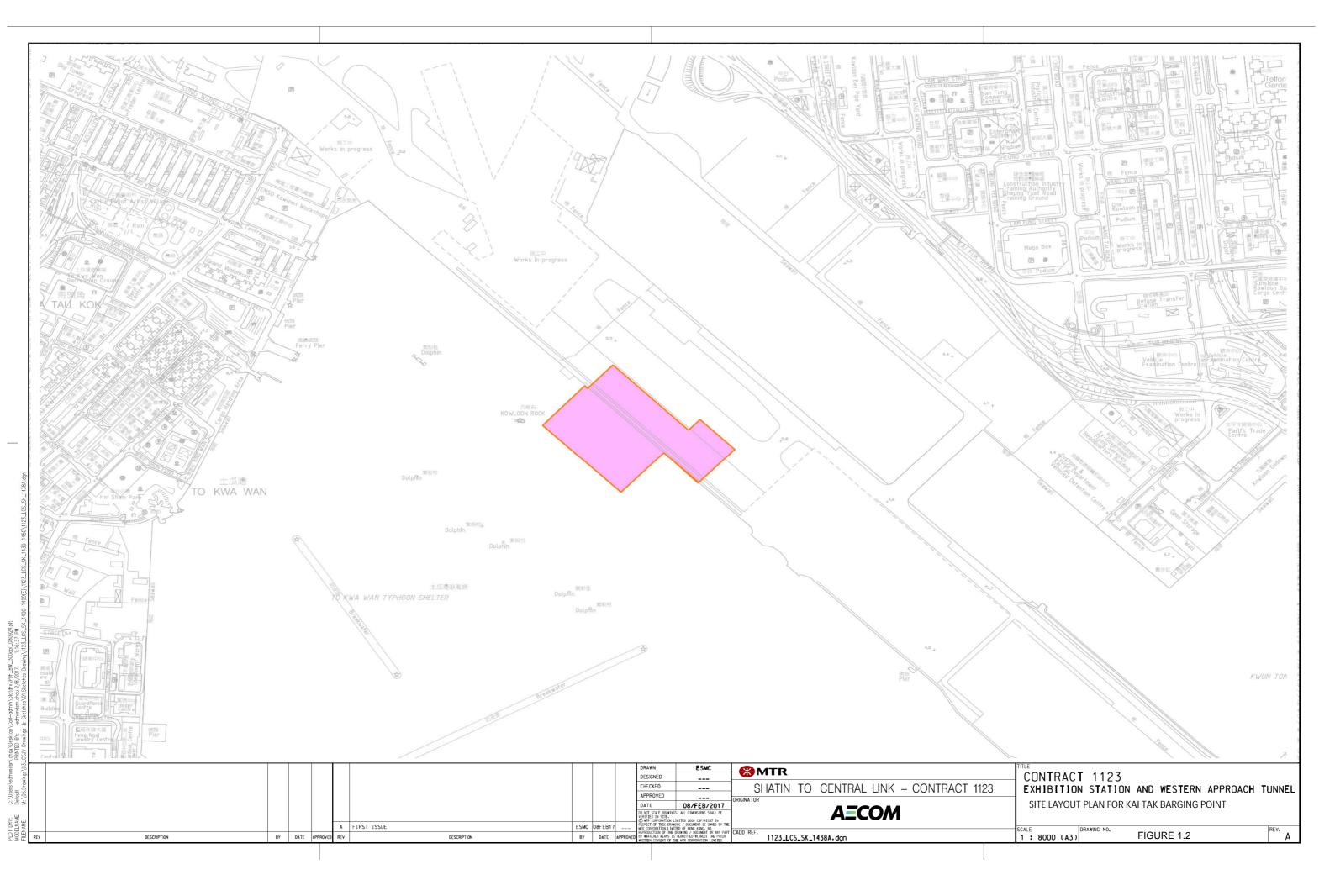
• No specific observation was identified in the reporting month.

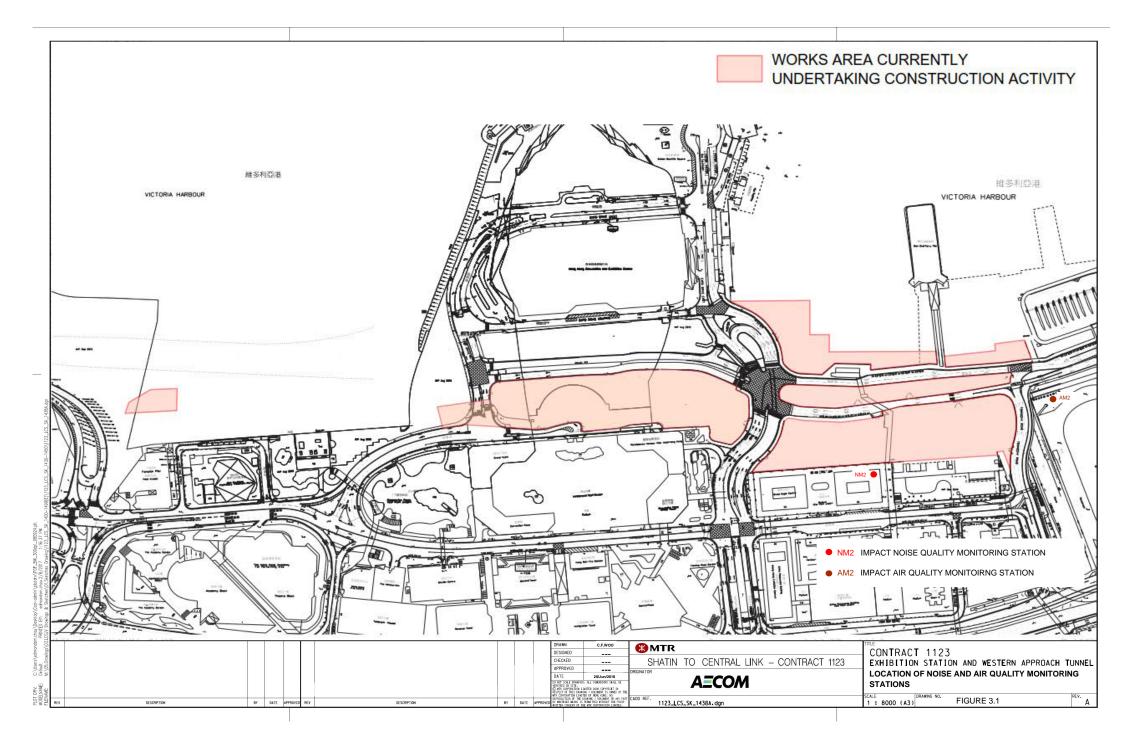
Permits/licenses

Valid environmental permit should be displayed at site entrance.







