MTR Corporation Limited

Shatin to Central Link –
Hung Hom to Admiralty Section

Monthly EM&A Report No. 24

[Period from 1 to 30 April 2016]

(May 2016)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 11 MAY 2016

MTR Corporation Limited

Shatin to Central Link –
Hung Hom to Admiralty Section

Monthly EM&A Report No. 24

[Period from 1 to 30 April 2016]

(May 2016)

Certified by: Richard Kwan

Position: Environmental Team Leader

Date: 11 May 2016

AECOM

MTR Corporation Limited

Consultancy Agreements
No. C11033B

Shatin to Central Link - Hung Hom to Admiralty Section

Monthly EM&A Report No. 24

[Period from 1 to 30 April 2016]

	Name	Signature
Prepared & Checked:	Joanne Tsoi	
Reviewed & Approved:	Josh Lam	

Version: A	Date: **11 May 2016**

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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/D) was issued by Director of Environmental Protection (DEP) on 5 February 2016.

1.2 Project Programme

1.2.1 Six 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 2021[1]. 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	NSL Cross Harbour Tunnels	March 2015	Penta-Ocean – China State JV	Cinotech Consultants Ltd. (Cinotech)
1123	Exhibition Station and Western Approach Tunnels	June 2015	Leighton – China State JV	AECOM Asia Co. Ltd.
1126(1)	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(2)	SCL – Advance Works for NSL	May 2014	Hsin Chong Construction Co. Ltd.	AECOM Asia Co. Ltd.
11227(3)	Advance Works for NSL Cross Harbour Tunnels	August 2014	Concentric-Hong Kong River Joint Venture	Cinotech Consultants Ltd. (Cinotech)

Note:
(1) Construction works under Works Contract 1126 was completed on 17 May 2015.
(2) Construction works under Works Contract 1129 was completed on 20 July 2015.
(3) Construction works in Victoria Harbour and Shek O Casting Basin under Works Contract 11227 were completed on 15 and 20 December 2014 respectively.

[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.

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 twenty-fourth 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 30 April 2016.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1 EM&A Results

2.1.1 The EM&A Report for Works Contracts 1128, 1121 and 1123 prepared by the respective Contractor's ETs are provided in **Appendices A** to **C** 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

Works Contract	Site	Construction Activities
1121	Shek O	• Construction of IMT Bottom Plate; • Steel Formwork Erection; • Base Slab Rebar Fixing Concreting. • Wall and Roof Rebar Fixing; • IMT Wall & Roof Concreting ; • Collar Plate Installation; and • Roof Formwork Shelter Construction.
	Victoria Harbour	• Installation of Pipe Pile Wall and Steel Pile Wall for Cofferdam in Hung Hom; • Construction of Marine Platform in Hung Hom; • Grouting Curtain (Land side and Marine side) in Hung Hom; • Sand Backfill and Geotextile Installation for the Cofferdam Wall at Hung Hom; • Seawall Pre-boring for Sheet Pile Installation at Hung Hom; • Pump Well Construction at Hung Hom; • Trench Dredging Works for IMT alignments at Victoria Harbour; • Piling Works outside CBTS; • Installation of Seawall Blocks at CBTS Breakwater; and • Demolition of Finger Pier Barge Ramp No.1. •
1123	Exhibition Station (PTI Area)	• Utilities Diversion/ Protection • Provision of Temporary Footbridge • Demolition Ferry Pier Footbridge • Prebored socket H-Piles (PBSH) & King Post • Diaphragm Wall Works • Remove Temporary PTI and Reinstatement
	Exhibition Station (Swimming Pool Area)	• Diaphragm Wall Works
	Exhibition Station (Tunnel at Tonnochy Road)	• Diaphragm Wall Works
	Western Approach Tunnel WAT Area A	• Diaphragm Wall Works
	Western Vent Shaft (WVS)	• Diaphragm Wall Works
1128	Area W1	• TBM Up-track Exacvation, • Precast Ring Installation
	Area W2	• Pre-bored H-pile; • D-wall Construction and • Tower Crane Erection
	Area W3	• Pile Removal at Percival Street Footbridge; • Steel Frame Erection for CHT Footbridge
	Area W3.5.2	• Lean Mix Column Construction

Works Contract	Site	Construction Activities
	AreaW4a	• Pile Removal Works
	Area W4b	• Jet Grouting for Light Parking Plug
	Area W6	• Ground Treatment for West Trunk Sewer; • Left-in Sheetpile Removal; • Grouting Work at Marsh Rd-HKE Building and • Pile Detection at Marsh Road West-Footpath
	Area W8	• Area 1 – 140T Gantry Crane Installation and Pumping Test; • Area 2 – D-wall Construction
	Area W10 - SVB	• Cavern Excavation
	Lung King Street	• TTMS to Shift Traffic Lane for Further Pile Detection
	Area W15 & W16	• Pile Investigation Works

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 Levels of 24-hr TSP, construction noise and water quality parameters due to the Project construction were recorded. Results of air quality, construction noise and 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 **C**).

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

Monitoring Station ID	Location	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1121[(1)]					
Works Contract 1123					
AM3	Existing Harbour Road Sports Centre[(2)]	53.1 – 88.6	169	260	No
Works Contract 1123 and 1128					
AM2	Wan Chai Sports Ground[(3)(4)]	34.1 – 69.0	160	260	No
Works Contract 1128					
AM4	Pedestrian Plaza	65.8– 116.0	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) Dust monitoring at AM3 (Existing Harbour Road Sports Centre) was handed over from Works Contract 1126 to Works Contract 1123 in June 2015.
(3) 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.
(4) 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

Monitoring	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))	Limit	Exceedance

Station ID		Measured	Baseline	Corrected[(1)]	Level (dB(A))	due to the Project Construction (Yes/No)
Works Contract 1121[(2)]						
Works Contract 1123						
NM2[(3)(4)(5)]	Harbour Centre	67.9 – 72.7	69.6	<Baseline – 69.8	75	No
Work Contract 1128[(6)]						
NM1	Hoi Kung Court	69.6 – 71.3	71	< Baseline – 59.5	75	No

Note:
(1) The measured noise levels are corrected against the corresponding baseline noise levels.
(2) No construction noise monitoring is required under Works Contract 1121.
(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, agreed by IEC and EPD's formal approval is awaited in August 2014. 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 Habour 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 Marine Water Quality Monitoring Results in the Reporting Period [(1)]

Locations		Parameters		
		Depth-averaged Dissolved Oxygen (mg/L)	Depth-averaged Turbidity (NTU)	Depth-averaged Suspended Solids (mg/L)
Shek O Casting Basin [(2)]				
Victoria Harbour (Wet Season) [(3)]				
21	Mean	7.2	4.5	4.9
	Range	6.6 – 8.6	1.6 – 6.8	3.0 – 6.8
34	Mean	7.2	4.7	4.6
	Range	6.3 – 7.9	2.7 – 7.1	3.0 – 6.8
9	Mean	7.1	3.9	4.6
	Range	5.2 – 8.6	1.0 – 6.6	3.0 – 6.5
Action Level		2.8	11.3	6.9
Limit Level		2.7	17.2	9.1
Exceedance (Yes/No)		No	No	No
A	Mean	7.3	4.0	5.0
	Range	6.5 – 8.3	2.8 – 4.5	3.3 – 5.8
WSD17	Mean	7.5	4.1	4.8
	Range	6.9 – 9.0	2.8 – 4.6	2.7 – 5.8
WSD9	Mean	7.4	3.9	4.6
	Range	6.6 – 8.7	2.2– 4.6	<2.5 – 5.8
Action Level		<2.1	4.7	6.0
Limit Level		<2	6.5	6.0
Exceedance (Yes/No)		No	No	No

Locations		Parameters		
		Depth-averaged Dissolved Oxygen (mg/L)	Depth-averaged Turbidity (NTU)	Depth-averaged Suspended Solids (mg/L)
C1	Mean	7.4	3.8	4.5
	Range	6.7 – 8.6	2.4 – 4.6	3.3 – 5.8
C2	Mean	7.5	3.9	4.8
	Range	6.8 – 8.8	3.0 – 4.5	3.2 – 5.8

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 has not yet commenced in the reporting month, and thus no water quality monitoring was conducted during the reporting period.

(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 complaints,notification of summons and successful prosecutions were received 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

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
	Reporting Month	Reporting Month	Reporting Month
1121	0	0	0
1123	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.

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/D). 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/D)	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	3 Feb 2015
Condition 2.5	Management Organisation of Main Construction Companies	15 Apr 2015
Condition 2.6	Construction Programme and EP Submission Schedule	15 Apr 2015
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP) Works Contract 1126: Construction Noise Mitigation Measures Plan (CNMMP) Works Contract 1123: Construction Noise Mitigation Measures Plan (CNMMP)	 9 Jun 2014 (1st Submission) 24 Apr 2015 (1st Submission) 7 Jul 2015 (2nd Submission) 2 Oct 2015 (3rd Submission)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP) Works Contract 1126: Continuous Noise Monitoring Plan (CNMP) Works Contract 1123: Continuous Noise Monitoring Plan (CNMP)	 9 Jun 2014 (1st Submission) 24 Apr 2015 (1st Submission) 7 Jul 2015 (2nd Submission)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1st Submission) 12 Sep 2012 (2nd Submission) 15 Oct 2012 (approved)
Condition 2.10	Works Contract 11227: Silt Curtain Deployment Plan for Trial Trenching in Victoria Harbour Works Contract 1121: Silt Curtain Deployment Plan for Hung Hom Landfall and Trial Trench in Victoria Harbour	11 Jul 2014 17 Feb 2015 (1st Submission) 2 Apr 2015 (2nd Submission) 27 Oct 2015 (3rd Submission) 29 March 2016 (4th Submission)
Condition 2.11	Works Contract 11227: Silt Screen Deployment Plan Works Contract 1121: Silt Screen Deployment Plan	11 Jul 2014 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) 3 Jul 2014 (4th 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)
Condition 2.23.1	Works Contract 11227: Silt Curtain Deployment Plan for Shek O	23 Jul 2014 (1st Submission) 31 Jul 2014 (approved)

EP Condition (EP-436/2012/D)	Submission	Submission date
	Works Contract 1121: Silt Curtain Deployment Plan for Shek O	4 Feb 2015 (1st Submission) 4 Mar 2015 (2nd 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 (3rd Submission) 7 Jun 2013 (approved)
Condition 3.3	Baseline Monitoring Report (for noise and air quality)	4 Dec 2013 (1st Submission) 5 Feb 2014 (2nd Submission)
	Baseline Water Quality Monitoring Report	23 Sep 2014 (1st Submission) 18 Dec 2014 (2nd Submission)
	Baseline Water Quality Monitoring Report for Temporary Marine Works at Shek O Casting Basin	8 Jul 2014 (1st Submission) 11 Aug 2014 (2nd Submission)
Condition 3.4	Monthly EM&A Reports No.1 - 22 Final EM&A Review Report for Works Contract 11227 Final EM&A Review Report for Works Contract 1126 Monthly EM&A Report No.23	Reported in previous Monthly EM&A Reports 12 Feb 2015 25 Jun 2015 (1st Submission) 4 Sep 2015 (2nd Submission) 14 April 2016

Appendix A

Monthly EM&A Report for April 2016 – SCL Works Contract 1128 South Ventilation Building to Admiralty Tunnels

AECOM

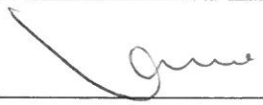
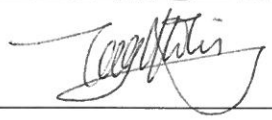
Dragages Bouygues J.V.

Shatin to Central Link -
Hung Hom to Admiralty Section

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

Monthly EM&A Report for
April 2016

[May 2016]

	Name	Signature
Prepared & Checked:	Lemon Lam	
Reviewed, Approved & Certified:	Y T Tang (Contractor's Environmental Team Leader)	

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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 30 April 2016. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Area W1	• TBM Up-track Excavation & Precast Ring Installation
Area W2	• Pre-bored H-pile, D-wall construction and tower crane erection
Area W3	• Pile removal at Percival Street Footbridge and steel frame erection for CHT footbridge
Area W3.5.2	• Lean mix column construction
Area W4a	• Pile removal works
Area W4b	• Jet grouting for light parking plug
Area W6	• Ground treatment for West Trunk Sewer, Left-in sheetpile removal, Grouting work at Marsh Rd-HKE building and Pile detection at Marsh Road West-Footpath
Area W8	• Area 1 – 140T Gantry crane installation and pumping test • Area 2 – D-wall construction
Area W10 – SVB	• Cavern excavation
Lung King Street	• TTMS to shift traffic lane for further pile detection
Area W15 & W16	• Pile investigation works

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.

Complaint, Notification of Summons and Successful Prosecution

No environmental complaint and no 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
Area W1	• Segment Delivery • Concrete Spoil Basin Wall
Area W2	• STP Installation, Construction for SOV
Area W3	• Pile Removal at Percival Footbridge
Area W3.5.2	• Concrete Column for SP5
Area W4a	• Pile Removal at Canal Road Culvert
Area W4b	• Light TBM parking plug at Canal Road Flyover
Area W6	• Excavation Work For Sheet Pile Removal • Exposed HEC Cable • Ground Treatment of West Tunnel Sewer and HEC Building
Area W8	• Erection of gantry crane, Cavern Excavation, D-wall Construction
Lung King Street	• TTMS to shift traffic lane for further pile detection at Fleet Arcade
Area W15 & W16	• Pile Detection at Fenwick Pier Street, Road Construction for Traffic Diversion

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

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 eighteenth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 30 April 2016.

1.2 Report Structure

1.2.1 This monthly EM&A Report is orgainised 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/D) was issued by the Director of Environmental Protection (DEP) on 5 February 2016.

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;
(l) 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.

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 W1	• TBM Up-track Excavation & Precast Ring Installation
Area W2	• Pre-bored H-pile, D-wall construction and tower crane erection
Area W3	• Pile removal at Percival Street Footbridge and steel frame erection for CHT footbridge
Area W3.5.2	• Lean mix column construction
Area W4a	• Pile removal works
Area W4b	• Jet grouting for light parking plug
Area W6	• Ground treatment for West Trunk Sewer, Left-in sheetpile removal, Grouting work at Marsh Rd-HKE building and Pile detection at Marsh Road West-Footpath
Area W8	• Area 1 – 140T Gantry crane installation and pumping test • Area 2 – D-wall construction
Area W10 – SVB	• Cavern excavation
Lung King Street	• TTMS to shift traffic lane for further pile detection
Area W15 & W16	• Pile investigation works

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
MTR	Residential Engineer (ER)	Construction Manager	Mr. Thomas Neil De Rye, BARRETT	2171 3610	2171 3609
		SCL Project Environmental Team Leader	Mr. Richard Kwan	2688 1283	2993 7577
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
JV	Contractor	Project Director	Mr. Alain Hervio	6112 9197	2171 3715
		Environmental Manager	Mr. Marcus Cheung	6628 2685	
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	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. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-436/2012/D	5-Feb-16	-	Valid	-
Construction Noise Permit				
GW-RS1280-15	19-Nov-15	18-May-16	Valid	Section of Wan Shing Street between Wan Ying Street and Hung Hing Road (W6) – East + West Ground Investigation
GW-RS1299-15	26-Nov-15	23-May-16	Valid	Former Tunnel Approach Rest Garden (W4) – Pile Removal
GW-RS1440-15	1-Jan-16	29-Jun-16	Valid	An area of Tunnel Approach Rest Garden near Hung Hing Road Flyover (W3)
GW-RS0036-16	14-Jan-16	11-Jul-16	Valid	An area near Lung King Street and Convention Avenue (W8) – FPP Grouting Modified
GW-RS0029-16	14-Jan-16	12-Jul-16	Valid	An area at Gloucester Road near Marsh Road Station Building (W5)
GW-RS0065-16	29-Jan-16	27-Jul-16	Valid	An area at Gloucester Road near Marsh Road Station Building (W5) - Individual PME group for grouting
GW-RS0250-16	14-Mar-16	13-Sep-16	Valid	Lung King Street near DSD Screening Plant (W14)
GW-RS0288-16	23-Mar-16	30-Apr-16	Valid	Ex-Police Officers' Club (W1+W2)
GW-RS0336-16	7-Apr-16	4-Oct-16	Valid	Construction site at Gloucester Road near Hung Hing Road (W4) – Jet Grouting
GW-RS0392-16	22-Apr-16	21-Oct-16	Valid	Victoria Park Road near Police Officer Club (W1) – Rock Excavation + Noise Cover + TBM assembly
GW-RS0414-16	28-Apr-16	31-Jul-16	Valid	Wan Chai Sport Ground
Wastewater Discharge License				
WT00020473-2014	09-Dec-14	31-Dec-19	Valid	Gloucester Road near Hung Hing Road (W4)
WT00021519-2015	04-May-15	31-May-20	Valid	Between Percival Street Footbridge and Hung Hing Road Flyover (W3)
WT00022596-2015	22-Sep-15	30-Sep-20	Valid	Gloucester Road near Marsh Road Station Building (W5)

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
WT00022781-2015	3-Nov-15	30-Nov-20	Valid	Works Area at Green Zone
WT00022907-2015	16-Nov-15	31-Dec-19	Valid	Works Area at POC(W1 + W2)
WT00023987-2016	10-Mar-16	31-Mar-20	Valid	Junction of Lung King Street and Convention Avenue (W8)
WT00023988-2016	10-Mar-16	31-Dec-19	Valid	Wang Shing Street (W6)
WT00023989-2016	10-Mar-16	31-Dec-19	Valid	Lung King Street near DSD Screening Plant (W14)
Chemical Waste Producer Registration				
5213-135-D2551-01	16-Dec-14	End of the Project	Valid	Gloucester Road near Hung Hing Road (W4)
5213-134-D2552-01	16-Dec-14	End of the Project	Valid	Lung King Street near DSD Screening Plant (W14)
5111-151-D2552-02	05-Jan-15	End of the Project	Valid	Victoria Park Road near POC (W1)
Billing Account for Construction Waste Disposal				
7020686	15-Sep-14	End of Contract	Valid	For disposal of C&D waste to public fills and landfills
Notification Under Air Pollution Control (Construction Dust) Regulation				
378806	02-Sep-14	End of Contract	Valid	For Wan Chai, Causeway Bay, Hong Kong Island
380227	07-Oct-14	End of Contract	Valid	For Gloucester Road near Cross Harbour Tunnel
380228	07-Oct-14	End of Contract	Valid	Near Convention Avenue and Fenwick Pier Street, HK Island

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:10273))
Calibration Kit	TISCH Environmental Orifice (Model TE-5025A (Orifice I.D.: 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 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.
(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 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/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.

(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 April 2016 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 3.2**.

Table 3.4 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. B&K2238 (S/N: 2800927), (S/N: 2800930))
Acoustic Calibrator	Rion (Model No. NC-73 (S/N: 10307223))

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 3.4** 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: $L_{eq(30\text{-minutes})}$ 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}, L_{10} and L_{90} 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 April 2016 is provided in **Appendix F**.

3.3 Landscape and Visual

3.3.1 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 (EP-436/2012/D)	Monthly EM&A Report for March 2016	14 April 2016

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 ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM2#	51.7	34.1 – 69.0	160	260
AM4	92.8	65.8 – 116.0	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 Action and Limit Level exceedance was recorded for 24-hour TSP monitoring at the monitoring location in the reporting month.

5.1.3 The event and action plan is annexed in **Appendix H**.

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 – 59.5	75

(*) Baseline correction will be made to the measured L_{eq} 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.

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 11,179.4m^3 of inert C&D material was generated (5,385.1m^3 was disposed of as fill bank at TKO137, 26.0m^3 was disposed of fill bank at TM38, 747.0m^3 was disposed of as public fill at CWPFBP, 4,814.0m^3 was reused by WDII project and 207.3m^3 was reused by CWB project) in the reporting month. 27.3m^3 general refuse was generated in the reporting month. No metals, no paper/cardboard packaging material and no plastic was collected by recycling contractor in the reporting month. No inert C&D materials were reused on site. No chemical waste was collected by licensed contractor in the reporting period.

5.3.3 SCL1128 has started to deliver the spoil to WDII and CWB for beneficial use since April 2016. If spoil could not be fully utilized by WDII in their site in the future, spoil will be transported to Mainland China for reuse. The waste flow table is annexed in **Appendix K**.

5.3.4 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.

5.3.5 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.

5.4 Landscape and Visual

5.4.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 April 2016. 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**.

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 5, 11, 18 and 25 April 2016. Joint inspection with the IEC, ER, the Contractor and the ET was conducted on 11 April 2016. 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	5 Apr 16	• Open stockpile was observed at W1. The Contractor should cover the stockpile when not in use and spray with water for dust suppression.	The item was rectified by the Contractor on 6 Apr 16.
		• Reminder: The Contractor was reminded to provide sufficient wheel washing facility on site to prevent carrying site material from site to public area.	The item was improved by the Contractor on 7 Apr 16.
	11 Apr 16	• Mud trail was observed at the public road near site entrance of W8. The Contractor was advised to remove the mud trail and ensure the wheels were properly washed before vehicle leave the site.	The item was rectified by the Contractor on 13 Apr 16.
	18 Apr 16	• Reminder: The Contractor was reminded to water and keep the haul road clean to minimize dust impact.	The item was rectified by the Contractor on 19 Apr 16.
Noise	Nil	• Nil	Nil
Water Quality	11 Apr 16	• Reminder: Stagnant water was observed accumulated on ground in W1 especially near the wheel washing facility due to rainfall. The Contractor was reminded to provide mitigation measure, ie. more pump, and review the capacity of the water flow on site.	The item was rectified by the Contractor on 11 Apr 16.
	18 Apr 16	• Wastewater treatment facility was observed inefficient after rainstorm at W1. The Contractor should keep monitor and maintain the plant frequently to ensure the water quality is in compliance with the discharge license conditions.	The item was rectified by the Contractor on 20 Apr 16.
Waste/ Chemical Management	5 Apr 16	• Chemical containers placed on ground without drip tray was observed at W1. The Contractor should store the chemical containers with drip tray to retain leakage, if any.	The item was rectified by the Contractor on 6 Apr 16.
	11 Apr 16	• Chemical containers were observed without secondary containment at W1, W8 and W14. The Contractor was advised to provide drip tray to avoid potential spillage.	The item was rectified by the Contractor on 15 Apr 16.
		• Drain hole of the drip tray at W1 and W8 was not plugged, while oil stain was observed next to that drip tray at W1. The Contractor was advised to remove the oil stain and dispose of as chemical waste, and ensure the drain holes were plugged properly.	
		• Reminder: Oil mixture was observed accumulated in drip tray at W8 and W14 after rain. The Contractor was reminded to remove the oily mixture and dispose of as chemical waste.	
	18 Apr 16	• Oil stain was observed at W1. The Contractor should remove the oil stain and dispose of as chemical waste properly.	The item was rectified by the Contractor on 19 Apr 16.
	25 Apr 16	• Chemical containers were observed without secondary containment at W8 and W14. The Contractor was advised to provide drip tray to avoid potential spillage.	The item was rectified by the Contractor on 28 Apr 16.
Landscape & Visual	Nil	Nil	Nil
Permits/ Licenses	Nil	Nil	Nil

6.1.3 All 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.

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**.

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works in between May 2016 and July 2016 will be:

Location	Site Activities
Area W1	• Segment Delivery • Concrete Spoil Basin Wall
Area W2	• STP Installation, Construction for SOV
Area W3	• Pile Removal at Percival Footbridge
Area W3.5.2	• Concrete Column for SP5
Area W4a	• Pile Removal at Canal Road Culvert
Area W4b	• Light TBM parking plug at Canal Road Flyover
Area W6	• Excavation Work For Sheet Pile Removal • Exposed HEC Cable • Ground Treatment of West Tunnel Sewer and HEC Building
Area W8	• Erection of gantry crane, Cavern Excavation, D-wall Construction
Lung King Street	• TTMS to shift traffic lane for further pile detection at Fleet Arcade
Area W15 & W16	• Pile Detection at Fenwick Pier Street, Road Construction for Traffic Diversion

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 May 2016 and July 2016 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 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 4 nos. of environmental site inspections were carried out in April 2016. 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 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

- Implement effective measures to avoid dust impact and provide sufficient wheel washing facility on site to avoid carrying site material to public.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Implement effective/preventive measures to avoid surface runoff from site and well maintain of the wastewater treatment facility to ensure the water quality is in compliance with the discharge license conditions.

Chemical and Waste Management

- Provide proper chemical and waste handling management.

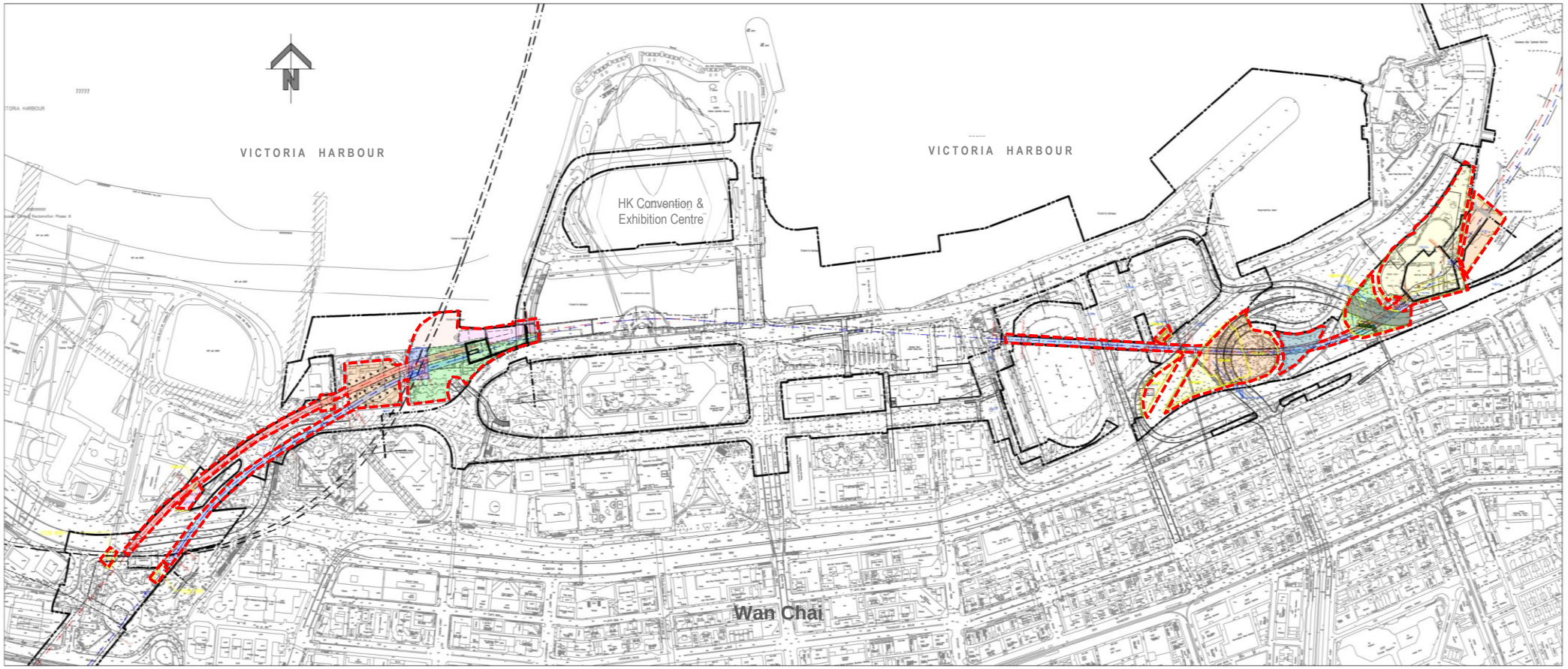
Landscape & Visual Impact

- No specific observation was identified in the reporting month.

Permits/licenses

- No specific observation was identified in the reporting month.

FIGURES

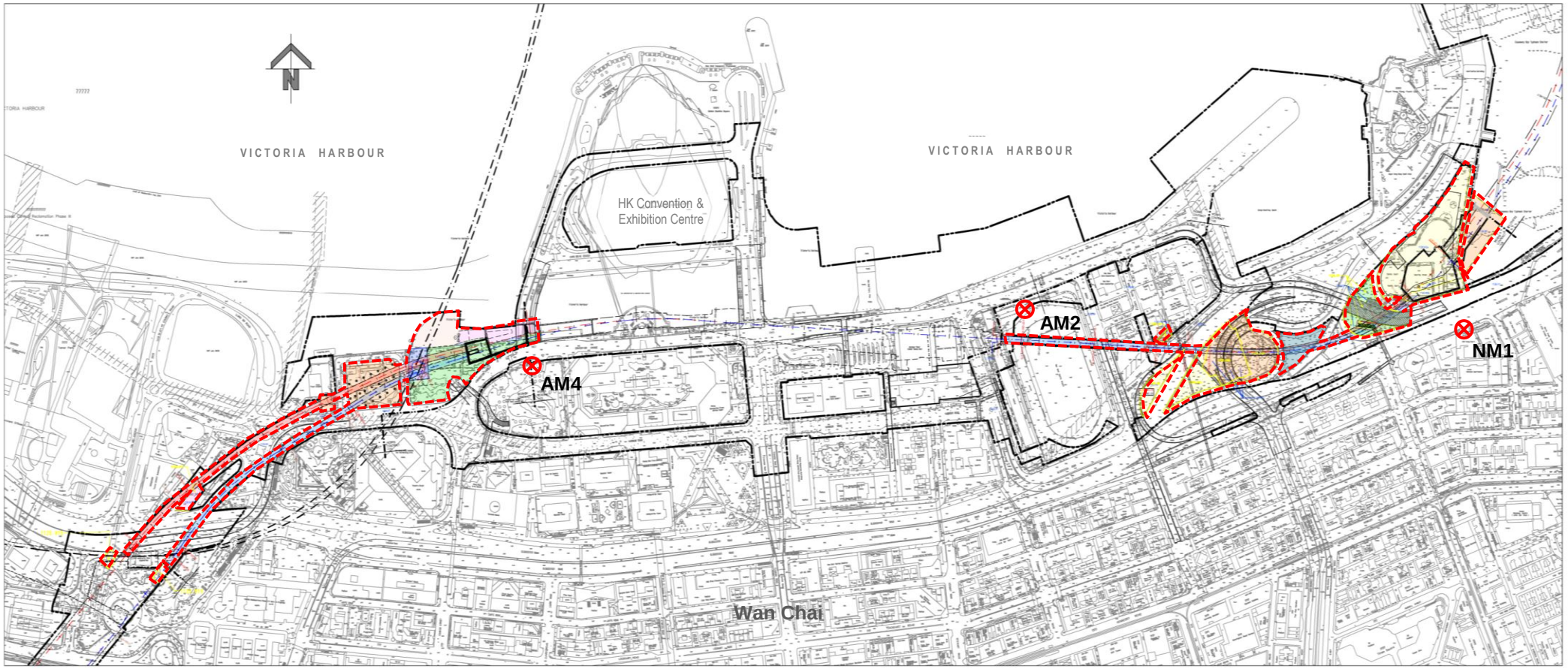


SCL Contract 1128
South Ventilation Building to Admiralty Tunnels

AECOM

SITE LAYOUT PLAN of SCL1128

Project No.: 60331173 **Date: February 2016** **Figure 1.1**



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

* The noise monitoring at NM1 was handed-over from SCL1129 in August 2015.