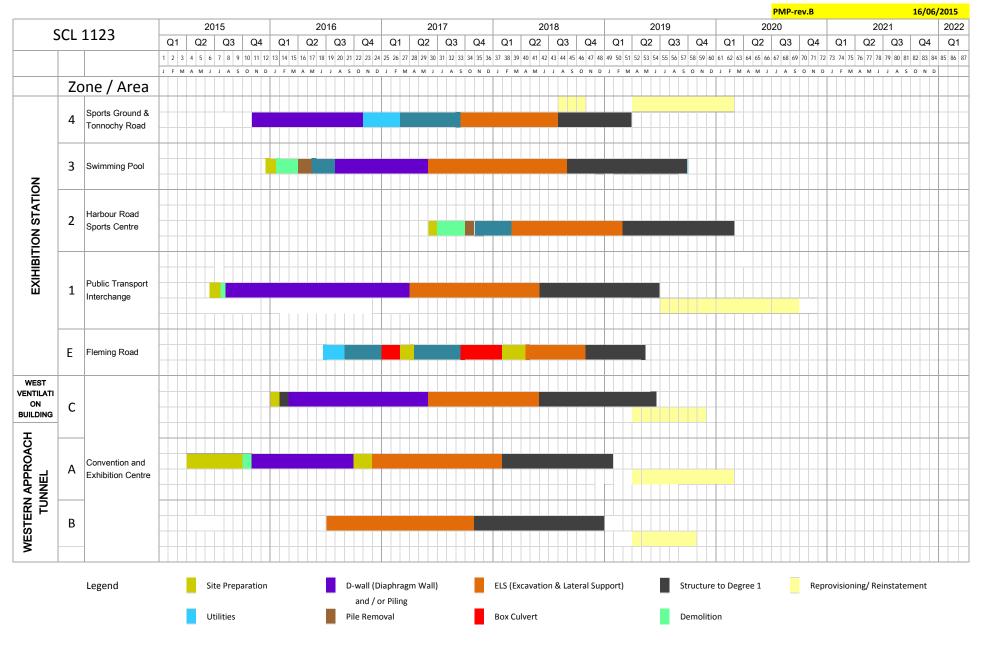


APPENDIX A

Construction Programme

High Level Programme

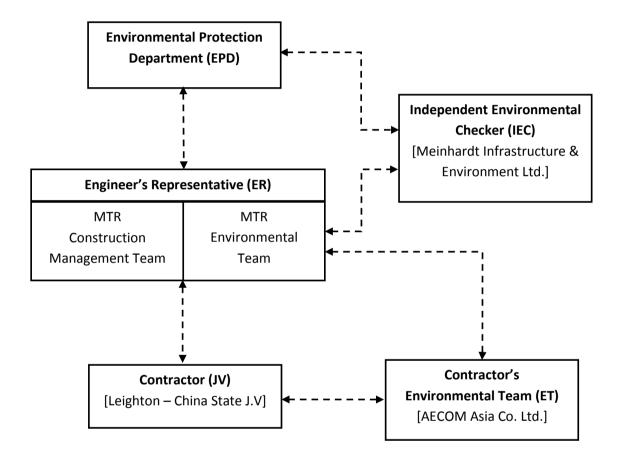




APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure



Appendix B AECOM

APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Cultural He	ritage Impact					
S4.93 & Table 4.2	Erection of decorative and sensibly designed hoarding along the boundary of the works area	To mitigate the temporary visual impact due to surface works.	Contractor	Works Areas in Causeway Bay and Wan Chai, and Works Shaft in Admiralty	Construction Phase	V
Ecological	Impact					
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted.	To minimize the contamination of wastewater discharge	Contractor	All land based works areas	Construction Phase	N/A
Landscape	and Visual Impact					
Construction	on Phase					
Table 7.9	CM1 - Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with ETWB TC(W) 3/2006 – Tree Preservation.	Transplanting and reuse of affected trees.	MTR	Works Sites	Construction Phase	V
Table 7.9	CM2a - Compensatory tree planting shall be provided in accordance with ETWB TC(W) 3/2006 – Tree Preservation to compensate for felled trees and maintained until end of the establishment period.	Compensation for the removal of existing trees due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM2b - Compensatory shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	Compensation for the removal of existing shrub planting due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time glare due to the Project during construction phase	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM4 - Erection of decorative screen hoarding compatible with the surrounding setting.	Minimize the visual impact of the Project during construction phase	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs	Control of height and deposition/ arrangement of temporary facilities in works areas	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM6 - All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis to the satisfaction of the relevant Government Departments.	Reinstatement of temporary works areas.	MTR	Works Sites	Construction Phase	N/A
Construction	on Dust Impact					
Table 8.5	Barging facilities: (i) Transportation of spoils to the barging point – Pave all road surfaces within the barging facilities and provide watering once along with the haul road for every working hours to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.0 L/m² once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.0L/m² to achieve the removal efficiency. The dust levels would be monitored and	To minimize dust impacts	Contractor	All barging points	Construction phase	V
	managed under an EM&A programme as specified in the EM&A Manual. (ii) Unloading of spoil materials – Undertake the unloading process within a 3-sided screen with top					V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	tipping hall. Provide water spraying and flexible dust curtains at the discharge point for dust suppression. (iii) Vehicles leaving the barging facilities – Pass vehicles through the wheel washing facilities provided at site exits.					V
S8.63	For concrete batching plant, the requirements and mitigation measures stipulated in the <i>Guidance</i> Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93) shall be followed and implemented.	To minimize dust impact	Contractor	Concrete Batching Plant	Construction phase	N/A
Table 8.6	 During operation of concrete batching plant: Unloading of aggregates from the tipper trucks to receiving hopper – unload the aggregates from the tipper trucks to the receiving hopper equipped with enclosures on 3 sides and top cover, and water spraying system. Unloading of cement and PFA from tankers into the silo – Directly load the cement and PFA into the silo via a flexible duct. Install dust collectors at cement/PFA silos. Storage of aggregates in overhead storage bins – Store the aggregates in fully enclosed overhead storage bins. Cover the top of overhead storage bins with cladding. Install water spraying system at the top of storage bins for watering the aggregates, and fully enclose aggregates storage bins. Weighing and batching of cementitious materials – Perform the whole process of weighing and mixing in a fully enclosed environment. Equip all the mixers with dust collectors. Loading of concrete from mixer into transit mixer of a truck – Directly load the concrete from the mixer into the transit mixer of a truck in "wet form". Tipper trucks and cement tankers leaving the Concrete Batching Plant – Haul road within the site is unpaved. Install wheel washing pit at the gate of the concrete batching plant. Transportation of materials within the plant – Provide watering twice a day would be provided. 	To minimize dust impacts	Contractor	Concrete Batching Plant	Construction phase	N/A
S8.89	Watering once every working hour on active works areas, exposed areas and paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.	To minimize dust impact	Contractor	Works areas	Construction Phase	V
S8.89	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall, provision of water spraying and flexible dust curtains to reduce dust emission	To minimize dust impact	Contractor	All barging points	Construction phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
\$8.90	 Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. 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 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. Imposition of speed controls for vehicles on site haul roads. Where possible, routing of vehicles and positioning of construction plant shall be at the maximum possible distance from ASRs. Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. Instigation of an environmental monitoring and auditing program to monitor the construction 	To minimize dust impacts	Contractor	Works areas	Construction phase	V V V V V V
/	 process in order to enforce controls and modify method of work if dusty conditions arise Dust suppression measures (con't) De-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement The portion of any road where along the site boundary should be kept clear of dusty materials. Use of frequent watering for any dusty construction process (e.g. breaking works) to reduce dust emissions. 	To minimize dust impacts	Contractor	Works areas	Construction phase	V V V
/ Airborne No	 Emission from Vehicles and Plants All vehicles shall be shut down in intermittent use. Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD) 	Reduce air pollution emission from construction vehicles and plants	Contractor	Works areas	Construction phase	V V
Construction						
S9.55	 The following good site practices shall be implemented: Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program Mobile plant, if any, shall be sited as far from NSRs as possible Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs 	To minimize construction noise impact	Contractor	Works areas	Construction phase	V @ V V N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities					N/A
/	 Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants during operation Air compressors shall be fitted with valid noise emission labels during operation 	To minimize construction noise impact	Contractor	Works areas	Construction phase	V
S9.56 & Table 9.16	The following quiet PME shall be used: Crane lorry, mobile Crane, mobile Asphalt paver Backhoe with hydraulic breaker Breaker, excavator mounted (hydraulic) Hydraulic breaker Concrete lorry mixer Poker, vibrator, hand-held Concrete pump Crawler crane, mobile Mobile crane Dump truck Excavator Truck Rock drill Lorry Wheel loader Roller vibratory Movable noise barrier shall be used for the following PME:	To minimize construction noise impact To minimize	Contractor	 Works areas at: Hung Hom Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel Works areas at: 	Construction phase Construction	V V N/A V N/A N/A N/A V V V V V V N/A N/A N/A
\$9.59 & Table 9.17	 Air compressor Asphalt paver Backhoe with hydraulic breaker Bar bender Bar bender and cutter (electric) Breaker, excavator mounted Concrete pump Concrete pump, stationary/lorry mounted Excavator Generator Grout pump Hand held breaker Hydraulic breaker Saw, concrete 	construction noise impact		 Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel 	phase	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
S9.60 & Table 9.17	Noise insulating fabric shall be used for Drill rig, rotary type Piling, diaphragm wall, bentonite filtering plant Piling, diaphragm wall, grab and chisel Piling, diaphragm wall, hydraulic extractor Piling, large diameter bored, grab and chisel Piling, hydraulic extractor Piling, earth auger, auger Rock drill, crawler mounted (pneumatic)	To minimize construction noise impact	Contractor	Works areas at: Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel	Construction phase	N/A N/A N/A N/A N/A N/A N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Water Qual	ity Impact					
Construction	on Phase					
S11.216	The following mitigation measures are proposed to minimize the potential water quality impacts from the construction works at or close to the seafront: • Temporary storage of construction materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction and demolition materials shall be located well away from the seawater front and storm drainage during carrying out of the works.	To minimize release of construction wastes from construction works at or close to the seafront	Contractor	Construction works at or close to the seafront	Construction Phase	V
	 Stockpiling of construction and demolition materials and dusty materials shall be covered and located away from the seawater front and storm drainage. 					V
	Construction debris and spoil shall be covered up and/or disposed of as soon as possible to avoid being washed into the nearby receiving waters.					N/A
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable. Surface Run-off Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction Phase	V
	run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks. • Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit shall 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 shall comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains. Minimum					@
	distances of 100 m shall be maintained between the discharge points of construction site runoff and the existing saltwater intakes. Construction works shall be programmed to minimize 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 shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels shall be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall					V
	 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. Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused 					N/A
	 by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary. Measures shall be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out 					N/A
	from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be covered with tarpaulin or similar fabric during rainstorms.					V
	 Manholes (including newly constructed ones) shall 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. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system. 					V
	 Good site practices shall 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. Boring and Drilling Water 					V
	Water used in ground boring and drilling for site investigation or rock / soil anchoring shall as far as					V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	 practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater shall be discharged into storm drains via silt removal facilities. Wheel Washing Water All vehicles and plant shall be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing bay shall be provided at every site exit if practicable and wash-water shall have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road shall be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road 					V
	drains. <u>Bentonite Slurries</u> • Bentonite slurries used in diaphragm wall and bore-pile construction shall be reconditioned and used					V
	again wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the bentonite slurries shall either be dewatered or mixed with inert fill material for disposal to a public filling area.					V
	 If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the TM-DSS. Water for Testing & Sterilization of Water Retaining Structures and Water Pipes 					N/A
	• Water used in water testing to check leakage of structures and pipes shall be used for other purposes					N/A
	 as far as practicable. Surplus unpolluted water will be discharged into storm drains. Sterilization is commonly accomplished by chlorination. Specific advice from EPD shall be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water shall be used again wherever practicable. Acid Cleaning, Etching and Pickling Wastewater 					N/A
	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities shall be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater shall be tankered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters. Wastewater from Site Facilities					N/A
	 Wastewater nome lite racinities Wastewater collected from any temporary canteen kitchens, including that from basins, sinks and floor drains, shall be discharged into foul sewer via grease traps. In case connection to the public foul sewer is not feasible, wastewater generated from kitchens or canteen, if any, shall be collected in a temporary storage tank. A licensed waste collector shall be deployed to clean the temporary storage tank on a regular basis. 					N/A
	• Drainage serving an open oil filling point shall be connected to storm drains via petrol interceptors with					N/A
	 vehicle and plant servicing areas, vehicle wash bays and lubrication bays shall as far as possible be located within roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor. Oil leakage or spillage shall be contained and cleaned up immediately. Waste oil shall be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. 					V
S11.246 & 11.247	Construction work force sewage discharges on site are expected to be discharged to the nearby existing trunk sewer or sewage treatment facilities. If disposal of sewage to public sewerage system is not feasible, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment. The Contractor shall also be responsible for waste disposal and maintenance practices. Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.	To minimize water quality impacts due to sewage generated from construction workforce	Contractor	Works areas	Construction Phase	N/A
S11.248	In case seepage of uncontaminated groundwater occurs, groundwater shall be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process shall also be discharged into the storm system via silt traps.	To minimize impact from discharge of uncontaminated groundwater	Contractor	Works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.249	If land contaminated site is identified from the Stage 2 SI work (refer to Sections 11.188 to 11.191 of the EIA Report), the following mitigation measures shall be implemented for the identified contaminated area. Any transient pile of contaminated soil / material shall be minimized and shall be bottom-lined, bunded and covered with impervious membrane during rain event to avoid generation of contaminated runoff. Appropriate intercepting channels and partial shelters shall be provided where necessary to prevent rainwater from collecting within trenches or footing excavations. Any contaminated water and wastewater generated from the decontamination process shall not be directly discharged to public sewers or site drainage. They shall be treated or tanked away as necessary for proper disposal in compliance with the TM-DSS.	To control site run-off generated from any potential contaminated works areas.	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.250 & S11.251	No direct discharge of groundwater from contaminated areas shall be adopted. If land contamination impact and generation of contaminated groundwater is identified from the Stage 2 SI works (refer to Sections 11.189 to 11.192 of the EIA Report), the following mitigation measures shall be adopted. Any contaminated groundwater shall be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground. If wastewater treatment is 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 TPH) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and shall be discharged into the foul sewers. If groundwater recharging wells are deployed, the recharging wells shall be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharge operation as indicated in Section 2.3 of the TM-DSS. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater at the recharge well. Prior to recharge, any prohibited substance such as TPH products shall be removed as necessary by installing the petrol interceptor. The Contractor shall apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	To minimize potential water quality impact from discharge of contaminated groundwater	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.252	 The following good site practices shall be adopted for the proposed barging points: all vessels shall be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash all hopper barges shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material construction activities shall not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site loading of barges and hoppers shall be controlled to prevent splashing of material into the surrounding water. Barges or hoppers shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation 	To minimize water quality impacts generated from the barging points.	Contractor	Barging points	Construction Phase	N/A
S11.253	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 runoff and wastewater generated from the works areas shall be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distances of 100 m shall be maintained between the discharge points of construction site effluent and the existing seawater intakes. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimize 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 shall be carried out in accordance with the WPCO license which is under the ambit of Regional Office (RO) of EPD.	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.254	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 shall be observed and complied with for control of chemical wastes.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	V
S11.255	Any service shop and maintenance facilities shall be located on hard standings within a bunded area, and sumps and oil interceptors shall be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken within the areas appropriately equipped to control these discharges.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	N/A
S11.256	Disposal of chemical wastes shall 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: • Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	V
	 storage, handling and transport. Chemical waste containers shall be suitably labelled, to notify and warn the personnel who are 					V
	 handling the wastes, to avoid accidents. Storage area shall be selected at a safe location on site and adequate space shall be allocated to the storage area. 					V
Waste Mana	agement Implications					
Construction	n Phase					
S12.75	 Good Site Practices and Waste Reduction Measures Prepare a Waste Management Plan (WMP) approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites; 	To reduce waste management impacts	Contractor	All Work Sites	Construction Phase	V
	 Training of site personnel in, site cleanliness, proper waste management and chemical handling procedures; 					V
	 Provision of sufficient waste disposal points and regular collection of waste; Appropriate measures to minimize windblown litter and dust during transportation of waste by 					V
	 either covering trucks or by transporting wastes in enclosed containers; Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and 					N/A
040.70	Separation of chemical wastes for special handling and appropriate treatment.			Alland I O'r		V
S12.76	 Good Site Practices and Waste Reduction Measures (con't) Sorting of demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); 	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A
	 Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; 					V
	 Encourage collection of aluminum cans by providing separate labeled bins to enable this waste to be segregated from other general refuse generated by the workforce; 					V
	Proper storage and site practices to minimize the potential for damage or contamination of construction materials; Plantage of the structure protection protection and structure protection and structure protection and structure protection and structure protection.					V
	 Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; and Training shall be provided to workers about the concepts of site cleanliness and appropriate 					V
	waste management procedures, including waste reduction, reuse and recycle.					
S12.77	Good Site Practices and Waste Reduction Measures (con't) The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.					
S12.78	Good Site Practices and Waste Reduction Measures (con't) C&D materials would be reused in other local concurrent projects as far as possible. If all reuse outlets are exhausted during the construction phase, the C&D materials would be disposed of at Taishan, China as a last resort.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A
S12.79	 Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: Waste, such as soil, shall be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; Maintain and clean storage areas routinely; 	To minimize potential adverse environmental impacts arising from waste storage	Contractor	Work Sites	Construction Phase	N/A N/A
	 Stockpiling area shall be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and Different locations shall be designated to stockpile each material to enhance reuse. 					N/A N/A
S12.80	Storage, Collection and Transportation of Waste (con't) Waste haulier with appropriate permits shall be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following suggestions shall be enforced to minimize the potential adverse impacts: Remove waste in timely manner Waste collectors shall only collect wastes prescribed by their permits Impacts during transportation, such as dust and odour, shall be mitigated by the use of covered	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	Work Sites	Construction Phase	V V N/A
	 trucks or in enclosed containers Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28) Waste shall be disposed of at licensed waste disposal facilities 					V
S12.81	 Maintain records of quantities of waste generated, recycled and disposed Storage, Collection and Transportation of Waste (con't) Implementation of trip ticket system with reference to DevB TC(W) No.6/2010 to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) shall be proposed. 	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	Work Sites	Construction Phase	V
\$12.83 – 12.86	 Sorting of C&D Materials Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. 	To minimize potential adverse environmental impacts during the	Contractor	Work Sites	Construction Phase	V
	 Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. The C&D materials shall at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled as far as practicable before delivery to PFRFs as mentioned for beneficial use in other projects. While opportunities for reusing the non-inert 	handling, transportation and disposal of C&D materials				N/A V
	 portion shall be investigated before disposal of at designated landfills. Possibility of reusing the spoil in the Project will be continuously investigated in the detailed design and construction stages, it includes backfilling to cut and cover construction works for the Hung Hom south and north approach tunnels. 					N/A
S12.88	 Sediments The basic requirements and procedures for excavated / dredged sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is managing the disposal facilities in Hong Kong for the dredged and excavated sediment, while EPD is the authority of issuing marine dumping permit under the Dumping at Sea Ordinance. 	To ensure the sediment to be disposed of in an authorized and least impacted way	Contractor	All works areas with sediments concern	Construction Phase	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.89	 Sediments (con't) The contractor for the excavation / dredging works shall apply for the site allocations of marine sediment disposal based on the prior agreement with MFC/CEDD. A request for reservation of sediment disposal space have been submitted to MFC for onward discussions of disposal approach and feasible disposal sites and the letter is attached in Appendix 12.6. The Project proponent shall also be responsible for the application of all necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged and excavated sediment prior to the commencement of the excavation works. 	To determine the best handling and disposal option of the sediments	MTR / Contractor	All works areas with sediments concern	Detailed Design Stage and Construction Phase	N/A
S12.91 – 12.94	 Sediments (con't) Stockpiling of contaminated sediments shall be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment shall be covered by tarpaulin and the area shall be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiling areas shall be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas shall be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). In order to minimise the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP. In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
S12.95	 Sediments (con't) A possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
S12.97	Containers for Storage of Chemical Waste The Contractor shall register with EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for storage of chemical waste shall:	To register with EPD as a Chemical waste producer and store chemical waste in	Contractor	Work Sites	Construction Phase	
	Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; Have a conscituted loss than 450 litters upless the appointment of loss than 450 litters upless the appointme	appropriate containers				V
	 Have a capacity of less than 450 litters unless the specifications have been approved by EPD; and Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation. 					V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.98	 Chemical Waste Storage Area Be clearly labeled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; Be enclosed on at least 3 sides; Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; 	To prepare appropriate storage areas for chemical waste at works areas	Contractor	Work Sites	Construction Phase	@ V V
	 Have adequate ventilation; Be covered to prevent rainfall from entering; and Be properly arranged so that incompatible materials are adequately separated. 					V V V
S12.99	Chemical Waste Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants shall be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.	To clearly label the chemical waste at works areas	Contractor	Work Sites	Construction Phase	N/A
S12.100	Collection and Disposal of Chemical Waste A trip-ticket system shall be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical waste. The Contractor shall employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To monitor the generation, reuse and disposal of chemical waste	Contractor	Work Sites	Construction Phase	N/A
S12.101	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes. Preferably, an enclosed and covered area shall be provided to reduce the occurrence of wind-blown light material.	To properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	Work Sites	Construction Phase	@
S12.102	General Refuse (con't) The recyclable component of general refuse, such as aluminum cans, paper and cleansed plastic containers shall be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	Contractor	Work Sites	Construction Phase	V
S12.103	General Refuse (con't) The Contractor shall carry out an education programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins shall also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	Contractor	Work Sites	Construction Phase	V
7	 Accidental spillage To prevent accidental spillage of chemicals, the following is recommended: Proper storage and handling facilities will be provided. All the tanks, containers, storage area will be bunded and the locations will be locked as far as possible from the sensitive watercourse and stormwater drains. 	To minimize potential adverse environmental impacts arising from accidental spillage	Contractor	Work Sites	Construction Phase	V
	 The contractor will register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities will be stored with suitable labels and warnings. 					V
	 Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation. 					V
Land Conta	mination Impact					
S13.23– 13.24	 For construction works at sites under the current stage of site investigation (Stage 1 SI): Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process shall involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination. If soil materials suspected to be contaminated are encountered during excavation, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during 	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Within Project Boundary where signs of contamination is identified	During excavation works for Cut-and- Cover	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	demolition, excavation and cut & cover construction shall be temporary stockpiled. Shall concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the Contamination Assessment Report (CAR) and Remediation Action Plans (RAP).					
S13.30	For some sites with currently no SI proposed (i.e. sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28), to be conservative, visual inspection shall be conducted during demolition and excavation to detect any abnormal colour, smell or other characteristics of the soil, due to the nearby land use and/ or construction method. If abnormal colour, smell or other characteristics of contamination are identified for any of these sites, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during demolition, excavation and cut & cover construction shall be temporary stockpiled. Should the concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the CAR and RAP.	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Areas with no SI proposed (Sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28)	During excavation works for Cut-and- Cover	N/A
S13.36 – 13.38	 For areas inaccessible for proper site appraisal and investigation (Stage 2 SI) (i) Site 2-15 Upon site access being granted, visual inspection shall be carried out where intrusive works and soil excavation is encountered, for attention on any potential contamination due to its current operation A supplementary CAP shall then be submitted to EPD for endorsement. A CAR/RAP shall be prepared and submitted to EPD for endorsement on completion of the SI and analytical testing. Shall remediation be undertaken a Remediation Report (RR) shall be prepared and submitted to EPD for endorsement to demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/ disposal records (including trip tickets), confirmatory sampling results, and photographs shall be included in the aforesaid RR. No construction work shall be carried out prior to the endorsement of the RR by EPD. 	To identify areas with land contamination concern, report laboratory results and propose remediation measures if necessary. To ensure remediation works have been undertaken to before the commencement of any construction works of the Project.	Contractor	Areas unable to be accessed during Stage 1 SI (Site 2-15)	After land resumption and prior to the construction works commencement at the site	N/A
S13.39	Potential Remediation of Contaminated Soil Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; Supply of suitable clean backfill material is needed after excavation; If remediation is required with chemical oxidation proposed as a contaminant mass reduction technology, chemicals will be securely and separately stored away from sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and personal protective equipment (PPE). Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions; Speed control for the trucks carrying contaminated materials shall be enforced; Vehicle wheel and body washing facilities at the site's exit points shall be established and used; and Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control shall be implemented and complied with relevant regulations and guidelines.	To remediate contaminated soil	Contractor	Identified contaminated sites	Site remediation	N/A
S13. 40	In order to minimize the potential adverse effects on health and safety of construction workers during the course of site remediation, the Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations shall be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures shall be implemented as far as possible: • Set up a list of safety measures for site workers; • Provide written information and training on safety for site workers; • Keep a log-book and plan showing the contaminated zones and clean zones; • Maintain a hygienic working environment; • Avoid dust generation; • Provide face and respiratory protection gear to site workers;	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	Identified contaminated sites	Site remediation and prior to construction phase	N/A

EIA Ref. / EM&A Log Ref.		Who to implement the measures?	Location of the measure	Implementation Status
	 Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers; and Provide first aid training and materials to site workers. 			

Legend: V = implemented; x = not implemented; @ = partially implemented; N/A = not applicable

APPENDIX D

Summary of Action and Limit Levels

Appendix D - Summary of Action and Limit Levels

Table 1 Action and Limit Levels for 24-hour TSP

ID	Location	Action Level	Limit Level
AM2*	Wan Chai Sports Ground	160 μg/m³	260 μg/m³
AM3	Existing Harbour Road Sports Centre	169 μg/m³	260 μg/m³

The monitoring station at AM2 was handed over from Contract SCL1128 on 28 October 2015.

Table 2 Action and Limit Levels for Construction Noise (0700 – 1900 hrs of normal weekdays)

ID	Location	Action Level	Limit Level
NM2*	Harbour Centre	When one documented complaint is received	75 dB(A)

The Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring under Works Contract 1126. An alternative monitoring location at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited in August 2014.

Appendix D AECOM

APPENDIX E

Calibration Certificates of Equipments

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

Station	Wanchai Sports	Ground		Operator:	Choi W	/ing Ho	
Cal. Date: 9-Jan-19			Next Due Date:		9-Ma	ar-19	_
Equipment No.:	A-001-72T	_		Serial No.	80	09	_
			Ambion	t Condition			
Tomporati	ro To (V)	291		Pa (mmHg)		765.5	
Temperatu	ile, Ta (N)	291	riessuie,	ra (IIIIIIII)		700.0	
		C	rifice Transfer S	Standard Information	on		
Seria	l No:	988	Slope, mc	2.01	1748	Intercept, bc	-0.0265
Last Calibra	ation Date:	22-May-18			III (D-/5(0)	(200 /T-)1 ^{1/2}	
Next Calibr	ation Date:	22-May-19		mc x Qstd + bc =	= [H x (Pa/760) x	(298/1a)]	
			Calibration	of TSP Sampler			
		0	rfice	or for Sampler	HV	S Flow Recorder	
Resistance Plate No.	DH (orifice), in. of water	[DH x (Pa/76	0) x (298/Ta)] ^{1/2}	Qstd (m³/min) X -	Flow Recorder Reading (CFM)	Continuous Flo Reading IC (CF	
18	7.1	.2	2.71	1.35	47.0	47.7	3
13	6.3	2	2.55	1.28	42.0	42.6	6
10	4.6	1	2.18	1.09	32.0	32.5	0
7	3.3		1.84	0.93	24.0	24.3	7
5	2.6		1.64	0.82	18.0	18.2	8
Slope , mw = Correlation Coe		_	987	Intercept, bw =	-26.	7216	_
n constant of	Jointolette v 0.000	, 6110011 4114 1004111					Spirit Control of the
From the TSD Ei	eld Calibration C	urve, take Qstd = 1	State of the state	t Calculation			
		ne "Y" value accord					
r form the regree	solon Equation, ti	ic i value accord	iiig to				
		mw:	x Qstd + bw = IC	x [(Pa/760) x (298/	Ta)] ^{1/2}		
Therefore, Set P	oint; IC = (mw x	Qstd + bw) x [(76	60 / Pa) x (Ta / 2	98)] ^{1/2} =		43.61	_
							<u> </u>
Parameter 20							
Remarks:							
				1000			
	,	CAIX-		—		-01	1,0
QC Reviewer:	W>	CHAN!	Signature:	4		Date: 09/0	117



RECALIBRATION **DUE DATE:**

May 22, 2019

ertificate o

Calibration Certification Information

Cal. Date: May 22, 2018

Rootsmeter S/N: 438320

Ta: 296 Pa: 749.3 °K

Operator: Jim Tisch

Calibration Model #: TE-5025A

Calibrator S/N: 0988

mm Hg

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3840	3.2	2.00
2	3	4	1	0.9840	6.4	4.00
3	5	6	1	0.8790	7.9	5.00
4	7	8	1	0.8420	8.7	5.50
5	9	10	1	0.6900	12.7	8.00

		Data Tabulat	tion		
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$ (y-axis)	V-	Qa (v. avia)	√ΔH(Ta/Pa)
0.9883	0.7141	The second secon	Va	(x-axis)	(y-axis)
		1.4090	0.9957	0.7195	0.8889
0.9841	1.0001	1.9926	0.9915	1.0076	1.2570
0.9821	1.1173	2.2278	0.9895	1.1257	1.4054
0.9811	1.1652	2.3365	0.9884	1.1739	1.4740
0.9758	1.4141	2.8179	0.9831	1.4247	1,7777
	m=	2.01748		m=	1.26331
QSTD[b≃	-0.02651	QA	b=	-0.01673
×-	r=	0.99988		r=	0.99988

Calculation	ns	
Vstd= Δ Vol((Pa- Δ P)/Pstd)(Tstd/Ta)	Va= ΔVol((Pa-ΔP)/Pa)	
Qstd= Vstd/ΔTime	Qa= Va/ΔTime	
For subsequent flow rat	e calculations:	
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	$Qa = 1/m \left(\left(\sqrt{\Delta H \left(Ta/Pa \right)} \right) - b \right)$	

	Standard Conditions	
Tstd:	298.15 °K	
Pstd:	760 mm Hg	
	Key	
ΔH: calibrator	manometer reading (in H2O)	
ΔP: rootsmete	er manometer reading (mm Hg)	_
Ta: actual abs	olute temperature (°K)	
Pa: actual bar	ometric pressure (mm Hg)	_
b: intercept		
m: slope		_

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the **Determination of Suspended Particulate Matter in** the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc. 145 South Miami Avenue Village of Cleves, OH 45002

www.tisch-env.com

TOLL FREE: (877)263-7610

FAX: (513)467-9009



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

18CA0914 03

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of

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Item tested

Description Manufacturer:

Sound Level Meter (Type 1)

Microphone

B&K

B&K 4188

Type/Model No.: Serial/Equipment No.:

2238 2800927

Adaptors used:

2791211

Item submitted by

Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No .: Date of receipt:

14-Sep-2018

Date of test:

17-Sep-2018

Reference equipment used in the calibration

Description:

Serial No.

Expiry Date:

Traceable to:

Multi function sound calibrator Signal generator

Model: B&K 4226 DS 360

2288444

23-Aug-2019 24-Apr-2019

CIGISMEC

Signal generator

DS 360

33873 61227

23-Apr-2019

CEPREI CEPREI

Ambient conditions

Temperature:

21 ± 1 °C

Relative humidity:

55 ± 10 %

Air pressure:

1005 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%

The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3 between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate

Feng Junqi

Actual Measurement data are documented on worksheets.

Approved Signatory:

Date:

18-Sep-2018

Company Chop:

The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

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Form No.CARP152-1/Issue 1/Rev C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA0914 03

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Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertanity (dB)	Coverage Factor
	•	D	0.0	
Self-generated noise	A	Pass	0.3	
	С	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
, , , , ,	С	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
3 - 3	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
5	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
3 3	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
Overload maleation	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
•	Weighting A at 8000 Hz	Pass	0.5	

3. Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated

Calibrated by:

Date:

Fung Chi Yip

17-Sep-2018

Checked by:

Date:

Shek Kwong Tal 18-Sep-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No.CARP152-2/Issue 1/Rev.C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

18CA1019 01-01

Page

2

Item tested

Description: Manufacturer:

Sound Level Meter (Type 1) B&K

Microphone B&K

Preamp **B&K**

of

Type/Model No.: Serial/Equipment No.: 2250 3001291 4950 2665582 ZC0032 17190

Adaptors used: Item submitted by

Customer Name:

AECOM ASIA CO LIMITED

Address of Customer:

Request No. Date of receipt:

19-Oct-2018

Date of test:

19-Oct-2018

Reference equipment used in the calibration

Description:

Multi function sound calibrator

Signal generator

Signal generator

B&K 4226 DS 360

DS 360

Model: Serial No. 2288444

33873 61227

Expiry Date:

23-Aug-2019

24-Apr-2019 23-Apr-2019 Traceable to:

CIGISMEC CEPREI CEPREI

Ambient conditions

Temperature:

20 ± 1 °C

Relative humidity:

50 ± 10 %

Air pressure:

1005 ± 5 hPa

Test specifications

- 1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- 2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%
- 3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets

Feng

Junai

Approved Signatory:

Date:

20-Oct-2018

Company Chop:

The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

Soils & Materials Engineering Co., Ltd.

Form No.CARP152-1/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA1019 01-01

Page

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2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

			Expanded	Coverage
Test:	Subtest:	Status:	Uncertanity (dB)	Factor
0.15				
Self-generated noise	A	Pass	0.3	
	С	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Weighting A at 125 Hz	Pass	0.3	
Weighting A at 8000 Hz	Pass	0.5	
	Weighting A at 125 Hz	Weighting A at 125 Hz Pass	SubtestStatusUncertanity (dB)Weighting A at 125 HzPass0.3

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip (

Checked by:

Date:

shek Kwong Tat 20-Oct-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

End

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Form No CARP152-2/Issue 1/Rev C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

18CA0406 02-02

Page:

of

2

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer:

B & K

Type/Model No.:

4231

Serial/Equipment No.:

3006428 / N004.03

Adaptors used:

Item submitted by

Curstomer:

AECOM ASIA CO LIMITED

Address of Customer:

Request No .:

Date of receipt:

06-Apr-2018

Date of test:

09-Apr-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2743150	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

Ambient conditions

Temperature:

21 ± 1 °C

Relative humidity:

50 ± 10 %

Air pressure:

1005 ± 5 hPa

Test specifications

- 1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2. The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference 3. pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942. 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Feng

Approved Signatory:

Date:

11-Apr-2018

Company Chop:

Comments: The results reported in his certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument

Soils & Materials Engineering Co., Ltd.

Form No CARP156-1/Issue 1/Rev D/01/03/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

18CA0406 02-02

Page:

1 Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

			(Output level in dB re 20 µPa)
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.20	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.015 dB

Estimated expanded uncertainty

0.005 dB

Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 999.96 Hz

Estimated expanded uncertainty

0.1 Hz

Coverage factor k = 2.2

Total Noise and Distortion 4,

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.4 %

Estimated expanded uncertainty

0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated

Calibrated by:

Fung Chi Yip

Checked by:

Lam Tze Wai

Date: 09-Apr-2018 Date:

11-Apr-2018

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP156-2/Issue 1/Rev C/01/05/2005

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel **Impact Monitoring Schedule for February 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Feb	2-Feb
0.5.1	4.5.1		0.5.1	7.5.1	0.5.1	0.5.1
3-Feb	4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb
	Air Ouglitu				Naige	Air Ouglity
	Air Quality				Noise	Air Quality
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
	Noise				Air Quality	
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
				A : O I:	Mataa	
				Air Quality	Noise	
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
			Air Quality	Noise		

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station

AM2 Wan Chai Sports Ground

Noise Monitoring Station

NM2 Harbour Centre

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency

Once per week

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel **Tentative Impact Monitoring Schedule for March 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
		Air Quality	Noise			
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
TO WILL	TT Wat	12 Widi	10 Mai	TTWA	TO Wat	10 Mai
	Air Quality	Noise				Air Quality
47.14-	40 May	40 Mar	00 Mar	04 Mar	00 Mar	00 Mar
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar
	Noise				Air Quality	
					4.4.4,	
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
				Air Quality	Noise	
				All Quality	140136	
31-Mar						

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Noise Monitoring Station NM2 Harbour Centre

Air Quality Monitoring Station

AM2 Wan Chai Sports Ground

Monitoring Frequency Monitoring Frequency

24-hr TSP Once every 6 days

Once per week

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel **Tentative Impact Monitoring Schedule for April 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr
			Air Quality	Noise		
7-Apr	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr
		Air Quality	Noise			
14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr
	Air Quality	Noise		Air Quality		
21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr
			Air Quality	Noise		
28-Apr	29-Apr	30-Apr				
		Air Quality				

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station

AM2 Wan Chai Sports Ground

Noise Monitoring Station

NM2 Harbour Centre

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency

Once per week

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel **Tentative Impact Monitoring Schedule for May 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-May	2-May	3-May	4-May
				Noise		
5-May	6-May	7-May	8-May	9-May	10-May	11-May
	Air Quality	Noise				Air Quality
12-May	13-May	14-May	15-May	16-May	17-May	18-May
				Air Quality	Noise	
19-May	20-May	21-May	22-May	23-May	24-May	25-May
			Air Quality	Noise		
26-May	27-May	28-May	29-May	30-May	31-May	
		Air Quality	Noise			

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

Air Quality Monitoring Station

AM2 Wan Chai Sports Ground

Noise Monitoring Station

NM2 Harbour Centre

Monitoring Frequency

24-hr TSP Once every 6 days

Monitoring Frequency

Once per week

APPENDIX G

Air Quality Monitoring Results and their Graphical Presentations

Appendix G Air Quality Monitoring Results

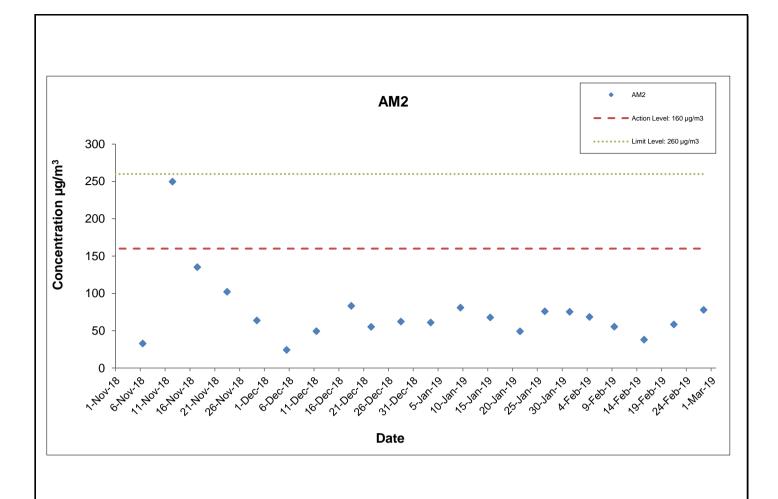
24-hour TSP Monitoring Results at Station AM2 (Wan Chai Sports Ground)

Star	rt	End		Weather	Air	Atmospheric	Flow Rate	(m³/min.)	Av. flow	Total vol.	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (°C)	Pressure (hPa)	Initial	Final	(m³/min)	(m ³)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	(µg/m³)
4-Feb-19	0:00	5-Feb-19	0:00	Fine	21.7	1018.1	1.34	1.34	1.34	1935.4	2.6361	2.7684	0.1323	22770.00	22794.00	24.00	68.4
9-Feb-19	0:00	10-Feb-19	0:00	Sunny	18.0	1021.7	1.34	1.34	1.34	1935.4	2.7000	2.8073	0.1073	22794.00	22818.00	24.00	55.4
15-Feb-19	0:00	16-Feb-19	0:00	Fine	20.4	1019.9	1.34	1.34	1.34	1935.4	2.6906	2.7640	0.0734	22818.00	22842.00	24.00	37.9
21-Feb-19	0:00	22-Feb-19	0:00	Sunny	21.4	1017.4	1.34	1.34	1.34	1935.4	2.6658	2.7788	0.1130	22842.00	22866.00	24.00	58.4
27-Feb-19	0:00	28-Feb-19	0:00	Fine	20.7	1015.5	1.34	1.34	1.34	1935.4	2.6687	2.8195	0.1508	22866.00	22890.00	24.00	77.9

 Average
 59.6

 Minimum
 37.9

 Maximum
 77.9

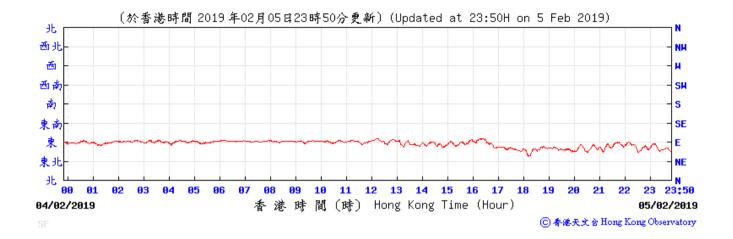


* The monitoring station at AM2 was handed over from Contract SCL1128 on 28 October 2015.

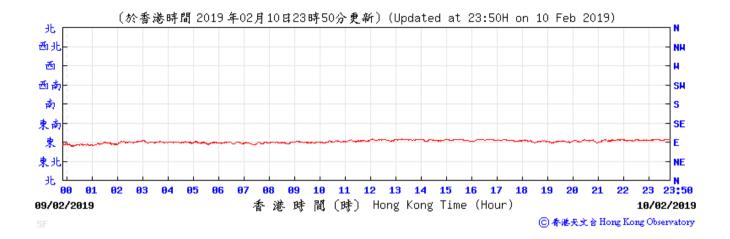
Shatin Central Link Contract No. 1123
Exhibition Station and Western Approach Tunnel

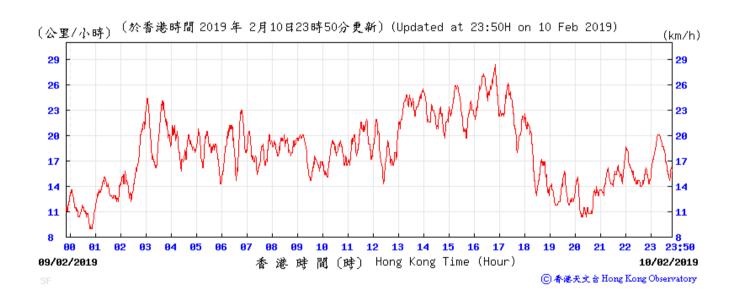


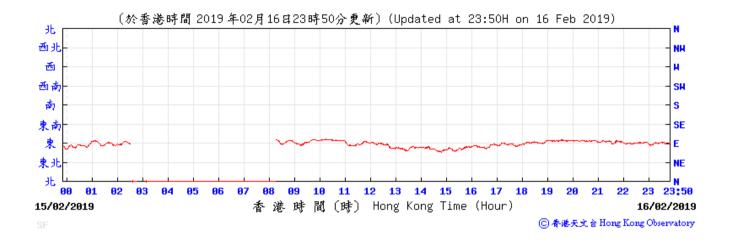
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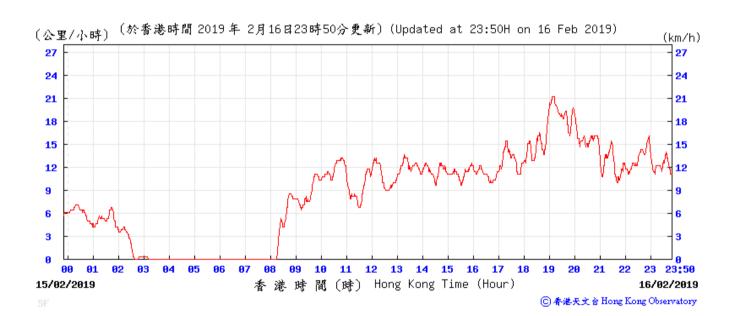


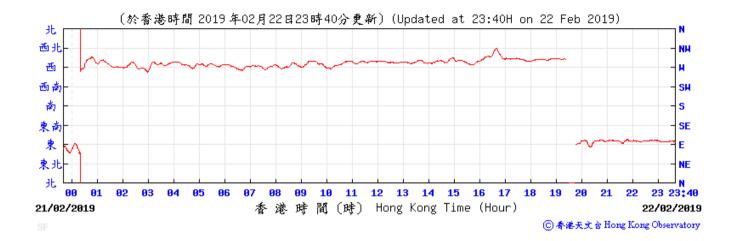


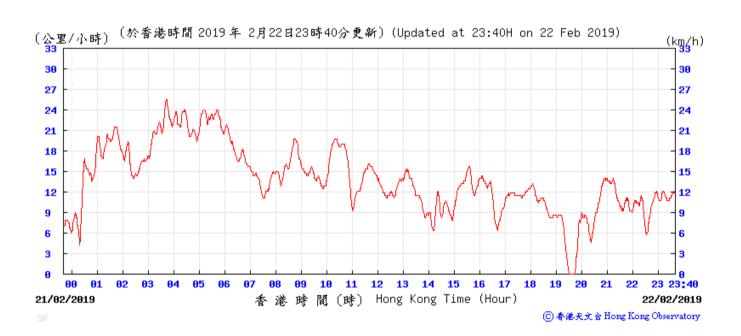


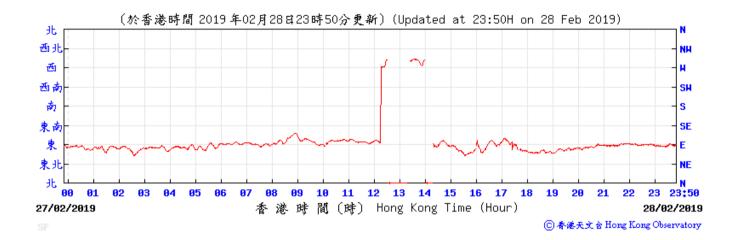














APPENDIX H

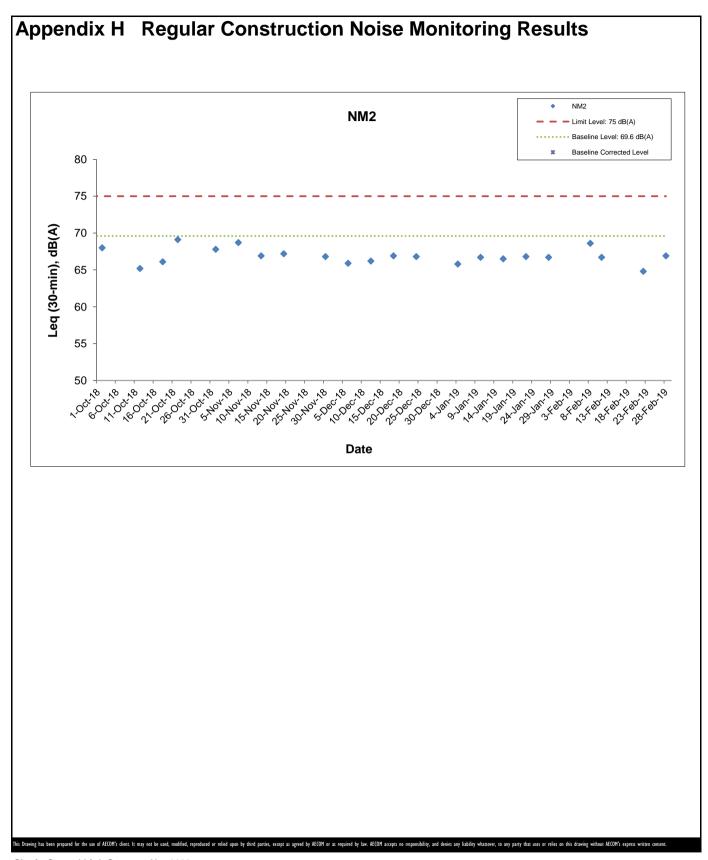
Noise Monitoring Results and their Graphical Presentations

Appendix H Regular Construction Noise Monitoring Results

Daytime Noise Monitoring Results at Station NM2 (Harbour Centre)

Date Weather		Nois	e Level fo	r 30-min, c	IB(A) ⁺	Baseline Corrected	Baseline Noise	Limit Level,	Exceedance
Buio	Condition Time L90 L10 Leq Level, dB(A)		Level, dB(A)	dB(A)	(Y/N)				
8-Feb-19	Fine	14:30	67.9	70.9	68.6	<baseline< td=""><td>69.6</td><td>75</td><td>N</td></baseline<>	69.6	75	N
11-Feb-19	Fine	9:50	64.3	68.9	66.7	<baseline< td=""><td>69.6</td><td>75</td><td>N</td></baseline<>	69.6	75	N
22-Feb-19	Sunny	11:30	62.0	66.0	64.8	<baseline< td=""><td>69.6</td><td>75</td><td>N</td></baseline<>	69.6	75	N
28-Feb-19	Sunny	13:00	63.0	67.5	66.9	<baseline< td=""><td>69.6</td><td>75</td><td>N</td></baseline<>	69.6	75	N

^{+ -} Façade measurement



Shatin Central Link Contract No. 1123 Exhibition Station and Western Approach Tunnel

Date: March 2019 Appendix H

APPENDIX I

Event Action Plan

Event / Action Plan for Construction Dust Monitoring

EVENT		ACT	ΓΙΟΝ	
EVENI	ET	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	 Inform the Contractor, IEC and ER; Discuss with the Contractor and IEC on the remedial measures required; Repeat measurement to confirm findings; Increase monitoring frequency 	Check monitoring data submitted by the ET; Check Contractor's working method; Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	Confirm receipt of notification of exceedance in writing.	 Identify source(s), investigate the causes of exceedance and propose remedial measures; Implement remedial measures; Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples	 Inform the Contractor, IEC and ER; Discuss with the ER, IEC and Contractor on the remedial measures required; Repeat measurements to confirm findings; Increase monitoring frequency to daily; If exceedance continues, arrange meeting with the IEC, ER and Contractor; If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by the ET; Check Contractor's working method; Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	Confirm receipt of notification of exceedance in writing; Review and agree on the remedial measures proposed by the Contractor; Supervise Implementation of remedial measures.	 Identify source and investigate the causes of exceedance; Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; Implement the agreed proposals; Amend proposal as appropriate.