SCL Contract 1128

South Ventilation Building to Admiralty Tunnels

AECOM

Air Quality and Noise Monitoring Loactions

Project No.: 60331173 **Date: February 2016** **Figure 3.1**

APPENDIX A

Construction Programme

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
SCL 1128 - SOV to Admiralty Tunnel_3 Month Rolling Programme (Apr-16)						
Contract Dates						
Schedule of Access Dates for Works Areas						
Early Possession Date/ Access Date						
01128.EAD330	1128.W17	0	04-Jul-16*		0%	0
Late Possession Date/ Access Date						
01128.LAD330	1128.W17	0	25-Jul-16*		0%	0
Cost Centre B - Cut & Cover Tunnel to SOV (Advance Shaft)						
Design Submission						
C&C Tunnel in Advance Launch Shaft at Area W1 (Alternative Scheme)						
01128.BDS00270	Stage 1 - Draft Detailed Design Submission Preparation & Submission with ICE	48	05-Jan-16 A	07-Jun-16	80%	31
01128.BDS00280	Stage 1 - DDDS Review & Comments by Engineer	14	08-Jun-16	21-Jun-16	0%	14
01128.BDS00290	Stage 2 - Detailed Design Submission Preparation & Submission with ICE	36	22-Jun-16	03-Aug-16	0%	36
01128.BDS00300	Stage 2 - DDS Review & Approval by BD/RDO	28	04-Aug-16	31-Aug-16	0%	28
Vent. Duct						
01128.BDS00400	Stage 2 - Detailed Design Submission Preparation & Submission with ICE	33	07-Mar-16 A	30-Jun-16	65%	50
01128.BDS00410	Stage 2 - DDS Review & Approval by BD/RDO	28	01-Jul-16	28-Jul-16	0%	28
01128.BDS00420	Stage 3 - Working Drawings Submission	6	29-Jul-16	03-Aug-16	0%	6
Cost Centre C - South Ventilation Building (SOV)						
Design Submission						
Temporary ELS - Part 2 Struting Design						
01128.CDS00160	Stage 1 - Draft Detailed Design Submission Preparation & Submission with ICE	28	14-Aug-15 A	06-May-16	90%	5
01128.CDS00170	Stage 1 - DDDS Review & Comments by Engineer	14	07-May-16	20-May-16	0%	14
01128.CDS00230	Stage 2 - Detailed Design Submission Preparation & Submission with ICE	4	21-May-16	24-May-16	0%	4
01128.CDS00240	Stage 2 - DDS Review & Approval by BD/RDO	28	25-May-16	27-Jun-16	0%	28
01128.CDS00250	Stage 3 - Working Drawings Submission	6	28-Jun-16	05-Jul-16	0%	6
Foundation, Excavation & Structure						
Piling works for SOV						
01128.CCC000310	Pre-bored H-pile (HP44)	6	29-Feb-16 A	04-Mar-16 A	100%	0
01128.CCC000300	Pre-bored H-pile (HP43)	6	04-Mar-16 A	09-Mar-16 A	100%	0
01128.CCC000170	Pre-bored H-pile (HP11)	6	10-Mar-16 A	11-Mar-16 A	100%	0
01128.CCC000220	Pre-bored H-pile (HP18)	6	01-Mar-16 A	11-Mar-16 A	100%	0
01128.CCC000230	Pre-bored H-pile (HP19)	6	03-Mar-16 A	11-Mar-16 A	100%	0
01128.CCC000240	Pre-bored H-pile (HP20)	6	08-Mar-16 A	16-Mar-16 A	100%	0
01128.CCC000180	Pre-bored H-pile (HP13)	6	07-Mar-16 A	16-Mar-16 A	100%	0
01128.CCC000250	Pre-bored H-pile (HP21)	6	09-Mar-16 A	17-Mar-16 A	100%	0
01128.CCC000190	Pre-bored H-pile (HP14)	6	07-Mar-16 A	17-Mar-16 A	100%	0
01128.CCC000260	Pre-bored H-pile (HP32)	6	14-Mar-16 A	21-Mar-16 A	100%	0
01128.CCC000270	Pre-bored H-pile (HP33)	6	17-Mar-16 A	22-Mar-16 A	100%	0
01128.CCC000280	Pre-bored H-pile (HP37)	6	18-Mar-16 A	24-Mar-16 A	100%	0
01128.CCC000340	Pre-bored H-pile (HP61)	6	12-Mar-16 A	24-Mar-16 A	100%	0
01128.CCC000290	Pre-bored H-pile (HP38)	6	19-Mar-16 A	29-Mar-16 A	100%	0
01128.CCC000350	Pre-bored H-pile (HP62)	6	29-Mar-16 A	12-Apr-16 A	100%	0
01128.CCC000400	Pre-bored H-pile (HP67)	6	31-Mar-16 A	13-Apr-16 A	100%	0
01128.CCC000370	Pre-bored H-pile (HP64)	6	09-Apr-16 A	14-Apr-16 A	100%	0

Last month's planned
Actual Work
Non Critical Activity
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Baseline Milestone
Milestone

11283MRP160430

SCL 1128 - SOV to Admiralty Tunnels

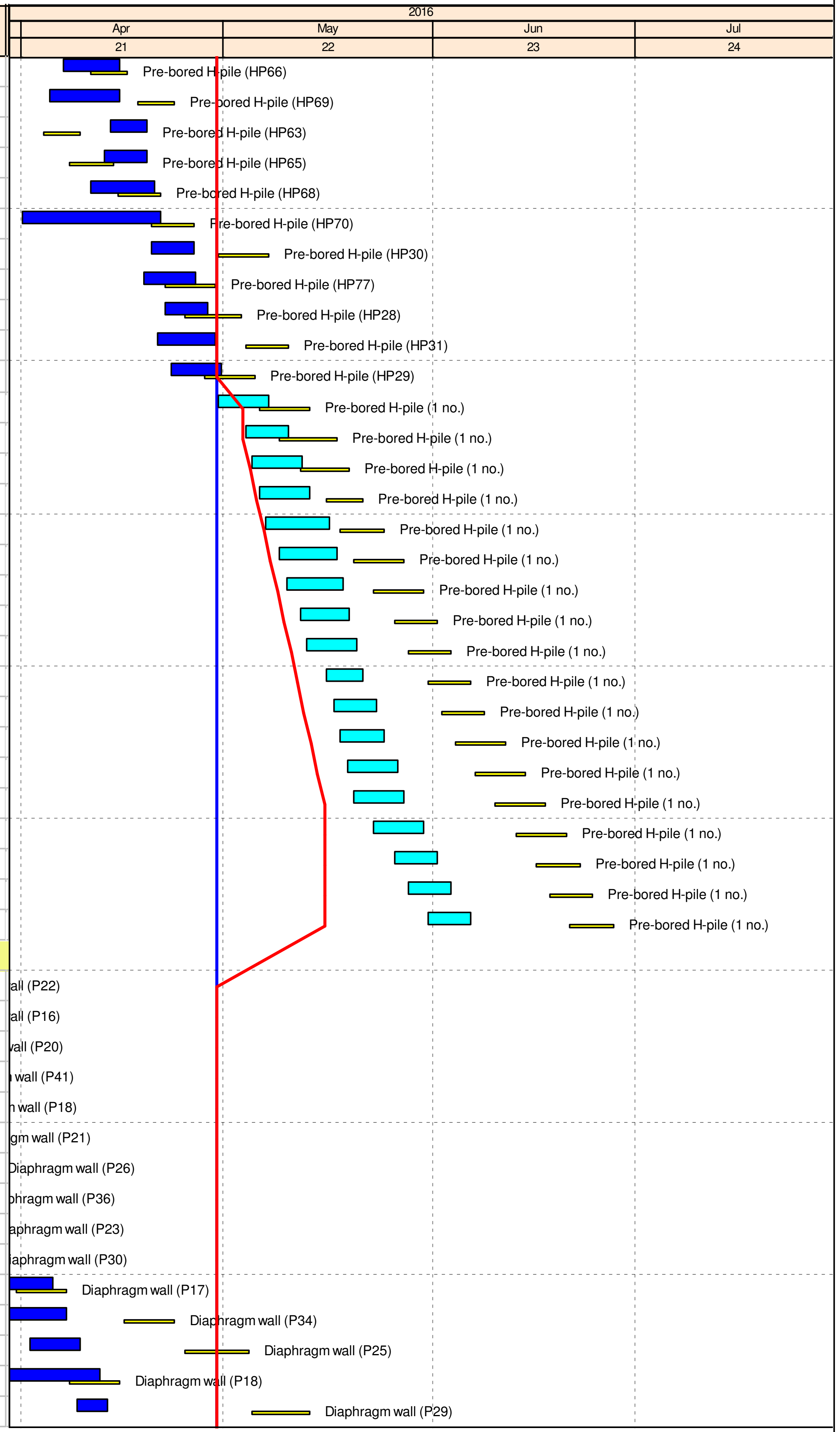
3 Month Rolling Programme (Data Date: 30-Apr-16)

1128

Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
01128.CCC000390	Pre-bored H-pile (HP66)	6	07-Apr-16 A	15-Apr-16 A	100%	0
01128.CCC000420	Pre-bored H-pile (HP69)	6	05-Apr-16 A	15-Apr-16 A	100%	0
01128.CCC000360	Pre-bored H-pile (HP63)	6	14-Apr-16 A	19-Apr-16 A	100%	0
01128.CCC000380	Pre-bored H-pile (HP65)	6	13-Apr-16 A	19-Apr-16 A	100%	0
01128.CCC000410	Pre-bored H-pile (HP68)	6	11-Apr-16 A	20-Apr-16 A	100%	0
01128.CCC000430	Pre-bored H-pile (HP70)	6	01-Apr-16 A	21-Apr-16 A	100%	0
01128.CCC000470	Pre-bored H-pile (HP30)	6	20-Apr-16 A	26-Apr-16 A	100%	0
01128.CCC000440	Pre-bored H-pile (HP77)	6	19-Apr-16 A	27-Apr-16 A	100%	0
01128.CCC000450	Pre-bored H-pile (HP28)	6	22-Apr-16 A	28-Apr-16 A	100%	0
01128.CCC000480	Pre-bored H-pile (HP31)	6	21-Apr-16 A	29-Apr-16 A	100%	0
01128.CCC000460	Pre-bored H-pile (HP29)	6	23-Apr-16 A	30-Apr-16 A	100%	0
01128.CCC000490	Pre-bored H-pile (1 no.)	6	30-Apr-16	07-May-16	0%	6
01128.CCC000500	Pre-bored H-pile (1 no.)	6	04-May-16	10-May-16	0%	6
01128.CCC000510	Pre-bored H-pile (1 no.)	6	05-May-16	12-May-16	0%	6
01128.CCC000520	Pre-bored H-pile (1 no.)	6	06-May-16	13-May-16	0%	6
01128.CCC000530	Pre-bored H-pile (1 no.)	6	07-May-16	16-May-16	0%	6
01128.CCC000540	Pre-bored H-pile (1 no.)	6	09-May-16	17-May-16	0%	6
01128.CCC000550	Pre-bored H-pile (1 no.)	6	10-May-16	18-May-16	0%	6
01128.CCC000560	Pre-bored H-pile (1 no.)	6	12-May-16	19-May-16	0%	6
01128.CCC000570	Pre-bored H-pile (1 no.)	6	13-May-16	20-May-16	0%	6
01128.CCC000580	Pre-bored H-pile (1 no.)	6	16-May-16	21-May-16	0%	6
01128.CCC000590	Pre-bored H-pile (1 no.)	6	17-May-16	23-May-16	0%	6
01128.CCC000600	Pre-bored H-pile (1 no.)	6	18-May-16	24-May-16	0%	6
01128.CCC000610	Pre-bored H-pile (1 no.)	6	19-May-16	26-May-16	0%	6
01128.CCC000620	Pre-bored H-pile (1 no.)	6	20-May-16	27-May-16	0%	6
01128.CCC000630	Pre-bored H-pile (1 no.)	6	23-May-16	30-May-16	0%	6
01128.CCC000640	Pre-bored H-pile (1 no.)	6	26-May-16	01-Jun-16	0%	6
01128.CCC000650	Pre-bored H-pile (1 no.)	6	28-May-16	03-Jun-16	0%	6
01128.CCC000660	Pre-bored H-pile (1 no.)	6	31-May-16	06-Jun-16	0%	6
Cofferdam						
01128.CCC001070	6. Diaphragm wall (P22)	12	01-Mar-16 A	09-Mar-16 A	100%	0
01128.CCC001140	9. Diaphragm wall (P16)	8	05-Mar-16 A	12-Mar-16 A	100%	0
01128.CCC001150	10. Diaphragm wall (P20)	7	08-Mar-16 A	14-Mar-16 A	100%	0
01128.CCC001130	8. Diaphragm wall (P41)	12	03-Mar-16 A	14-Mar-16 A	100%	0
01128.CCC001160	12. Diaphragm wall (P18)	6	14-Mar-16 A	16-Mar-16 A	100%	0
01128.CCC001170	13. Diaphragm wall (P21)	6	16-Mar-16 A	18-Mar-16 A	100%	0
01128.CCC00270	11. Diaphragm wall (P26)	12	11-Mar-16 A	21-Mar-16 A	100%	0
01128.CCC001050	7. Diaphragm wall (P36)	12	02-Mar-16 A	22-Mar-16 A	100%	0
01128.CCC001190	15. Diaphragm wall (P23)	6	19-Mar-16 A	23-Mar-16 A	100%	0
01128.CCC001180	14.Diaphragm wall (P30)	7	18-Mar-16 A	24-Mar-16 A	100%	0
01128.CCC001200	Diaphragm wall (P17)	7	22-Mar-16 A	05-Apr-16 A	100%	0
01128.CCC001220	Diaphragm wall (P34)	7	28-Mar-16 A	07-Apr-16 A	100%	0
01128.CCC001230	Diaphragm wall (P25)	7	02-Apr-16 A	09-Apr-16 A	100%	0
01128.CCC001210	Diaphragm wall (P18)	7	22-Mar-16 A	12-Apr-16 A	100%	0
01128.CCC001240	Diaphragm wall (P29)	7	09-Apr-16 A	13-Apr-16 A	100%	0



Last month's planned | Critical Activity
Actual Work | Baseline Milestone
Non Critical Activity | Milestone

11283MRP160430

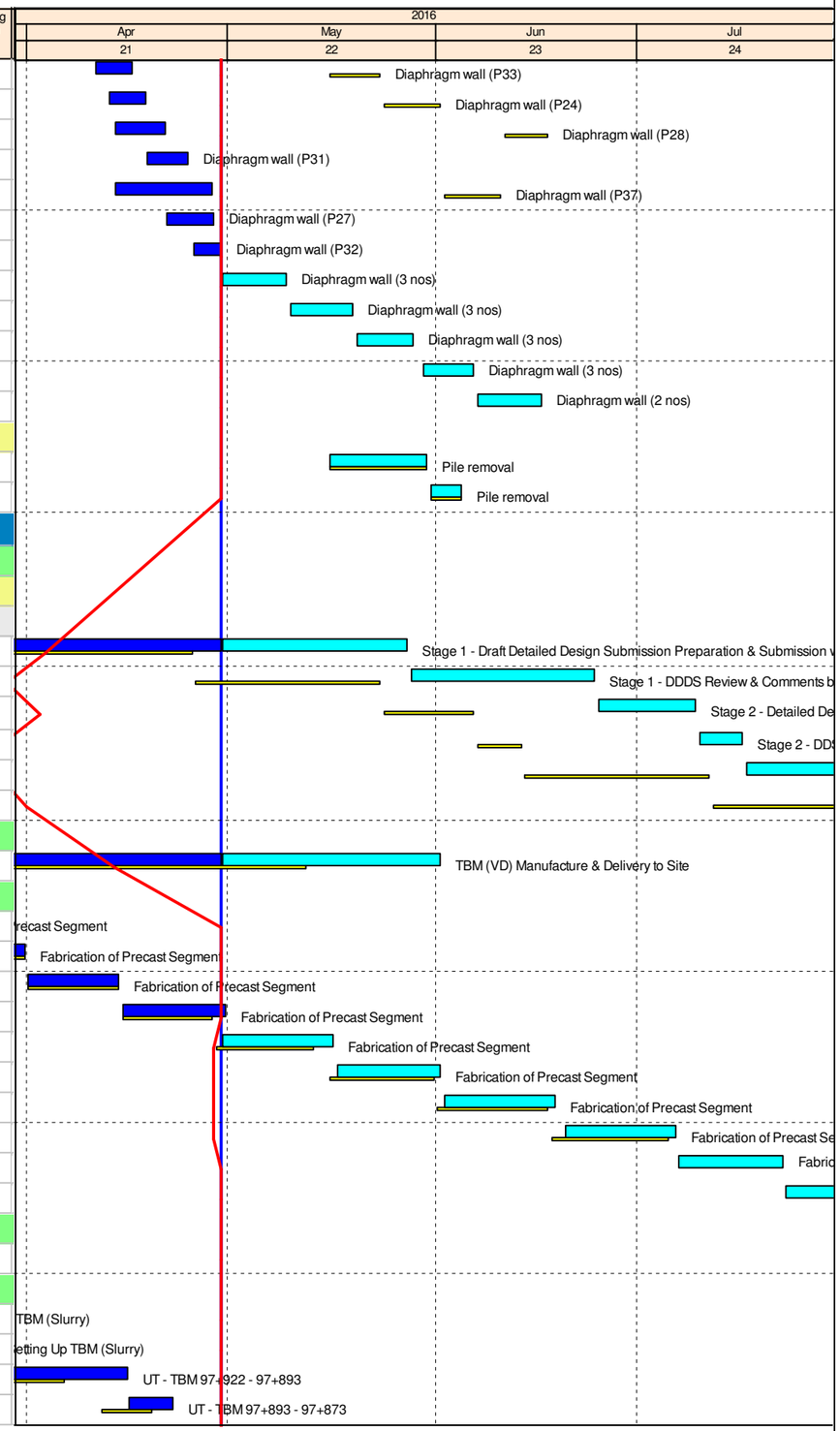
SCL 1128 - SOV to Admiralty Tunnels

3 Month Rolling Programme (Data Date: 30-Apr-16)

1128			
Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
01128.CCC001250	Diaphragm wall (P33)	7	11-Apr-16 A	16-Apr-16 A	100%	0
01128.CCC001260	Diaphragm wall (P24)	7	13-Apr-16 A	18-Apr-16 A	100%	0
01128.CCC001280	Diaphragm wall (P28)	7	14-Apr-16 A	21-Apr-16 A	100%	0
01128.CCC001290	Diaphragm wall (P31)	7	19-Apr-16 A	25-Apr-16 A	100%	0
01128.CCC001270	Diaphragm wall (P37)	7	14-Apr-16 A	28-Apr-16 A	100%	0
01128.CCC001300	Diaphragm wall (P27)	7	22-Apr-16 A	29-Apr-16 A	100%	0
01128.CCC001310	Diaphragm wall (P32)	7	26-Apr-16 A	30-Apr-16 A	100%	0
01128.CCC001320	Diaphragm wall (3 nos)	7	30-Apr-16	09-May-16	0%	7
01128.CCC001330	Diaphragm wall (3 nos)	7	10-May-16	19-May-16	0%	7
01128.CCC001340	Diaphragm wall (3 nos)	7	20-May-16	28-May-16	0%	7
01128.CCC001350	Diaphragm wall (3 nos)	7	30-May-16	06-Jun-16	0%	7
01128.CCC001360	Diaphragm wall (2 nos)	7	07-Jun-16	16-Jun-16	0%	7
Pile removal						
01128.CCC001110	Pile removal	12	16-May-16*	30-May-16	0%	12
01128.CCC001120	Pile removal	5	31-May-16	04-Jun-16	0%	5
Cost Centre D - SOV to EXH TBM Tunnels						
Design Submission						
Cast-insitu Lining TBM Tunnel Lining Design						
DDA						
01128.DDS00760	Stage 1 - Draft Detailed Design Submission Preparation & Submission with ICE	28	21-Mar-16 A	27-May-16	30%	22
01128.DDS00770	Stage 1 - DDDS Review & Comments by Engineer	28	28-May-16	24-Jun-16	0%	28
01128.DDS00780	Stage 2 - Detailed Design Submission Preparation & Submission with ICE	12	25-Jun-16	09-Jul-16	0%	12
01128.DDS00790	Stage 2 - DDS Review & Approval by BD/RDO	7	10-Jul-16	16-Jul-16	0%	7
01128.DDS00800	Stage 3 - Working Drawings Submission	28	17-Jul-16	13-Aug-16	0%	28
01128.DDS00810	DDA Final Submission with BD/RDO's Comments with ICE if required	21	15-Aug-16	07-Sep-16	0%	21
TBM (VD) Procurement, Manufacture & Delivery						
01128.CCD00033	TBM (VD) Manufacture & Delivery to Site	352	05-Mar-15 A	01-Jun-16	60%	26
Pre-cast Segment Fabrication						
01128.CCD000270	Fabrication of Precast Segment	12	01-Mar-16 A	14-Mar-16 A	100%	0
01128.CCD000280	Fabrication of Precast Segment	12	15-Mar-16 A	31-Mar-16 A	100%	0
01128.CCD000330	Fabrication of Precast Segment	12	01-Apr-16 A	14-Apr-16 A	100%	0
01128.CCD000340	Fabrication of Precast Segment	12	15-Apr-16 A	30-Apr-16 A	100%	0
01128.CCD000350	Fabrication of Precast Segment	12	30-Apr-16	16-May-16	0%	12
01128.CCD000360	Fabrication of Precast Segment	14	17-May-16	01-Jun-16	0%	14
01128.CCD000380	Fabrication of Precast Segment	14	02-Jun-16	18-Jun-16	0%	14
01128.CCD000390	Fabrication of Precast Segment	14	20-Jun-16	06-Jul-16	0%	14
01128.CCD000410	Fabrication of Precast Segment	14	07-Jul-16	22-Jul-16	0%	14
01128.CCD000420	Fabrication of Precast Segment	14	23-Jul-16	08-Aug-16	0%	14
STP						
01128.CCD000290	STP Set-up	12	01-Mar-16 A	15-Mar-16 A	100%	0
Stage 2 - SOV to EXH UT						
01128.CCD000260	UT - Setting Up TBM (Slurry)	12	01-Mar-16 A	14-Mar-16 A	100%	0
01128.CCD000320	UT - Setting Up TBM (Slurry)	7	15-Mar-16 A	22-Mar-16 A	100%	0
01128.CCD00070	UT - TBM 97+922 - 97+893	10	30-Mar-16 A	16-Apr-16 A	100%	0
01128.CCD000400	UT - TBM 97+893 - 97+873	7	16-Apr-16 A	22-Apr-16 A	100%	0



Last month's planned
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11283MRP160430

SCL 1128 - SOV to Admiralty Tunnels

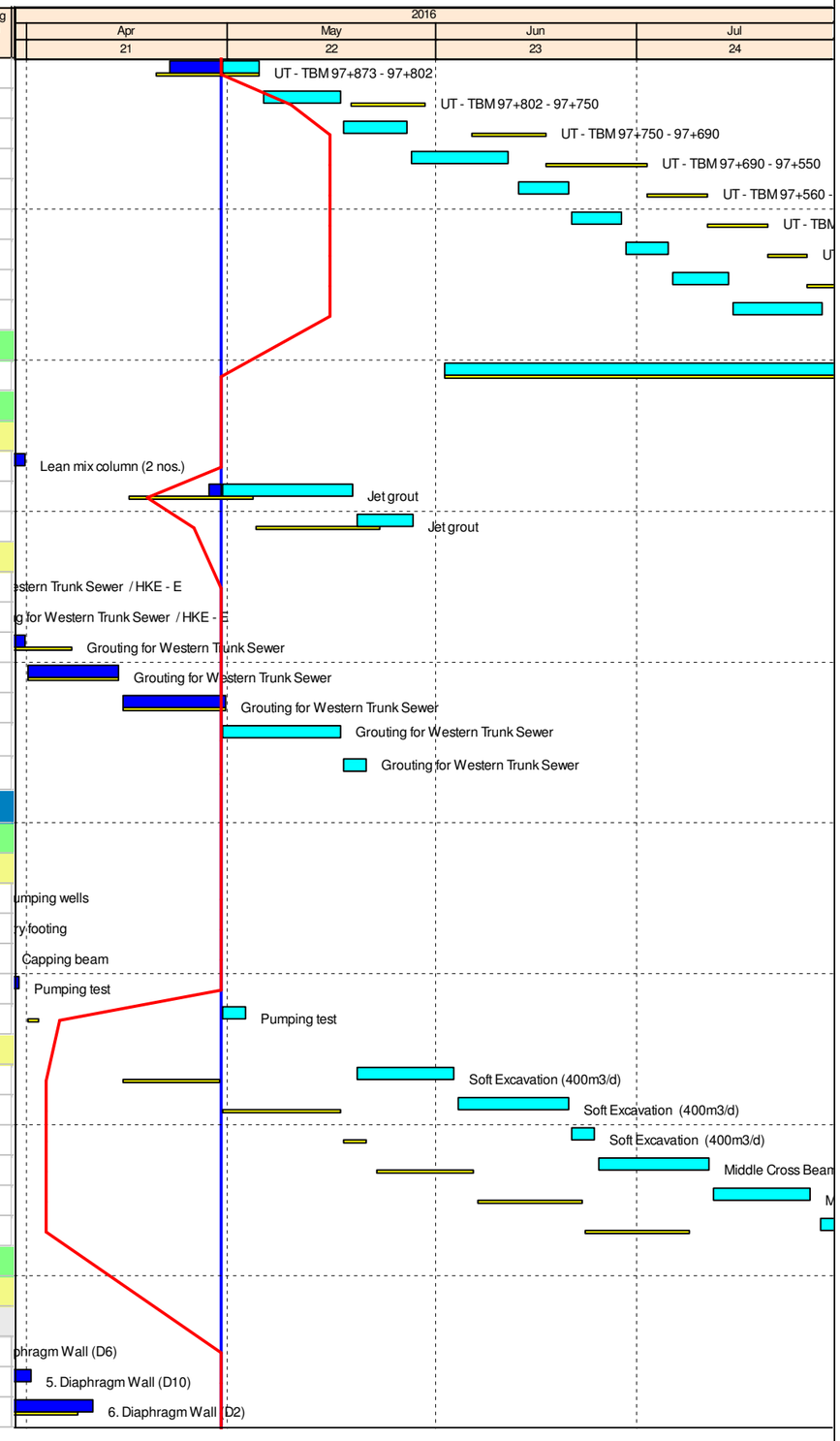
3 Month Rolling Programme (Data Date: 30-Apr-16)

1128

Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
01128.CCD00080	UT - TBM 97+873 - 97+802	14	22-Apr-16 A	05-May-16	78%	5
01128.CCD00090	UT - TBM 97+802 - 97+750	9	06-May-16	17-May-16	0%	9
01128.CCD00110	UT - TBM 97+750 - 97+690	9	18-May-16	27-May-16	0%	9
01128.CCD00111	UT - TBM 97+690 - 97+550	12	28-May-16	11-Jun-16	0%	12
01128.CCD00112	UT - TBM 97+560 - 97+520	7	13-Jun-16	20-Jun-16	0%	7
01128.CCD00120	UT - TBM 97+520 - 97+470	7	21-Jun-16	28-Jun-16	0%	7
01128.CCD00121	UT - TBM 97+470 - 97+435	5	29-Jun-16	05-Jul-16	0%	5
01128.CCD00122	UT - TBM 97+435 - 97+390	7	06-Jul-16	14-Jul-16	0%	7
01128.CCD00130	UT - TBM 97+390 - 97+311	12	15-Jul-16	28-Jul-16	0%	12
Stage 2 - SOV to EXH DT						
01128.CCD00240	DT - Setting up TBM (VD)	48	02-Jun-16	30-Jul-16	0%	48
Associated Works						
Ground treatment - Mid-tunnel Sump (SP5)						
01128.CCD00504	Lean mix column (2 nos.)	14	09-Mar-16 A	31-Mar-16 A	100%	0
01128.CCD001064	Jet grout	14	28-Apr-16 A	19-May-16	10%	14
01128.CCD001074	Jet grout	7	20-May-16	28-May-16	0%	7
Grouting - Western Trunk Sewer / HKE - E						
01128.CCD001024	Grouting for Western Trunk Sewer / HKE - E	12	01-Mar-16 A	14-Mar-16 A	100%	0
01128.CCD001034	Grouting for Western Trunk Sewer / HKE - E	6	15-Mar-16 A	21-Mar-16 A	100%	0
01128.CCD001044	Grouting for Western Trunk Sewer	12	22-Mar-16 A	31-Mar-16 A	100%	0
01128.CCD001054	Grouting for Western Trunk Sewer	12	01-Apr-16 A	14-Apr-16 A	100%	0
01128.CCD001114	Grouting for Western Trunk Sewer	13	15-Apr-16 A	30-Apr-16 A	100%	0
01128.CCD001124	Grouting for Western Trunk Sewer	12	30-Apr-16	17-May-16	0%	12
01128.CCD001134	Grouting for Western Trunk Sewer	4	18-May-16	21-May-16	0%	4
Cost Centre E - Tunnel Boring Machine Launching Shaft (FPP)						
Area 1						
Cofferdam						
01128.CCE00220	Installation of Pumping wells	12	01-Mar-16 A	10-Mar-16 A	100%	0
01128.CCE001690	Gantry footing	12	10-Mar-16 A	23-Mar-16 A	100%	0
01128.CCE001610	Capping beam	9	29-Feb-16 A	29-Mar-16 A	100%	0
01128.CCE001670	Pumping test	12	11-Mar-16 A	31-Mar-16 A	100%	0
01128.CCE001680	Pumping test	2	30-Apr-16*	03-May-16	0%	2
Excavation						
01128.CCE00260	Soft Excavation (400m3/d)	12	20-May-16*	03-Jun-16	0%	12
01128.CCE00270	Soft Excavation (400m3/d)	12	04-Jun-16	20-Jun-16	0%	12
01128.CCE00280	Soft Excavation (400m3/d)	4	21-Jun-16	24-Jun-16	0%	4
01128.CCE00290	Middle Cross Beam	12	25-Jun-16	11-Jul-16	0%	12
01128.CCE00300	Middle Cross Beam	12	12-Jul-16	26-Jul-16	0%	12
01128.CCE001720	Soft Excavation (400m3/d)	12	28-Jul-16	11-Aug-16	0%	12
Area 2 & B						
Cofferdam						
Works Area W8						
01128.CCE001450	4. Diaphragm Wall (D6)	12	04-Mar-16 A	22-Mar-16 A	100%	0
01128.CCE001460	5. Diaphragm Wall (D10)	12	10-Mar-16 A	01-Apr-16 A	100%	0
01128.CCE001570	6. Diaphragm Wall (D2)	12	23-Mar-16 A	11-Apr-16 A	100%	0



Last month's planned
Actual Work
Non Critical Activity
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11283MRP160430

SCL 1128 - SOV to Admiralty Tunnels

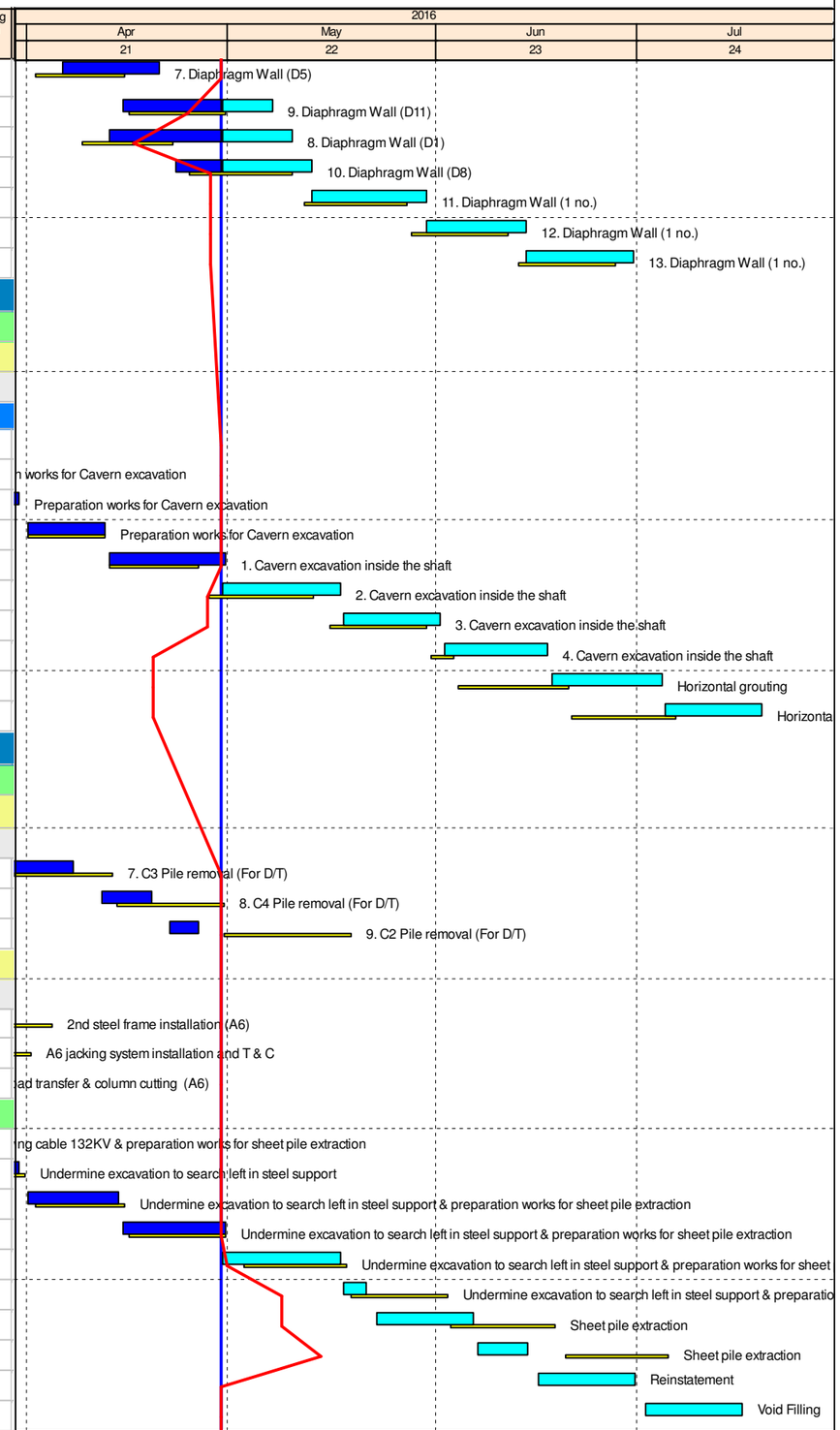
3 Month Rolling Programme (Data Data: 30-Apr-16)

1128

Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
01128.CCE001640	7. Diaphragm Wall (D5)	12	06-Apr-16 A	20-Apr-16 A	100%	0
01128.CCE001660	9. Diaphragm Wall (D11)	12	15-Apr-16 A	07-May-16	70%	6
01128.CCE001650	8. Diaphragm Wall (D1)	12	13-Apr-16 A	10-May-16	40%	8
01128.CCE001730	10. Diaphragm Wall (D8)	12	23-Apr-16 A	13-May-16	20%	10
01128.CCE001740	11. Diaphragm Wall (1 no.)	12	13-May-16	30-May-16	0%	12
01128.CCE001750	12. Diaphragm Wall (1 no.)	12	30-May-16	14-Jun-16	0%	12
01128.CCE001760	13. Diaphragm Wall (1 no.)	12	14-Jun-16	30-Jun-16	0%	12
Cost Centre F - FPP to ADM TBM Tunnels						
Associated Works						
Grouting - TWL Crossing at SVB						
Grouting - TWL Crossing at SVB						
Vertical Shaft						
01128.CCF001160	Probe test	3	02-Mar-16 A	04-Mar-16 A	100%	0
01128.CCF001170	Preparation works for Cavern excavation	12	05-Mar-16 A	18-Mar-16 A	100%	0
01128.CCF001180	Preparation works for Cavern excavation	12	19-Mar-16 A	31-Mar-16 A	100%	0
01128.CCF001190	Preparation works for Cavern excavation	10	01-Apr-16 A	12-Apr-16 A	100%	0
01128.CCF001070	1. Cavern excavation inside the shaft	12	13-Apr-16 A	30-Apr-16 A	100%	0
01128.CCF001080	2. Cavern excavation inside the shaft	12	30-Apr-16	17-May-16	0%	12
01128.CCF001090	3. Cavern excavation inside the shaft	12	18-May-16	01-Jun-16	0%	12
01128.CCF001100	4. Cavern excavation inside the shaft	12	02-Jun-16	17-Jun-16	0%	12
01128.CCF001130	Horizontal grouting	12	18-Jun-16	04-Jul-16	0%	12
01128.CCF001140	Horizontal grouting	12	05-Jul-16	19-Jul-16	0%	12
Cost Centre H - Other RRIW Works						
CHT Slip Road Footbridge Diversion						
Pile Removal - Percival Street Footbridge (H16)						
Removal of 9 nos.of Dia.600mm Bored Pile (5mPD to -24mPD)						
01128.CCH00257	7. C3 Pile removal (For D/T)	13	30-Mar-16 A	08-Apr-16 A	100%	0
01128.CCH00258	8. C4 Pile removal (For D/T)	13	12-Apr-16 A	19-Apr-16 A	100%	0
01128.CCH00350	9. C2 Pile removal (For D/T)	13	22-Apr-16 A	26-Apr-16 A	100%	0
Causeway/Hung Hing Flyover (Underpinning)						
Stage 1						
01128.CCH001060	2nd steel frame installation (A6)	6	29-Feb-16 A	09-Mar-16 A	100%	0
01128.CCH001130	A6 jacking system installation and T & C	4	10-Mar-16 A	14-Mar-16 A	100%	0
01128.CCH001120	Jacking, Load transfer & column cutting (A6)	5	14-Mar-16 A	15-Mar-16 A	100%	0
Wan Shing Street						
01128.CCH04630	Slewing cable 132KV & preparation works for sheet pile extraction	12	10-Mar-16 A	22-Mar-16 A	100%	0
01128.CCH04640	Undermine excavation to search left in steel support	12	15-Mar-16 A	31-Mar-16 A	100%	0
01128.CCH04650	Undermine excavation to search left in steel support & preparation works for sheet pile extraction	12	01-Apr-16 A	14-Apr-16 A	100%	0
01128.CCH04670	Undermine excavation to search left in steel support & preparation works for sheet pile extraction	12	15-Apr-16 A	30-Apr-16 A	100%	0
01128.CCH04680	Undermine excavation to search left in steel support & preparation works for sheet pile extraction	12	30-Apr-16	17-May-16	0%	12
01128.CCH04690	Undermine excavation to search left in steel support & preparation works for sheet pile extraction	4	18-May-16	21-May-16	0%	4
01128.CCH04700	Sheet pile extraction	12	23-May-16	06-Jun-16	0%	12
01128.CCH04710	Sheet pile extraction	6	07-Jun-16	14-Jun-16	0%	6
01128.CCH04770	Reinstatement	12	16-Jun-16	30-Jun-16	0%	12
01128.CCH04780	Void Filling	12	02-Jul-16	16-Jul-16	0%	12



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SCL 1128 - SOV to Admiralty Tunnels

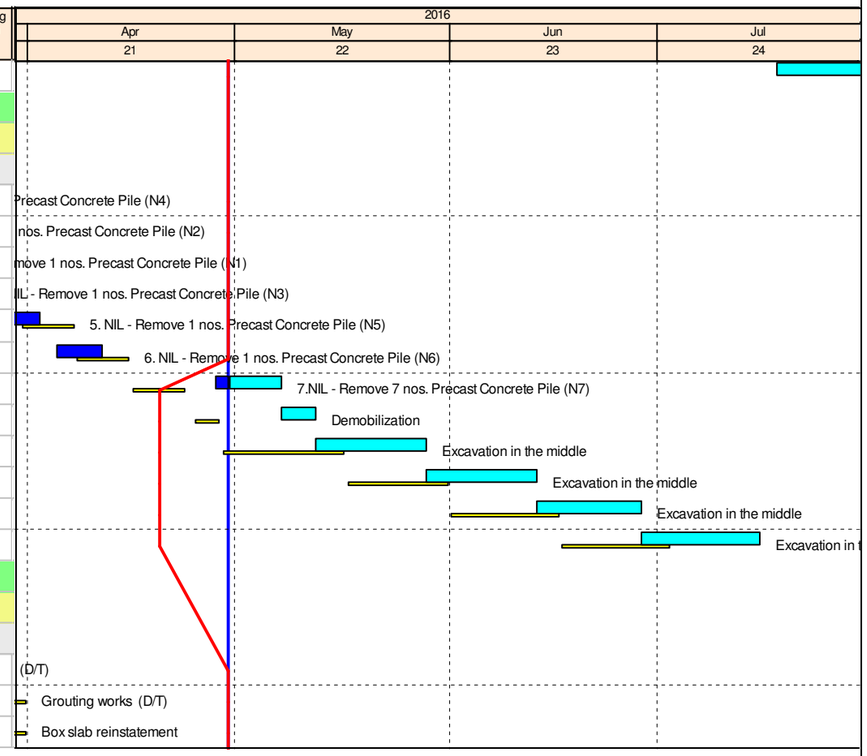
3 Month Rolling Programme (Data Date: 30-Apr-16)

1128

Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

DRAGAGES - BOUYGUES JOINT VENTURE

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Remaining Duration
01128.CCH04790	Void Filling	12	18-Jul-16	01-Aug-16	0%	12
TARG (Pile Removal: D03, H13, D04 & Trunk Sewers)						
Canal Rd. Box Culvert & Pile Removal (D03) - Twin Channel Scheme						
Stage 3						
01128.CCH03260	1. NIL - Remove 1 nos. Precast Concrete Pile (N4)	7	29-Feb-16 A	04-Mar-16 A	100%	0
01128.CCH03270	2. NIL - Remove 1 nos. Precast Concrete Pile (N2)	7	05-Mar-16 A	10-Mar-16 A	100%	0
01128.CCH03290	4. NIL - Remove 1 nos. Precast Concrete Pile (N1)	7	11-Mar-16 A	16-Mar-16 A	100%	0
01128.CCH03280	3. NIL - Remove 1 nos. Precast Concrete Pile (N3)	7	17-Mar-16 A	23-Mar-16 A	100%	0
01128.CCH03300	5. NIL - Remove 1 nos. Precast Concrete Pile (N5)	7	24-Mar-16 A	02-Apr-16 A	100%	0
01128.CCH03310	6. NIL - Remove 1 nos. Precast Concrete Pile (N6)	7	05-Apr-16 A	11-Apr-16 A	100%	0
01128.CCH01560	7.NIL - Remove 7 nos. Precast Concrete Pile (N7)	7	28-Apr-16 A	07-May-16	15%	6
01128.CCH01570	Demobilization	3	07-May-16	12-May-16	0%	3
01128.CCH04720	Excavation in the middle	12	12-May-16	28-May-16	0%	12
01128.CCH04730	Excavation in the middle	12	28-May-16	13-Jun-16	0%	12
01128.CCH04740	Excavation in the middle	12	13-Jun-16	28-Jun-16	0%	12
01128.CCH04750	Excavation in the middle	12	28-Jun-16	15-Jul-16	0%	12
DSD Wan Chai West Sewage Screening Plant (B13), Lung King St. Box Culvert (D01) & Fleet Arcade (B11)						
Fenwick Pier Street						
Lung King St. Box Culvert						
01128.CCH04610	Grouting works (D/T)	12	01-Mar-16 A	14-Mar-16 A	100%	0
01128.CCH04660	Grouting works (D/T)	12	15-Mar-16 A	22-Mar-16 A	100%	0
01128.CCH04760	Box slab reinstatement	12	14-Mar-16 A	30-Mar-16 A	100%	0



Last month's planned
Actual Work
Non Critical Activity
Critical Activity
Baseline Milestone
Milestone

11283MRP160430

SCL 1128 - SOV to Admiralty Tunnels

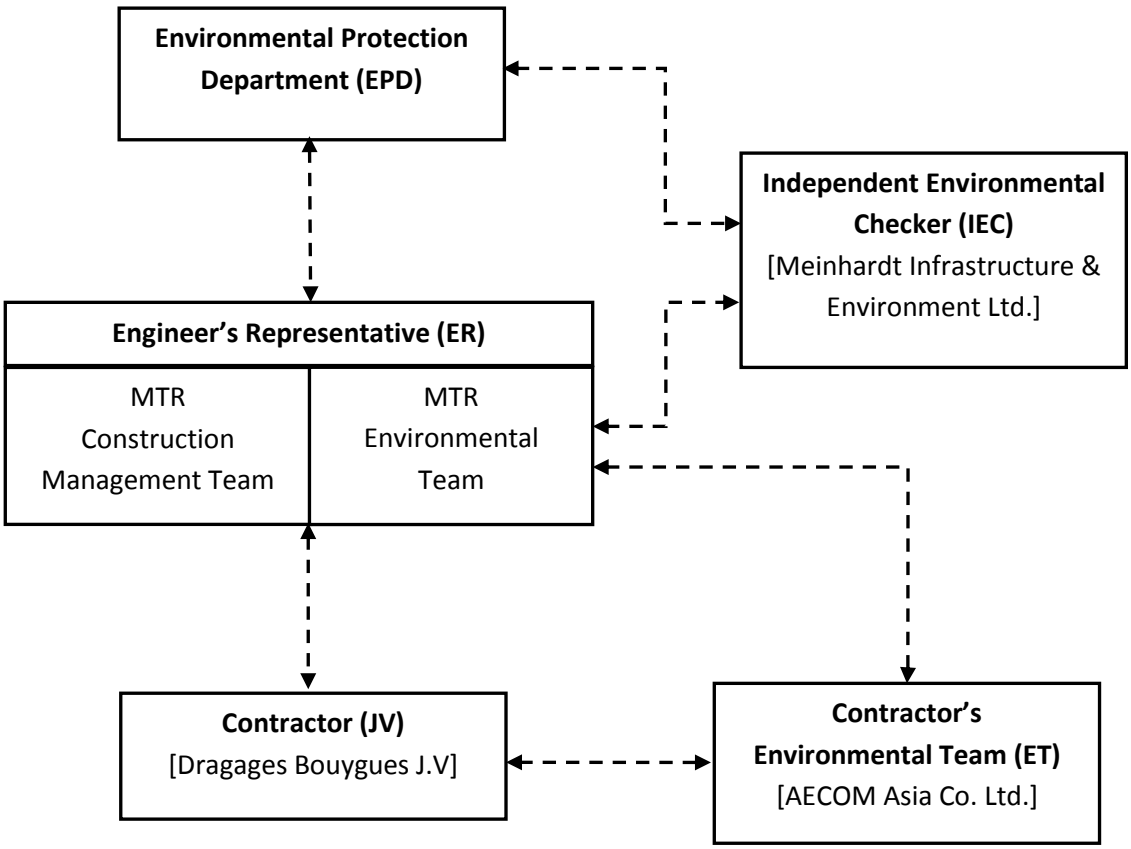
3 Month Rolling Programme (Data Date: 30-Apr-16)

1128			
Date	Revision	Checked	Approved
31-Mar-16	1128 - 3MRP		

APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure



APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

Appendix C – Environmental Mitigation Implementation Schedule

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 Heritage 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 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
Air Quality						
/	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 V

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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 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/m^2 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/m^2 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 *Guidance 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: (i) 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. (ii) 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. (iii) 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. (iv) 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. (v) 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”. (vi) 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. (vii) 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

Appendix C – Environmental Mitigation Implementation Schedule

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. • 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	To minimize dust impacts	Contractor	Works areas	Construction phase	 V V V @ N/A @ N/A V V V V 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 Noise Impact						
Construction 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 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 • Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities	To minimize construction noise impact	Contractor	Works areas	Construction phase	 V V V V V 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 V

Appendix C – Environmental Mitigation Implementation Schedule

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 N/A N/A N/A N/A N/A N/A V V V V N/A N/A N/A 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 breaker • Saw, concrete	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 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 N/A

Appendix C – Environmental Mitigation Implementation Schedule

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 Quality Impact						
Construction 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. • Stockpiling of construction and demolition materials and 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 disposed of as soon as possible to avoid being washed into the nearby receiving waters.	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 V N/A
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” shall be followed where practicable. <u>Surface Run-off</u> • 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 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 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. • 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. • Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be 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 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.	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction Phase	V @ V N/A V V V V

Appendix C – Environmental Mitigation Implementation Schedule

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. 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. 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 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. 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 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 • 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 • 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 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 V V N/A N/A N/A N/A N/A N/A 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

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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) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. 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

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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 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	Construction Phase	V V V
Waste Management Implications						
Construction 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; • 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 Work Sites	Construction Phase	V V V N/A N/A 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 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.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A V N/A V V 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

Appendix C – Environmental Mitigation Implementation Schedule

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: • 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	Work Sites	Construction Phase	N/A N/A 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 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 collection and disposal	Contractor	Work Sites	Construction Phase	N/A N/A N/A N/A N/A N/A
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. • 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	Work Sites	Construction Phase	V V V 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

Appendix C – Environmental Mitigation Implementation Schedule

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
/	***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 N/A

Appendix C – Environmental Mitigation Implementation Schedule

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: • 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	Work Sites	Construction Phase	V N/A N/A
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	Work Sites	Construction Phase	V V V V 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

Appendix C – Environmental Mitigation Implementation Schedule

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 Contamination 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

Appendix C – Environmental Mitigation Implementation Schedule

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 = 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 $\mu g/m^3$	260 $\mu g/m^3$

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.

APPENDIX E

Calibration Certificates of Equipments

AECOM Asia Company Limited
TSP High Volume Sampler
Field Calibration Report

Station: Pedestrian Plaza
Operator: Shum Kam Yuen
Cal. Date: 19-Mar-16
Next Due Date: 19-May-16
Equipment No.: A-001-70T
Serial No. 10273

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	757.8

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.97831	Intercept, bc	0.01264
Last Calibration Date:	29-May-15	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-May-16				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	7.6	2.78	1.40	46.0	46.32
13	6.0	2.47	1.24	40.0	40.28
10	4.5	2.14	1.07	34.0	34.24
7	3.3	1.83	0.92	28.0	28.20
5	2.1	1.46	0.73	20.0	20.14

By Linear Regression of Y on X

Slope , mw = 39.0129 **Intercept, bw =** -7.9891

Correlation Coefficient* = 0.9989

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2}$ = **42.43**

Remarks:

QC Reviewer: WS CHAN Signature: Date: 18/3/16

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 29, 2015 Rootsmeter S/N 0438320 Ta (K) - 297
Operator Tisch Orifice I.D. - 0988 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3980	3.2	2.00
2	NA	NA	1.00	0.9910	6.3	4.00
3	NA	NA	1.00	0.8790	7.8	5.00
4	NA	NA	1.00	0.8380	8.6	5.50
5	NA	NA	1.00	0.6890	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9934	0.7106	1.4125
0.9893	0.9983	1.9976
0.9872	1.1231	2.2334
0.9862	1.1769	2.3424
0.9809	1.4237	2.8251

Qstd slope (m) = 1.97831
intercept (b) = 0.01264
coefficient (r) = 0.99985

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7123	0.8866
0.9917	1.0007	1.2539
0.9896	1.1258	1.4019
0.9886	1.1797	1.4703
0.9833	1.4271	1.7732

Qa slope (m) = 1.23878
intercept (b) = 0.00793
coefficient (r) = 0.99985

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-02 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800927	,	2791214
Adaptors used:	-	,	-

Item submitted by

N-009 06

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
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Fax : (852) 2555 7533

HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-02 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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 Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	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	
	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 Uncertainty (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.

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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.

綜合試驗有限公司
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800930	,	2250455
Adaptors used:	-	,	-

Item submitted by

N·009·07

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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 Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	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	
	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 Uncertainty (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.

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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.

綜合試驗有限公司
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA1203 03 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10307223
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Dec-2015

Date of test: 03-Dec-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2239857	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	1010 ± 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.

3, 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 04-Dec-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA1203 03 **Page:** 2 **of** 2

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	94.04	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 = 0.002 dB**

Estimated expanded uncertainty 0.005 dB

3, 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 = 987.5 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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.

- End -

Calibrated by: Fung Chi Yip **Date:** 03-Dec-2015

Checked by: Lam Tze Wai **Date:** 04-Dec-2015

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.

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1128 - South Ventilation Building to Admiralty Tunnels
Impact Monitoring Schedule for April 2016

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

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 May 2016

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

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 June 2016

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

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 July 2016

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

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

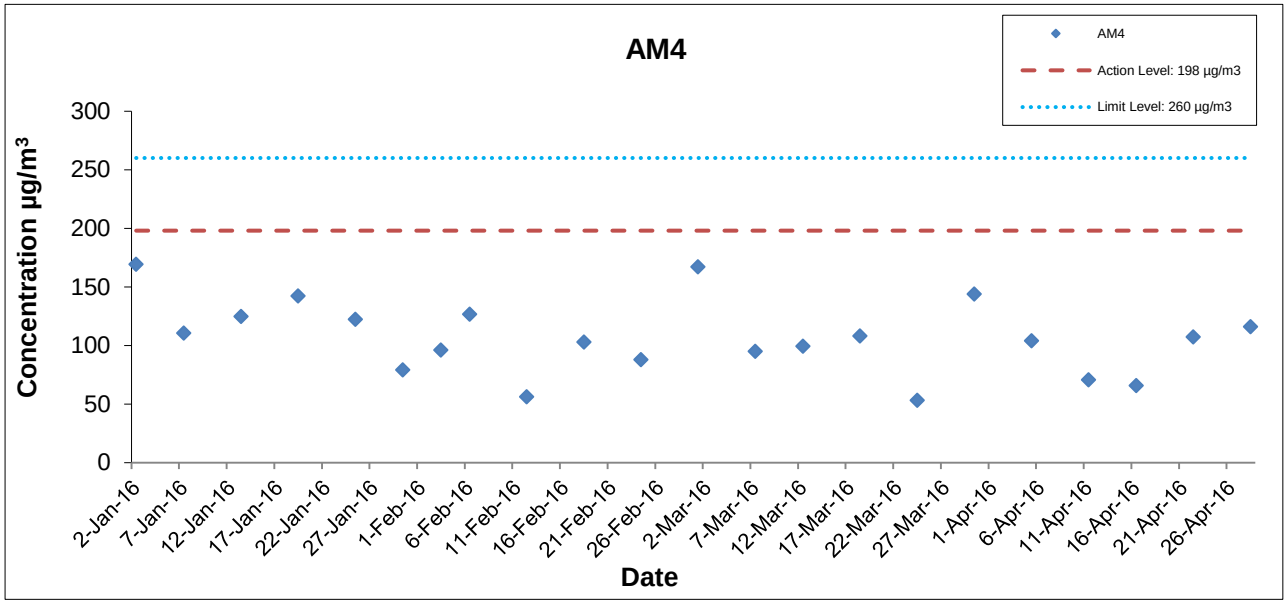
APPENDIX G

Air Quality Monitoring Results and their Graphical Presentations

Appendix G
Air Quality Monitoring Results

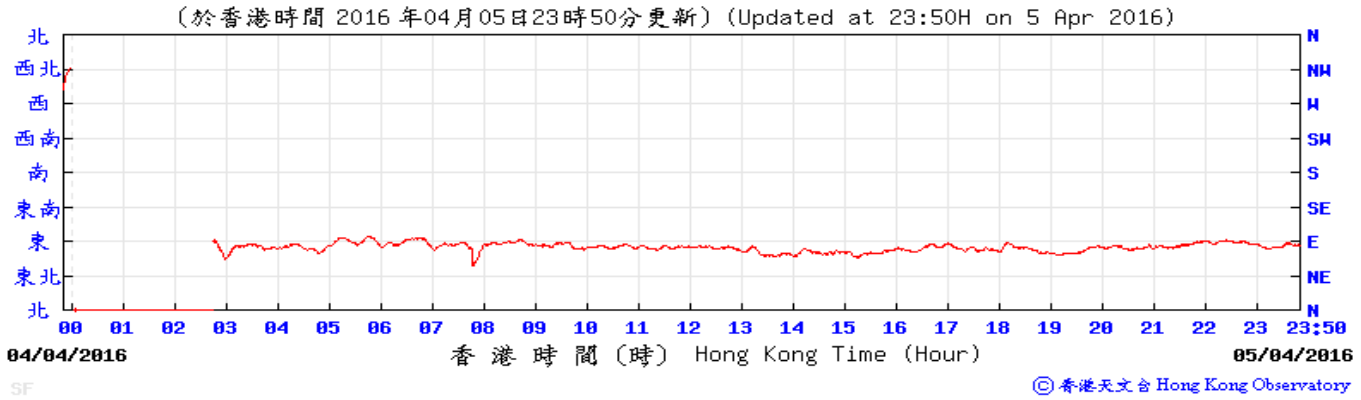
24-hour TSP Monitoring Results at Station AM4 (Pedestrian Plaza)

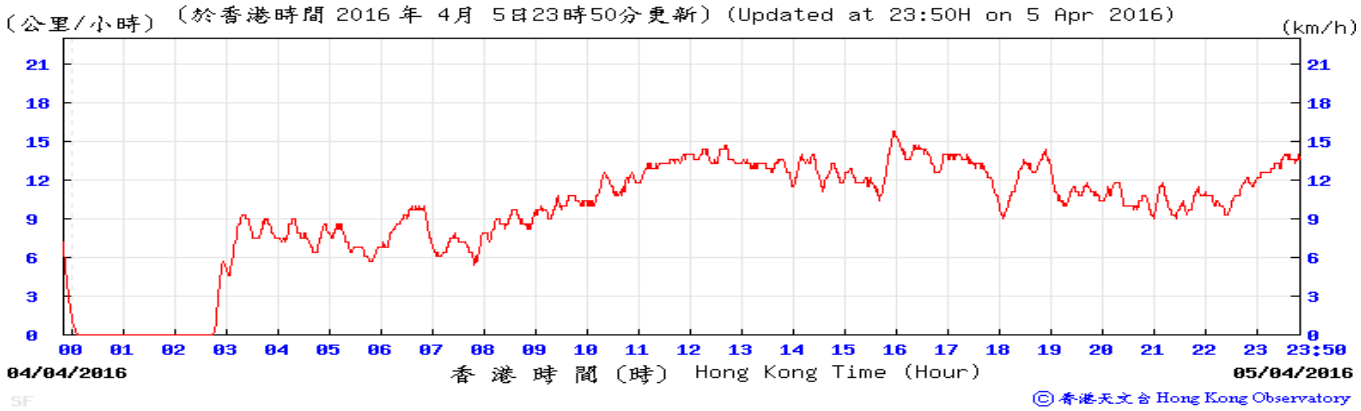
Start		End		Weather	Air	Atmospheric	Flow Rate (m^3/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (^oC)	Pressure (hPa)	Initial	Final	(m^3/min)	(m^3)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	($\mu g/m^3$)
5-Apr-16	0:00	6-Apr-16	0:00	Cloudy	22.3	1013.3	1.27	1.27	1.27	1833.1	2.8817	3.0725	0.1908	19041.00	19065.00	24.00	104.1
11-Apr-16	0:00	12-Apr-16	0:00	Cloudy	21.5	1010.1	1.27	1.27	1.27	1833.1	2.8820	3.0116	0.1296	19065.00	19089.00	24.00	70.7
16-Apr-16	0:00	17-Apr-16	0:00	Cloudy	24.7	1010.5	1.27	1.27	1.27	1833.1	2.8599	2.9806	0.1207	19089.00	19113.00	24.00	65.8
22-Apr-16	0:00	23-Apr-16	0:00	Cloudy	24.9	1008.2	1.27	1.27	1.27	1833.1	2.8090	3.0055	0.1965	19113.00	19137.00	24.00	107.2
28-Apr-16	0:00	29-Apr-16	0:00	Sunny	26.0	1010.4	1.27	1.27	1.27	1833.1	2.8537	3.0664	0.2127	19137.00	19161.00	24.00	116.0
																Average	**92.8**
																Minimum	**65.8**
																Maximum	**116.0**



Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

5-Apr-16



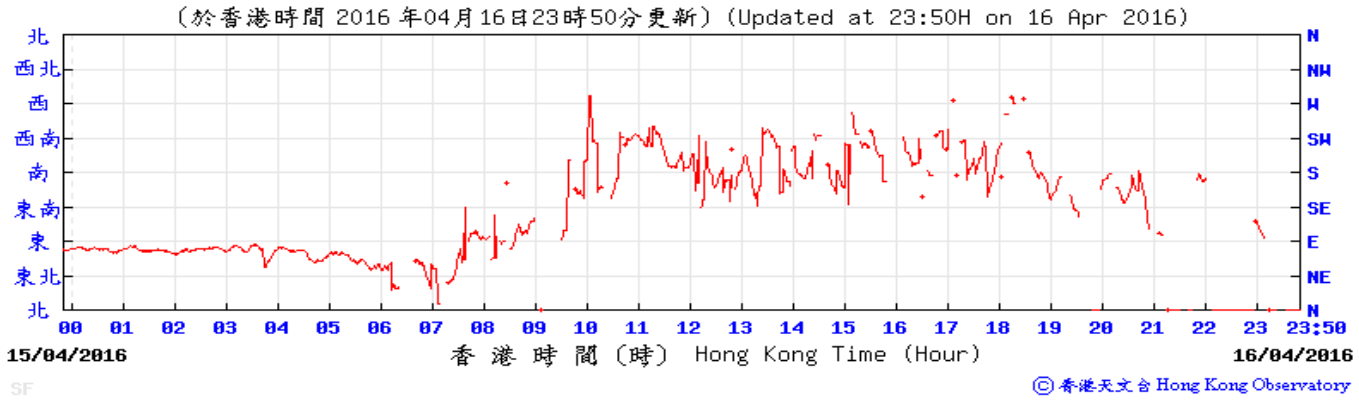


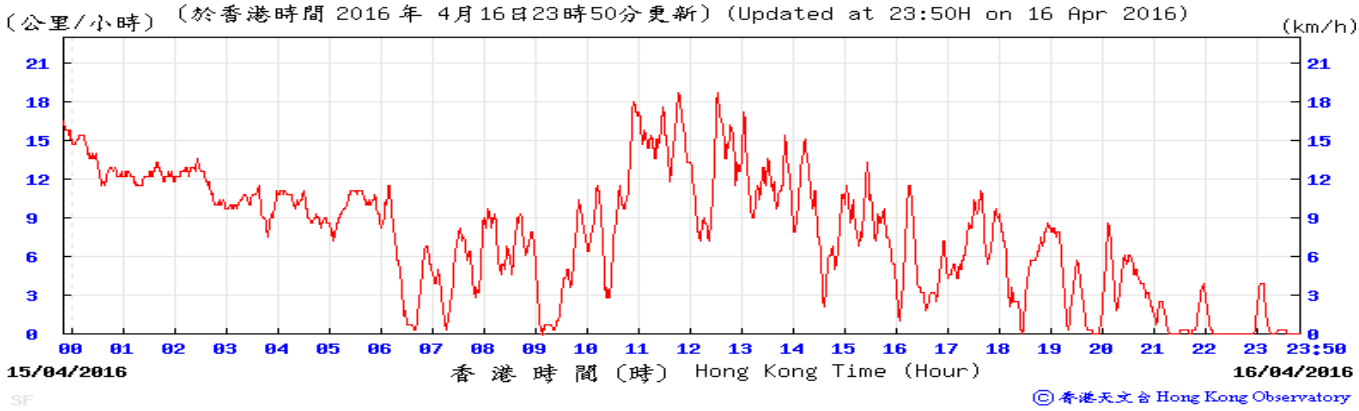
11-Apr-16

No meteorological information was availiable from the HKO.