Appendix I	Event Action Plan											
EVENT		ACT	TION									
EVENT	ET	IEC	ER	Contractor								
LIMIT LEVEL												
Exceedance for one sample	 Inform the Contractor, IEC, EPD and ER; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. 	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with the ET, ER and Contractor on possible remedial measures; Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	 Confirm receipt of notification of exceedance in writing; Review and agree on the remedial measures proposed by the Contractor; Supervise implementation of remedial measures. 	 Identify source(s) and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; Implement the agreed proposals; Amend proposal if appropriate. 								
Exceedance for two or more consecutive samples	 Notify Contractor, IEC, EPD and ER; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented; Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with ET, ER, and Contractor on the potential remedial measures; Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	 Confirm receipt of notification of exceedance in writing; In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; 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. 	 Identify source(s) and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; Implement the agreed proposals; Revise and resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated. 								

Event and Action Plan for Construction Noise Monitoring

EVENT.		AC ⁻	TION	
EVENT	ET	IEC	ER	Contractor
Exceedance of Action Level	 Notify the Contractor, IEC and ER; Discuss with the ER, IEC and Contractor on the remedial measures required; and Increase monitoring frequency to check mitigation effectiveness. 	 Review the investigation results submitted by the contractor; and Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	 Confirm receipt of notification of complaint in writing; Review and agree on the remedial measures proposed by the Contractor; and Supervise implementation of remedial measures. 	 Investigate the complaint and propose remedial measures; Report the results of investigation to the IEC, ET and ER; Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification; and Implement noise mitigation proposals.
Exceedance of Limit Level	 Notify the Contractor, IEC, EPD and ER; Repeat measurement to confirm findings; Increase monitoring frequency; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; Inform IEC, ER and EPD the causes and actions taken for the exceedances; Review the effectiveness of Contractor's remedial measures and keep IEC, EPD and ER informed of the results; and If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by the ET; Check the Contractor's working method; Discuss with the ER, ET and Contractor on the potential remedial measures; and Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	 Confirm receipt of notification of exceedance in writing; In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; and 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. 	 Identify source and investigate the causes of exceedance; Take immediate action to avoid further exceedance; Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification; Implement the agreed proposals; Revise and resubmit proposals if problem still not under control; and Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Continuous Noise Monitoring

EVENIT		ACTI	ON	
EVENT	ET	IEC	ER	CONTRACTOR
Action/Limit Level	1. Identify source; 2. Repeat measurement. If two consecutive measurements exceed Action/Limit Level, the exceedance is then confirmed; 3. If exceedance is confirmed, notify IEC, ER and Contractor; 4. Investigate the cause of exceedance and ckeck Contractor's working procedures to determine possible mitigation to be implemented; 5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures; and 6. Assess effectiveness of Contractor's remedial actions and keep IEC and ER informed of the results.	1. Check monitoring data submitted by the Works Contract 1123 ET; 2. Check the Contractor's working method; 3. Discuss with the ER, Works Contract 1123 ET and Contractor on the potential remedial measures; and 4. Review and advise the Works Contract 1123 ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the Works Contract 1123 ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Ensure the proper 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.	1. Identify source with the Works Contract 1123 ET; 2. If exceedance is confirmed, investigation the cause of exceedance and take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification; 4. Implement the agreed proposals; 5. Liaise with ER to optimize the effectiveness of the agreed mitigation; 6. Revise and resubmit proposals if problem still not under control; and 7. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

APPENDIX J

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix J

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental complaints	-	-	-	0	13
Notification of summons	-	-	-	0	2
Successful Prosecutions	-	-	-	0	0

APPENDIX K

Waste Flow Table

Appendix K MONTHLY SUMMARY WASTE FLOW TABLE

Contract No.:MTR SCL 1123 - Exhibition Station and Western Approach

Monthly Summary Waste Flow Table for 2019

	Actua	al Quantities	of Inert C&D	Materials G	enerated Mo	nthly	Actual Quantities of C&D Wastes Generated Monthly				Monthly	Actual Quantities of Marine Dumping Monthly		
Month	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse	Type 1	Type 2	
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)	
Jan	11.879	0.000	0.076	5.548	6.255	0.434	372.718	0.280	0.057	0.000	0.205	0.000	0.000	
Feb	3.812	0.000	0.000	3.573	0.239	0.235	299.655	0.340	0.095	0.315	0.088	0.000	0.000	
Mar														
Apr														
Мау														
Jun														
Sub-total	15.691	0.000	0.076	9.121	6.493	0.669	672.373	0.620	0.152	0.315	0.293	0.000	0.000	
July														
August														
September														
October														
November														
December														
Total	15.691	0.000	0.076	9.121	6.493	0.669	672.373	0.620	0.152	0.315	0.293	0.000	0.000	

Comments:

- Assumption: The densities of Rock, Soil, Mixed Rock and Soil, and Regular Spoil are 2.0 ton/m³; the density of general refuse is 1.0 ton/m³; the density of waste oil is 1.0 kg/L.
- 2) The cut-off date of waste amount in Feb is 28/2/2019 for Public Fill Facilities and Landfill.
- 3) The amounts of waste in Feb are 88.22 tons for Landfill and 477.63 tons for Public Fill.
- 4) The amounts of C&D waste reused in other projects in Feb is 660 tons for Lung Kwu Tan and 6486.33 tons for SCL1123 Kai Tak Barging Point, for cut-off date as
- 5) The amount of import fill in Feb is 469.43 tons, for cut-off date as 28/2/2019.
- 6) The amount of metal waste generated in Feb is 299655 kg, for cut-off date as 28/2/2019.
- 7) The amount of paper waste generated in Feb is 340 kg, for cut-off date as 28/2/2019.
- 8) The amount of plastic waste generated in Feb is 95 kg, for cut-off date as 28/2/2019.
- 9) The amount of chemical waste generated in Feb is 300 L for liquid and 15kg for solid, for cut-off date as 28/2/2019.

Appendix D

Monthly EM&A Report for February 2019 – SCL Works Contract 1122 Admiralty South Overrun Tunnel



Vinci Construction Grands Projets

Shatin to Central Link - Hung Hom to Admiralty Section

Works Contract 1122 - Admiralty South Overrun Tunnel

Monthly EM&A Report for February 2019

[March 2019]

	Name	Signature
Prepared & Checked:	Ray Cheng	AR
Reviewed, Approved & Certified:	Y W Fung (Contractor's Environmental Team Leader)	

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Version: 0	Date:	08 March 2019
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Disclaimer

This Environmental Monitoring and Audit Report is prepared for Vinci Construction Grands Projets and is given for its sole benefit in relation to and pursuant to SCL1122 and may not be disclosed to, quoted to or relied upon by any person other than Vinci Construction Grands Projets without our prior written consent. No person (other than Vinci Construction Grands Projets into whose possession a copy of this Manual comes may rely on this plan without our express written consent and Vinci Construction Grands Projets may not rely on it for any purpose other than as described above.

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AECOM Asia Co. Ltd. ii March 2019

EXECUTIVE SUMMARY

Shatin to Central Link Contract 1122 – Admiralty South Overrun Tunnel (hereafter called "the Project") covers part of the construction of the Shatin to Central Link (SCL).

Admiralty Station will be the major interchange station between the Island Line (ISL), Tsuen Wan Line (TWL), South Island Line (East) (SIL(E)) and the Shatin to Central Link (North South Line) (SCL(NSL)). The Admiralty South Overrun Tunnel (ASOR) is located to the south of Hong Kong Park Ventilation Building (HKB) and is approximately 700m long.

The EM&A programme commenced on 8 August 2016.

This report documents the findings of EM&A works conducted in the period between 1 and 28 February 2019. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities	
HKB	Erecting scaffolds for L3 Slab	
	BS installation works for tunnel connection	
Refuse collection point	Utility sewage construction	
	Reinstatement work on the ground	

Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons and successful prosecution were received in the reporting month.

Reporting Changes

There was no reporting change in the reporting month.

Future Key Issues

Key issues to be considered in the coming month included:

Location	Site Activities		
HKB	BS installation works for tunnel connection		
Refuse collection point	Utility sewage construction		
	Reinstatement work on the ground		

Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

AECOM Asia Co. Ltd. 1 March 2019

1 INTRODUCTION

Vinci Construction Grands Projets (VCGP) was commissioned by MTR as the Civil Contractor for Works Contract 1122. AECOM Asia Company Limited (AECOM) was appointed by VCGP as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1 Purpose of the Report

1.1.1 This is the thirty-first monthly EM&A Report which summaries audit findings for the Project during the reporting period between 1 and 28 February 2019.

1.2 Report Structure

- 1.2.1 This monthly EM&A Report is organized as follows:
 - Section 1: Introduction
 - Section 2: Project Information
 - Section 3: Environmental Monitoring Requirement
 - Section 4: Implementation Status of Environmental Mitigation Measures
 - Section 5: Monitoring Results
 - Section 6: Environmental Site Inspection and Audit
 - Section 7: Environmental Non-conformance
 - Section 8: Future Key Issues
 - Section 9: Conclusions and Recommendations

AECOM Asia Co. Ltd. 2 March 2019

2 PROJECT INFORMATION

2.1 Background

- 2.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2012, which covers SCL (HUH-ADM) EP No.: EP-436/2012), for the construction and operation. Variation of EP (VEP) was subsequently applied and the latest EP (EP No. EP-436/2012/F) was issued by the Director of Environmental Protection (DEP) on 23 January 2019.
- 2.1.3 The site layout plan of the Project is shown in **Figure 1.1**.

2.2 Site Description

- 2.2.1 The scope of the major Permanent Works include the following:
 - (a) Approx. 700m of single bore tunnel south of HKB including, among others, breakthrough of a temporary headwall in the tunnel stub at HKB, tunnel fan niche structure, drainage, secondary structures including overtrack ducts, plenums, side walls, protected corridors, walkways and all the related fitting-out works;
 - (b) Secondary structures inside SCL Overrun Tunnel (SCLOR) including overtrack ducts, plenums, side walls, walkways and all the related fitting-out works;
 - (c) Alteration and Addition Works (A&A Works) from Level L10 to Upper Roof Level of HKB including removal of precast planks at G/F;
 - (d) Re-provisioning of LCSD Refuse Collection Point No. 2 (RCP);
 - (e) Roadworks including drainage, traffic aids, road markings, lighting, signage, utilities diversion, demolition, reinstatement and TTM schemes to facilitate the construction works and any works require TTM submission;
 - (f) Tree planting and soft and hard landscaping works;
 - (g) Design and construction of ABWF at HKB, ASOR, SCLOR and RCP; and
 - (h) Design and construction of building services works at HKB, ASOR, SCLOR and RCP

AECOM Asia Co. Ltd. 3 March 2019

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarized below:

Location	Site Activities
HKB	Erecting scaffolds for L3 Slab
	BS installation works for tunnel connection
Refuse collection point	Utility sewage construction
	Reinstatement work on the ground

2.3.2 The construction programme is presented in **Appendix A**.

2.4 Project Organisation

2.4.1 The project organisation structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarised in **Table 2.1.**

Table 2.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
MTR Residential Engineer (ER)	Residential	Construction Manager	Mr. Brian Suen	2176 2788	38 2171 3829
	SCL Project Environmental Team Leader	Ms. Lisa Poon	3127 6295	3127 6422	
Meinhardt	Independent Environmental Checker (IEC)	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
VCGP	Contractor	Project Director	Mr. Francois Dudouit	3765 5610	2824 2991
		Environmental Manager	Mr. Keith Lee	5191 8251	2024 2991
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y W Fung	3922 9366	2317 7609

2.5 Status of Environmental Licences, Notification and Permits

2.5.1 Relevant valid environmental licenses, permits and/or notifications on environmental protection for this Project in the reporting month are summarized in **Table 2.2**.

Table 2.2 Status of Environmental Licenses, Notifications and Permits

Permit / License	Valid F	Period	Ctatus	Domonko	
No. / Notification/ Reference No.	From	То	Status	Remarks	
Environmental Permi	it				
EP-436/2012/F	23 Jan 2019	-	Valid	-	
Construction Noise F	Permit				
GW-RS1131-18	11 Dec 2018	10 Jun 2019	Valid	Operation of Crane, Wastewater Treatment System, Drilling	
Wastewater Discharg	je License				
WT00028501-2017	10 Oct 2017	31 Oct 2022	Valid	-	
Chemical Waste Prod	Chemical Waste Producer Registration				
5213-124-V2232-01	12 May 2016	End of Project	Valid	-	
Billing Account for Construction Waste Disposal					
7023777	20 Nov 2015	End of Project	Account Active	-	
Notification Under Air Pollution Control (Construction Dust) Regulation					
405362	22 Jul 2016	End of Project	Notified	-	

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Landscape and Visual

3.1.1 As per the EM&A Manuals, the landscape and visual mitigation measures shall be implemented and site inspections should be undertaken once every two weeks during the construction period. A summary of the implementation status is presented in **Section 6.**

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C.** Status of required submissions under the EP during the reporting period is summarised in **Table 4.1.**

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report for January 2019	14 February 2019

5 MONITORING RESULTS

5.1 Waste Management

- 5.1.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.
- 5.1.2 As advised by the Contractor, No inert C&D material was generated in the reporting month. 22 m³ of general refuse was generated in the reporting month. No paper/cardboard packaging material, metal or plastic was collected by recycling contractor in the reporting month. No inert C&D materials were reused on site. 400kg chemical waste was collected by licensed contractor.
- 5.1.3 The waste flow table with detail breakdown is annexed in **Appendix E**.
- 5.1.4 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 5.1.5 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.2 Landscape and Visual

5.2.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 February 2019. A summary of the site inspection is provided in **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

AECOM Asia Co. Ltd. 6 March 2019

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

- 6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.
- 6.1.2 In the reporting month, 4 site inspections were carried out on 4, 11, 18 and 25 February 2019. Joint inspection with the IEC, ER, the Contractor and the ET was conducted on 11 February 2019. No non-compliance was recorded during the site inspections. Details of observations recorded during the site inspections are presented in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters Date		Observations and Recommendations	Follow-up
Air Quality	25 February 2019	Reminder: • The Contractor was reminded to enhance the mitigation measure of dust during breaking activities at ground level.	28 February 2019
Noise	Nil	Nil	Nil
Water Quality	18 February 2019	Reminder: • The Contractor was reminded to clean up the muddy pool to prevent any muddy water run out from site.	20 February 2019
Waste/ Chemical Management	Nil	Nil	Nil
Landscape & Visual	Nil	Nil	Nil
Permits/ Licenses	Nil	Nil	Nil

- 6.1.1 No follow up action was requested during the site inspection on 4 and 11 February 2019.
- 6.1.2 All of the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed into the following weekly site inspection conducted during the reporting period.

AECOM Asia Co. Ltd. 7 March 2019

7 ENVIRONMENTAL NON-CONFORMANCE

- 7.1 Summary of Environmental Non-Compliance
- 7.1.1 No environmental non-compliance was recorded in the reporting month.
- 7.2 Summary of Environmental Complaints
- 7.2.1 No environmental complaint was recorded in the reporting month. Cumulative statistics on environmental complaints is provided in **Appendix D.**
- 7.3 Summary of Environmental Summon and Successful Prosecutions
- 7.3.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix D**.

AECOM Asia Co. Ltd. 8 March 2019

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The tentative major construction works in between March and May 2019 will be:

Location		Site Activities		
HKB	BS installation works for tunnel connection			
Refuse collection point	•	Utility sewage construction		
	•	Reinstatement work on the ground		

8.2 Key Issues for the Coming Month

8.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality and waste management.