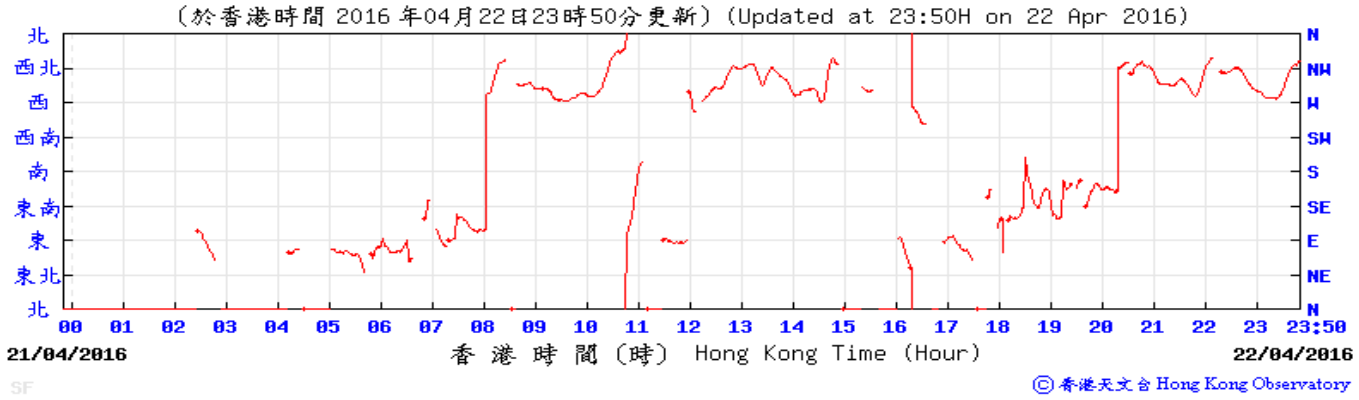
Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

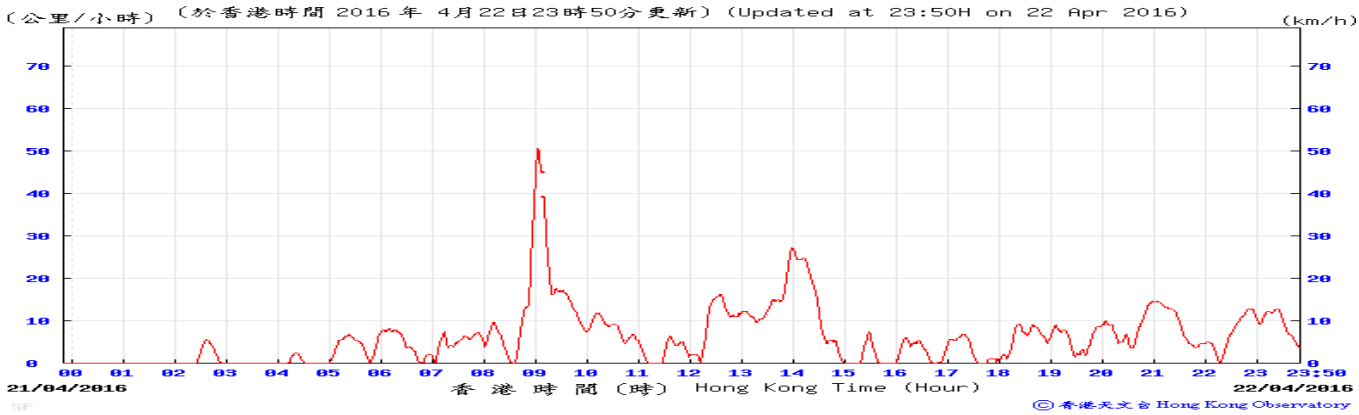
16-Apr-16





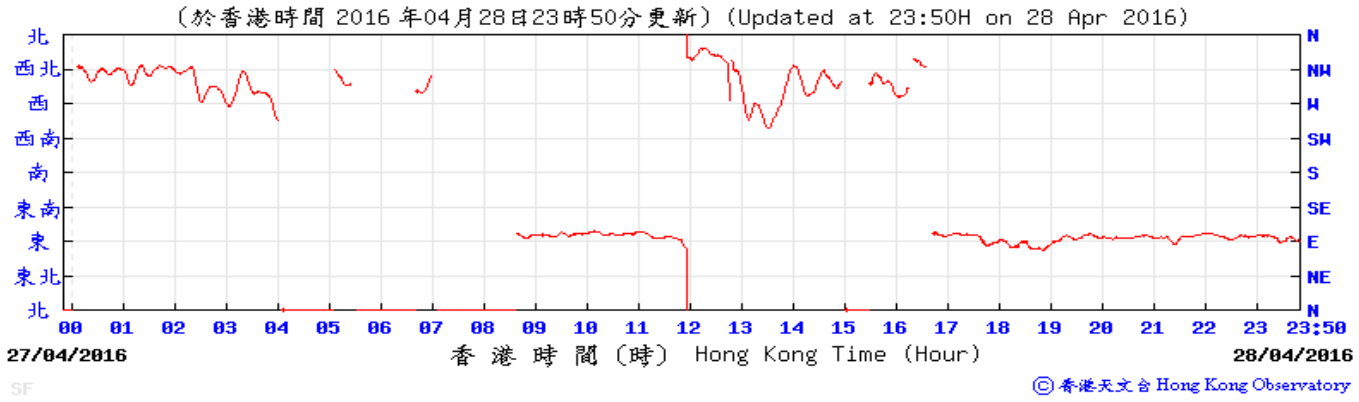
22-Apr-16

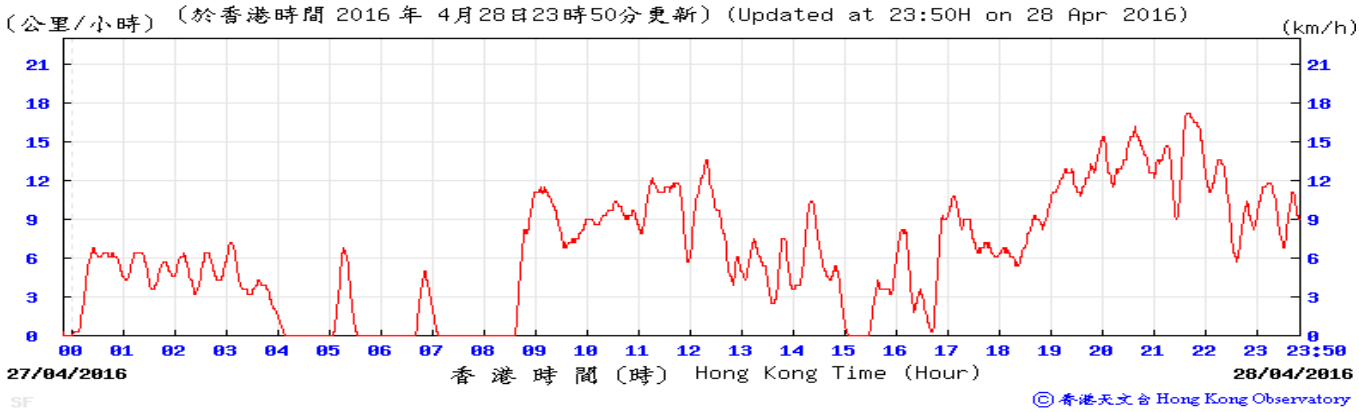




Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

28-Apr-16





APPENDIX H

Noise Monitoring Results and their Graphical Presentations

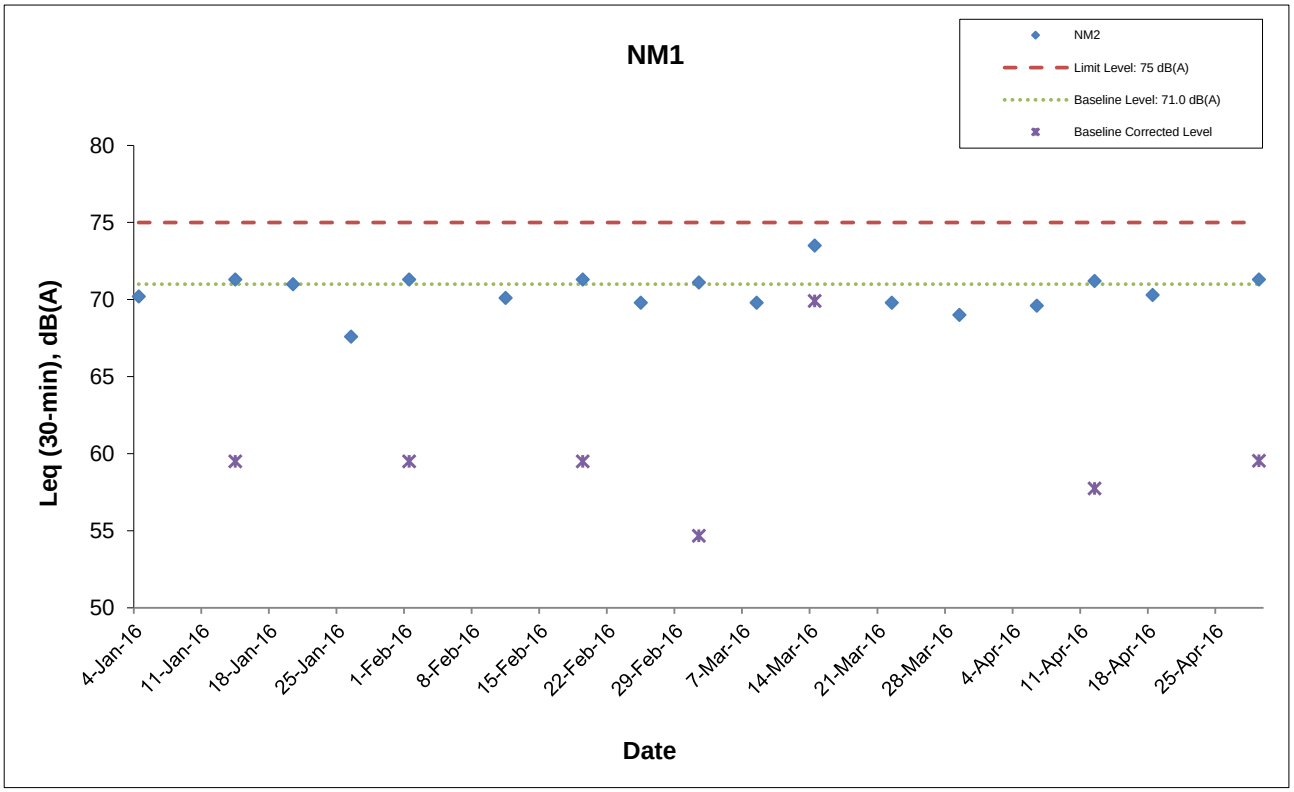
Appendix H Regular Construction Noise Monitoring Results

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

Date	Weather Condition	Noise Level for 30-min, dB(A)+				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
6-Apr-16	Cloudy	15:17	65.2	70.3	69.6	<Baseline	71.0	75	N
12-Apr-16	Fine	13:24	68.6	72.8	71.2	57.7	71.0	75	N
18-Apr-16	Cloudy	14:00	69.0	72.0	70.3	<Baseline	71.0	75	N
29-Apr-16	Sunny	13:00	70.0	73.0	71.3	59.5	71.0	75	N

+ - Façade measurement

Appendix H Regular Construction Noise Monitoring Results



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

Graphical Presentation of Impact Noise Monitoring Results

Date: May 2016

Appendix H

APPENDIX I

Event Action Plan

Appendix I Event Action Plan

Event / Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	**IEC**	**ER**	**Contractor**
ACTION LEVEL				
Exceedance for one sample	1. Inform the Contractor, IEC and ER; 2. Discuss with the Contractor and IEC on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples	1. Inform the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

Appendix I Event Action Plan

EVENT	ACTION			
	ET	**IEC**	**ER**	**Contractor**
LIMIT LEVEL				
Exceedance for one sample	1. Inform the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ET, ER and Contractor on possible remedial measures; 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise implementation of remedial measures.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify Contractor, IEC, EPD and ER ; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with ET, ER, and Contractor on the potential remedial measures; 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; 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(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; 6. 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

EVENT	ACTION			
	ET	**IEC**	**ER**	**Contractor**
Exceedance of Action Level	1. Notify the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the contractor; and 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of complaint in writing; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise implementation of remedial measures.	1. Investigate the complaint and propose remedial measures; 2. Report the results of investigation to the IEC, ET and ER; 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification; and 4. 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.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures; and 4. Review and advise the 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 ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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	1
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

APPENDIX K

Waste Flow Table

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

Latest Programme for Generation & Import of Materials in each Reporting Period	Quantity for off-site disposal of / resused Inert C&D materials (m^3)							Quantity for off-site disposal of Non-inert C&D materials					
	Inert C&D material (m^3)							Metals (kg)	Paper / Cardboard (kg)	Plastics (kg)	Chemical Waste (kg)	General Waste (m^3)	Sediment (m^3)
					Reused in Other Projects								
	TKO137FB(1)	TKO137SF(2)	TM38FB(3)	CWPFBP(4)	WDII(5)	CWB(6)	**Total (m^3)**	Total	Total	Total	Total	Total	Total
2016/01 (Actual)	2,621.5	0.0	18.0	1,105.5	0.0	0.0	3,745.0	0	0	0	0	40.6	0
2016/02 (Actual)	3,489.9	0.0	168.8	184.6	0.0	0.0	3,843.3	0	0	0	0	24.4	0
2016/03 (Actual)	4,937.3	0.0	16.3	257.8	0.0	0.0	5,211.4	0	0	0	0	29.6	0
2016/04 (Actual)	5,385.1	0.0	26.0	747.0	4,814.0	207.3	11,179.4	0	0	0	0	27.3	0
2016/05	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/06	-	-	-	-	-	-	-	-	-	-	-	-	-
2016 Sub-total	**16,433.8**	**0.0**	**229.0**	**2,294.9**	**4,814.0**	**207.3**	**23,979.0**	**0**	**0**	**0**	**0**	**121.9**	**0**
2016/07	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/08	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/09	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/10	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/11	-	-	-	-	-	-	-	-	-	-	-	-	-
2016/12	-	-	-	-	-	-	-	-	-	-	-	-	-
2016 Total	**16,433.8**	**0.0**	**229.0**	**2,294.9**	**4,814.0**	**207.3**	**23,979.0**	**0**	**0**	**0**	**0**	**121.9**	**0**

Remark: ***Assume the density is 2 tonnes per cubic metre for inert C&D materials and General Waste**

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**	**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)**

Appendix B

Monthly EM&A Report for April 2016 – 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. 14

[Period from 1 to 30 April 2016]

Works Contract 1121 – NSL Cross Harbour Tunnels

(May 2016)

Certified by: _____Dr. Priscilla Choy_____

Position: ___Environmental Team Leader___

Date:_____11th May 2016_____

Penta Ocean – China State Joint Venture

Shatin to Central Link – Contract 1121 NSL Cross Harbour Tunnels

Monthly Environmental Monitoring and Audit Report For April 2016

(version 2.0)

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.

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 14th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants 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 30 April 2016.

Summary of Construction Works undertaken during Reporting Month

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

Shek O

- Construction of IMT Bottom Plate;
- Steel Formwork Erection;
- Base Slab Rebar Fixing Concreting;
- Wall and Roof Rebar Fixing;
- IMT Wall & Roof Concreting;
- Collar Plate Installation; and
- Roof Formwork Shelter Construction.

Victoria Harbour

- Installation of Pipe Pile Wall and Sheet Pile Wall for Cofferdam in Hung Hom;
- Construction of Marine Platform in Hung Hom;
- Grouting Curtain (Land side & Marine side) in Hung Hom;
- Sand backfill and Geotextile installation for the Cofferdam Wall at Hung Hom;
- Seawall Pre-boring for Sheet Pile Installation at Hung Hom;
- Pump Well Construction at Hung Hom;
- Trench Dredging Works for IMT alignments at Victoria Harbour;
- Piling Works outside CBTS;
- Installation of Seawall blocks at CBTS Breakwater; and
- Demolition of Finger Pier Barge Ramp No.1.

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) 13 times

Remarks:

(1) Removal of earth bunds at Shek O Casting Basin under this Project has not yet commenced in the reporting month.

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**.

Landscape and Visual

5. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 7 and 18 April 2016. 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 7, 11, 18 and 25 April 2016. The representative of the IEC joined the site inspection on 18 April 2016. 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 non-compliance event was recorded during the reporting period.

9. No environmental complaint and no notification of summons/successful prosecutions were received in this reporting period.

Reporting Changes

10. No reporting changes in this reporting period.

Future Key Issues

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

Shek O

- Construction of IMT Bottom Plate;
- Steel Formwork Erection;
- Base Slab Rebar Fixing Concreting;
- Wall and Roof Rebar Fixing;
- IMT Wall & Roof Concreting;
- Collar Plate Installation; and
- Tunnel Lighting Installation;
- Ballast Tank Installation.

Victoria Harbour

- Installation of Pipe Pile Wall and Sheet Pile Wall for Cofferdam in Hung Hom;
- Construction of Marine Platform in Hung Hom;
- Grouting curtain (Land side & Marine side) in Hung Hom;
- Sand backfill and Geotextile installation for the Cofferdam Wall at Hung Hom;
- Seawall Pre-boring for Sheet Pile Installation at Hung Hom;
- Pump Well Construction at Hung Hom;
- Trial Rock Breaking & Excavation at seabed of Element E1 Location;
- Trench Dredging Works for IMT alignment;
- Installation of Seawall blocks at CBTS Breakwater; and
- Demolition of Finger Pier Barge Ramp No.1.

12. 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 Cinotech Consultants Limited (Cinotech) 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 14th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 to 30 April 2016. 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 The "Environmental Review Report – Design Changes of North Ventilation Building and Shek O Casting Basin" (ERR) was submitted to the EPD in 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.

2.4 The "Environmental Review Report – Variation for IMT Extension" (ERR) was submitted to the EPD in February 2015 to identify and assess the likely environmental issues pertinent to the proposed alternative scheme of IMT extension. The "Supplementary Information Paper for Optimized Scheme for IMT Construction in CBTS" was submitted to the EPD in January 2016 to demonstrate that no unacceptable impacts would be resulted from the Optimized Scheme in CBTS. Variation of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/D) was issued by Director of Environmental Protection (DEP) on 5 February 2016.

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**.

Shek O

- Construction of IMT Bottom Plate;
- Steel Formwork Erection;

- Base Slab Rebar Fixing Concreting;
- Wall and Roof Rebar Fixing;
- IMT Wall & Roof Concreting;
- Collar Plate Installation; and
- Roof Formwork Shelter Construction.

Victoria Harbour

- Installation of Pipe Pile Wall and Sheet Pile Wall for Cofferdam in Hung Hom;
- Construction of Marine Platform in Hung Hom;
- Grouting Curtain (Land side & Marine side) in Hung Hom;
- Sand backfill and Geotextile installation for the Cofferdam Wall at Hung Hom;
- Seawall Pre-boring for Sheet Pile Installation at Hung Hom;
- Pump Well Construction at Hung Hom;
- Trench Dredging Works for IMT alignments at Victoria Harbour;
- Piling Works outside CBTS;
- Installation of Seawall blocks at CBTS Breakwater; and
- Demolition of Finger Pier Barge Ramp No.1.

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 2.1**.

Table 2.1 Summary of the Status of Environmental Licences, Notification and Permits

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-436/2012/D	05/02/2016	N/A	Valid
SP License			
L-3-248(1)	10/09/2015	09/09/2017	Valid
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 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

Permit / License No.	Valid Period		Status
	From	To	
Marine Dumping Permit			
EP/MD/16-091	13/10/2015	12/04/2016	Expired on 12/04/2016
EP/MD/16-180	03/03/2016	02/04/2016	Expired on 02/04/2016
EP/MD/16-185	17/03/2016	16/04/2016	Expired on 16/04/2016
EP/MD/16-196	03/04/2016	02/05/2016	Valid
EP/MD/16-197	29/03/2016	28/04/2016	Expired on 28/04/2016
EP/MD/16-199	13/04/2016	12/10/2016	Valid
EP/MD/16-214	29/04/2016	28/05/2016	Valid
EP/MD/17-001	29/04/2016	28/05/2016	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00021844-2015	25/06/2015	30/06/2020	Valid
WT00021891-2015	18/08/2015	31/08/2020	Valid
WT00022449-2015	29/09/2015	30/06/2020	Valid
Construction Noise Permit (CNP)			
GW-RS1205-15	06/11/2015	03/05/2016	Valid
PP-RE0069-15	11/01/2016	10/10/2016	Valid
GW-RS0130-16	19/02/2016	18/08/2016	Superseded by GW-RS0332-16 on 08/04/2016
GW-RS0332-16	08/04/2016	07/10/2016	Valid
PP-RS0010-16	01/04/2016	30/09/2016	Valid
GW-RE0255-16	23/03/2016	22/09/2016	Superseded by GW-RE0198-16 on 15/04/2016
GW-RE0341-16	15/04/2016	14/10/2016	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 ERR, 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.

3.4 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	Coordinates	
		Easting	North
Shek O Casting Basin			
GB3	Turtle Cove Beach	841120	810280
C3	Control Station for ebb tide	841200	806210
C4	Control Station for flood tide	843330	807320
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
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 ERR. **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
Monitoring Period	Victoria Harbour During the dredging and filling operation 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 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 should consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It should be readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 should be used for calibration of the instrument before and after use.

Dissolved Oxygen and Temperature Measuring Equipment

3.7 The Dissolved Oxygen (DO) measuring equipment should be portable and weatherproof. It should complete with cable and senor, and a DC power source. The equipment should be capable of measuring:

- a DO level in the range of 0 - 20 $mg \cdot L^{-1}$ and 0 - 200% saturation; and
- a temperature of 0 - 45 degree Celsius (°C).

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

Sampler

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

Water Depth Detector

3.12 A portable, battery-operated echo sounder should be 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) should be provided for measuring salinity of the water at each monitoring station.

Sample Containers and Storage

3.14 Water samples for SS monitoring should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4 °C without being frozen) and delivered to the laboratory and 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, should be 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 shall be checked and calibrated before use. DO meter and turbidimeter shall be 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 should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be 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	1
Multi-parameter Water Quality System	Aquaread AP-2000-D	3
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1

3.18 Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be 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 shall be carried out in a HOKLAS or other international accredited laboratory. Sufficient water samples shall be collected at the monitoring stations for carrying out the laboratory SS determinations, with detection limit shown in **Table 3.4**. The SS determination work shall start within 24 hours after collection of the water samples. The analyses shall follow 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 (March 2016)	14 April 2016

5 MONITORING RESULTS

Water Quality Monitoring

5.1 13 sets of water quality monitoring were carried out at the designated monitoring stations in Victoria Harbour in this reporting period. All water quality monitoring was conducted as scheduled in the reporting month. The water quality impact monitoring schedule for this reporting period is shown in **Appendix C**.

5.2 Removal of earth bunds at Northern and Southern Gates has not yet commenced in Shek O Casting Basin. Therefore, no water quality monitoring in Shek O was carried out during this reporting period under this Project.

5.3 The monitoring results together with graphical presentations are shown in **Appendix D**.

5.4 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**.

5.5 No exceedance of Action and Limit Levels of water quality was recorded during the reporting period.

Waste Management

5.6 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**.

5.7 1325 m^3 inert C&D materials were generated during the reporting month by this Project. 3,691 m^3 and 11,359 m^3 inert C&D materials were received from SCL Contract 1111 and 1112 respectively. 16,374 m^3 of these inert C&D materials were reused in the other Projects. No chemical waste was collected by licensed collector during the reporting month. No metal, no plastics and 377 kg paper/cardboard packaging were generated during the reporting month.

5.8 6,253 m^3 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 and 1112. Such materials were collected and 6,253 m^3 of it were disposed at Capping of the exhausted Confined Marine Disposal Facility at South Cheung Chau.

5.9 6,825 m^3 contaminated materials - Type 1 (dedicated sites) and 31,814 m^3 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) were received from SCL Contract 1111 and 1112. 0 m^3 and 358 m^3 contaminated materials - Type 2 - Confined Marine Disposal (Category M) sediments were received from SCL Contract 1111 and 1112 respectively. Such materials were collected and 31,814 m^3 of it were disposed at Capping of the exhausted Confined Marine Disposal Facility at South of The Brothers (or East of Sha Chau).

5.10 557 m^3 contaminated materials - Type 3 (Special Treatment Disposal) sediments were generated from construction activities of this Project during this reporting period. No contaminated materials - Type 3 (Special Treatment Disposal) sediments were received from SCL Contract 1111 and 1112. Such materials were disposed at Capping of the exhausted Confined Marine Disposal Facility at East of Sha Chau.

Table 5.1 Quantities of Waste Generated from the Project

Reporting Month	Quantity						
	C&D Materials (inert) [a]	Sediments (in bulk volume)	C&D Materials (non-inert)[b]				
			General Refuse	Chemical Waste	Recycled materials		
					Paper/ cardboard	Plastics	Metals
March 2016	1,990 m^3	40,613 m^3 (*)	123 *tonne*	0 *kg*	*462 kg*(*)	0 *kg*	0 *kg*
April 2016	1,325 m^3	45,449 m^3	171 *tonne*	0 *kg*	*377 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.
(*) Updated from Monthly EM&A Report (March 2016)

Landscape and Visual

5.11 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 7 and 18 April 2016. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

6 ENVIRONMENTAL SITE INSPECTION

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 7, 11, 18 and 25 April 2016 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 18 April 2016. No site inspection was conducted by the EPD during the reporting period. 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 Apr 2016	Observation: Silt curtain is observed "open" for Hung Hom marine works area. The Contractor is reminded to close the silt curtain during the marine works.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.
	18 Apr 2016	Observation: Small amount of water observed discharged into the sea near Hung Hom seawall. The Contractor is reminded to avoid discharge of effluent into seawater.	Follow up action will be reported in next reporting month.
	18, 25 Apr 2016	Reminder: To clear the general refuse and construction waste in the drainage channel of Shek O Casting Basin.	Follow up action will be reported in next reporting month.
	18 Apr 2016	Reminder: Spillage of sediment from mechanical grab should be avoided outside of frame type silt curtain in Hung Hom.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.
	25 Apr 2016	Observation: Silty surface runoff observed discharged into sea within silt curtain at Hung Hom. The Contractor is reminded to prevent surface runoff out of site.	Follow up action will be reported in next reporting month.
	25 Apr 2016	Observation: Silty seawater and general refuse observed near the finger pier at Hung Hom. The Contractor is reminded to locate the source of silty water discharge into sea. It is also reminded to remove the general refuse on sea.	Follow up action will be reported in next reporting month.

Parameters	Date	Observations and Recommendations	Follow-up
	25 Apr 2016	Reminder: Stockpile of sand should be covered properly in Hung Hom.	Follow up action will be reported in next reporting month.
Noise	--	--	--
Landscape and Visual	--	--	--
Air Quality	21, 29 Mar 2016	Reminder: Proper coverage was reminded to be provided to the grouting facility found near the barging point in Hung Hom works area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 7 April 2016.
	29 Mar, 7 Apr 2016	Reminder: To provide proper NRMM label to air compressor in Shek O Casting Basin.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
	11 Apr 2016	Observation: NRMM label was not provided to air compressor in Shek O Casting Basin. The Contractor is reminded to provide proper NRMM label or remove the air compressor from site.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
	11 Apr 2016	Reminder: To cover the stockpile of dusty material and cement bags by impervious material in Hung Hom marine platform.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
	11 Apr 2016	Reminder: To repair the dust curtain in Hung Hom barging facility.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
	11 Apr 2016	Reminder: Provide proper top and 3 side enclosure to grout mixer in Hung Hom works area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
Waste / Chemical Management	29 Mar 2016	Reminder: To provide drip trays to chemical containers in Shek O Casting Basin and Hung Hom marine platform.	The observation was observed to be improved/rectified by the Contractor during the audit session on 7 April 2016.
	29 Mar 2016	Reminder: To clear the stagnant water and oil-water mixture in the drip trays in Shek O Casting Basin.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.
	7 Apr 2016	Reminder: To clear the oil-water mixture in the drip tray in Shek O Casting Basin and clear the oil stain on paved ground near drip tray.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.
	11 Apr 2016	Observation: Oil-water mixture observed in the drip tray in Shek O Casting Basin. The Contractor is reminded to clear the mixture to prevent leakage of chemical out of drip tray.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.