AECOM Asia Co. Ltd. 9 March 2019

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

- 9.1.1 4 nos. of environmental site inspections were carried out in February 2019. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.
- 9.1.2 Referring to the Contractor's information, no environmental complaint, notification of summons and successful prosecution was received in the reporting month.

9.2 Recommendations

9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

Mitigation measure of dust during breaking activities at ground level should be enhanced.

Construction Noise Impact

• No specific observation was identified in the reporting month.

Water Quality Impact

• Muddy pool should be removed.

Chemical and Waste Management

• No specific observation was identified in the reporting month.

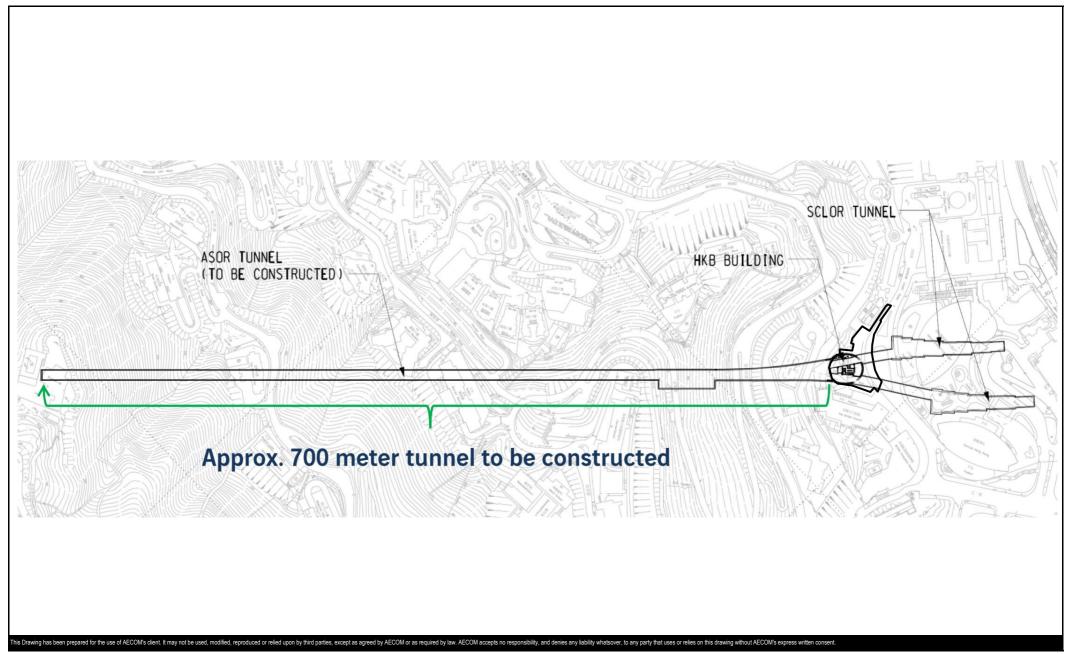
Landscape & Visual Impact

• No specific observation was identified in the reporting month.

Permits/licenses

• No specific observation was identified in the reporting month.



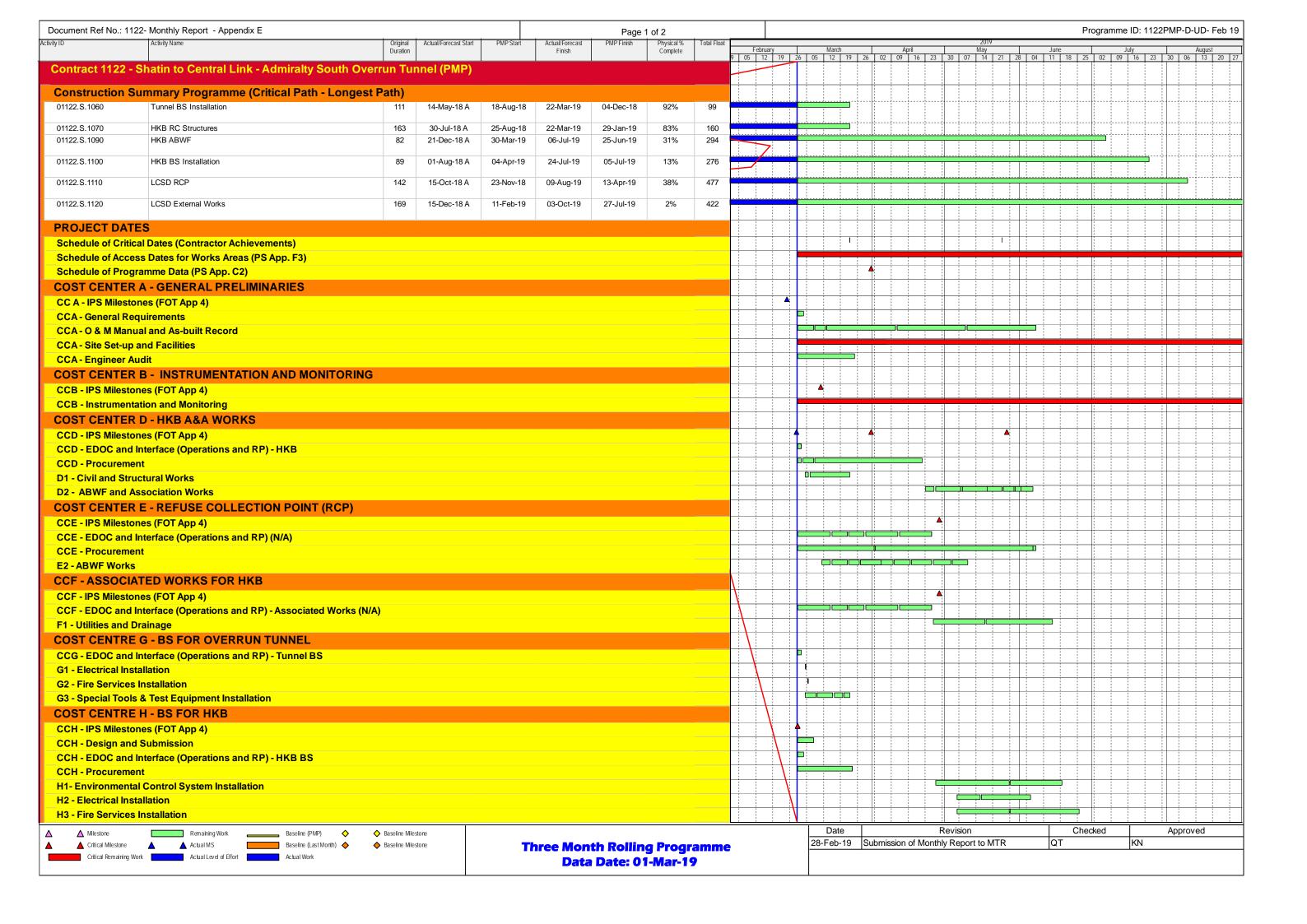


SCL Contract 1122
Admiralty South Overrun Tunnel



APPENDIX A

Construction Programme

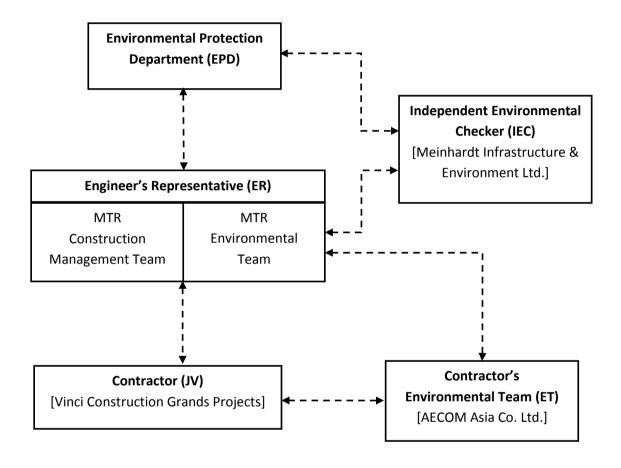


Document Ref No.: 1122- Monthly Report - Appendix E Programme ID: 1122PMP-D-UD- Feb 19 Page 2 of 2 Actual/Forecast Finish Physical % Complete February | March | April | May | June | July | August | 9 | 05 | 12 | 19 | 26 | 05 | 12 | 19 | 26 | 02 | 09 | 16 | 23 | 30 | 07 | 14 | 21 | 28 | 04 | 11 | 18 | 25 | 02 | 09 | 16 | 23 | 30 | 06 | 13 | 20 | 27 H4 - Plumbing & Drainage System Installation H5 - Special Tools & Test Equipment Installation Checked Revision Approved Baseline (PMP) \Diamond Baseline Milestone ▲ Milestone Remaining Work 28-Feb-19 Submission of Monthly Report to MTR QT KN **Three Month Rolling Programme** ▲ Critical Milestone Baseline Milestone ▲ Actual MS Baseline (Last Month) 🔷 Critical Remaining Work Actual Level of Effort Actual Work Data Date: 01-Mar-19

APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure



Appendix B AECOM

APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Cultural He	ritage Impact					
S4.93 & Table 4.2	Erection of decorative and sensibly designed hoarding along the boundary of the works area	To mitigate the temporary visual impact due to surface works.	Contractor	Works Areas in Causeway Bay and Wan Chai, and Works Shaft in Admiralty	Construction Phase	V
Ecological	Impact					
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted.	To minimize the contamination of wastewater discharge	Contractor	All land based works areas	Construction Phase	N/A
Landscape	and Visual Impact					
Construction	on Phase					
Table 7.9	CM1 - Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with ETWB TC(W) 3/2006 – Tree Preservation.	Transplanting and reuse of affected trees.	MTR	Works Sites	Construction Phase	V
Table 7.9	CM2a - Compensatory tree planting shall be provided in accordance with ETWB TC(W) 3/2006 – Tree Preservation to compensate for felled trees and maintained until end of the establishment period.	Compensation for the removal of existing trees due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM2b - Compensatory shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	Compensation for the removal of existing shrub planting due to the Project.	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time glare due to the Project during construction phase	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM4 - Erection of decorative screen hoarding compatible with the surrounding setting.	Minimize the visual impact of the Project during construction phase	MTR	Works Sites	Construction Phase	V
Table 7.9	CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs	Control of height and deposition/ arrangement of temporary facilities in works areas	MTR	Works Sites	Construction Phase	N/A
Table 7.9	CM6 - All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis to the satisfaction of the relevant Government Departments.	Reinstatement of temporary works areas.	MTR	Works Sites	Construction Phase	N/A
/	All retained/exist trees shall be properly protected during construction period.	Tree protection	Contractor	Works areas	Construction phase	V
Air Quality		•			· ·	
1	 Emission from Vehicles and Plants All vehicles shall be shut down in intermittent use. Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. All diesel fuelled construction plant within the works areas shall be powered by ultra low 	Reduce air pollution emission from construction vehicles and plants	Contractor	Works areas	Construction phase	V V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Construction	on Dust Impact					
Table 8.5	Barging facilities: (i) Transportation of spoils to the barging point – Pave all road surfaces within the barging facilities and provide watering once along with the haul road for every working hours to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.0 L/m² once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.0L/m² to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual. (ii) Unloading of spoil materials – Undertake the unloading process within a 3-sided screen with top tipping hall. Provide water spraying and flexible dust curtains at the discharge point for dust suppression. (iii) Vehicles leaving the barging facilities – Pass vehicles through the wheel washing facilities provided at site exits.	To minimize dust impacts	Contractor	All barging points	Construction phase	N/A
S8.63	For concrete batching plant, the requirements and mitigation measures stipulated in the <i>Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93)</i> shall be followed and implemented.	To minimize dust impact	Contractor	Concrete Batching Plant	Construction phase	N/A
Table 8.6	 During operation of concrete batching plant: Unloading of aggregates from the tipper trucks to receiving hopper – unload the aggregates from the tipper trucks to the receiving hopper equipped with enclosures on 3 sides and top cover, and water spraying system. Unloading of cement and PFA from tankers into the silo – Directly load the cement and PFA into the silo via a flexible duct. Install dust collectors at cement/PFA silos. Storage of aggregates in overhead storage bins – Store the aggregates in fully enclosed overhead storage bins. Cover the top of overhead storage bins with cladding. Install water spraying system at the top of storage bins for watering the aggregates, and fully enclose aggregates storage bins. Weighing and batching of cementitious materials – Perform the whole process of weighing and mixing in a fully enclosed environment. Equip all the mixers with dust collectors. Loading of concrete from mixer into transit mixer of a truck – Directly load the concrete from the mixer into the transit mixer of a truck in "wet form". Tipper trucks and cement tankers leaving the Concrete Batching Plant – Haul road within the site is unpaved. Install wheel washing pit at the gate of the concrete batching plant. Transportation of materials within the plant – Provide watering twice a day would be provided. 	To minimize dust impacts	Contractor	Concrete Batching Plant	Construction phase	N/A
S8.89	Watering once every working hour on active works areas, exposed areas and paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.	To minimize dust impact	Contractor	Works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S8.89	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall, provision of water spraying and flexible dust curtains to reduce dust emission	To minimize dust impact	Contractor	All barging points	Construction phase	N/A
S8.90	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved	To minimize dust impacts	Contractor	Works areas	Construction phase	V
	 roads, particularly during dry weather. 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 					@ V
	 aggregate fines. Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. 					V
	 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 					V
	 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/ 					V
	 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. 					V
	 Imposition of speed controls for vehicles on site haul roads. Where possible, routing of vehicles and positioning of construction plant shall be at the maximum possible distance from ASRs. 					V
	• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.					V
	 Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise 					V
	 Dust suppression measures (con't) De-bagging, batching and mixing processes carried out in sheltered areas during the use of bagged cement 	To minimize dust impacts	Contractor	Works areas	Construction phase	V
	pise Impact					
Constructio		1=				I
9.55	 The following good site practices shall be implemented: Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program 	To minimize construction noise impact	Contractor	Works areas	Construction phase	V
	 Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program 	Impact				V
	 Mobile plant, if any, shall be sited as far from NSRs as possible Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum 					V
	 Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs 					V
	 Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities 					N/A
	 Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants during operation Air compressors shall be fitted with valid noise emission labels during operation 	To minimize construction noise impact	Contractor	Works areas	Construction phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S9.56 & Table 9.16	The following quiet PME shall be used: Crane lorry, mobile Crane, mobile Asphalt paver Backhoe with hydraulic breaker Breaker, excavator mounted (hydraulic) Hydraulic breaker Concrete lorry mixer Poker, vibrator, hand-held Concrete pump Crawler crane, mobile Mobile crane Dump truck Excavator Truck Rock drill Lorry Wheel loader Roller vibratory	To minimize construction noise impact	Contractor	Works areas at: Hung Hom Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel	Construction phase	N/A V N/A V/A N/A N/A N/A V V V V N/A N/A
S9.58 – S9.59 & Table 9.17	Movable noise barrier shall be used for the following PME:	To minimize construction noise impact	Contractor	 Works areas at: Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel 	Construction phase	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
S9.60 & Table 9.17	Noise insulating fabric shall be used for Drill rig, rotary type Piling, diaphragm wall, bentonite filtering plant Piling, diaphragm wall, grab and chisel Piling, diaphragm wall, hydraulic extractor Piling, large diameter bored, grab and chisel Piling, hydraulic extractor Piling, earth auger, auger Rock drill, crawler mounted (pneumatic)	To minimize construction noise impact	Contractor	Works areas at: Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV SOV to EXH EXH EXH to open space at the junction of Expo Drive and Convention Avenue Open space at the junction of Expo Drive and Convention Avenue to north of ADM South of ADM to Overrun Tunnel	Construction phase	N/A N/A N/A N/A N/A N/A N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Water Qual	ity Impact					
Construction	on Phase					
S11.216	The following mitigation measures are proposed to minimize the potential water quality impacts from the construction works at or close to the seafront: • Temporary storage of construction materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction and demolition materials shall be located well away from the seawater front and storm drainage during carrying out of the works.	To minimize release of construction wastes from construction works at or close to the seafront	Contractor	Construction works at or close to the seafront	Construction Phase	V
	Stockpiling of construction and demolition materials and dusty materials shall be covered and located away from the seawater front and storm drainage.					V
	 Construction debris and spoil shall be covered up and/or disposed of as soon as possible to avoid being washed into the nearby receiving waters. 					V
S11.222 to 11.245	 The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable. Surface Run-off Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels shall be constructed in advance of site formation works and earthworks. Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit shall 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 shall comply with both engineering and environmental requirements in order to provide adequate hydraulic capacity of all drains. Minimum 	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction Phase	@ V
	distances of 100 m shall be maintained between the discharge points of construction site runoff and the existing saltwater intakes. • Construction works shall be programmed to minimize 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 shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels shall be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place in such a way that adequate surface protection measures can					V
	 be safely carried out well before the arrival of a rainstorm. Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary. 					N/A
	 Measures shall be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities. 					V
	Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be					V
	 covered with tarpaulin or similar fabric during rainstorms. Manholes (including newly constructed ones) shall 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. Discharge of surface run-off into foul 					V
	 sewers must always be prevented in order not to unduly overload the foul sewerage system. Good site practices shall 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. 					V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	 Boring and Drilling Water Water used in ground boring and drilling for site investigation or rock / soil anchoring shall as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater shall be discharged into storm drains via silt removal facilities. 					V
	 Wheel Washing Water All vehicles and plant shall be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing bay shall be provided at every site exit if practicable and wash-water shall have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road shall be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering 					V
	 public road drains. <u>Bentonite Slurries</u> Bentonite slurries used in diaphragm wall and bore-pile construction shall be reconditioned and used again wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the bentonite slurries shall either be dewatered or mixed with inert fill material for disposal to a public filling area. 					N/A
	 filling area. If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the TM-DSS. 					N/A
	 Water for Testing & Sterilization of Water Retaining Structures and Water Pipes Water used in water testing to check leakage of structures and pipes shall be used for other purposes 					N/A
	 as far as practicable. Surplus unpolluted water will be discharged into storm drains. Sterilization is commonly accomplished by chlorination. Specific advice from EPD shall be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water shall be used again wherever practicable. 					N/A
	 Acid Cleaning, Etching and Pickling Wastewater Acidic wastewater generated from acid cleaning, etching, pickling and similar activities shall be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater shall be tankered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters. 					N/A
	 Wastewater from Site Facilities Wastewater collected from any temporary canteen kitchens, including that from basins, sinks and floor drains, shall be discharged into foul sewer via grease traps. In case connection to the public foul sewer is not feasible, wastewater generated from kitchens or canteen, if any, shall be collected in a temporary storage tank. A licensed waste collector shall be deployed to clean the temporary storage 					N/A
	tank on a regular basis.Drainage serving an open oil filling point shall be connected to storm drains via petrol interceptors					N/A
	 with peak storm bypass. Vehicle and plant servicing areas, vehicle wash bays and lubrication bays shall as far as possible be located within roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor. Oil leakage or spillage shall be contained and cleaned up immediately. Waste oil shall be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. 					N/A
S11.246 & 11.247	Construction work force sewage discharges on site are expected to be discharged to the nearby existing trunk sewer or sewage treatment facilities. If disposal of sewage to public sewerage system is not feasible, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment. The Contractor shall also be responsible for waste disposal and maintenance practices. Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.	To minimize water quality impacts due to sewage generated from construction workforce	Contractor	Works areas	Construction Phase	N/A
S11.248	In case seepage of uncontaminated groundwater occurs, groundwater shall be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process shall also be discharged into the storm system via silt traps.	To minimize impact from discharge of uncontaminated groundwater	Contractor	Works areas	Construction Phase	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.249	If land contaminated site is identified from the Stage 2 SI work (refer to Sections 11.188 to 11.191 of the EIA Report), the following mitigation measures shall be implemented for the identified contaminated area. Any transient pile of contaminated soil / material shall be minimized and shall be bottom-lined, bunded and covered with impervious membrane during rain event to avoid generation of contaminated runoff. Appropriate intercepting channels and partial shelters shall be provided where necessary to prevent rainwater from collecting within trenches or footing excavations. Any contaminated water and wastewater generated from the decontamination process shall not be directly discharged to public sewers or site drainage. They shall be treated or tanked away as necessary for proper disposal in compliance with the TM-DSS.	To control site run-off generated from any potential contaminated works areas.	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.250 & S11.251	No direct discharge of groundwater from contaminated areas shall be adopted. If land contamination impact and generation of contaminated groundwater is identified from the Stage 2 SI works (refer to Sections 11.189 to 11.192 of the EIA Report), the following mitigation measures shall be adopted. Any contaminated groundwater shall be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground. If wastewater treatment is 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 TPH) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and shall be discharged into the foul sewers. If groundwater recharging wells are deployed, the recharging wells shall be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells shall 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 shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substance such as TPH products shall be removed as necessary by installing the petrol interceptor. The Contractor shall apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	To minimize potential water quality impact from discharge of contaminated groundwater	Contractor	Any potential contaminated areas to be identified from the Stage 2 SI	Construction Phase	N/A
S11.252	 The following good site practices shall be adopted for the proposed barging points: all vessels shall be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash all hopper barges shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material construction activities shall not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site loading of barges and hoppers shall be controlled to prevent splashing of material into the surrounding water. Barges or hoppers shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation 	To minimize water quality impacts generated from the barging points.	Contractor	Barging points	Construction Phase	N/A
S11.253	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 runoff and wastewater generated from the works areas shall be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distances of 100 m shall be maintained between the discharge points of construction site effluent and the existing seawater intakes. 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 shall be carried out in accordance with the WPCO license which is under the ambit of Regional Office (RO) of EPD.	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S11.254	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 shall be observed and complied with for control of chemical wastes.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	V
S11.255	Any service shop and maintenance facilities shall be located on hard standings within a bunded area, and sumps and oil interceptors shall be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken within the areas appropriately equipped to control these discharges.	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	N/A
S11.256	Disposal of chemical wastes shall 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:	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction Phase	
	 Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. Chemical waste containers shall be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. 					V
	 Storage area shall be selected at a safe location on site and adequate space shall be allocated to the storage area. 					V
Waste Man	agement Implications					
Construction	on Phase					
S12.75	Good Site Practices and Waste Reduction Measures Prepare a Waste Management Plan (WMP) approved by the Engineer/Supervising Officer of the Preject based on current practices on construction sites:	To reduce waste management impacts	Contractor	All Work Sites	Construction Phase	V
	 the Project based on current practices on construction sites; Training of site personnel in, site cleanliness, proper waste management and chemical handling procedures; 					V
	 Provision of sufficient waste disposal points and regular collection of waste; Appropriate measures to minimize windblown litter and dust during transportation of waste by 					N/A
	either covering trucks or by transporting wastes in enclosed containers;					N/A
	 Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and Separation of chemical wastes for special handling and appropriate treatment. 					V
S12.76	Good Site Practices and Waste Reduction Measures (con't) Sorting of demolition debris and excavated materials from demolition works to recover	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A
	reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); • Segregation and storage of different types of waste in different containers, skips or stockpiles					V
	to enhance reuse or recycling of materials and their proper disposal; • Encourage collection of aluminum cans by providing separate labeled bins to enable this					N/A
	 waste to be segregated from other general refuse generated by the workforce; Proper storage and site practices to minimize the potential for damage or contamination of 					V
	 construction materials; Plan and stock construction materials carefully to minimize amount of waste generated and 					V
	 avoid unnecessary generation of waste; and Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. 					V
S12.77	Good Site Practices and Waste Reduction Measures (con't) The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
	The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.					
S12.78	Good Site Practices and Waste Reduction Measures (con't) C&D materials would be reused in other local concurrent projects as far as possible. If all reuse outlets are exhausted during the construction phase, the C&D materials would be disposed of at Taishan, China as a last resort.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V
S12.79	Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:	To minimize potential adverse environmental	Contractor	Work Sites	Construction Phase	
	 Waste, such as soil, shall be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; Maintain and clean storage areas routinely; Stockpiling area shall be provided with covers and water spraying system to prevent materials 	impacts arising from waste storage				V V V
	from wind-blown or being washed away; and Different locations shall be designated to stockpile each material to enhance reuse.					V
S12.80	Storage, Collection and Transportation of Waste (con't) Waste haulier with appropriate permits shall be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following suggestions shall be enforced to minimize the potential adverse impacts:	To minimize potential adverse environmental impacts arising from waste	Contractor	Work Sites	Construction Phase	
	 Remove waste in timely manner Waste collectors shall only collect wastes prescribed by their permits Impacts during transportation, such as dust and odour, shall be mitigated by the use of covered trucks or in enclosed containers 	collection and disposal				V V V
	Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28)					V
	 Waste shall be disposed of at licensed waste disposal facilities Maintain records of quantities of waste generated, recycled and disposed 					V
S12.81	 Storage, Collection and Transportation of Waste (con't) Implementation of trip ticket system with reference to DevB TC(W) No.6/2010 to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) shall be proposed. 	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	Work Sites	Construction Phase	V
S12.83 – 12.86	 Sorting of C&D Materials Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. 	To minimize potential adverse environmental impacts	Contractor	Work Sites	Construction Phase	V
	Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.	during the handling, transportation and				V
	The C&D materials shall at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled as far as practicable before delivery to PFRFs as mentioned for beneficial use in other projects. While opportunities for reusing the non-inert portion shall be investigated before disposal of at designated landfills.	disposal of C&D materials				V
	Possibility of reusing the spoil in the Project will be continuously investigated in the detailed design and construction stages, it includes backfilling to cut and cover construction works for the Hung Hom south and north approach tunnels.					V
S12.88	Sediments The basic requirements and procedures for excavated / dredged sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is managing the disposal facilities in Hong Kong for the dredged and excavated sediment, while EPD is the authority of issuing marine dumping permit under the Dumping at Sea Ordinance.	To ensure the sediment to be disposed of in an authorized and least impacted way	Contractor	All works areas with sediments concern	Construction Phase	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.89	 Sediments (con't) The contractor for the excavation / dredging works shall apply for the site allocations of marine sediment disposal based on the prior agreement with MFC/CEDD. A request for reservation of sediment disposal space have been submitted to MFC for onward discussions of disposal approach and feasible disposal sites and the letter is attached in Appendix 12.6. The Project proponent shall also be responsible for the application of all necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged and excavated sediment prior to the commencement of the excavation works. 	To determine the best handling and disposal option of the sediments	MTR / Contractor	All works areas with sediments concern	Detailed Design Stage and Construction Phase	N/A
\$12.91 - 12.94	 Sediments (con't) Stockpiling of contaminated sediments shall be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment shall be covered by tarpaulin and the area shall be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiling areas shall be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas shall be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). In order to minimise the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments shall be wetted during excavation / material handling and shall be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge shall be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. The barge transporting the sediments to the designated disposal sites shall be equipped with tight fitting seals to prevent leakage and shall not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP. In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
S12.95	 Sediments (con't) A possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe, the USA and Japan and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed. 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	Construction Phase	N/A
/	 Accidental spillage To prevent accidental spillage of chemicals, the following is recommended: Proper storage and handling facilities will be provided. All the tanks, containers, storage area will be bunded and the locations will be locked as far as possible from the sensitive watercourse and stormwater drains. The contractor will register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities will be stored with suitable labels and warnings. Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation. 	To minimize potential adverse environmental impacts arising from accidental spillage	Contractor	Work Sites	Construction Phase	V V V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S12.97	Containers for Storage of Chemical Waste The Contractor shall register with EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for storage of chemical waste shall:	To register with EPD as a Chemical waste producer and store chemical waste in	Contractor	Work Sites	Construction Phase	
	Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed;	appropriate containers				V
	 Have a capacity of less than 450 litters unless the specifications have been approved by EPD; and 					N/A
	 Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation. 					V
S12.98	 Chemical Waste Storage Area Be clearly labeled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; 	To prepare appropriate storage areas for chemical	Contractor	Work Sites	Construction Phase	V
	 Be enclosed on at least 3 sides; Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; 	waste at works areas				V
	 Have adequate ventilation; Be covered to prevent rainfall from entering; and Be properly arranged so that incompatible materials are adequately separated. 					V V V
S12.99	Chemical Waste Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants shall be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.	To clearly label the chemical waste at works areas	Contractor	Work Sites	Construction Phase	N/A
S12.100	Collection and Disposal of Chemical Waste A trip-ticket system shall be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical waste. The Contractor shall employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To monitor the generation, reuse and disposal of chemical waste	Contractor	Work Sites	Construction Phase	N/A
S12.101	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes. Preferably, an enclosed and covered area shall be provided to reduce the occurrence of wind-blown light material.	To properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	Work Sites	Construction Phase	V
S12.102	General Refuse (con't) The recyclable component of general refuse, such as aluminum cans, paper and cleansed plastic containers shall be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	Contractor	Work Sites	Construction Phase	V
S12.103	General Refuse (con't) The Contractor shall carry out an education programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins shall also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	Contractor	Work Sites	Construction Phase	V

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
Land Conta	mination Impact					
\$13.23- 13.24	 For construction works at sites under the current stage of site investigation (Stage 1 SI): Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process shall involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination. If soil materials suspected to be contaminated are encountered during excavation, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during demolition, excavation and cut & cover construction shall be temporary stockpiled. Shall concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the Contamination Assessment Report (CAR) and Remediation Action Plans (RAP). 	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Within Project Boundary where signs of contamination is identified	During excavation works for Cut-and- Cover	N/A
S13.30	For some sites with currently no SI proposed (i.e. sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28), to be conservative, visual inspection shall be conducted during demolition and excavation to detect any abnormal colour, smell or other characteristics of the soil, due to the nearby land use and/ or construction method. If abnormal colour, smell or other characteristics of contamination are identified for any of these sites, sampling and testing shall be undertaken to verify the presence of contamination. The soil extracted during demolition, excavation and cut & cover construction shall be temporary stockpiled. Should the concentrations of contaminants of concern (COCs) exceed relevant RBRGs as indicated by laboratory analyses, remediation works shall be undertaken with reference to the CAR and RAP.	To act as a general precautionary measure to screen soils for the presence contamination during excavation works for Cut-and-Cover.	Contractor	Areas with no SI proposed (Sites ID 2-02, 2-18, 2-22, 2-23, 2-27, 2-28)	During excavation works for Cut-and- Cover	N/A
S13.36 – 13.38	 For areas inaccessible for proper site appraisal and investigation (Stage 2 SI) (i) Site 2-15 Upon site access being granted, visual inspection shall be carried out where intrusive works and soil excavation is encountered, for attention on any potential contamination due to its current operation A supplementary CAP shall then be submitted to EPD for endorsement. A CAR/RAP shall be prepared and submitted to EPD for endorsement on completion of the SI and analytical testing. Shall remediation be undertaken a Remediation Report (RR) shall be prepared and submitted to EPD for endorsement to demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/ disposal records (including trip tickets), confirmatory sampling results, and photographs shall be included in the aforesaid RR. No construction work shall be carried out prior to the endorsement of the RR by EPD. 	To identify areas with land contamination concern, report laboratory results and propose remediation measures if necessary. To ensure remediation works have been undertaken to before the commencement of any construction works of the Project.	Contractor	Areas unable to be accessed during Stage 1 SI (Site 2-15)	After land resumption and prior to the construction works commencement at the site	N/A
S13.39	 Potential Remediation of Contaminated Soil Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; Supply of suitable clean backfill material is needed after excavation; If remediation is required with chemical oxidation proposed as a contaminant mass reduction technology, chemicals will be securely and separately stored away from sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and personal protective equipment (PPE). Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions; Speed control for the trucks carrying contaminated materials shall be enforced; Vehicle wheel and body washing facilities at the site's exit points shall be established and used; and Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control shall be implemented and complied with relevant regulations and guidelines. 	To remediate contaminated soil	Contractor	Identified contaminated sites	Site remediation	N/A

EIA Ref. / EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	Implementation Status
S13. 40	In order to minimize the potential adverse effects on health and safety of construction workers during the course of site remediation, the Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations shall be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures shall be implemented as far as possible: • Set up a list of safety measures for site workers; • Provide written information and training on safety for site workers; • Keep a log-book and plan showing the contaminated zones and clean zones; • Maintain a hygienic working environment; • Avoid dust generation; • Provide face and respiratory protection gear to site workers; • Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers; and • Provide first aid training and materials to site workers.	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	Identified contaminated sites	Site remediation and prior to construction phase	N/A

 V = implemented;
 x = not implemented;
 @ = partially implemented;
 N/A = not applicable Legend: V

APPENDIX D

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix D

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Statistics on Complaints, Notifications of Summons and Successful Prosecutions in this reporting month

	Date Received	Subject	Status	Total no. received in this month
Environmental complaints	-	-	-	0
Notification of summons	-	-	-	0
Successful Prosecutions	-	-	-	0

Appendix D AECOM

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions since project commencement

since project comment	Number of Complaints in	Number of Summons in	Number of Prosecutions in		
Reporting Month	Reporting Month	Reporting Month	Reporting Month		
August 2016	0	0	0		
September 2016	0	0	0		
October 2016	0	0	0		
November 2016	0	0	0		
December 2016	0	0	0		
January 2017	0	0	0		
February 2017	0	0	0		
March 2017	1	0	0		
April 2017	0	0	0		
May 2017	0	0	0		
June 2017	0	0	0		
July 2017	0	0	0		
August 2017	0	0	0		
September 2017	0	0	0		
October 2017	0	0	0		
November 2017	0	0	0		
December 2017	0	0	0		
January 2018	0	0	0		
February 2018	0	0	0		
March 2018	0	0	0		
April 2018	0	0	0		
May 2018	0	0	0		
June 2018	0	0	0		
July 2018	0	0	0		
August 2018	0	0	0		
September 2018	0	0	0		
October 2018	0	0	0		
November 2018	0	0	0		
December 2018	0	0	0		
January 2019	0	0	0		
February 2019	0	0	0		
Total	1	0	0		

Appendix D AECOM

APPENDIX E

Waste Flow Table

Monthly Summary Waste Flow Table for 2019

	Actu	al Quantities	of Inert C&D	Materials G	enerated Mo	nthly	Actual (Quantities of	C&D Wastes	Generated	Monthly
Month	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.022
Mar											
Apr											
May											
Jun											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.045
Jul											
Aug											
Sep											
Oct											
Nov											
Dec	_			_	_	_	_			_	
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.045

Comments:

- 1) Assumption: The densities of Rock, Soil, Mixed Rock and Soil, and Regular Spoil are 2.0 ton/m3; the density of general refuse is 1.0 ton/m3; the density of waste oil is 1.0 ton/m3.
- 2) The cut-off date of waste amount in Feb is 28/02/2019 for TKO137FB/TM38FB, NENT/SENT/WENT landfill.
- 3) The amount of waste in Feb is 22.22 tons for NENT/SENT/WENT Landfill, 0 tons for TKO137FB/TKO137SF/TM38FB.
- 4) The amount of C&D waste reused in the Contract in Feb is 0 trucks, reused in other Projects is 0 tons, for cut-off date as 28/02/2019.
- 5) The amount of chemical waste in Feb is 400L for cut-off date as 28/02/2019.

Appendix E

Monthly EM&A Report for February 2019 – SCL Works Contract 1124 Admiralty SCL Related Works

MTR Corporation Limited

Shatin to Central Link – Admiralty SCL Related Works

Monthly EM&A Report No. 25 [Period from 1 to 28 February 2019]

(March 2019)

	Aula
Verified by:	Nicola Hon
Position:	Environmental Team Leader
Date:	8 March 2019



JOB NO.: TCS00838/16

MTR SHATIN TO CENTRAL LINK – CONTRACT 1124
ADMIRALTY SCL RELATED WORKS

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT – FEBRUARY 2019

PREPARED FOR BUILD KING SCL 1124 JV

Date Reference No. Prepared By Certified By

5 March 2019 TCS00838/16/600/R0043v1

Martin Li (Environmental Consultant)

Nicola Hon (Environmental Team Leader)

Version	Date	Remarks
1	5 March 2019	First Submission



EXECUTIVE SUMMARY

- ES.01 Build King SCL 1124 Joint Venture (hereinafter 'JV") has been awarded by the MTR Corporation Limited (MTR) of the Contract No. MTR 1124 Admiralty SCL Related Works (hereinafter "Contract 1124').
- ES.02 Admiralty Station (ADM) will become an interchange station for four railway lines. The works of Contract 1124 are mainly the Alteration and Additional (A&A) works at the interface between the existing Admiralty Station (ADM) and the new ADM, construction of internal structure at the new ADM and associated road works and building services etc.
- ES.03 The Environmental Monitoring & Audit (EM&A) Programme for Contract 1124 was commenced on 1 February 2017.
- ES.04 This is the 25th Monthly Environmental Monitoring and Audit (EM&A) Report summarizing the impact monitoring results and audit findings for Contract 1124 during the period from 1 to 28 February 2019 (the Reporting Period).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.05 Environmental monitoring activities under the EM&A Programme in this Reporting Period are summarized in the following table.