Parameters	Date	Observations and Recommendations	Follow-up
	11 Apr 2016	Reminder: Provide drip trays to chemical containers in Hung Hom.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 April 2016.
	18 Apr 2016	Reminder: Chemical leakage observed within drip tray and on paved ground in Shek O. The Contractor is reminded to clear the oil as chemical waste.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 April 2016.
	25 Apr 2016	Reminder: Provide drip tray to chemical container in Hung Hom.	Follow up action will be reported in next reporting month.
Permits/ Licenses	--	--	--

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No exceedance of the Action and Limit Levels of regular water quality monitoring 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**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. 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:

Shek O

- Construction of IMT Bottom Plate;
- Steel Formwork Erection;
- Base Slab Rebar Fixing Concreting;
- Wall and Roof Rebar Fixing;
- IMT Wall & Roof Concreting;
- Collar Plate Installation; and
- Tunnel Lighting Installation;
- Ballast Tank Installation.

Victoria Harbour

- Installation of Pipe Pile Wall and Sheet Pile Wall for Cofferdam in Hung Hom;
- Construction of Marine Platform in Hung Hom;
- Grouting Curtain (Land side & Marine side) in Hung Hom;
- Sand backfill and Geotextile installation for the Cofferdam Wall at Hung Hom;
- Seawall Pre-boring for Sheet Pile Installation at Hung Hom;
- Pump Well Construction at Hung Hom;
- Trench Dredging Works for IMT alignments at Victoria Harbour;
- Piling Works outside CBTS;
- Installation of Seawall blocks at CBTS Breakwater; and
- Demolition of Finger Pier Barge Ramp No.1.

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 both Shek O and 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 construction water quality monitoring will be conducted at the same monitoring locations in the next reporting period.

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 30 April 2016 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, no successful prosecution or notification of summons 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:

Water Quality

- To remove the construction material and general refuse in the U-channel in Shek O Casting Basin.
- Silt curtain for Hung Hom works area should be "closed" during the marine works.
- Leakage of surface runoff should be avoided into seawater in Hung Hom.
- Spillage of sediment from mechanical grab should be avoided outside of frame type silt curtain in Hung Hom.
- Silty seawater and general refuse should be avoided near the finger pier at Hung Hom.
- Stockpile of sand should be covered properly in Hung Hom.

Landscape and Visual

- N/A

Noise

- N/A

Air Quality

- To provide proper enclosure during the operation of the grout mixer.
- To cover the stockpile of dusty material and cement bags by impervious material
- To repair the dust curtain in Hung Hom barging facility.
- To provide proper NRMM label to necessary PMEs on-site.

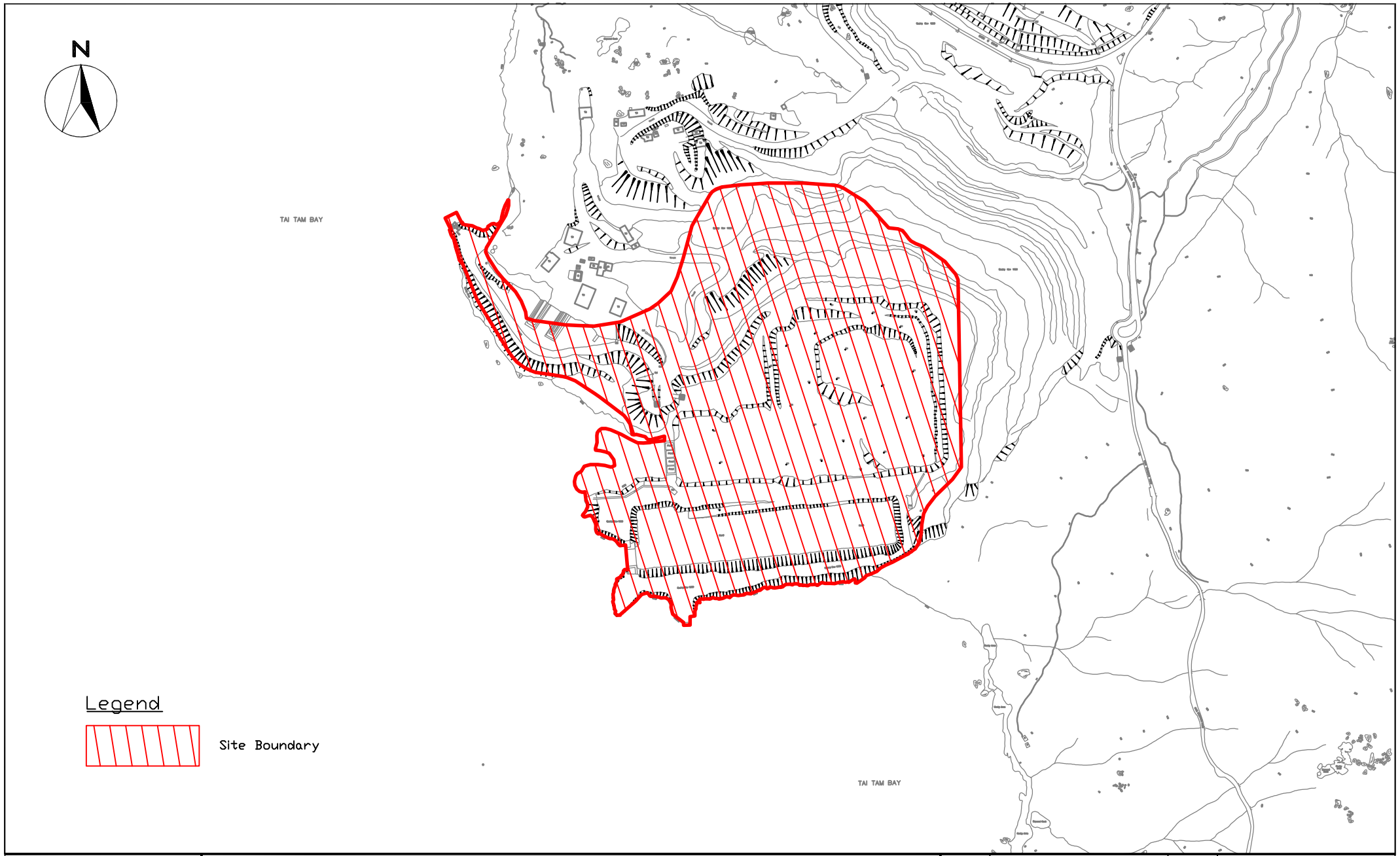
Waste/Chemical Management

- To remove the stagnant water / oily water in the drip tray in Shek O casting basin.
- To provide drip tray to chemical containers in Shek O Casting Basin.

Permits/Licenses

- N/A

FIGURES

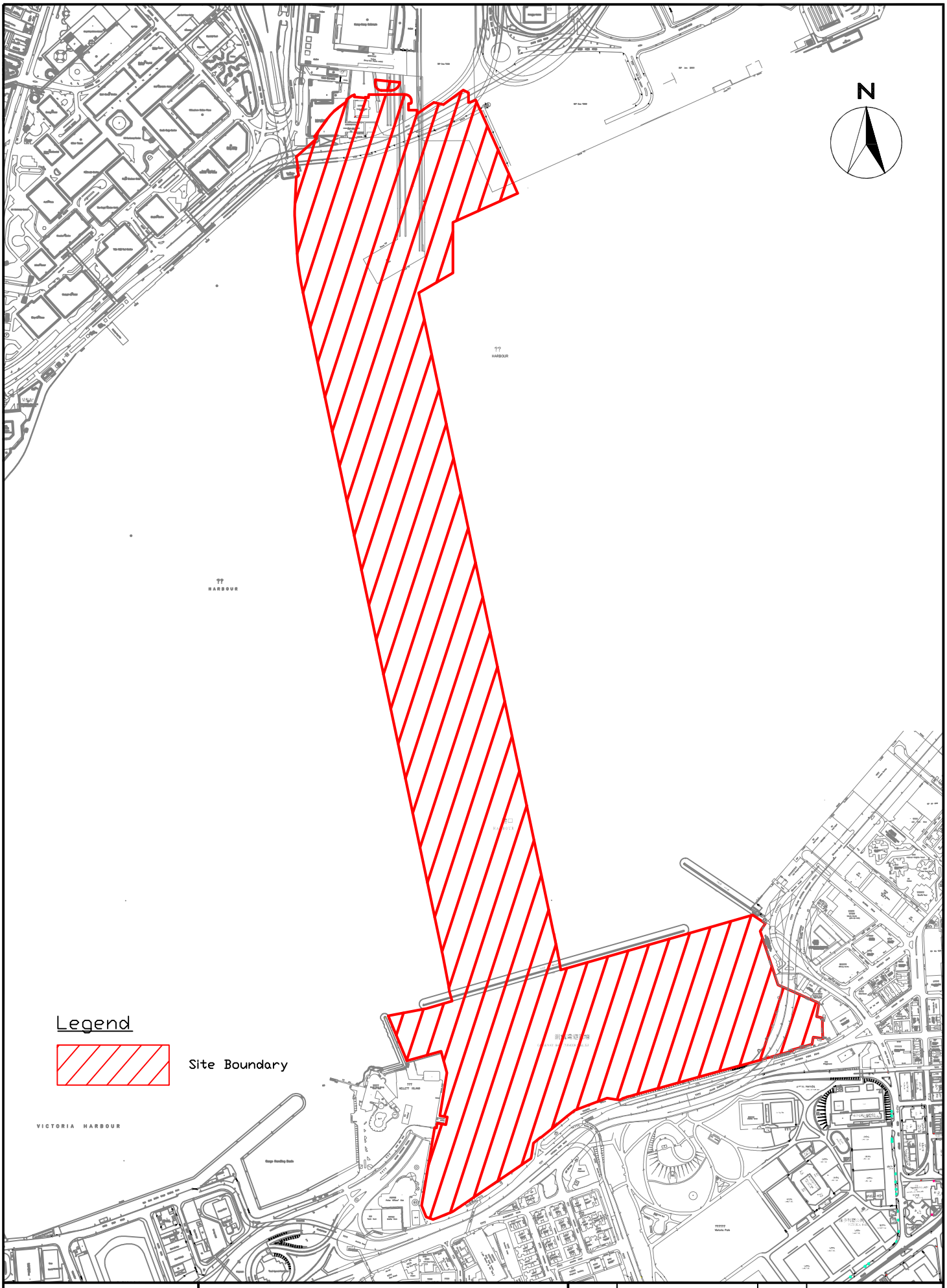


CINOTECH
Cinotech Consultants Limited

SCL 1121 - NSL Cross Harbour Tunnels

Site Layout Plan (Shek O)

SCALE	1:150	DATE	12/2014
CHECK	CHECK	DRAWN	VW
JOB No.	MA14047	FIGURE NO.	1a
		REV	–



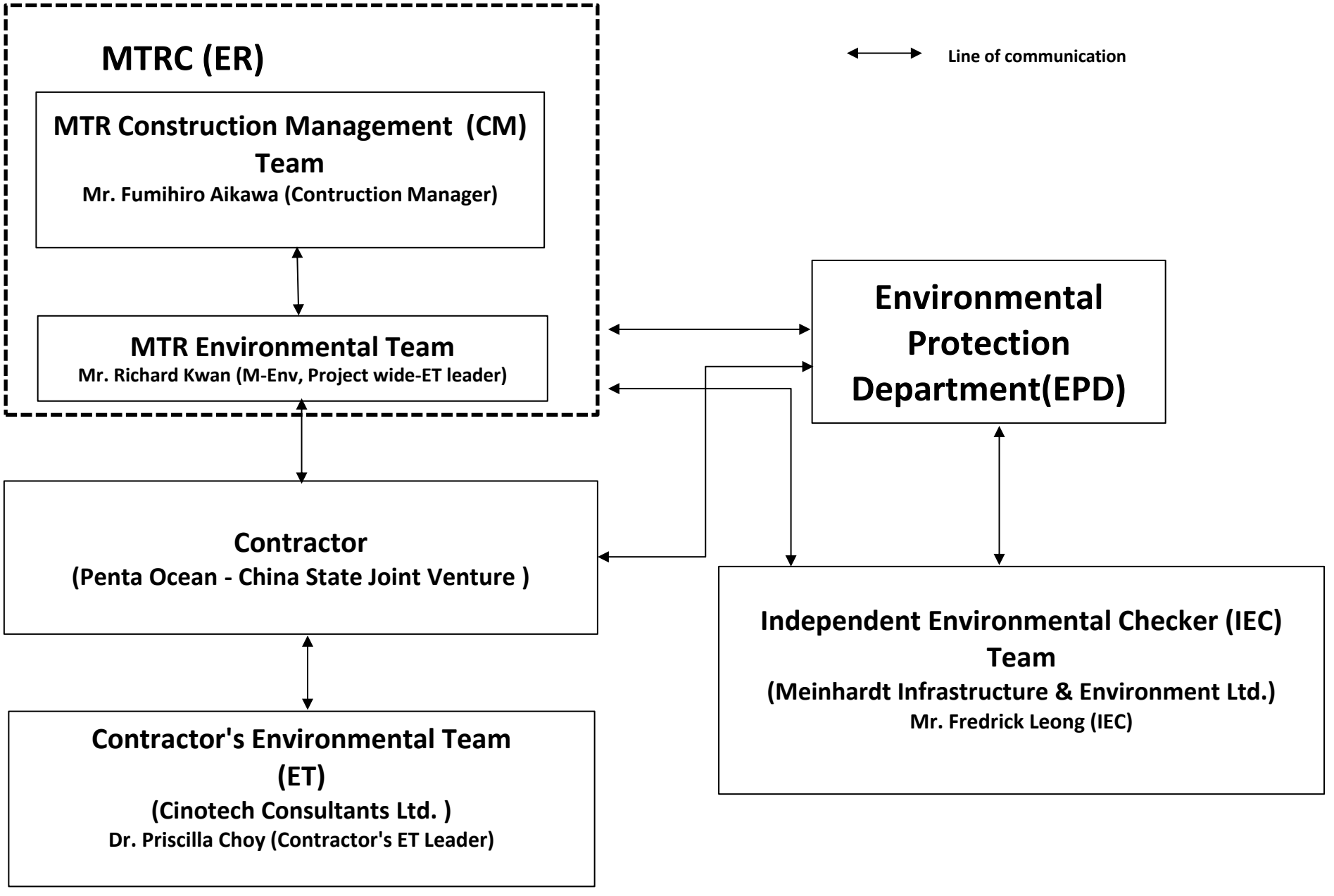
CINOTECH
Cinotech Consultants Limited

SCL 1121 - NSL Cross Harbour Tunnels

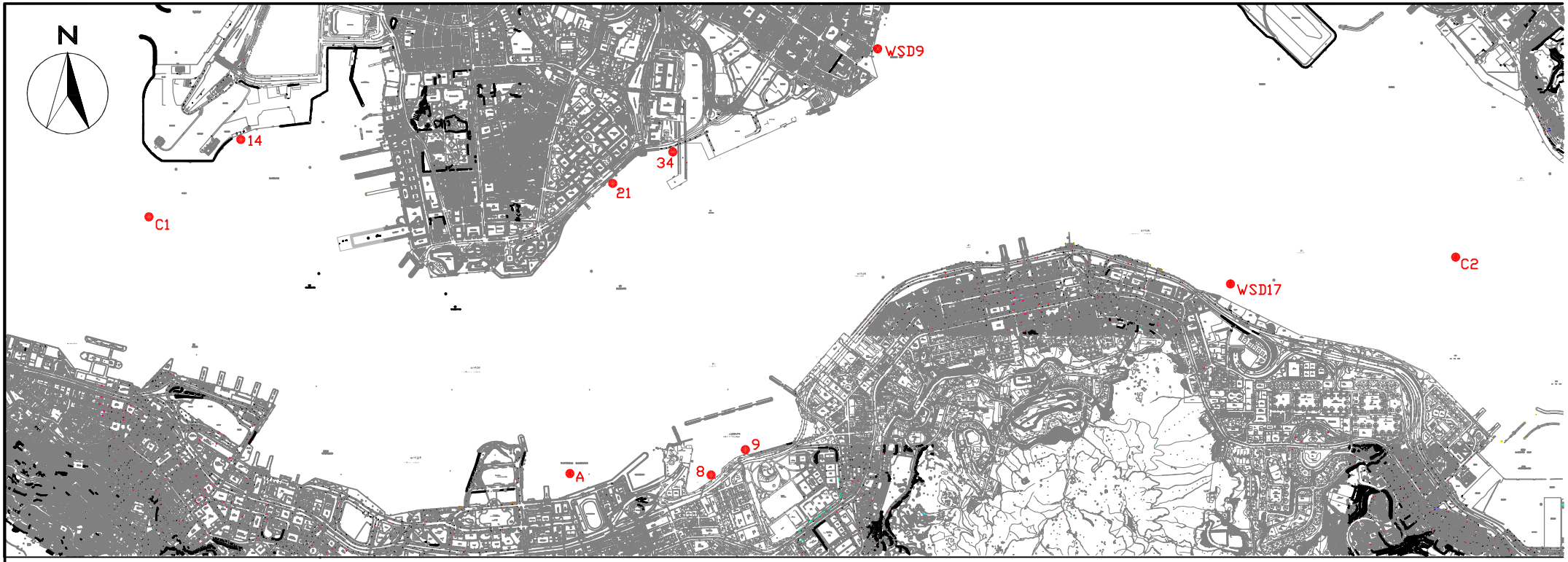
Site Layout Plan
(Victoria Harbour)

SCALE	1:220	DATE	1/2015
CHECK	JF	DRAWN	VW
JOB No.	MA14047	FIGURE NO.	1b
		REV	–

F:/Project_drawings



Title	SCL Contract 1121 The Shatin to Central Link - NSL Cross Harbour Tunnels Project Organisation for Environmental Works	Scale N.T.S	Project No. MA14047	CINOTECH
		Date Jan-15	Figure 2	



COORDINATE	EASTING	NORTHING
A	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

CINOTECH
Cinotech Consultants Limited

SCL 1121 - NSL Cross Harbour Tunnels

Locations of Water Quality Monitoring station in the Victoria Harbour

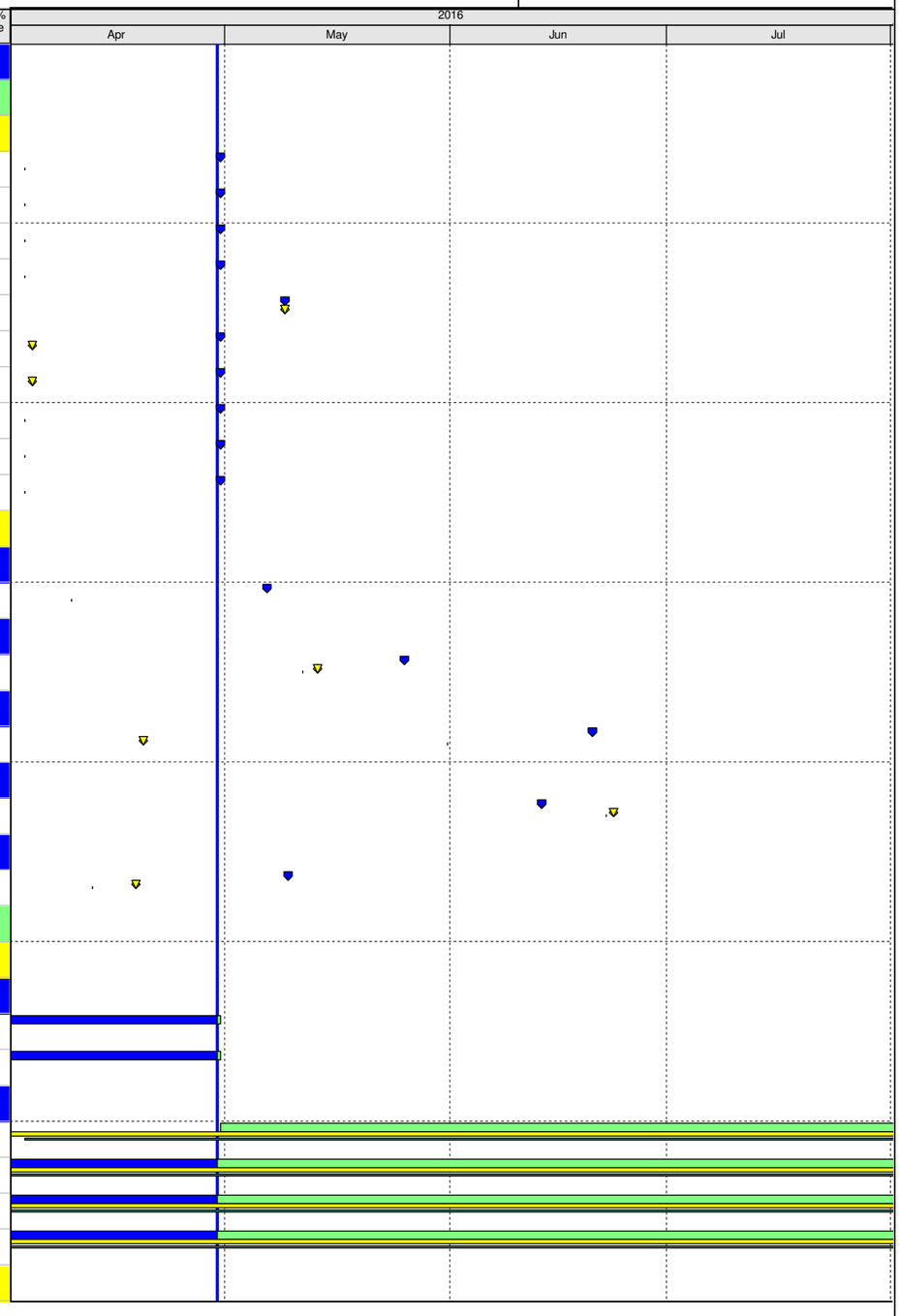
SCALE	1:30	DATE	1/2015
CHECK	JF	DRAWN	VW
JOB No.	MA14047	FIGURE NO. 3	REV –

APPENDIX A
TENTATIVE CONSTRCUTION PROGRAMME

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 ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
1121 - 18 - 3M Rolling Programme (5 - 7/2016) (Ref. to PMP Rev 1a) (Updates as of 30 Apr 2016)				14-May-15	19-Dec-16	479.0	201.0	08-Mar-15 A	30-Dec-16	1470.0	
SCHEDULE OF COMPLETION OBLIGATIONS AND MILESTONES SCHEDULE				14-May-15	23-Jun-16	407.0	52.0	30-Apr-16	20-Jun-16	1655.0	
Option Latest Exercise Date and Completion Date				14-May-15	09-May-16	361.0	9.0	30-Apr-16	09-May-16	0.0	
01121.CD10020	Option 12 - Latest Exercise Date 22 Feb 16			22-Feb-16		0.0	0.0	30-Apr-16*		-68.0	0%
01121.CD10360	Option 1 (i) - Deferral of Possession / Access Date of Works Area 1121.VH3C and VH3D 1wk to 13wk [postpone to 7Feb16]			09-Nov-15		0.0	0.0	30-Apr-16*		-173.0	0%
01121.CD10360-100	Option 1 (i) - deferral of VH3C & 3D possession date [postpone latest exercise date to 7 Feb 2016] [replace ID CD10360]					0.0	0.0	30-Apr-16*		-83.0	0%
01121.CD10370	Option 1 (ii) - Deferral of Possession / Access Date of Works Area 1121.VH3C and VH3D 14wk to 26wk (latest exercise)			08-Feb-16		0.0	0.0	30-Apr-16*		-82.0	0%
01121.CD10380	Option 1 (iii) - Deferral of Possession / Access Date of Works Area 1121.VH3C and VH3D 27wk to 39wk (latest exercise)			09-May-16		0.0	0.0	09-May-16*		0.0	0%
01121.CD10420	Option 3 - Advancement of relocation of the Specified Vessels from Aberdeen Typhoon Shelter to CBTS (latest excercise)			04-Apr-16		0.0	0.0	30-Apr-16*		-26.0	0%
01121.CD10440	Option 4 - Maintenance for Corrosion Monitoring Works for 12 months after DLP (latest excercise)			04-Apr-16		0.0	0.0	30-Apr-16*		-26.0	0%
01121.CD10550	Option 9 (i) - Condensed Aerosol Fire Extinguishing System - Telecommunication Equip Rm. (latest exercise)			14-May-15		0.0	0.0	30-Apr-16*		-352.0	0%
01121.CD10560	Option 9 (ii) - Condensed Aerosol Fire Extinguishing System - TECS Control Rm. (latest exercise)			14-May-15		0.0	0.0	30-Apr-16*		-352.0	0%
01121.CD10570	Option 9 (iii) - Condensed Aerosol Fire Extinguishing System - LV Switch Rm. (latest exercise)			14-May-15		0.0	0.0	30-Apr-16*		-352.0	0%
Milestone Schedule				15-Dec-15	23-Jun-16	191.0	45.0	06-May-16	20-Jun-16	1655.0	
Cost Center AA - Design and ICE (Independant Checking Engineer) Cost				15-Dec-15	15-Dec-15	0.0	0.0	06-May-16	06-May-16	1700.0	
01121.MS10170	Milestone AA4 (Finish On or Before 6 Sep 15)				15-Dec-15	0.0	0.0		06-May-16	1700.0	0%
Cost Center B - North Ventilation Building (NOV)				13-May-16	13-May-16	0.0	0.0	25-May-16	25-May-16	1681.0	
01121.MS10200	Milestone B2 - Complete Pump Test for NOV, Ready for Bulk Excavation (Finish On or Before 29 May 16)				13-May-16	0.0	0.0		25-May-16	1681.0	0%
Cost Center C - Hung Hom Landfall Tunnels				19-Apr-16	19-Apr-16	0.0	0.0	20-Jun-16	20-Jun-16	1655.0	
01121.MS10310	Milestone C3 - Complete Pump Test for Land Cofferdam - Complete Marine Cofferdam (Finish On or Before 24 Apr 16)				19-Apr-16	0.0	0.0		20-Jun-16	1655.0	0%
Cost Center D - Immersed Tunnels				23-Jun-16	23-Jun-16	0.0	0.0	13-Jun-16	13-Jun-16	1662.0	
01121.MS10420	MIlestone D4.1 - Complete 30% of fabrication of IMT Units by Number (Finish on 3-Jul-16)				23-Jun-16	0.0	0.0		13-Jun-16	1662.0	0%
Cost Centre E - CBTS Tunnels				18-Apr-16	18-Apr-16	0.0	0.0	09-May-16	09-May-16	1697.0	
01121.MS10530	Milestone E3 - Complete temporary reclamation at VH3B & VH3C (Finish on 24-Apr-16) (to be revised)				18-Apr-16	0.0	0.0		09-May-16	1697.0	0%
CONSTRUCTION				06-Nov-15	19-Dec-16	334.0	201.0	08-Mar-15 A	30-Dec-16	1470.0	
Cost Centre A - General Preliminary				23-Nov-15	17-Sep-16	300.0	180.0	23-Nov-15 A	26-Oct-16	1527.0	
A5				23-Nov-15	17-Mar-16	116.0	0.0	23-Nov-15 A	30-Apr-16	1707.0	
01121.15210	A5 - Specified Plans - Implementation with Satisfactory from Engineer			23-Nov-15	17-Mar-16	116.0	0.0	23-Nov-15 A	30-Apr-16	57.0	30%
01121.15220	A5 - Preliminary ABWF and BS Programme - Prepare, Submit and Approve			23-Nov-15	17-Mar-16	116.0	0.0	23-Nov-15 A	30-Apr-16	1707.0	30%
A6				23-Nov-15	17-Sep-16	300.0	180.0	24-Nov-15 A	26-Oct-16	1163.0	
01121.15240	A6 - Specified Plans - Implementation with Satisfactory from Engineer			18-Mar-16	13-Sep-16	180.0	180.0	30-Apr-16	26-Oct-16	57.0	0%
01121.15260	A6 - Programming Management System - Implementation with Satisfactory from Engineer			25-Nov-15	14-Sep-16	295.0	141.0	24-Nov-15 A	17-Sep-16	281.0	10%
01121.15270	A6 - NOV ABWF Shop Drawing & Material Submission (AIP) - Prepare, Submit and Approve			23-Nov-15	17-Sep-16	300.0	141.0	30-Nov-15 A	17-Sep-16	1202.0	10%
01121.15280	A6 - NOV BS Shop Drawing & Material Submission (AIP) - Prepare, Submit and Approve			23-Nov-15	17-Sep-16	300.0	141.0	05-Dec-15 A	17-Sep-16	1202.0	10%
Cost Centre B - North Ventilation Building NOV				27-Apr-16	15-Jun-16	40.0	87.0	05-Apr-16 A	13-Aug-16	7.0	



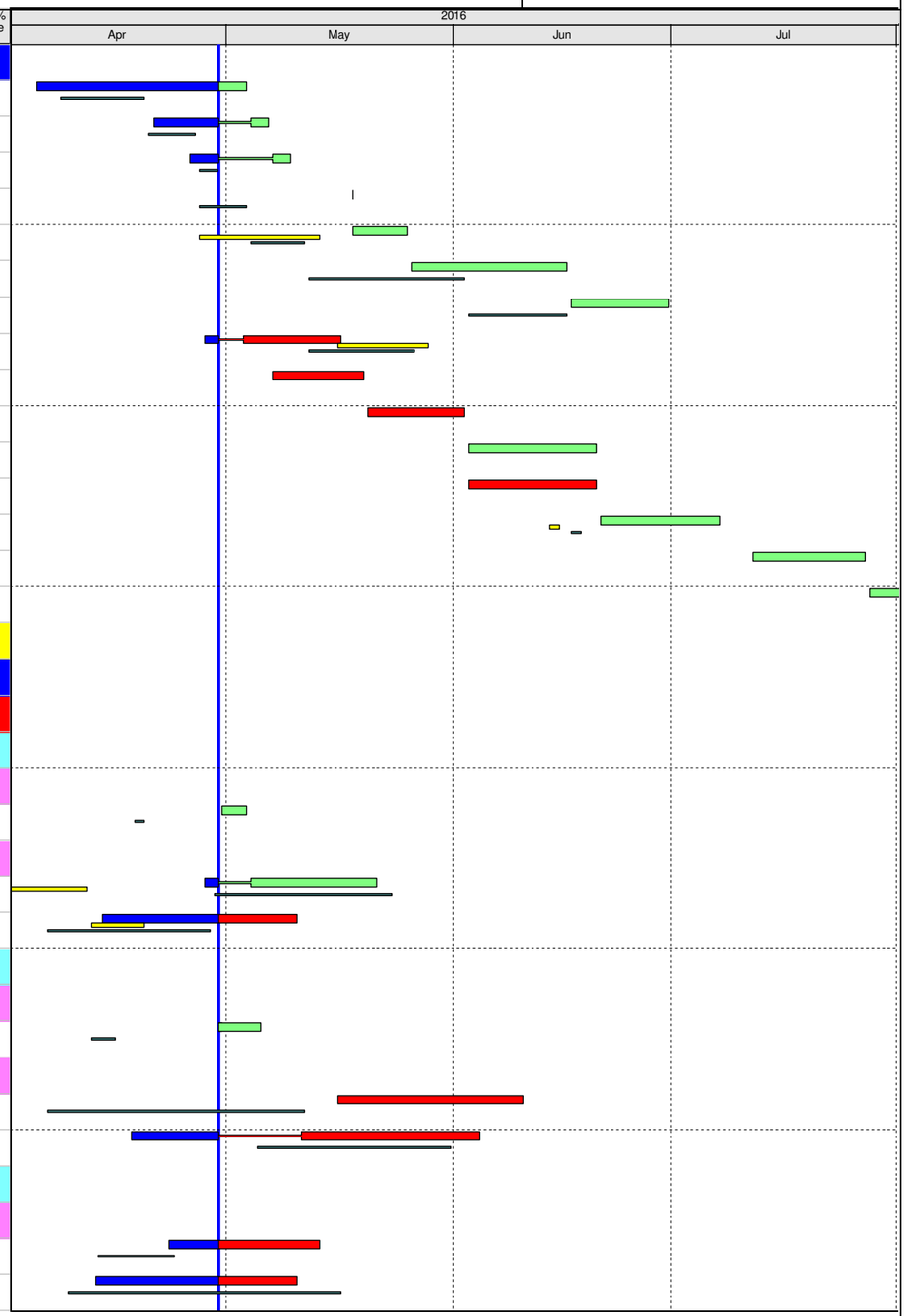
Data Date:
30-Apr-16

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

Updated 3M Rolling Programme May - Jul 2016
(Updated as of 30 Apr 2016)