Issues	Issues Environmental Monitoring Parameters / Inspection	
Inspection / Audit	ET Regular Environmental Site Inspection	4

ENVIRONMENTAL COMPLAINT

ES.06 No environmental complaint was recorded or received in this Reporting Period.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.07 No environmental summons or successful prosecutions were recorded in this Reporting Period.

REPORTING CHANGE

ES.08 No reporting changes were made in this Reporting Period.

FUTURE KEY ISSUES

ES.09 Special attention should be paid to on the potential environmental impacts arising from the forthcoming activities such as water quality and waste management.



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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 The Environmental Impact Assessment (EIA) Reports for SCL Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2012, which covers SCL (HUH-ADM) EP No.: (EP-436/2012), for the construction and operation. Variation of EP (VEP) was subsequently applied and the latest EP (EP No. EP-436/2012/F) was issued by the Director of Environmental Protection (DEP) on 31 December 2018.
- 1.1.3 Major works of Contract 1124 including the following:-
 - (a) Alteration and Additional (A&A) works at the interface between the existing ADM and the new ADM;
 - (b) Construction of internal structures at the new ADM;
 - (c) Alteration and addition works for plant rooms;
 - (d) Demolition of Vent Shaft X;
 - (e) Road works including drainage, traffic aids, road markings, lighting, signage, utilities diversion, demolition, reinstatement and TTM schemes to facilitate the construction works and any works require TTM submission;
 - (f) Tree planting and soft and hard landscaping works;
 - (g) Design and construction of ABWF works.
 - (h) Supply and installation of doors and ironmongeries, signs and advertising panels, Customer Service Centre (CUC), Platform Supervisor Booths (PSB) and Common Station Components etc.
- 1.1.4 The general layout of the Project is shown in *Appendix A*.
- 1.1.5 Action-United Environmental Services & Consulting (hereinafter referred as "AUES") was appointed by the Contractor as an Environmental Team (hereinafter referred as "the ET") to implement the relevant EM&A programme in accordance with the EM&A Manual and EP during construction phase of the project.
- 1.1.6 This is the 25th Monthly EM&A Report summarizing the impact monitoring results and audit findings for Contract 1124 in the period of 1 to 28 February 2019.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1	Introduction
Section 2	Project Organization and Construction Progress
Section 3	Summary of Impact Monitoring Requirement
Section 4	Waste Management
Section 5	Site Inspection
Section 6	Environmental Complaint and Non-Compliance
Section 7	Implementation Statue of Mitigation Measures
Section 8	Conclusions and Recommendation



2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.1.1 The organization structure and contact details of key personnel with respect to environmental management are shown in *Appendix B*.

2.2 CONSTRUCTION PROGRESS

2.2.1 The Construction Program of the Contract 1124 is enclosed in *Appendix C* and the major construction activities undertaken in this Reporting Period are listed below:-

Civil Works

• SCL Level – Mass concrete for Walkway for leftover areas in North Bound & South Bound. Hoist removal works completed near B13 slab.

ABWF Works

- Cat ladder and door installation works in North Bound
- Concourse Level Floor Tiles and Wall painting carried out in SCR Waiting area
- Atrium Aluminium cladding works & escalator installation works

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 Summary of the relevant permits, licences, and/or notifications on environmental protection for Contract 1124 in this Reporting Period is presented in *Table 2-1*.

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	Ref. no.	Valid	Period	Status
			From	То	
1	Environmental permit	EP-436/2012/F	23 Jan 2018	End of the Project	Valid
2	Notification pursuant to Air pollution Control (Construction Dust) Regulation	Ref No.: 400699	1 Apr 2016	End of the Project	Valid
3	Chemical Waste Producer Registration	Waste Producers Number: 5213-124-B2482- 01	11 May 2016	End of the Project	Valid
4	Water Pollution Control Ordinance - Discharge License	No.WT00025943- 2016	27 Oct 2016	31 Oct 2021	Valid until 31 Oct 2021
5	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7024833	21 April 2016	End of the Project	Valid
6	Construction Noise Permit	GW-RS1230-18	20 Jan 19	19 Jul 19	Valid until 19 Jul 19



3 SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

- 3.1.1 The impact monitoring for air quality, construction noise as well as landscape and visual inspection are not required for Contract 1124.
- 3.1.2 The impact monitoring requirement for Contract 1124 shall include waste management and site inspection.



4 WASTE MANAGEMENT

4.1 GENERAL WASTE MANAGEMENT

4.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

4.2 RECORDS OF WASTE QUANTITIES

- 4.2.1 All types of waste arising from the construction work are classified into the following:
 - Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil.
- 4.2.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 4-1* and *4-2* and the Monthly Summary Waste Flow Table is shown in *Appendix D*. Whenever possible, materials were reused on-site as far as practicable.

Table 4-1 Summary of Quantities of Inert C&D Materials for the Project

	Quantity			
Type of Waste	Prior Months	Reporting Month (February 2019)	Cumulated	Disposal Location
Total C&D Materials generated (Inert) (in '000m ³)	1.8107	0.015	1.8257	
Reused in this Project (Inert) (in '000m ³)	0	0	0	
Reused in other Projects (Inert) (in '000m ³)	0	0	0	
Disposal as Public Fill (Inert) (in '000m³)	1.8107	0.015	1.8257	TKO 137

Table 4-2 Summary of Quantities of C&D Wastes for the Project

	Quantity			
Type of Waste	Prior Months	Reporting Month (February 2019)	Cumulated	Disposal Location
Metals ('000kg)	0	0	0	
Paper / Cardboard Packing ('000kg)	0	0	0	
Plastics ('000kg)	0	0	0	
Chemical Wastes ('000kg)	0	0	0	
General Refuses ('000m ³)	2.7087	0.061	2.7697	SENT



5 SITE INSPECTION

5.1 REQUIREMENTS

5.1.1 According to the EM&A Manual, the environmental site inspection shall be formulated by ET Leader. Weekly environmental site inspections should be carried out to monitor the implementation of mitigation measures and environmental performance.

5.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

- 5.2.1 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the MTR, ET and the Contractor were carried out on **8**, **13**, **20** and **27** February **2019** and IEC had joined the site inspection on **13** February **2019**. Furthermore, no site inspection was conducted by EPD during the Reporting Period. No non-compliance was noted during the site inspection in the Reporting Period.
- 5.2.2 The observations and reminders recorded in the weekly site inspection in the Reporting Period are summarized in *Table 5-1*.

Table 5-1 Site Observations

Parameters	Date	Observations / Reminders	Follow-Up Status
Air Quality	Nil	Nil	Nil
Noise	Nil	Nil	Nil
Water Quality	Nil	Nil	Nil
Waste/ Chemical Management	Nil	Nil	Nil
Permits/ licenses	Nil	Nil	Nil



6 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

6.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

6.1.1 No environmental complaints, summons and prosecution were received in this Reporting Period. The statistical summary table of environmental complaint is presented in *Tables 6-1*, 6-2 and 6-3.

Table 6-1 Statistical Summary of Environmental Complaints

Domontino Domio d	Environmental Complaint Statistics						
Reporting Period	Frequency	Cumulative	Complaint Nature				
1 – 28 February 2019	0	1	Air Quality (Uncover dump truck)				

 Table 6-2
 Statistical Summary of Environmental Summons

Domontina Domina	Enviro	Environmental Summons Statistics							
Reporting Period	Frequency	Cumulative	Summons Nature						
1 – 28 February 2019	0	0	NA						

 Table 6-3
 Statistical Summary of Environmental Prosecution

Domontino Dominal	Environmental Prosecution Statistics							
Reporting Period	Frequency	Cumulative	Prosecution Nature					
1 – 28 February 2019	0	0	NA					



7 IMPLEMENTATION STATUS OF MITIGATION MEASURES

7.1 GENERAL REQUIREMENTS

- 7.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the EM&A Manual covered the issues of dust, noise, water quality and waste management and they are summarized presented in *Appendix E*.
- 7.1.2 The Contractor has implemented the environmental mitigation measures and requirements as stated in the EIA reports the EP and EM&A Manuals subject to the site condition. The major environmental mitigation measures implemented by the Contract in this Reporting Period are summarized in *Table 7-1*.

Table 7-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water	• Wastewater to be treated by the filtration systems i.e. sedimentation tank
Quality	before to discharge.
Air Quality	Maintain wet surface on access road
	 All vehicles must use wheel washing facility before off site
	 Sprayed water during breaking works
Noise	 Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. CNP was granted for construction works during restricted hours Keep good maintenance of plants
	Shut down the plants when not in used.
Waste and	On-site sorting prior to disposal
Chemical	 Follow requirements and procedures of the "Trip-ticket System"
Management	 Predict required quantity of concrete accurately
	 Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	The site was generally kept tidy and clean.

7.1.3 Status of required submissions under the EP during the reporting period is summarized in *Table 7-2*.

Table 7-2 Status of Required Submission under Environmental Permit

EP Condition	P Condition Submission	
Condition 3.4	Monthly EM&A Report for January 2019	14 February 2019

7.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

7.2.1 Construction activities listed below will be undertaken in the coming month for Contract 1124.

Civil Works

• SCL Level – Mass concrete for Walkway for leftover areas in North Bound & South Bound. Hoist removal works completed near B13 slab.

ABWF Works

- Cat ladder and door installation works in North Bound
- Concourse Level Floor Tiles and Wall painting carried out in SCR Waiting area
- Atrium Aluminium cladding works & escalator installation works



7.3 KEY ISSUES FOR THE COMING MONTH

- 7.3.1 Key issues to be considered in the coming month for the Contract include:
 - Ensure dust suppression measures are implemented properly;
 - Implementation of construction noise preventative control measures
 - Management of chemical wastes;
 - Follow-up of improvement on general waste management issues; and
 - Potential wastewater quality impact



8 CONCLUSIONS AND RECOMMENTATIONS

8.1 CONCLUSIONS

- 8.1.1 This is the 25th Monthly EM&A report, covering the construction period from 1 to 28 February 2019.
- 8.1.2 No documented complaint, notification of summons or successful prosecution was received in the Reporting Period.
- 8.1.3 Joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor were carried out on **8**, **13**, **20** and **27** February **2019** and IEC had joined the site inspection on **13** February **2019**. No adverse environmental issue was observed in the reporting period.

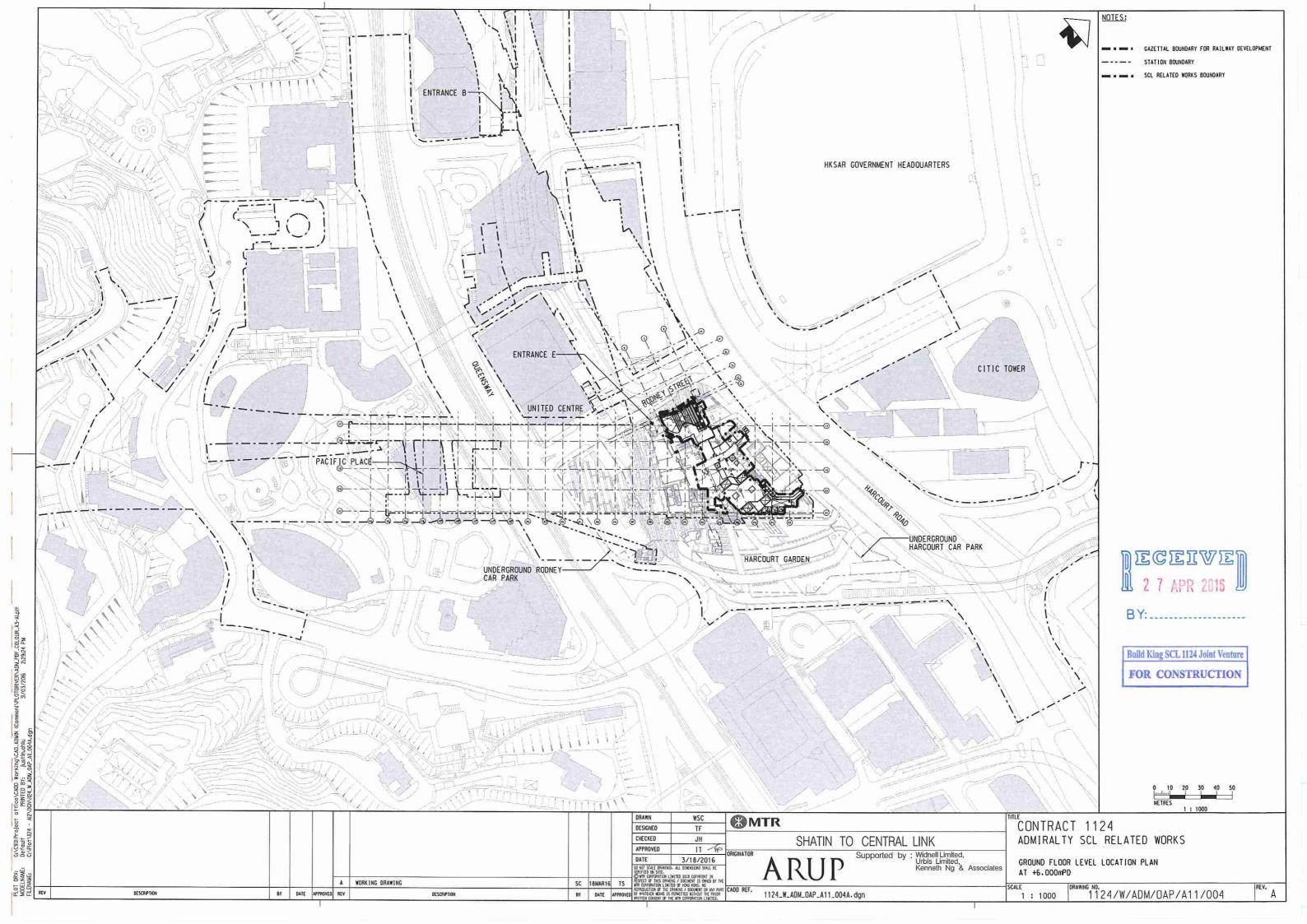
8.2 **RECOMMENDATIONS**

- 8.2.1 Special attention should be paid to on the potential environmental impacts arising from the forthcoming activities such as water quality and waste management.
- 8.2.2 The Contractor was reminded to properly maintain the wastewater treatment facilities and ensure the discharge complied with the relevant licence requirement.
- 8.2.3 The Contractor was reminded that the C&D waste and general refuse should be disposed in a timely manner, and chemical containers should be provided with drip tray to avoid leakage on ground during construction period.
- 8.2.4 The Contractor is also reminded to implement the recommended environmental mitigation measures according to the EM&A Manual.



Appendix A

PROJECT SITE LAYOUT PLAN

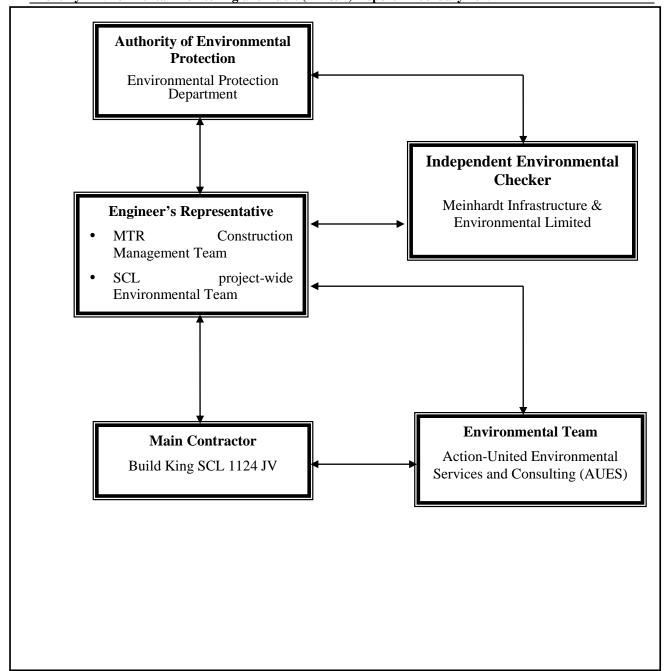




Appendix B

ORGANIZATION STRUCTURE AND CONTACT DETAILS OF RELEVANT PARTIES





Project Organization Structure



Contact Details of Key Personnel

Organization	Role	Position	Name of Key Staff	Tel No.	Fax No.
MTR	Resident Engineer	Construction Manager	Mr. Brain Suen	2176 2788	2171 2829
MTR	Senior Environmental Engineer	SCL project-wide Environmental Team Leader	Ms. Lisa Poon	3127 6295	2993 7557
Meinhardt	Independent Er	nvironmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
Build King SCL 1124 JV	Contractor	Project Director	Mr. Simon Liu	2272 3680	2528 1751
Build King SCL 1124 JV	Contractor	General Manager	Mr. Yee Hon Wing	2272 3680	2528 1751
Build King SCL 1124 JV	Contractor	Environmental Officer	Mr. Ronald Fung	2272 3680	2528 1751
AUES	Contractor's Environmental Team (ET)	Environmental Team Leader	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Contractor's Environment		Mr. Ben Tam	2959 6059	2959 6079
AUES	Contractor's Environmental Team (ET)	Environmental Consultant	Mr. Martin Li	2959 6059	2959 6079

Legend:

MTR-MTR Corporation Limited

Meinhardt — Meinhardt Infrastructure & Environmental Limited


Build King SCL 1124 JV - Build King SCL 1124 Joint Venture

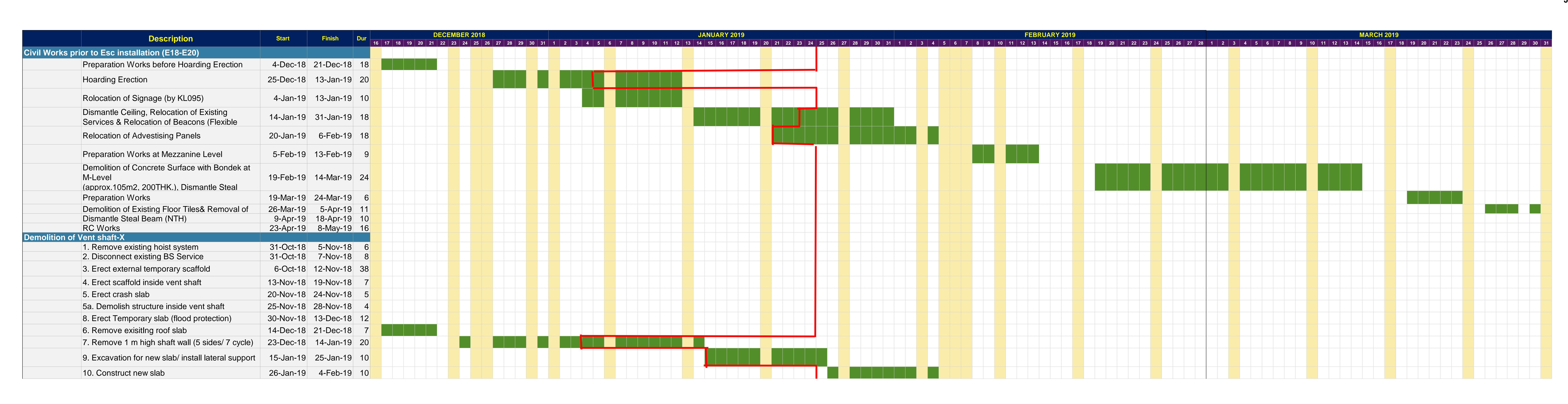
AUES - Action-United Environmental Services & Consulting



Appendix C

CONSTRUCTION PROGRAM







Appendix D

SUMMARY OF WASTE FLOW TABLE

Monthly Summary Waste Flow Table for 2017

Name of Emp	ployer: MTR Co	rporation Limi	ted						Contract No.: MTR1124				
				Actual Quanti	ties of Inert Ca	&D Materials C	enerated Mor	nthly	Actual Quantities of Non-Inert C&D Wastes Generated Monthly				ed Monthly
Month	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Rock	Soil	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
Feb	0.0089	0	0	0	0.0089	0	0	0	0	0	0	0	0.0887
Mar	0.0115	0.007	0	0	0.0045	0	0	0	0	0	0	0	0.1526
Apr	0.0150	0	0	0	0.0150	0	0	0	0	0	0	0	0.0856
May	0.4145	0.4145	0	0	0	0	0	0	0	0	0	0	0.0290
Jun	0.4218	0.4218	0	0	0	0	0	0	0	0	0	0	0.0147
Jul	0.1560	0.1560	0	0	0	0	0	0	0	0	0	0	0.0100
Aug	0.1300	0.1300	0	0	0	0	0	0	0	0	0	0	0.0249
Sep	0.1300	0.1300	0	0	0	0	0	0	0	0	0	0	0.0650
Oct	0.0320	0.0320	0	0	0	0	0	0	0	0	0	0	0.0414
Nov	0.1230	0.1230	0	0	0	0	0	0	0	0	0	0	0.0324
Dec	0.0880	0.0880	0	0	0	0	0	0	0	0	0	0	0.0384
Total	1.5307	1.5023	0	0	0.0284	0	0	0	0	0	0	0	0.5827

MTR 1124
Monthly Summary Waste Flow Table for 2018

Name of Em	ployer: MTR Co	orporation Limi	ted						Contract No.: MTR1124				
				Actual Quant	ities of Inert C	&D Materials (Senerated Mor	nthly	Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
Month	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Rock	Soil	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
Jan	0.023	0.023	0	0	0	0	0	0	0	0	0	0	0.204
Feb	0.031	0.031	0	0	0	0	0	0	0	0	0	0	0.241
Mar	0.034	0.034	0	0	0	0	0	0	0	0	0	0	0.225
Apr	0.011	0.011	0	0	0	0	0	0	0	0	0	0	0.301
May	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0.284
Jun	0.027	0.027	0	0	0	0	0	0	0	0	0	0	0.188
Jul	0.022	0.022	0	0	0	0	0	0	0	0	0	0	0.144
Aug	0.027	0.027	0	0	0	0	0	0	0	0	0	0	0.111
Sep	0.015	0.015	0	0	0	0	0	0	0	0	0	0	0.066
Oct	0.021	0.021	0	0	0	0	0	0	0	0	0	0	0.073
Nov	0.015	0.015	0	0	0	0	0	0	0	0	0	0	0.099
Dec	0.014	0.014	0	0	0	0	0	0	0	0	0	0	0.071
Total	0.261	0.261	0	0	0.00	0	0	0	0	0	0	0	2.007

Notes:

1) Density of waste materials:

Bentonite, broken concrete, building debris, mixed rock & soil , soil, slurry = 2.0

General Refuse = 1.0

Waste Oil = 1.0

MTR 1124 Monthly Summary Waste Flow Table for 2019

Name of Em	ployer: MTR Co	orporation Limi	ted						Contract No.: MTR1124				
				Actual Quant	ities of Inert Co	&D Materials C	Senerated Mor	nthly	Actual Quantities of Non-Inert C&D Wastes Generated Monthly				
Month	Total Quantity Generated	Broken Concrete	Building Debris	Mixed Rock & Soil	Bentonite	Rubbish	Rock	Soil	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
Jan	0.019	0.019	0	0	0	0	0	0	0	0	0	0	0.119
Feb	0.015	0.015	0	0	0	0	0	0	0	0	0	0	0.061
Mar	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Apr	0.000	0	0	0	0	0	0	0	0	0	0	0	0
May	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Nov	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0.000	0	0	0	0	0	0	0	0	0	0	0	0
Total	0.034	0.034	0	0	0	0	0	0	0	0	0	0	0.18

Notes:

1) Density of waste materials:

Bentonite, broken concrete, building debris, mixed rock & soil , soil, slurry = 2.0

General Refuse = 1.0

Waste Oil = 1.0



Appendix E

IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES (ISEMM)



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	eritage Impact (Construction Phase)				
S4.93 & Table 4.2	Erection of decorative and sensibly designed hoarding along the boundary of the works area	To mitigate the temporary visual impact due to surface works	Contractor	Works Areas in Causeway Bay and Wan Chai, and Works Shaft in Admiralty	V
Ecological	Impact (Construction Phase)				
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted	To minimize the contamination of wastewater discharge	Contractor	All land based works areas	V
Landscape	e and Visual Impact (Contraction Phase)				
Table 7.9	CM1 - Trees unavoidably affected by the works shall be transplanted as far as possible in accordance with ETWB TC(W) 3/2006 - Tree Preservation.	Transplanting and reuse of affected trees.	MTR	Works Sites	N/A
Table 7.9	CM2a - Compensatory tree planting shall be provided in accordance with ETWB TC(W) 3/2006 - Tree Preservation to compensate for felled trees and maintained until end of the establishment period.	Compensation for the removal of existing trees due to the Project.	MTR	Works Sites	N/A
Table 7.9	CM2b - Compensatory shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	Compensation for the removal of existing trees due to the Project.	MTR	Works Sites	N/A
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time glare due to the Project during construction phase	MTR	Works Sites	V
Table 7.9	CM4 - Erection of decorative screen hoarding compatible with the surrounding setting.	Minimize the visual impact of the Project during construction phase	MTR	Works Sites	V
Table 7.9	CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works	Control of height and deposition/	MTR	Works Sites	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	site to minimize visual impact to adjacent VSRs	arrangement of temporary facilities in works areas			
Table 7.9	CM6 - All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis to the satisfaction of the relevant Government Departments.	Reinstatement of temporary works areas	MTR	Works Sites	N/A
/	All retained/exist trees shall be properly protected during construction period.	Tree protection	Contractor	Works Sites	N/A
Dust Impa	ct (Construction Phase)				
/	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	Works Sites	V
S8.89	Watering once every working hour on active works areas, exposed areas and paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7 L/m2 for Kowloon side and 1.0 L/m2 for Hong Kong side to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual.	To minimize dust impact	Contractor	Works areas	V
S8.90	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: • Use of regular watering to reduce dust emissions from exposed site surfaces	To minimize dust impact	Contractor	Works areas	V



		Objectives of the	Who to		
EM&A	Recommended Mitigation Measures	Recommended	implement	Location of the	Implementation
Ref.	Recommended writigation weasures	Measures & Main	the	measure	Status
		Concern to Address	measures?		
	and unpaved roads, particularly during dry weather. • 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				
	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. • Imposition of speed controls for vehicles on site haul roads. •				
	Where possible, routing of vehicles and positioning of construction				
	plant shall be at the maximum possible distance from ASRs. • Every				
	stock of more than 20 bags of cement or dry pulverised fuel ash (PFA)				
	shall be covered entirely by impervious sheeting or placed in an area				
	sheltered on the top and the 3 sides. • Instigation of an environmental				
	monitoring and auditing program to monitor the construction process				
	in order to enforce controls and modify method of work if dusty				
	conditions arise				
/	Dust suppression measures (con't) • De-bagging, batching and mixing	To minimize	Contractor	Works areas	V
	processes carried out in sheltered areas during the use of bagged	construction impact			
	cement				
	act (Construction Phase)	- · · ·			
S9.55	The following good site practices shall be implemented: • Only	To minimize	Contractor	Works areas	V
	well-maintained plant shall be operated on-site and plant shall be	construction noise			
	serviced regularly during the construction program • Silencers or	impact			
	mufflers on construction equipment shall be utilized and shall be				



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	properly maintained during the construction program • Mobile plant, if any, shall be sited as far from NSRs as possible • Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum • Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs • Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities				
/	• Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants during operation • Air compressors shall be fitted with valid noise emission labels during operation	To minimize construction noise impact	Contractor	Works areas	N/A
S9.56 & Table 9.16	The following quiet PME shall be used: • Crane lorry, mobile • Crane, mobile • Asphalt paver • Backhoe with hydraulic breaker • Breaker, excavator mounted (hydraulic) • Hydraulic breaker • Concrete lorry mixer • Poker, vibrator, hand-held • Concrete pump • Crawler crane, mobile • Mobile crane • Dump truck • Excavator • Truck • Rock drill • Lorry • Wheel loader • Roller vibratory	To minimize construction noise impact	Contractor	Works areas at: • Hung Hom • Cross Harbour section up to Breakwater of CBTS • Breakwater of CBTS to SOV • SOV to EXH • EXH • EXH to open space at the junction of Expo Drive and Convention Avenue • Open space at the junction of Expo Drive and Convention Avenue to north of ADM • South of ADM to Overrun Tunne	N/A
S9.58 – S9.59 & Table 9.17	Movable noise barrier shall be used for the following PME: • Air compressor • Asphalt paver • Backhoe with hydraulic breaker • Bar bender • Bar bender and cutter (electric) • Breaker, excavator mounted • Concrete pump • Concrete pump, stationary/lorry mounted • Excavator • Generator • Grout pump • Hand held breaker • Hydraulic	To minimize construction noise impact	Contractor	Works areas at: • Cross Harbour section up to Breakwater of CBTS • Breakwater of CBTS to SOV • SOV to EXH •	N/A



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
S9.60 & Table 9.17	Noise insulating fabric shall be used for • Drill rig, rotary type • Piling, diaphragm wall, bentonite filtering plant • Piling, diaphragm wall, grab and chisel • Piling, diaphragm wall, hydraulic extractor • Piling, large diameter bored, grab and chisel • Piling, hydraulic extractor • Piling, earth auger, auger • Rock drill, crawler mounted (pneumatic)	To minimize construction noise impact	Contractor	EXH • EXH to open space at the junction of Expo Drive and Convention Avenue • Open space at the junction of Expo Drive and Convention Avenue to north of ADM • South of ADM to Overrun Tunnel Works areas at: • Cross Harbour section up to Breakwater of CBTS • Breakwater of CBTS to SOV • SOV to EXH • EXH • EXH to open space at the junction of Expo Drive and Convention Avenue • Open space at the junction of Expo Drive and Convention Avenue to north of ADM • South of ADM • South of ADM to Overrun Tunne	N/A
Water Qua	ality Impact (Construction Phase)				
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable.	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works area	V
\$11.246 & 11.247	Construction work force sewage discharges on site are expected to be discharged to the nearby existing trunk sewer or sewage treatment	To minimize water quality impacts from	Contractor	Works area	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	facilities. If disposal of sewage to public sewerage system is not feasible, appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment. The Contractor shall also be responsible for waste disposal and maintenance practices. Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.	construction site runoff and general construction activities			
S11.248	In case seepage of uncontaminated groundwater occurs, groundwater shall be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process shall also be discharged into the storm system via silt traps	To minimize impact from discharge of uncontaminated groundwater	Contractor	Works area	N/A
S11.253	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 runoff and wastewater generated from the works areas shall be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distances of 100 m shall be maintained between the discharge points of construction site effluent and the existing seawater intakes. 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 shall be carried out in accordance with the WPCO license which is under the ambit of Regional Office (RO) of EPD	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	V
S11.254	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 shall be observed and complied with for control of chemical wastes.	To minimize water quality impact from accidental spillage of chemica	Contractor	All construction works areas	V
S11.255	Any service shop and maintenance facilities shall be located on hard standings within a bunded area, and sumps and oil interceptors shall be	To minimize water quality impact from	Contractor	All construction works areas	N/A



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken within the areas appropriately equipped to control these discharges	accidental spillage of chemical			
S11.256	Disposal of chemical wastes shall 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: - Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport Chemical waste containers shall be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents Storage area shall be selected at a safe location on site and adequate space shall be allocated to the storage area	To minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	V
S12.75	Good Site Practices and Waste Reduction Measures - Prepare a Waste Management Plan (WMP) approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites; - 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; - Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and - Separation of chemical wastes for special handling and appropriate treatment.	To reduce waste management impacts	Contractor	All construction works areas	V
S12.76	Good Site Practices and Waste Reduction Measures (con't) - Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - Encourage collection of aluminum cans by providing separate labeled bins to enable this waste	To achieve waste reduction	Contractor	All construction works areas	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; and - Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle.				
S12.77	Good Site Practices and Waste Reduction Measures (con't) - The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWBTCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.	To achieve waste reduction	Contractor	All construction works areas	V
S12.78	C&D materials would be reused in other local concurrent projects as far as possible. If all reuse outlets are exhausted during the construction phase, the C&D materials would be disposed of at Taishan, China as a last resort	To achieve waste reduction	Contractor	All construction works areas	V
S12.79	Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, shall be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area shall be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations shall be designated to stockpile each material to enhance reuse	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All construction works areas	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
S12.80	Storage, Collection and Transportation of Waste (con't) Waste haulier with appropriate permits shall be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal outlets. The following suggestions shall be enforced to minimize the potential adverse impacts: - Remove waste in timely manner- Waste collectors shall only collect wastes prescribed by their permits - Impacts during transportation, such as dust and odour, shall be mitigated by the use of covered trucks or in enclosed containers - Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28) - Waste shall be disposed of at licensed waste disposal facilities - Maintain records of quantities of waste generated, recycled and disposed	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All construction works areas	V
S12.81	Storage, Collection and Transportation of Waste (con't) - Implementation of trip ticket system with reference to DevB TC(W) No.6/2010 to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) shall be proposed	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All construction works areas	V
S12.83 – 12.86	Sorting of C&D Materials - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials The C&D materials shall at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled as far as practicable before delivery to PFRFs as mentioned for beneficial use in other projects. While opportunities for reusing the non-inert portion shall be investigated before disposal of at designated landfills Possibility of reusing the spoil in the Project will be continuously investigated in the detailed design and construction stages, it includes backfilling to cut and cover construction works for the Hung Hom south and north approach tunnels	To minimize potential adverse environmental impacts during the handling, transportation and disposal of C&D materials	Contractor	All construction works areas	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
S12.97	Containers for Storage of Chemical Waste The Contractor shall register with EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for storage of chemical waste shall: - Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; - Have a capacity of less than 450 litters unless the specifications have been approved by EPD; and - Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation.	To register with EPD as a Chemical waste producer and store chemical waste in appropriate containers	Contractor	All construction works areas	V
S12.98	Chemical Waste Storage Area - Be clearly labeled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; - Be enclosed on at least 3 sides; - Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; - Have adequate ventilation; - Be covered to prevent rainfall from entering; and - Be properly arranged so that incompatible materials are adequately separated	To prepare appropriate storage areas for chemical waste at works areas	Contractor	All construction works areas	V
S12.99	Chemical Waste - Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants shall be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.	To clearly label the chemical waste at works areas	Contractor	works areas	V
S12.100	Collection and Disposal of Chemical Waste A trip-ticket system shall be operated in accordance with the Waste Disposal (Chemical Waste) (General) Regulation to monitor all movements of chemical waste. The Contractor shall employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To monitor the generation, reuse and disposal of chemical waste	Contractor	works areas	V
S12.101	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector shall be employed by the contractor to	To properly store and separate from other C&D materials for	Contractor	works areas	V



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	remove general refuse from the site, separately from C&D materials	subsequent collection			
	and chemical wastes. Preferably, an enclosed and covered area shall be provided to reduce the occurrence of wind-blown light material	and disposal			
S12.102	General Refuse (con't) The recyclable component of general refuse,	To facilitate recycling	Contractor	works areas	V
	such as aluminum cans, paper and cleansed plastic containers shall be	of recyclable portions			
	separated from other waste. Provision and collection of recycling bins	of refuse			
	for different types of recyclable waste shall be set up by the Contractor.				
	The Contractor shall also be responsible for arranging recycling companies to collect these materials				
S12.103	3 General Refuse (con't) The Contractor shall carry out an education	To raise workers'	Contractor	works areas	V
	programme for workers in avoiding, reducing, reusing and recycling of	awareness on			
	materials generation. Posters and leaflets advising on the use of the	recycling issue			
	bins shall also be provided in the sites as reminders.				

Legend: V = implemented; x = not implemented; @ = partially implemented; N/A = not applicable