Date	Revision	Checked	Approved
04-May-16		Vincent Yeung	K. Hatakeyama

Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
NOV Cofferdam Construction and ELS Installation				27-Apr-16	15-Jun-16	40.0	87.0	05-Apr-16 A	13-Aug-16	7.0	
01121.13890-1010	NOV - install DP2, DP5-7, DP13, RW2, OW3, OW(M)7, OW8, OW(M)13, WS2-3, WS6-7	14 nos.	11 nos.			0.0	2.0	05-Apr-16 A	03-May-16	35.0	79%
01121.13890-1020	NOV - install OW1, OW6, OW(M)2, WS1	4 nos.	2 nos.			0.0	3.0	21-Apr-16 A	06-May-16	35.0	50%
01121.13890-1030	NOV - install DP1, DP3-4, DP14, RW3	4 nos.	1 no.			0.0	2.0	26-Apr-16 A	09-May-16	35.0	25%
01121.13890-2000	NOV - pumping test baseline monitoring					0.0	0.0	18-May-16	18-May-16	29.0	0%
01121.13900	NOV - Pumping Test			27-Apr-16	13-May-16	14.0	7.0	18-May-16	25-May-16	29.0	0%
01121.13900-1000	NOV - pumping test report - prepare test report and submit to BD					0.0	18.0	26-May-16	16-Jun-16	29.0	0%
01121.13900-1010	NOV - pumping test report - BD comment and acceptance					0.0	14.0	17-Jun-16	30-Jun-16	35.0	0%
01121.13940	NOV - Excavate to +1.8mPD (Zone B)	4500m3		16-May-16	28-May-16	12.0	11.0	28-Apr-16 A	16-May-16	-6.0	0%
01121.13940-100	NOV - Install S1 at +2.8mPD (Zone B)					0.0	10.0	07-May-16	19-May-16	-6.0	0%
01121.13940-200	NOV - A4 Platform (Section 1)					0.0	12.0	20-May-16	02-Jun-16	-6.0	0%
01121.13940-300	NOV - Install S1 at +3.5mPD (Zone B)					0.0	14.0	03-Jun-16	20-Jun-16	1.0	0%
01121.13940-400	NOV - A4 Platform (Section 2)					0.0	14.0	03-Jun-16	20-Jun-16	-6.0	0%
01121.13960	NOV - Excavate to -0.5mPD (Zone B)			14-Jun-16	15-Jun-16	2.0	14.0	21-Jun-16	07-Jul-16	10.0	0%
01121.13960-100	NOV - Install S2 at +0.5mPD and +1.3mPD					0.0	14.0	12-Jul-16	27-Jul-16	7.0	0%
01121.13980-100	NOV- Excavate to S3 (-4.5mPD)					0.0	15.0	28-Jul-16	13-Aug-16	7.0	0%
Cost Centre C - Hung Hom Cut and Cover Tunnels				16-Feb-16	17-Jun-16	99.0	118.0	14-Mar-16 A	20-Sep-16	1254.0	
HUH Submerged Tunnel (Area B)				18-Feb-16	17-Jun-16	97.0	82.0	13-Apr-16 A	08-Aug-16	-13.0	
HUH Area B - HUH Temp Cofferdam				18-Feb-16	17-Jun-16	97.0	82.0	13-Apr-16 A	08-Aug-16	-13.0	
HUH Area B - Under Bypass Cofferdam (By SNE)				03-Mar-16	19-Apr-16	37.0	17.0	14-Apr-16 A	21-May-16	9.0	
Rock Socket & Grouting - West - SNE						0.0	2.0	30-Apr-16	03-May-16	9.0	
01121.25940-400	HUH Area B (under bypass) - West - drive casing inside existing casting (BP075) (SNE Area)	1 no.				0.0	2.0	30-Apr-16	03-May-16	9.0	0%
TAM Grout - SNE				03-Mar-16	19-Apr-16	37.0	17.0	14-Apr-16 A	21-May-16	9.0	
01121.22415	HUH Area B (under bypass) - TAM grout West (SNE Area)	100%	18%	03-Mar-16	11-Apr-16	30.0	15.0	28-Apr-16 A	21-May-16	9.0	18%
01121.22420	HUH Area B (under bypass) - TAM grout East (SNE Area)	100%	25%	12-Apr-16	19-Apr-16	7.0	8.0	14-Apr-16 A	10-May-16	-3.0	25%
HUH Area B - Under Bypass Cofferdam - (by A3 Platform)				18-Feb-16	20-Feb-16	3.0	33.0	18-Apr-16 A	10-Jun-16	-7.0	
Sheetpile - By A3 Platform				18-Feb-16	20-Feb-16	3.0	4.0	30-Apr-16 A	05-May-16	9.0	
01121.22270	HUH Area B (A3 platform) - West - install sheetpile (BP105-BP114)	6m 15nos.	5%	18-Feb-16	20-Feb-16	3.0	4.0	30-Apr-16 A	05-May-16	9.0	5%
TAM Grout - By A3 Platform						0.0	25.0	18-Apr-16 A	10-Jun-16	-7.0	
01121.26580	HUH Area B (under bypass) - West - TAM Grout (by A3 Platform)	100%				0.0	22.0	16-May-16	10-Jun-16	-7.0	0%
01121.26590	HUH Area B (under bypass) - East - TAM Grout (by A3 Platform)	100%				0.0	21.0	18-Apr-16 A	04-Jun-16	-3.0	0%
HUH Area B - Outside Bypass Cofferdam (By Ngai Shun)						0.0	33.0	13-Apr-16 A	10-Jun-16	-7.0	
HUH Area B - Outside Bypass Cofferdam - TAM Grout						0.0	33.0	13-Apr-16 A	10-Jun-16	-7.0	
01121.26520	HUH Area B (outside bypass) - West - TAM grout (BP180 - BP76)	100%	45%			0.0	11.0	23-Apr-16 A	13-May-16	-7.0	45%
01121.26530	HUH Area B (outside bypass) - East - TAM grout (BP160 - BP17)	100%	20%			0.0	8.0	13-Apr-16 A	10-May-16	-7.0	20%



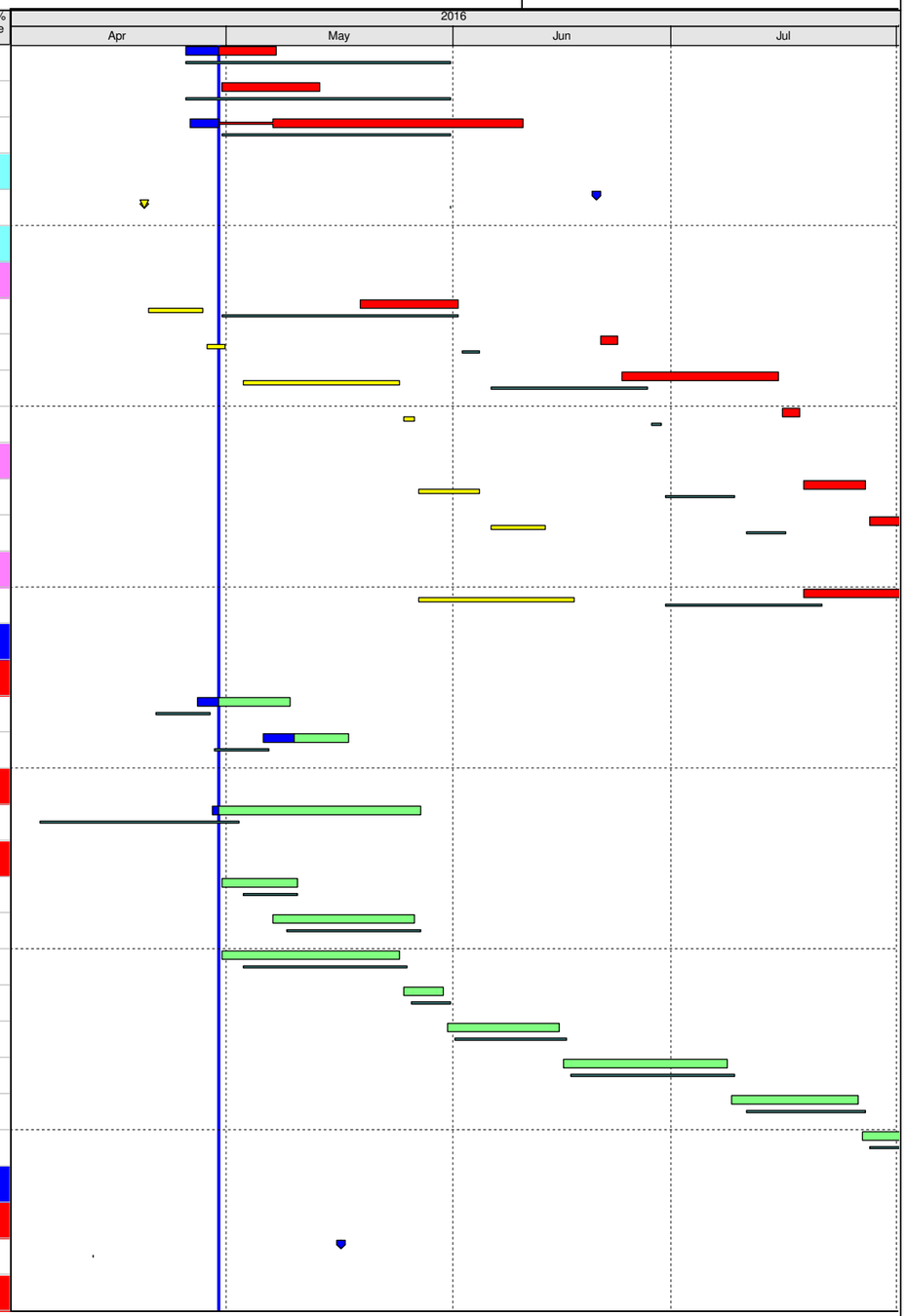
Data Date:
30-Apr-16

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

Updated 3M Rolling Programme May - Jul 2016
(Updated as of 30 Apr 2016)

Date	Revision	Checked	Approved
04-May-16		Vincent Yeung	K. Hatakeyama

Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
01121.26550	HUH Area B (outside bypass) - End Wall West - TAM grout (BP171-BP180)	100%	30%			0.0	6.0	25-Apr-16 A	07-May-16	-2.0	30%
01121.26560	HUH Area B (outside bypass) - End Wall East - TAM grout (BP151-BP160)	100%	0%			0.0	11.0	30-Apr-16 A	13-May-16	-7.0	0%
01121.26570	HUH Area B (outside bypass) - End Wall - TAM grout (EP001-EP023)	100%	0%			0.0	28.0	26-Apr-16 A	10-Jun-16	-7.0	0%
HUH Area B - (B2) Piling Platform & Cofferdam				19-Apr-16	19-Apr-16	0.0	0.0	20-Jun-16	20-Jun-16	-15.0	
01121.10810	HUH Area B - cofferdam completed				19-Apr-16	0.0	0.0		20-Jun-16	-15.0	0%
HUH Area B - Bulk Excavation (14745m3 + 2521m3 of rock) and ELS				20-Apr-16	17-Jun-16	48.0	68.0	19-May-16	08-Aug-16	-13.0	
HUH Area B - Pumping Test and Dewatering				20-Apr-16	26-May-16	30.0	50.0	19-May-16	18-Jul-16	-15.0	
01121.17270	HUH Area B - Install Dewatering Well (3no x 2sides)			20-Apr-16	27-Apr-16	7.0	12.0	19-May-16	01-Jun-16	0.0	0%
01121.17280	HUH Area B - Dewater down to seabed level			28-Apr-16	30-Apr-16	3.0	3.0	21-Jun-16	23-Jun-16	-15.0	0%
01121.17290	HUH Area B - Pump test after seabed exposed			03-May-16	24-May-16	18.0	18.0	24-Jun-16	15-Jul-16	-15.0	0%
01121.17300	HUH Area B - Dewater to 1m below S2 level (-5mPD)			25-May-16	26-May-16	2.0	2.0	16-Jul-16	18-Jul-16	-15.0	0%
HUH Area B1 (Outside HUH Bypass)				27-May-16	13-Jun-16	14.0	14.0	19-Jul-16	03-Aug-16	-15.0	
01121.17310	HUH Area B1 (O/S HUH Bypass) - Excavate to -5.5m (MD:1715m3)			27-May-16	04-Jun-16	8.0	8.0	19-Jul-16	27-Jul-16	-15.0	0%
01121.17315	HUH Area B1 (O/S HUH Bypass) - Excavate to -5.5m (CDG387m3)			06-Jun-16	13-Jun-16	6.0	6.0	28-Jul-16	03-Aug-16	-15.0	0%
HUH Area B2 (Under Hung Hom by-pass)				27-May-16	17-Jun-16	18.0	18.0	19-Jul-16	08-Aug-16	-13.0	
01121.17420	HUH Area B2 (Under HUH Bypass) - Excavate to -5.5m (CDG:1919m3)			27-May-16	17-Jun-16	18.0	18.0	19-Jul-16	08-Aug-16	-13.0	0%
Hung Hom Finger Pier						0.0	118.0	27-Apr-16 A	20-Sep-16	147.0	
Demolish Ramp 1						0.0	13.0	27-Apr-16 A	17-May-16	158.0	
01121.10780-134	HUH Finger Pier Ramp demolition - remove r.c. footings	100%	90%			0.0	7.0	27-Apr-16 A	09-May-16	158.0	90%
01121.10780-145	HUH Finger Pier Ramp demolition - submit Form BA14 for completion of ramp demolition	100%	50%			0.0	6.0	06-May-16 A	17-May-16	158.0	50%
Utilities Diversion and Removal of Paving						0.0	28.0	29-Apr-16 A	27-May-16	166.0	
01121.10780-194	HUH Finger Pier A&A works - BD review and approve design amendment					0.0	28.0	29-Apr-16 A	27-May-16	166.0	0%
A&A Works to Finger Pier						0.0	118.0	30-Apr-16 A	20-Sep-16	147.0	
01121.10780-160	HUH Finger Pier A&A works - watermain diversion and remove FH	approx 60m;				0.0	8.0	03-May-16 A	10-May-16	147.0	0%
01121.10780-162	HUH Finger Pier A&A works - remove paving					0.0	16.0	07-May-16	26-May-16	161.0	0%
01121.10790-1025	HUH Finger Pier A&A works - application of MDN					0.0	19.0	30-Apr-16	24-May-16	147.0	0%
01121.10790-1030	HUH Finger Pier A&A works - plant mobilization for seawall modification	4500m3 @550m3/d				0.0	5.0	25-May-16	30-May-16	147.0	0%
01121.10790-1042	HUH Finger Pier A&A works - land excavation	approx. 80nos. x 2				0.0	13.0	31-May-16	15-Jun-16	147.0	0%
01121.10790-1050	HUH Finger Pier A&A works - marine excavation	7300 m3 @550m3/d				0.0	19.0	16-Jun-16	08-Jul-16	147.0	0%
01121.10790-1060	HUH Finger Pier A&A works - seawall construction					0.0	15.0	09-Jul-16	26-Jul-16	147.0	0%
01121.10790-1070	HUH Finger Pier A&A works - remove old seawall block and backfill	9850 m3				0.0	47.0	27-Jul-16	20-Sep-16	147.0	0%
HUH Land base Tunnel (Area C)				16-Feb-16	05-May-16	64.0	80.0	14-Mar-16 A	05-Aug-16	1292.0	
HUH Area C - Cofferdam (On Land)				29-Feb-16	29-Feb-16	0.0	0.0	16-May-16	16-May-16	1360.0	
01121.18860	HUH Area C - Cofferdam Area C Completed				29-Feb-16	0.0	0.0		16-May-16	1360.0	0%
HUH Area C - Land Cofferdam				16-Feb-16	20-Feb-16	5.0	41.0	14-Mar-16 A	20-Jun-16	1331.0	



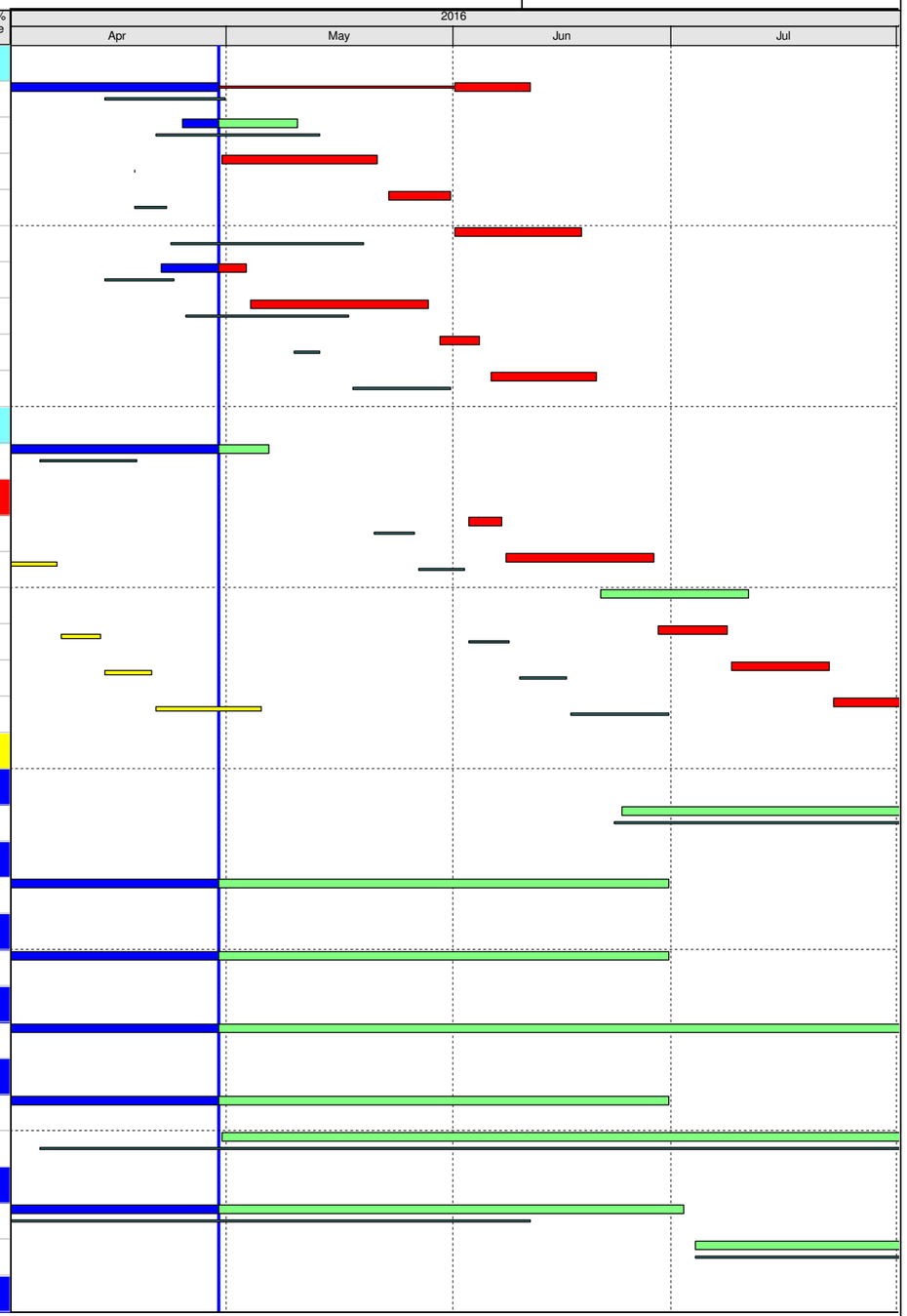
Data Date:
30-Apr-16

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

Updated 3M Rolling Programme May - Jul 2016
(Updated as of 30 Apr 2016)

Date	Revision	Checked	Approved
04-May-16		Vincent Yeung	K. Hatakeyama

Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
HUH Area C - Land Cofferdam (West) - H-pile & Grout						0.0	41.0	14-Mar-16 A	20-Jun-16	-15.0	
01121.21880-142	HUH Area C - West behind seawall (CP036-042) - TAM grout cutrain	100%	0%			0.0	9.0	14-Mar-16 A	11-Jun-16	-8.0	100%
01121.21880-165	HUH Area C - East behind seawall (CP001-009) - TAM grout curtain	100%	0%			0.0	8.0	25-Apr-16 A	10-May-16	6.0	0%
01121.21880-180	HUH Area C - West outside seawall (BP115 - CP36B) - preboring at seawall area					0.0	17.0	03-May-16 A	21-May-16	-14.0	0%
01121.21880-182	HUH Area C - West outside seawall (BP115 - CP36B) - install sheetpile					0.0	8.0	23-May-16	31-May-16	-14.0	0%
01121.21880-184	HUH Area C - West outside seawall (BP115 - CP36B) - TAM grout curtain	100%	0%			0.0	15.0	01-Jun-16	18-Jun-16	-14.0	0%
01121.21880-190	HUH Area C - East outside seawall (BP051-062) - construct retaininig piles outside seawall					0.0	2.0	22-Apr-16 A	03-May-16	-15.0	0%
01121.21880-200	HUH Area C - East outside seawall (BP051-062) - preboring					0.0	21.0	04-May-16	28-May-16	-15.0	0%
01121.21880-202	HUH Area C - East outside seawall (BP051-062) - install sheetpile					0.0	6.0	30-May-16	04-Jun-16	-15.0	0%
01121.21880-210	HUH Area C - East outside seawall (BP051-062) - TAM grout curtain at seawall area	100%	0%			0.0	12.0	06-Jun-16	20-Jun-16	-15.0	0%
HUH Area C - Cut-off wall (between HUH B & C) - TAM / Fissure Grout				16-Feb-16	20-Feb-16	5.0	5.0	31-Mar-16 A	06-May-16	1367.0	
01121.18610	HUH Area C - Cut Off Wall between HUH B&C - TAM and fissures grout			16-Feb-16	20-Feb-16	5.0	5.0	31-Mar-16 A	06-May-16	1367.0	80%
HUH Area C - Excavation (10828m3) and ELS (On Land)				22-Mar-16	05-May-16	34.0	53.0	03-Jun-16	05-Aug-16	-6.0	
01121.12490	HUH Area C - Excavate to +2.5mPD (Zone A) and remove existing haul road near FHOB			22-Mar-16	30-Mar-16	5.0	4.0	03-Jun-16	07-Jun-16	-6.0	0%
01121.12500	HUH Area C - Install S1 at +3.5mPD (Zone A)			31-Mar-16	07-Apr-16	6.0	17.0	08-Jun-16	28-Jun-16	-6.0	0%
01121.12500-100	HUH Area C - A4 Platform (Section 3)					0.0	17.0	21-Jun-16	11-Jul-16	1.0	0%
01121.12520	HUH Area C - Excavate to -0.5mPD (Zone A)			08-Apr-16	13-Apr-16	5.0	8.0	29-Jun-16	08-Jul-16	-6.0	0%
01121.12530	HUH Area C - Install S2 at +0.5mPD and connection			14-Apr-16	20-Apr-16	6.0	12.0	09-Jul-16	22-Jul-16	-6.0	0%
01121.12540	HUH Area C - Excavate to -5.5m (Fill material:3280m3)			21-Apr-16	05-May-16	12.0	12.0	23-Jul-16	05-Aug-16	-6.0	0%
Cost centre D - Immersed Tunnels				06-Nov-15	19-Dec-16	334.0	201.0	08-Mar-15 A	30-Dec-16	1470.0	
Reinstatement of Shek O Site				11-Oct-16	19-Dec-16	60.0	60.0	24-Jun-16	02-Sep-16	99.0	
01121.22670	Shek O Reinstatement - Dismantle All Fabrication Facilities/Equipment Inside the Basin (1st portion)			11-Oct-16	19-Dec-16	60.0	60.0	24-Jun-16	02-Sep-16	99.0	0%
IMT End Frame & Collar Plate						0.0	50.0	01-Dec-15 A	30-Jun-16	59.0	
01121.27840-1010	IMT end frame and collar plate - off site fabrication (remainig batch)	100%	35%			0.0	50.0	01-Dec-15 A	30-Jun-16	59.0	35%
Cast-in Items						0.0	50.0	30-Nov-15 A	30-Jun-16	6.0	
01121.27840-1110	IMT Cast-in items - off site fabrication (remaining units)	100%	70%			0.0	50.0	30-Nov-15 A	30-Jun-16	6.0	70%
Ballast Tank						0.0	102.0	28-Dec-15 A	31-Aug-16	114.0	
01121.27840-1200	IMT ballast tank - off site fabrication	100%	75%			0.0	102.0	28-Dec-15 A	31-Aug-16	114.0	75%
Bulk Head						0.0	127.0	30-Nov-15 A	30-Sep-16	94.0	
01121.27840-1300	IMT steel bulkhead - off site fabrication for cast-in items	100%	95%			0.0	50.0	30-Nov-15 A	30-Jun-16	94.0	95%
01121.27840-1310	IMT steel bulkhead - off site fabrication for main bulk head	100%				0.0	127.0	30-Apr-16	30-Sep-16	94.0	0%
Gina Gasket						0.0	99.0	11-Jan-16 A	27-Aug-16	1572.0	
01121.27830	IMT Gina Gasket - 1st batch off site fabrication / delivery	100%	65%			0.0	51.0	11-Jan-16 A	02-Jul-16	175.0	90%
01121.27840	IMT Gina Gasket - 2nd batch off site fabrication / delivery					0.0	48.0	04-Jul-16	27-Aug-16	1572.0	0%
Immersed Tunnel Units Fabrication				06-Nov-15	19-Dec-16	334.0	85.0	09-Nov-15 A	11-Aug-16	139.0	



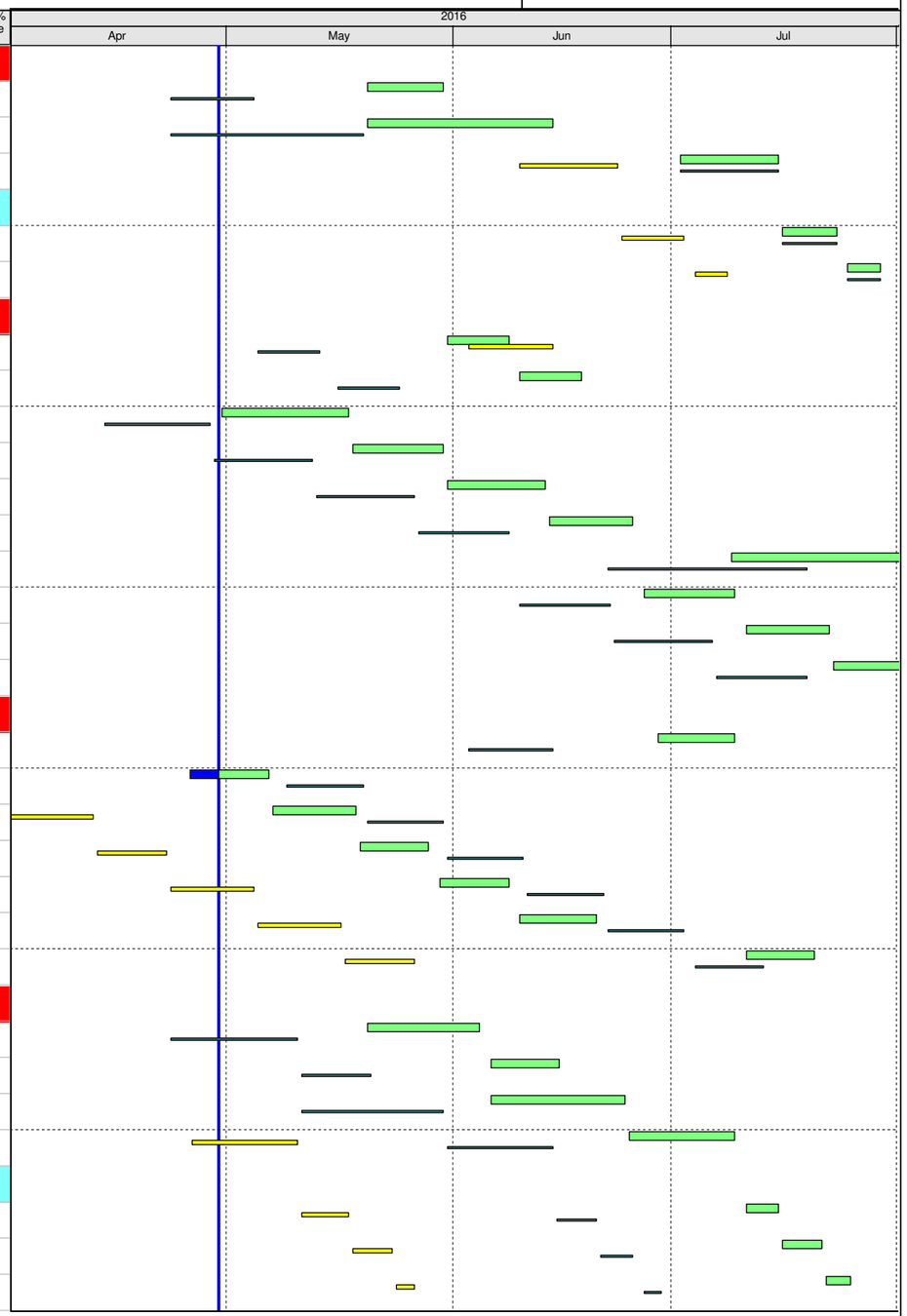
Data Date:
30-Apr-16

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

Updated 3M Rolling Programme May - Jul 2016
(Updated as of 30 Apr 2016)

Date	Revision	Checked	Approved
04-May-16		Vincent Yeung	K. Hatakeyama

Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
IMT8 (9 Bays)				03-Mar-16	08-Jul-16	102.0	59.0	20-May-16	29-Jul-16	142.0	
01121.20780	IMT8 - Base Slab End Bay 9			03-Mar-16	12-Mar-16	9.0	9.0	20-May-16	30-May-16	44.0	0%
01121.20790	IMT8 - Casting Walls and Roof End Bay 1			12-Mar-16	30-Mar-16	13.0	21.0	20-May-16	14-Jun-16	155.0	0%
01121.20880	IMT8 - Casting Walls and Roof End Bay 9			10-Jun-16	23-Jun-16	12.0	12.0	02-Jul-16	15-Jul-16	142.0	0%
Finishing Works (Pre-Stressing, Ballasts, Bulkheads, Waterproof Membrane and Gina Gaskets)				24-Jun-16	08-Jul-16	12.0	12.0	16-Jul-16	29-Jul-16	142.0	
01121.10345	IMT8 - fitting out - gain concrete strength before prestressing			24-Jun-16	02-Jul-16	7.0	7.0	16-Jul-16	23-Jul-16	142.0	0%
01121.10350	IMT8 - fitting out - Pre-Stressing and Grouting Works			04-Jul-16	08-Jul-16	5.0	5.0	25-Jul-16	29-Jul-16	142.0	0%
IMT6 (9 Bays)				03-Jun-16	26-Nov-16	147.0	79.0	30-Apr-16	04-Aug-16	112.0	
01121.20500	IMT6 - Base Slab End Bay 9			03-Jun-16	14-Jun-16	9.0	8.0	31-May-16	08-Jun-16	44.0	0%
01121.20580	IMT6 - Base Slab End Bay 1			29-Aug-16	07-Sep-16	9.0	8.0	10-Jun-16	18-Jun-16	44.0	0%
01121.20600	IMT6 - Casting Walls and Roof Bay 2			24-Aug-16	07-Sep-16	13.0	13.0	30-Apr-16	17-May-16	27.0	0%
01121.20610	IMT6 - Casting Walls and Roof Bay 3			08-Sep-16	21-Sep-16	11.0	11.0	18-May-16	30-May-16	27.0	0%
01121.20620	IMT6 - Casting Walls and Roof Bay 4			22-Sep-16	05-Oct-16	11.0	11.0	31-May-16	13-Jun-16	27.0	0%
01121.20630	IMT6 - Casting Walls and Roof Bay 5			06-Oct-16	19-Oct-16	11.0	11.0	14-Jun-16	25-Jun-16	27.0	0%
01121.20640	IMT6 - Additional pours on roof of Bay 5 for Ventilation Duct			01-Nov-16	26-Nov-16	23.0	23.0	09-Jul-16	04-Aug-16	112.0	0%
01121.20650	IMT6 - Casting Walls and Roof Bay 6			20-Oct-16	01-Nov-16	11.0	11.0	27-Jun-16	09-Jul-16	27.0	0%
01121.20660	IMT6 - Casting Walls and Roof Bay 7			02-Nov-16	14-Nov-16	11.0	11.0	11-Jul-16	22-Jul-16	27.0	0%
01121.20670	IMT6 - Casting Walls and Roof Bay 8			15-Nov-16	26-Nov-16	11.0	11.0	23-Jul-16	04-Aug-16	27.0	0%
IMT5 (9 Bays)				16-Feb-16	26-May-16	81.0	66.0	26-Apr-16 A	20-Jul-16	125.0	
01121.19740	IMT5 - Base Slab End Bay 1			16-Feb-16	25-Feb-16	9.0	9.0	29-Jun-16	09-Jul-16	61.0	0%
01121.19770	IMT5 - Base Slab Bay 6			18-Mar-16	31-Mar-16	9.0	5.0	26-Apr-16 A	06-May-16	89.0	0%
01121.19780	IMT5 - Base Slab Bay 5			01-Apr-16	12-Apr-16	9.0	9.0	07-May-16	18-May-16	89.0	0%
01121.19790	IMT5 - Base Slab Bay 4			13-Apr-16	22-Apr-16	9.0	9.0	19-May-16	28-May-16	89.0	0%
01121.19800	IMT5 - Base Slab Bay 3			23-Apr-16	04-May-16	9.0	9.0	30-May-16	08-Jun-16	93.0	0%
01121.19810	IMT5 - Base Slab Bay 2			05-May-16	16-May-16	9.0	9.0	10-Jun-16	20-Jun-16	95.0	0%
01121.19820	IMT5 - Base Slab End Bay 9			17-May-16	26-May-16	9.0	9.0	11-Jul-16	20-Jul-16	125.0	0%
IMT4 (9 Bays)				06-Nov-15	01-Jun-16	167.0	60.0	20-May-16	30-Jul-16	149.0	
01121.16080	IMT4 - Base Slab End Bay 1			06-Nov-15	16-Nov-15	9.0	14.0	20-May-16	04-Jun-16	81.0	0%
01121.16160	IMT4 - Base Slab End Bay 9			02-Feb-16	15-Feb-16	9.0	8.0	06-Jun-16	15-Jun-16	81.0	0%
01121.16170	IMT4 - Casting Walls and Roof End Bay 1			23-Jan-16	06-Feb-16	13.0	16.0	06-Jun-16	24-Jun-16	117.0	0%
01121.16980	IMT4 - Casting Walls and Roof End Bay 9			26-Apr-16	10-May-16	12.0	12.0	25-Jun-16	09-Jul-16	117.0	0%
Finishing Works (Pre-Stressing, Ballasts, Bulkheads, Waterproof Membrane and Gina Gaskets)				11-May-16	01-Jun-16	18.0	18.0	11-Jul-16	30-Jul-16	149.0	
01121.10015	IMT4 - fitting out - gain concrete strength before prestressing			11-May-16	17-May-16	5.0	5.0	11-Jul-16	15-Jul-16	149.0	0%
01121.10020	IMT4 - fitting out - Pre-Stressing and Grouting Works			18-May-16	23-May-16	5.0	5.0	16-Jul-16	21-Jul-16	149.0	0%
01121.10030	IMT4 - fitting out - Install Ballast Tank inside IMT			24-May-16	26-May-16	3.0	3.0	22-Jul-16	25-Jul-16	149.0	0%



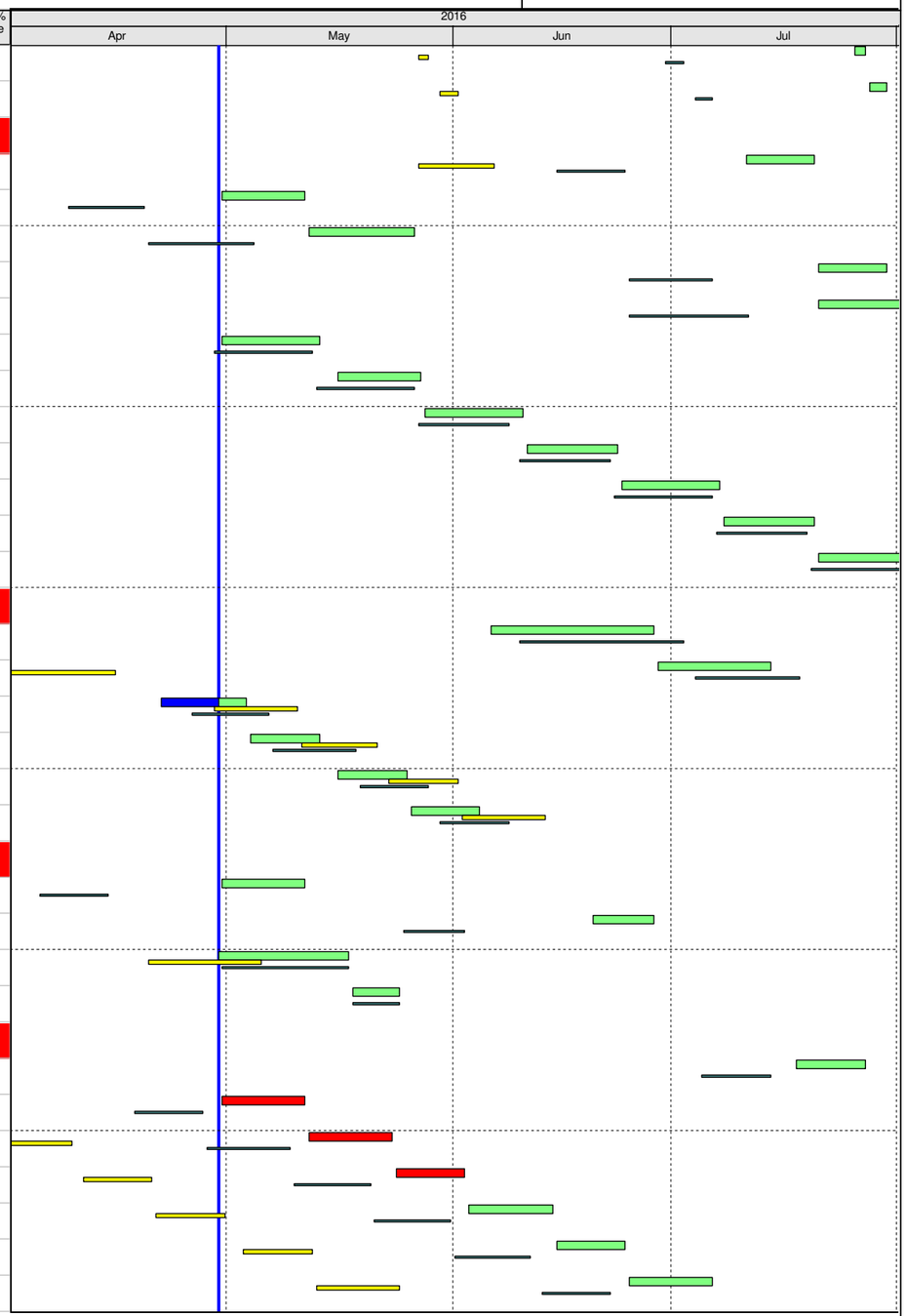
Data Date:
30-Apr-16

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

Updated 3M Rolling Programme May - Jul 2016
(Updated as of 30 Apr 2016)

Date	Revision	Checked	Approved
04-May-16		Vincent Yeung	K. Hatakeyama

Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
01121.10040	IMT4 - fitting out - Install and Weld Encounter Plates on Collar Plates			27-May-16	28-May-16	2.0	2.0	26-Jul-16	27-Jul-16	149.0	0%
01121.10050	IMT4 - fitting out - Install Bulkheads on Both Ends			30-May-16	01-Jun-16	3.0	3.0	28-Jul-16	30-Jul-16	149.0	0%
IMT7 (9 Bays)				27-May-16	15-Nov-16	143.0	79.0	30-Apr-16 A	04-Aug-16	99.0	
01121.19930	IMT7 - Base Slab End Bay 9			27-May-16	06-Jun-16	9.0	9.0	11-Jul-16	20-Jul-16	61.0	0%
01121.20000	IMT7 - Base Slab Bay 2			15-Aug-16	24-Aug-16	9.0	9.0	02-May-16 A	11-May-16	36.0	0%
01121.20005	IMT7 - base formwork move to IMT9					0.0	12.0	12-May-16	26-May-16	83.0	0%
01121.20010	IMT7 - Base Slab End Bay 1			25-Aug-16	03-Sep-16	9.0	9.0	21-Jul-16	30-Jul-16	103.0	0%
01121.20020	IMT7 - Casting Walls and Roof End Bay 9			26-Sep-16	12-Oct-16	13.0	13.0	21-Jul-16	04-Aug-16	61.0	0%
01121.20030	IMT7 - Casting Walls and Roof Bay 8			15-Aug-16	26-Aug-16	11.0	11.0	30-Apr-16	13-May-16	23.0	0%
01121.20040	IMT7 - Casting Walls and Roof Bay 7			27-Aug-16	08-Sep-16	11.0	11.0	16-May-16	27-May-16	23.0	0%
01121.20050	IMT7 - Casting Walls and Roof Bay 6			09-Sep-16	22-Sep-16	11.0	11.0	28-May-16	10-Jun-16	23.0	0%
01121.20060	IMT7 - Casting Walls and Roof Bay 5			23-Sep-16	06-Oct-16	11.0	11.0	11-Jun-16	23-Jun-16	23.0	0%
01121.20070	IMT7 - Casting Walls and Roof Bay 4			07-Oct-16	20-Oct-16	11.0	11.0	24-Jun-16	07-Jul-16	23.0	0%
01121.20080	IMT7 - Casting Walls and Roof Bay 3			21-Oct-16	02-Nov-16	11.0	11.0	08-Jul-16	20-Jul-16	23.0	0%
01121.20090	IMT7 - Casting Walls and Roof Bay 2			03-Nov-16	15-Nov-16	11.0	11.0	21-Jul-16	02-Aug-16	23.0	0%
IMT9.2 (8 Bays)				12-Dec-15	13-Jun-16	145.0	61.0	22-Apr-16 A	14-Jul-16	143.0	
01121.20882	IMT9.1 - Base Slab End Bay including base plate waterproofing layer			12-Dec-15	06-Jan-16	19.0	19.0	06-Jun-16	28-Jun-16	143.0	0%
01121.20884	IMT9.1 - Casting Walls and Roof End Bay			31-Mar-16	15-Apr-16	13.0	13.0	29-Jun-16	14-Jul-16	143.0	0%
01121.20940	IMT9.2 - Base Slab Bay 5			29-Apr-16	10-May-16	9.0	2.0	22-Apr-16 A	03-May-16	141.0	90%
01121.20950	IMT9.2 - Base Slab Bay 6			11-May-16	21-May-16	9.0	9.0	04-May-16	13-May-16	143.0	0%
01121.20960	IMT9.2 - Base Slab Bay 7			23-May-16	01-Jun-16	9.0	9.0	16-May-16	25-May-16	143.0	0%
01121.20970	IMT9.2 - Base Slab End Bay 8			02-Jun-16	13-Jun-16	9.0	9.0	26-May-16	04-Jun-16	143.0	0%
IMT2 (9 Bays)				13-Nov-15	05-May-16	139.0	48.0	30-Apr-16 A	28-Jun-16	61.0	
01121.20120	IMT2 - Base Slab End Bay 9			13-Nov-15	23-Nov-15	9.0	9.0	30-Apr-16	11-May-16	92.0	0%
01121.20200	IMT2 - Base Slab End Bay 1			12-Feb-16	22-Feb-16	9.0	8.0	20-Jun-16	28-Jun-16	61.0	0%
01121.20280	IMT2 - Casting Walls and Roof Bay 2			20-Apr-16	05-May-16	13.0	13.0	30-Apr-16 A	17-May-16	6.0	0%
01121.26600	IMT2 - demobilize formwork to IMT1					0.0	6.0	18-May-16	24-May-16	6.0	0%
IMT1 (9 curved bays)				05-Mar-16	29-Aug-16	144.0	84.0	30-Apr-16	10-Aug-16	107.0	
01121.16390	IMT1 - Base Slab End Bay 1			05-Mar-16	15-Mar-16	9.0	9.0	18-Jul-16	27-Jul-16	81.0	0%
01121.16400	IMT1 - Base Slab Bay 2			16-Mar-16	29-Mar-16	9.0	9.0	30-Apr-16	11-May-16	-2.0	0%
01121.16420	IMT1 - Base Slab Bay 3			30-Mar-16	09-Apr-16	9.0	9.0	12-May-16	23-May-16	-2.0	0%
01121.16430	IMT1 - Base Slab Bay 4			11-Apr-16	20-Apr-16	9.0	9.0	24-May-16	02-Jun-16	-2.0	0%
01121.16440	IMT1 - Base Slab Bay 5			21-Apr-16	30-Apr-16	9.0	9.0	03-Jun-16	14-Jun-16	24.0	0%
01121.16450	IMT1 - Base Slab Bay 6			03-May-16	12-May-16	9.0	9.0	15-Jun-16	24-Jun-16	26.0	0%
01121.16460	IMT1 - Base Slab Bay 7			13-May-16	24-May-16	9.0	9.0	25-Jun-16	06-Jul-16	28.0	0%



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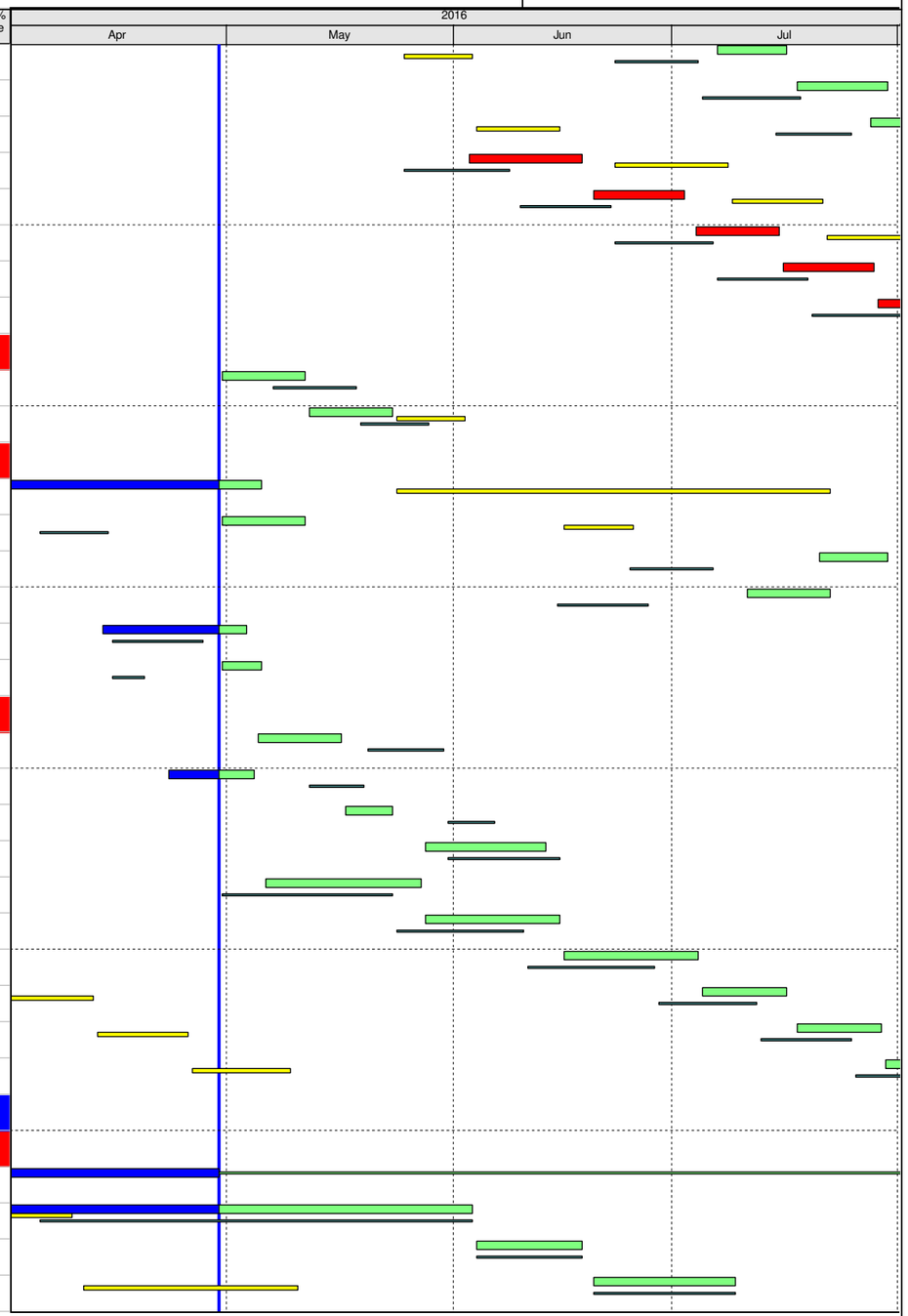
Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
01121.16470	IMT1 - Base Slab Bay 8			25-May-16	03-Jun-16	9.0	9.0	07-Jul-16	16-Jul-16	32.0	0%
01121.16472	IMT1 - base formwork move to IMT3					0.0	12.0	18-Jul-16	30-Jul-16	37.0	0%
01121.16480	IMT1 - Base Slab End Bay 9			04-Jun-16	15-Jun-16	9.0	9.0	28-Jul-16	06-Aug-16	110.0	0%
01121.16510	IMT1 - Casting Walls and Roof Bay 2			23-Jun-16	08-Jul-16	13.0	13.0	03-Jun-16	18-Jun-16	-2.0	0%
01121.16520	IMT1 - Casting Walls and Roof Bay 3			09-Jul-16	21-Jul-16	11.0	11.0	20-Jun-16	02-Jul-16	-2.0	0%
01121.16530	IMT1 - Casting Walls and Roof Bay 4			22-Jul-16	03-Aug-16	11.0	11.0	04-Jul-16	15-Jul-16	-2.0	0%
01121.16540	IMT1 - Casting Walls and Roof Bay 5			04-Aug-16	16-Aug-16	11.0	11.0	16-Jul-16	28-Jul-16	-2.0	0%
01121.16560	IMT1 - Casting Walls and Roof Bay 6			17-Aug-16	29-Aug-16	11.0	11.0	29-Jul-16	10-Aug-16	-2.0	0%
IMT3 (9 Bays)				23-Feb-16	02-Jun-16	81.0	18.0	30-Apr-16	23-May-16	173.0	
01121.20310	IMT3 - Base Slab End Bay 1			23-Feb-16	03-Mar-16	9.0	9.0	30-Apr-16	11-May-16	169.0	0%
01121.20390	IMT3 - Base Slab End Bay 9			24-May-16	02-Jun-16	9.0	9.0	12-May-16	23-May-16	173.0	0%
IMT11 (6 Curved Bays)				24-May-16	19-Dec-16	175.0	75.0	09-Nov-15 A	30-Jul-16	110.0	
01121.19508	IMT11 - base steel plate waterproofing layer	100%	89%	24-May-16	22-Jul-16	50.0	4.0	09-Nov-15 A	05-May-16	69.0	89%
01121.19510	IMT11 - Base Slab End Bay 7			16-Jun-16	25-Jun-16	9.0	9.0	30-Apr-16	11-May-16	165.0	0%
01121.19560	IMT11 - Base Slab End Bay 1			09-Aug-16	18-Aug-16	9.0	9.0	21-Jul-16	30-Jul-16	110.0	0%
01121.19570	IMT11 - Casting Walls and Roof End Bay 7			30-Nov-16	12-Dec-16	11.0	11.0	11-Jul-16	22-Jul-16	117.0	0%
01121.19612	IMT11 - Casting Walls and Roof Bay 2					0.0	2.0	14-Apr-16 A	03-May-16	183.0	90%
01121.19630	IMT11 - demobolized formwork to IMT10			13-Dec-16	19-Dec-16	6.0	4.0	30-Apr-16	05-May-16	69.0	0%
IMT10 (7 curved Bays)				02-Dec-15	09-May-16	126.0	85.0	23-Apr-16 A	11-Aug-16	80.0	
01121.16590	IMT10 - Base Slab End Bay 1			02-Dec-15	11-Dec-15	9.0	9.0	05-May-16	16-May-16	140.0	0%
01121.16660	IMT10 - Base Slab Bay 8			20-Feb-16	26-Feb-16	6.0	3.0	23-Apr-16 A	04-May-16	103.0	60%
01121.16670	IMT10 - Base Slab End Bay 9			27-Feb-16	04-Mar-16	6.0	6.0	17-May-16	23-May-16	147.0	0%
01121.16690	IMT10 - Casting Walls and Roof End Bay 1			26-Feb-16	11-Mar-16	13.0	13.0	28-May-16	13-Jun-16	130.0	0%
01121.16700	IMT10 - Casting Walls and Roof Bay 2			27-Jan-16	19-Feb-16	18.0	18.0	06-May-16	27-May-16	69.0	0%
01121.16710	IMT10 - Casting Walls and Roof Bay 3			20-Feb-16	08-Mar-16	15.0	15.0	28-May-16	15-Jun-16	69.0	0%
01121.16720	IMT10 - Casting Walls and Roof Bay 4			09-Mar-16	29-Mar-16	15.0	15.0	16-Jun-16	04-Jul-16	69.0	0%
01121.16730	IMT10 - Casting Walls and Roof Bay 5			30-Mar-16	12-Apr-16	11.0	11.0	05-Jul-16	16-Jul-16	69.0	0%
01121.16740	IMT10 - Casting Walls and Roof Bay 6			13-Apr-16	25-Apr-16	11.0	11.0	18-Jul-16	29-Jul-16	69.0	0%
01121.16750	IMT10 - Casting Walls and Roof Bay 7			26-Apr-16	09-May-16	11.0	11.0	30-Jul-16	11-Aug-16	69.0	0%
IMT Marine Works in Victoria Harbour				10-Mar-16	06-Dec-16	222.0	201.0	08-Mar-15 A	30-Dec-16	82.0	
IMT Bulk Dredging				10-Mar-16	06-Dec-16	222.0	201.0	08-Mar-15 A	30-Dec-16	82.0	
01121.22840	IMT1 - bulk dredging (remaining)	38,539 m3	total 34%	02-Nov-16	06-Dec-16	30.0	11.0	08-Mar-15 A	30-Dec-16	82.0	34%
01121.22900	IMT3 - bulk dredging	55,036 m3	total 17%	10-Mar-16	09-Apr-16	23.0	28.0	29-Mar-16 A	03-Jun-16	82.0	17%
01121.22900-100	IMT3 - replacement fill after dredging	5,007 m3				0.0	12.0	04-Jun-16	18-Jun-16	82.0	0%
01121.23360	IMT4 - bulk dredging	46,990 m3		11-Apr-16	10-May-16	25.0	17.0	20-Jun-16	09-Jul-16	82.0	0%



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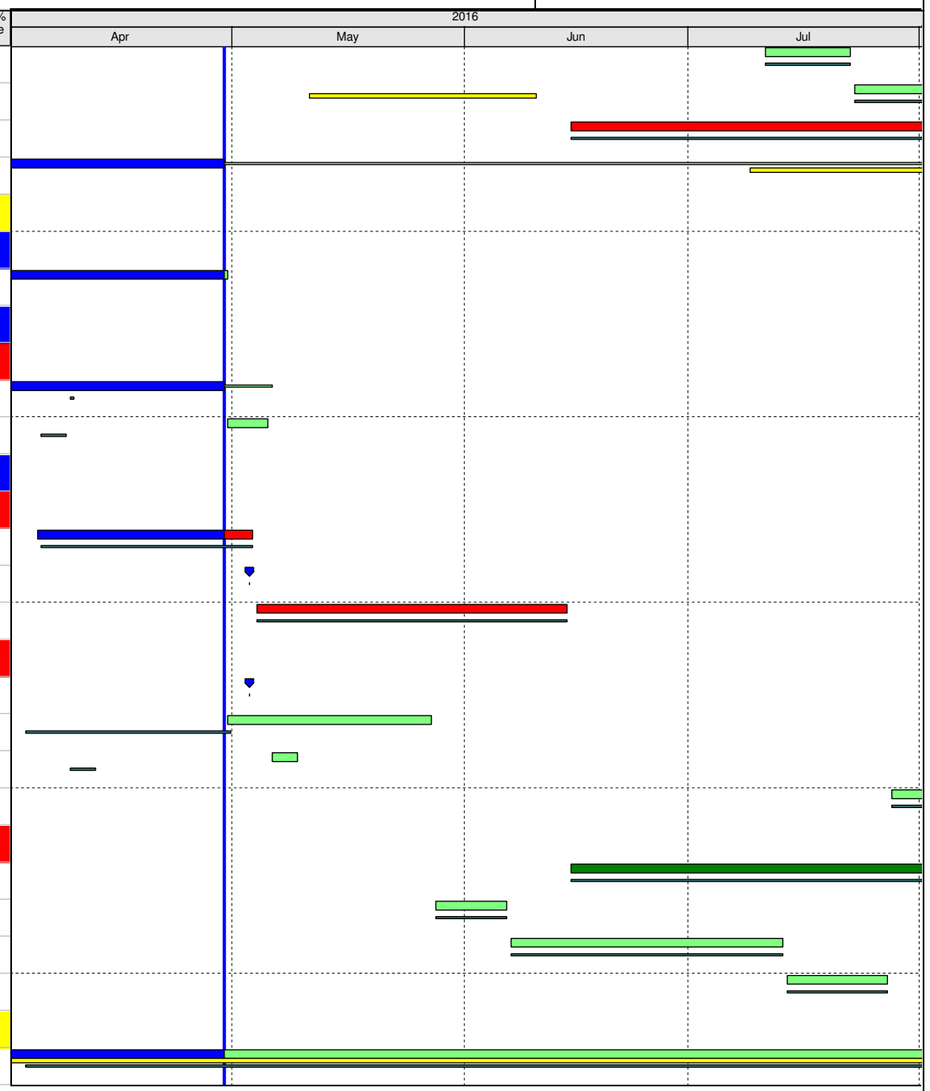
Activity ID	Activity Name	Total Qty	Completed Qty	BL1 Start	BL1 Finish	BL Duration	Rem. Dur.	Start	Finish	Total Float	Physical % Complete
01121.23360-100	IMT4 - replacement fill after dredging	4,858 m3				0.0	11.0	11-Jul-16	22-Jul-16	82.0	0%
01121.23400	IMT5 - bulk dredging	49,834 m3		11-May-16	10-Jun-16	25.0	31.0	23-Jul-16	27-Aug-16	82.0	0%
01121.23405-1010	IMT10 - advance dredging inside CBTS (102,000m3 @1200m3/d)	41,500 m3				0.0	84.0	15-Jun-16	22-Sep-16	0.0	0%
01121.23430	IMT7 - bulk dredging	71,479 m3	total 34%	09-Jul-16	15-Aug-16	32.0	23.0	21-Mar-16 A	06-Oct-16	82.0	34%
Cost Centre E - CBTS Tunnels				26-Nov-15	11-Feb-16	60.0	122.0	18-Nov-15 A	24-Sep-16	46.0	
Site Establishment						0.0	0.0	18-Nov-15 A	30-Apr-16	68.0	
01121.12100-1020	CBTS - G.I. - carry out G.I. at breakwater (5 nos.)	5 nos.	4 nos.			0.0	0.0	18-Nov-15 A	30-Apr-16	68.0	80%
VH3A & VH3B						0.0	4.0	26-Feb-16 A	06-May-16	64.0	
Trial Pile and Sheetpile Outside Breakwater						0.0	4.0	26-Feb-16 A	06-May-16	64.0	
01121.12210-1050	CBTS (VH3A & VH3B) - weld lagging plates to pipe piles					0.0	0.0	26-Feb-16 A	06-May-16	64.0	100%
01121.12210-1060	CBTS (VH3A & VH3B) - install additional 12 nos. of pipe pile	12 nos.				0.0	4.0	30-Apr-16	05-May-16	61.0	0%
VH3C & VH3D				26-Nov-15	11-Feb-16	60.0	122.0	05-Apr-16 A	24-Sep-16	46.0	
Temp Mooring / Anchorage Arrangement				26-Nov-15	06-Feb-16	60.0	36.0	05-Apr-16 A	14-Jun-16	0.0	
01121.12712	Application MDN for Phase 4 mooring					0.0	2.0	05-Apr-16 A	03-May-16	0.0	0%
01121.12715	Tentative CBTS Phase 4 mooring start (subject to actual handover by CWB contractor)					0.0	0.0	03-May-16*		0.0	0%
01121.12720	CBTS (VH3C & VH3D) - Temp Mooring (Phase 4) to relocate RHKYC vessels			26-Nov-15	06-Feb-16	60.0	34.0	04-May-16	14-Jun-16	0.0	0%
Pipe pile cofferdam and Seawall Blocks across Breakwater				11-Feb-16	11-Feb-16	0.0	122.0	30-Apr-16	24-Sep-16	46.0	
01121.12160	CBTS (VH3C & VH3D) - Possession of VH3C and VH3D			11-Feb-16		0.0	0.0	03-May-16		1.0	0%
01121.12160-1001	CBTS (breakwater) - seawall block - statutory submission and approval					0.0	28.0	30-Apr-16	27-May-16	56.0	0%
01121.12160-1002	CBTS (breakwater west) - seawall block - remove silting material					0.0	3.0	06-May-16	09-May-16	61.0	0%
01121.12360-1010	CBTS stage 3A (breakwater east) - install pipe piles across breakwater [P262-P215, 48 nos.]	48 nos.				0.0	50.0	28-Jul-16	24-Sep-16	46.0	0%
Remove Breakwater & E10 Bulk Dredging inside CBTS						0.0	98.0	28-May-16	22-Sep-16	0.0	
01121.12160-1019	[LOA] CBTS (VH3C & VH3D) - IMT10 advance dredging inside CBTS (100,000m3 @1200m3/d)					0.0	84.0	15-Jun-16	22-Sep-16	0.0	0%
01121.12160-1020	CBTS (breakwater) - remove breakwater from top to +2.0mPD	4000 m3				0.0	8.0	28-May-16	06-Jun-16	46.0	0%
01121.12160-1025	CBTS (breakwater) - remove breakwater from +2.0 to -4.0mPD	15000m3				0.0	30.0	07-Jun-16	13-Jul-16	46.0	0%
01121.12160-1030	CBTS (breakwater) - remove breakwater from -1.0 to -6.0mPD	6000m3				0.0	12.0	14-Jul-16	27-Jul-16	46.0	0%
Cost Centre F - Associated Works				20-Mar-16	18-Sep-16	183.0	142.0	20-Mar-16 A	18-Sep-16	461.0	
01121.15520	F3 - Management, Maintenance and Operation of Barging Point Facility			20-Mar-16	18-Sep-16	183.0	142.0	20-Mar-16 A	18-Sep-16	461.0	0%



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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 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, 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 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, 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
Water Quality Monitoring Schedule (April 2016)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Apr	2-Apr
						Mid-Flood 13:04 Mid-Ebb 20:21
3-Apr	**4-Apr**	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
		Mid-Ebb 11:00 Mid-Flood 16:41		Mid-Ebb 12:19 Mid-Flood 18:27		Mid-Flood 7:24 Mid-Ebb 13:44
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
	Mid-Flood 8:41 Mid-Ebb 15:17		Mid-Flood 10:07 Mid-Ebb 17:24		Mid-Flood 12:23 Mid-Ebb 19:58	
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
	Mid-Ebb 10:35 Mid-Flood 16:21		Mid-Ebb 11:36 Mid-Flood 17:47		Mid-Ebb 12:32 Mid-Flood 19:01	
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
	Mid-Flood 7:33 Mid-Ebb 14:04		Mid-Flood 8:19 Mid-Ebb 15:10		Mid-Flood 9:41 Mid-Ebb 17:04	

Water Quality Monitoring Stations
C1, C2, 9, 21, 34, A, WSD9, WSD17

* indicates that the tidal range of individual flood or ebb tide is less than 0.5m
Remark: 1) Reference was made to the tidal information of Hong Kong Observatory (Quarry Bay Station)

Shatin to Central Link - Contract No. 1121
NSL Cross Harbour Tunnels
Tentative Water Quality Monitoring Schedule (May 2016)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-May	**2-May**	3-May	4-May	5-May	6-May	7-May
		Mid-Ebb 9:50 Mid-Flood 15:27		Mid-Ebb 11:15 Mid-Flood 17:27		Mid-Ebb 12:42 Mid-Flood 19:13
8-May	9-May	10-May	11-May	12-May	13-May	**14-May**
	Mid-Flood 7:33 Mid-Ebb 14:13		Mid-Flood 8:54 Mid-Ebb 15:56		Mid-Flood 10:34 Mid-Ebb 17:55	
15-May	16-May	17-May	18-May	19-May	20-May	21-May
		Mid-Ebb 10:08 Mid-Flood 16:05		Mid-Ebb 11:12 Mid-Flood 17:35		Mid-Ebb 12:07 Mid-Flood 18:51
22-May	23-May	24-May	25-May	26-May	27-May	28-May
	Mid-Ebb 13:10 Mid-Flood 20:06		Mid-Flood 7:31 Mid-Ebb 14:21		Mid-Flood 8:48 Mid-Ebb 15:48	
29-May	30-May	31-May				
	Mid-Flood 12:23 Mid-Ebb 18:58					

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

Water Quality Monitoring Stations
C1, C2, 9, 21, 34, A, WSD9, WSD17

* indicates that the tidal range of individual flood or ebb tide is less than 0.5m
Remark: 1) Reference was made to the tidal information of Hong Kong Observatory (Quarry Bay Station)

APPENDIX D
WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Water Quality Monitoring Results at 9 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	19:48	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	19.6	19.6	7.7	7.7	30.3	30.4	90.2	90.2	6.9	6.9	6.9	5.7	5.7	5.7	4	4.0	4.0
						19.6		7.7		30.4		90.1		6.9			5.7			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
5-Apr-16	Cloudy	Moderate	10:31	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	17.5	17.5	7.8	7.9	33.1	33.1	94.0	94.0	7.4	7.4	7.4	5.2	5.2	5.2	4	4.0	4.0
						17.5		7.9		33.1		94.0		7.4			5.1			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
7-Apr-16	Sunny	Moderate	11:42	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	22.1	22.1	8.1	8.1	27.9	27.8	100.6	100.5	7.5	7.5	7.5	2.8	2.9	2.9	6	6.5	6.5
						22.0		8.1		27.7		100.4		7.5			2.9			7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
9-Apr-16	Cloudy	Moderate	13:11	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	20.4	20.3	8.3	8.3	30.4	30.4	111.2	111.1	8.4	8.4	8.4	0.9	1.0	1.0	3	3.5	3.5
						20.2		8.3		30.4		110.9		8.4			1.1			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
11-Apr-16	Cloudy	Moderate	14:58	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	20.2	20.2	8.3	8.3	31.0	31.1	112.4	112.5	8.5	8.5	8.5	2.8	2.8	2.8	5	5.0	5.0
						20.1		8.3		31.1		112.6		8.5			2.7			5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
13-Apr-16	Sunny	Moderate	17:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	20.8	20.8	8.1	8.1	29.3	29.4	99.6	99.7	7.5	7.5	7.5	2.8	2.9	2.9	6	6.0	6.0
						20.7		8.1		29.4		99.8		7.5			2.9			6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
15-Apr-16	Cloudy	Moderate	19:14	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	19.5	19.5	7.5	7.5	32.6	32.6	79.5	80.0	6.0	6.1	6.1	3.2	3.3	3.3	3	3.0	3.0
						19.5		7.5		32.6		80.4		6.1			3.3			3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
18-Apr-16	Rainy	Moderate	09:56	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
				Middle	1.5	21.5	21.4	8.0	8.0	28.4	28.5	85.7	85.2	6.4	6.4	6.4	5.3	5.1	5.1	5	5.0	5.0
						21.3		8.0		28.6		84.7		6.4			4.8			5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 9 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	10:57	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	4.7	-	-	4.0
				Middle	1.5	21.1 21.1	21.1	7.8 7.9	7.9	30.1 30.2	30.2	90.7 90.0	90.4	6.8 6.7	6.8		4.7 4.6	4.7		4 4	4.0	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
22-Apr-16	Cloudy	Moderate	12:04	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	4.7	-	-	4.5
				Middle	1.5	21.1 21.1	21.1	7.9 7.9	7.9	31.8 31.7	31.8	93.5 93.2	93.4	6.9 6.9	6.9		4.8 4.6	4.7		4 5	4.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
25-Apr-16	Sunny	Rough	13:34	Surface	-	-	-	-	-	-	-	-	-	-	-	5.7	-	-	4.7	-	-	5.0
				Middle	1.5	21.7 21.7	21.7	7.6 7.6	7.6	30.6 30.6	30.6	77.9 78.0	78.0	5.7 5.7	5.7		4.7 4.6	4.7		5 5	5.0	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
27-Apr-16	Cloudy	Moderate	15:27	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	3.8	-	-	6.5
				Middle	1.5	23.0 22.7	22.9	8.1 8.1	8.1	28.3 28.6	28.5	87.8 87.2	87.5	6.4 6.4	6.4		3.9 3.7	3.8		6 7	6.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
29-Apr-16	Cloudy	Calm	16:29	Surface	-	-	-	-	-	-	-	-	-	-	-	8.6	-	-	3.6	-	-	4.5
				Middle	1.5	21.4 21.3	21.4	8.4 8.4	8.4	31.1 31.1	31.1	116.4 116.7	116.6	8.6 8.6	8.6		3.9 3.2	3.6		4 5	4.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 9 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	12:32	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	6.6	-	-	5.5
				Middle	1.5	19.9	19.9	7.6	7.6	30.1	30.2	90.9	90.8	6.9	6.9		6.5	6.6		5	5.5	
						19.8		7.6		30.2		90.6		6.9			6.6			6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
5-Apr-16	Cloudy	Moderate	16:11	Surface	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	6.1	-	-	3.0
				Middle	1.5	17.6	17.6	7.9	7.9	33.3	33.3	93.5	93.5	7.3	7.3		6.1	6.1		3	3.0	
						17.6		7.9		33.3		93.5		7.3			6.1			3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
7-Apr-16	Fine	Moderate	18:06	Surface	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	3.6	-	-	4.0
				Middle	1.5	20.6	20.6	8.1	8.1	28.9	29.0	103.2	103.4	7.8	7.9		3.8	3.6		4	4.0	
						20.6		8.1		29.0		103.6		7.9			3.4			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
9-Apr-16	Cloudy	Moderate	07:07	Surface	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	2.6	-	-	6.0
				Middle	1.5	20.5	20.4	8.2	8.3	30.6	30.7	96.9	96.9	7.3	7.3		2.6	2.6		6	6.0	
						20.3		8.3		30.8		96.8		7.3			2.6			6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
11-Apr-16	Cloudy	Moderate	08:02	Surface	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	3.2	-	-	4.0
				Middle	1.5	20.3	20.2	8.2	8.3	30.9	31.1	103.8	103.6	7.8	7.8		3.5	3.2		4	4.0	
						20.1		8.3		31.2		103.4		7.8			2.9			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
13-Apr-16	Fine	Moderate	09:26	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	3.2	-	-	4.0
				Middle	1.5	20.7	20.7	8.1	8.1	28.8	28.7	93.5	93.5	7.1	7.1		3.4	3.2		4	4.0	
						20.7		8.1		28.6		93.4		7.1			3.0			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
15-Apr-16	Cloudy	Moderate	11:54	Surface	-	-	-	-	-	-	-	-	-	-	-	5.9	-	-	2.4	-	-	3.0
				Middle	1.5	19.5	19.5	7.7	7.7	32.2	32.2	78.0	78.0	5.9	5.9		2.4	2.4		3	3.0	
						19.5		7.7		32.2		77.9		5.9			2.4			3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
18-Apr-16	Rainy	Moderate	16:21	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	4.9	-	-	4.0
				Middle	1.5	20.6	20.6	8.1	8.1	31.2	31.2	100.4	100.3	7.5	7.5		4.8	4.9		4	4.0	
						20.6		8.0		31.2		100.2		7.5			5.0			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 9 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	17:12	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	3.1	-	-	4.0
				Middle	1.5	20.8	20.8	8.0	8.0	31.6	31.6	84.6	84.7	6.3	6.3		3.0	3.1		4	4.0	
						20.8		8.0		31.6		84.7		6.3			3.1			4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
22-Apr-16	Cloudy	Moderate	18:35	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	3.4	-	-	6.0
				Middle	1.5	20.9	20.9	8.0	8.0	29.3	29.4	90.2	90.1	6.8	6.8		3.4	3.4		6	6.0	
						20.9		8.0		29.4		90.0		6.8			3.4			6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
25-Apr-16	Sunny	Rough	06:58	Surface	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	5.7	-	-	3.0
				Middle	1.5	21.9	21.9	7.6	7.6	30.2	30.3	70.9	70.9	5.2	5.2		5.7	5.7		3	3.0	
						21.8		7.6		30.3		70.8		5.2			5.7			3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
27-Apr-16	Rainy	Moderate	07:55	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	2.8	-	-	6.5
				Middle	1.5	22.5	22.5	7.9	7.9	27.4	27.4	83.3	83.1	6.2	6.2		2.7	2.8		6	6.5	
						22.5		7.9		27.4		82.9		6.1			2.8			7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		
29-Apr-16	Sunny	Calm	09:22	Surface	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	3.5	-	-	5.5
				Middle	1.5	21.5	21.4	8.4	8.4	31.0	31.1	107.8	107.6	7.9	7.9		3.6	3.5		5	5.5	
						21.3		8.3		31.2		107.4		7.9			3.4			6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 21 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	20:52	Surface	1	18.3 18.3	18.3	8.1 8.1	8.1	32.4 32.4	32.4	111.4 111.5	111.5	8.6 8.7	8.7	8.6	5.3 5.4	5.4	4.6	6 6	6.0	6.0
				Middle	3.5	18.3 18.3	18.3	7.9 7.9	7.9	32.5 32.5	32.5	111.0 111.0	111.0	8.6 8.6	8.6		4.8 4.6	4.7		4 4	4.0	
				Bottom	6	18.2 18.3	18.3	7.9 7.9	7.9	32.3 32.4	32.4	109.1 109.2	109.2	8.5 8.5	8.5		3.5 3.6	3.6		8 8	8.0	
5-Apr-16	Cloudy	Moderate	11:41	Surface	1	17.7 17.7	17.7	8.1 8.1	8.1	33.4 33.4	33.4	98.4 98.5	98.5	7.7 7.7	7.7	7.6	3.1 3.2	3.2	4.1	3 3	3.0	5.0
				Middle	3.5	17.7 17.6	17.7	8.1 8.1	8.1	33.4 33.4	33.4	97.9 97.8	97.9	7.6 7.6	7.6		4.8 4.4	4.6		5 5	5.0	
				Bottom	6	17.5 17.4	17.5	8.1 8.1	8.1	33.6 33.6	33.6	97.7 97.6	97.7	7.6 7.6	7.6		4.3 4.5	4.4		7 7	7.0	
7-Apr-16	Sunny	Moderate	13:01	Surface	1	22.1 22.6	22.4	8.1 8.2	8.2	26.4 27.7	27.1	100.4 102.2	101.3	7.5 7.5	7.5	7.5	3.1 3.0	3.1	4.1	4 5	4.5	4.5
				Middle	3.5	22.1 23.2	22.7	8.2 8.1	8.2	26.9 30.1	28.5	98.7 104.0	101.4	7.4 7.5	7.5		3.8 3.9	3.9		4 4	4.0	
				Bottom	6	22.2 23.0	22.6	8.2 8.2	8.2	27.2 30.6	28.9	98.8 103.0	100.9	7.4 7.4	7.4		5.0 5.6	5.3		5 5	5.0	
9-Apr-16	Cloudy	Moderate	14:07	Surface	1	20.6 20.7	20.7	8.2 8.3	8.3	31.0 31.1	31.1	94.6 94.9	94.8	7.1 7.1	7.1	7.0	2.1 2.0	2.1	3.9	3 3	3.0	3.3
				Middle	3.5	20.2 19.9	20.1	8.2 8.2	8.2	31.7 31.7	31.7	94.2 93.6	93.9	7.1 7.1	7.1		4.3 4.2	4.3		3 3	3.0	
				Bottom	6	20.1 20.0	20.1	8.1 8.1	8.1	32.3 32.5	32.4	89.5 89.3	89.4	6.7 6.7	6.7		5.6 5.0	5.3		4 4	4.0	
11-Apr-16	Cloudy	Moderate	15:55	Surface	1	20.5 20.4	20.5	8.2 8.2	8.2	31.5 31.5	31.5	96.5 95.9	96.2	7.2 7.2	7.2	7.1	3.9 4.0	4.0	5.7	6 5	5.5	5.0
				Middle	3.5	19.9 19.7	19.8	8.2 8.2	8.2	32.2 32.2	32.2	95.3 94.9	95.1	7.2 7.2	7.2		6.2 6.2	6.2		4 4	4.0	
				Bottom	6	19.8 19.9	19.9	8.1 8.1	8.1	32.9 33.1	33.0	90.6 90.3	90.5	6.8 6.8	6.8		7.3 6.2	6.8		5 6	5.5	
13-Apr-16	Sunny	Moderate	17:56	Surface	1	20.8 22.3	21.6	8.2 8.2	8.2	29.7 29.7	29.7	97.5 101.2	99.4	7.3 7.4	7.4	7.0	3.0 3.1	3.1	4.1	4 4	4.0	5.3
				Middle	3.5	20.8 21.9	21.4	8.2 8.2	8.2	28.9 28.3	28.6	93.1 93.0	93.1	7.0 6.9	7.0		3.8 3.8	3.8		4 4	4.0	
				Bottom	6	22.9 21.7	22.3	8.2 8.2	8.2	30.4 28.5	29.5	93.2 88.9	91.1	6.7 6.6	6.7		5.0 5.6	5.3		8 8	8.0	
15-Apr-16	Cloudy	Moderate	20:20	Surface	1	19.6 19.6	19.6	7.6 7.7	7.7	33.6 33.6	33.6	96.8 96.6	96.7	7.3 7.3	7.3	7.3	3.7 3.5	3.6	3.9	3 3	3.0	3.3
				Middle	3.5	19.4 19.4	19.4	7.7 7.7	7.7	33.7 33.7	33.7	97.6 97.6	97.6	7.4 7.4	7.4		4.3 4.1	4.2		3 3	3.0	
				Bottom	6	19.5 19.5	19.5	7.7 7.7	7.7	33.4 33.4	33.4	97.4 97.1	97.3	7.3 7.3	7.3		3.9 3.8	3.9		4 4	4.0	
18-Apr-16	Rainy	Moderate	11:04	Surface	1	20.9 20.8	20.9	8.0 8.0	8.0	30.8 30.8	30.8	93.7 93.7	93.7	7.0 7.0	7.0	7.1	3.4 3.4	3.4	5.1	6 7	6.5	6.0
				Middle	3.5	20.7 20.6	20.7	8.0 8.0	8.0	30.9 30.9	30.9	93.4 93.9	93.7	7.0 7.0	7.0		5.5 5.5	5.5		4 4	4.0	
				Bottom	6	20.4 20.3	20.4	8.1 8.1	8.1	30.9 31.0	31.0	94.8 95.3	95.1	7.1 7.2	7.2		6.3 6.2	6.3		8 7	7.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 21 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	12:01	Surface	1	21.5 21.5	21.5	7.9 7.9	7.9	31.2 31.3	31.3	99.2 99.2	99.2	7.3 7.3	7.3	7.2	4.2 4.4	4.3	4.8	4 4	4.0	3.8
				Middle	3.5	21.2 21.1	21.2	8.1 8.1	8.1	31.8 31.9	31.9	96.8 96.7	96.8	7.1 7.1	7.1		4.9 4.8	4.9		5 5	5.0	
				Bottom	6	20.8 20.8	20.8	8.2 8.2	8.2	32.3 32.3	32.3	96.9 97.2	97.1	7.2 7.2	7.2		5.4 5.1	5.3		<2.5 <2.5	<2.5	
22-Apr-16	Cloudy	Moderate	13:07	Surface	1	22.1 22.0	22.1	7.9 8.0	8.0	32.1 32.2	32.2	100.9 100.2	100.6	7.3 7.3	7.3	7.2	4.7 4.6	4.7	4.8	4 4	4.0	4.7
				Middle	3.5	21.4 21.3	21.4	8.1 8.2	8.2	32.5 32.6	32.6	97.2 96.9	97.1	7.1 7.1	7.1		4.9 5.0	5.0		4 4	4.0	
				Bottom	6	21.0 21.0	21.0	8.2 8.2	8.2	32.7 32.7	32.7	96.7 96.7	96.7	7.1 7.1	7.1		4.8 4.5	4.7		6 6	6.0	
25-Apr-16	Sunny	Rough	14:31	Surface	1	20.9 20.9	20.9	8.0 8.1	8.1	32.5 32.5	32.5	90.5 90.5	90.5	6.7 6.7	6.7	6.7	1.9 1.7	1.8	3.1	5 5	5.0	4.8
				Middle	3	20.9 20.9	20.9	8.0 8.0	8.0	32.5 32.5	32.5	89.9 90.1	90.0	6.6 6.7	6.7		2.9 3.0	3.0		5 4	4.5	
				Bottom	5	20.9 20.9	20.9	8.1 8.0	8.1	32.4 32.5	32.5	89.6 89.9	89.8	6.6 6.6	6.6		4.5 4.7	4.6		5 5	5.0	
27-Apr-16	Cloudy	Moderate	14:21	Surface	1	23.1 23.0	23.1	8.1 8.1	8.1	29.7 29.9	29.8	95.8 95.6	95.7	6.9 6.9	6.9	6.9	1.2 1.0	1.1	1.6	5 5	5.0	6.8
				Middle	3.5	22.3 22.3	22.3	8.2 8.2	8.2	30.2 30.1	30.2	94.3 94.4	94.4	6.9 6.9	6.9		1.4 1.2	1.3		7 7	7.0	
				Bottom	6	22.1 22.0	22.1	8.2 8.2	8.2	30.1 30.1	30.1	93.7 93.4	93.6	6.9 6.9	6.9		2.4 2.5	2.5		9 8	8.5	
29-Apr-16	Cloudy	Calm	17:26	Surface	1	21.4 21.3	21.4	8.3 8.4	8.4	31.6 31.6	31.6	99.8 99.2	99.5	7.3 7.3	7.3	7.2	3.5 3.9	3.7	5.5	6 5	5.5	6.3
				Middle	3.5	21.3 21.1	21.2	8.3 8.3	8.3	32.3 32.3	32.3	99.5 99.1	99.3	7.3 7.3	7.3		5.3 5.7	5.5		4 4	4.0	
				Bottom	6	21.2 21.3	21.3	8.2 8.3	8.3	32.9 33.2	33.1	94.7 94.4	94.6	6.9 6.9	6.9		7.9 6.7	7.3		9 10	9.5	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 21 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	13:45	Surface	1	19.5 19.5	19.5	8.2 8.2	8.2	30.6 30.8	30.7	112.3 113.4	112.9	8.6 8.7	8.7	8.6	5.0 4.9	5.0	4.4	4 5	4.5	5.2
				Middle	3.5	19.0 18.8	18.9	8.0 8.1	8.1	31.4 31.6	31.5	111.7 111.3	111.5	8.6 8.6	8.6		4.1 4.3	4.2		5 5	5.0	
				Bottom	6	18.5 18.4	18.5	7.9 7.9	7.9	32.1 32.2	32.2	110.1 109.6	109.9	8.5 8.5	8.5		3.8 3.9	3.9		6 6	6.0	
5-Apr-16	Cloudy	Moderate	17:18	Surface	1	17.5 17.5	17.5	8.2 8.2	8.2	33.5 33.5	33.5	97.7 97.7	97.7	7.6 7.6	7.6	7.6	3.9 4.0	4.0	4.3	<2.5 <2.5	<2.5	4.8
				Middle	3.5	17.5 17.5	17.5	8.2 8.3	8.3	33.7 33.7	33.7	97.4 97.4	97.4	7.6 7.6	7.6		4.1 4.3	4.2		7 7	7.0	
				Bottom	6	17.4 17.4	17.4	8.2 8.2	8.2	34.0 34.1	34.1	97.4 97.5	97.5	7.6 7.6	7.6		4.5 4.6	4.6		5 5	5.0	
7-Apr-16	Fine	Moderate	19:07	Surface	1	20.8 21.5	21.2	8.1 8.1	8.1	29.4 29.3	29.4	101.5 103.9	102.7	7.7 7.7	7.7	7.3	3.6 4.5	4.1	4.8	5 4	4.5	5.2
				Middle	3.5	21.9 22.0	22.0	8.2 8.1	8.2	28.6 27.9	28.3	99.1 97.3	98.2	7.4 7.2	7.3		4.4 4.2	4.3		4 5	4.5	
				Bottom	6	22.2 21.6	21.9	8.2 8.1	8.2	30.1 28.2	29.2	96.2 92.8	94.5	7.0 6.9	7.0		5.7 6.4	6.1		6 7	6.5	
9-Apr-16	Cloudy	Moderate	08:05	Surface	1	20.7 20.3	20.5	8.2 8.2	8.2	31.2 31.2	31.2	97.9 97.4	97.7	7.3 7.3	7.3	7.2	3.2 3.1	3.2	5.3	4 4	4.0	5.2
				Middle	3.5	20.1 20.0	20.1	8.2 8.2	8.2	31.7 31.6	31.7	97.1 97.4	97.3	7.3 7.4	7.4		6.3 5.7	6.0		6 5	5.5	
				Bottom	6	19.9 19.8	19.9	8.1 8.1	8.1	32.5 32.4	32.5	92.5 91.5	92.0	7.0 6.9	7.0		7.2 6.2	6.7		6 6	6.0	
11-Apr-16	Cloudy	Moderate	09:01	Surface	1	20.3 20.3	20.3	8.2 8.2	8.2	31.7 31.7	31.7	96.4 96.0	96.2	7.2 7.2	7.2	7.1	4.9 4.6	4.8	6.8	4 4	4.0	5.0
				Middle	3.5	19.7 20.0	19.9	8.2 8.2	8.2	32.2 32.3	32.3	95.9 96.5	96.2	7.3 7.3	7.3		7.8 7.8	7.8		5 4	4.5	
				Bottom	6	19.5 19.6	19.6	8.1 8.1	8.1	33.2 32.8	33.0	90.8 90.0	90.4	6.9 6.8	6.9		7.3 8.1	7.7		7 6	6.5	
13-Apr-16	Fine	Moderate	10:41	Surface	1	20.9 21.6	21.3	8.1 8.2	8.2	27.3 28.6	28.0	93.7 95.7	94.7	7.1 7.1	7.1	7.1	3.7 3.6	3.7	4.4	4 5	4.5	5.2
				Middle	3.5	22.0 22.1	22.1	8.2 8.2	8.2	27.8 31.0	29.4	93.8 97.1	95.5	7.0 7.1	7.1		4.0 3.8	3.9		7 7	7.0	
				Bottom	6	22.3 21.7	22.0	8.2 8.2	8.2	28.1 31.5	29.8	94.2 95.9	95.1	7.0 7.0	7.0		5.3 6.0	5.7		4 4	4.0	
15-Apr-16	Cloudy	Moderate	13:05	Surface	1	19.8 19.8	19.8	7.8 7.7	7.8	32.8 32.9	32.9	93.1 93.4	93.3	7.0 7.0	7.0	7.2	3.1 2.9	3.0	3.5	<2.5 <2.5	<2.5	3.5
				Middle	3.5	19.6 19.6	19.6	7.9 7.9	7.9	33.1 33.1	33.1	95.0 95.3	95.2	7.2 7.2	7.2		3.5 3.5	3.5		4 4	4.0	
				Bottom	6	19.5 19.5	19.5	7.9 7.9	7.9	33.4 33.4	33.4	96.4 96.6	96.5	7.3 7.3	7.3		3.9 3.9	3.9		4 4	4.0	
18-Apr-16	Rainy	Moderate	15:29	Surface	1	23.8 23.3	23.6	8.0 8.0	8.0	30.1 30.1	30.1	91.0 91.2	91.1	6.5 6.5	6.5	6.7	3.6 3.8	3.7	5.1	3 3	3.0	5.0
				Middle	3.5	21.9 21.6	21.8	8.0 8.0	8.0	30.6 30.8	30.7	91.1 91.4	91.3	6.7 6.7	6.7		5.3 5.4	5.4		7 7	7.0	
				Bottom	6	20.8 20.6	20.7	8.1 8.1	8.1	31.4 31.5	31.5	93.1 93.2	93.2	6.9 7.0	7.0		6.1 6.2	6.2		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 21 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	18:19	Surface	1	21.6 21.6	21.6	8.3 8.3	8.3	32.3 32.2	32.3	101.8 101.6	101.7	7.4 7.4	7.4	7.3	5.4 5.3	5.4	5.4	3 3	3.0	3.7
				Middle	3.5	21.4 21.4	21.4	8.2 8.2	8.2	32.5 32.5	32.5	99.8 99.8	99.8	7.3 7.3	7.3		5.2 5.3	5.3		4 4	4.0	
				Bottom	6	21.3 21.3	21.3	8.1 8.1	8.1	32.7 32.6	32.7	98.7 98.7	98.7	7.2 7.2	7.2		5.5 5.6	5.6		4 4	4.0	
22-Apr-16	Cloudy	Moderate	19:40	Surface	1	20.9 20.9	20.9	8.2 8.2	8.2	32.3 32.6	32.5	97.6 96.2	96.9	7.2 7.1	7.2	7.1	4.7 4.8	4.8	4.6	7 7	7.0	5.0
				Middle	3.5	20.9 20.9	20.9	8.2 8.2	8.2	32.6 32.6	32.6	95.1 95.4	95.3	7.0 7.0	7.0		4.5 4.5	4.5		4 4	4.0	
				Bottom	6	20.9 20.8	20.9	8.2 8.2	8.2	32.6 32.6	32.6	95.4 95.2	95.3	7.0 7.0	7.0		4.5 4.6	4.6		4 4	4.0	
25-Apr-16	Sunny	Rough	07:52	Surface	1	21.4 21.4	21.4	7.9 7.9	7.9	31.1 31.2	31.2	88.5 88.8	88.7	6.5 6.6	6.6	6.6	4.7 4.5	4.6	4.1	3 3	3.0	3.0
				Middle	3.5	21.3 21.3	21.3	8.0 8.0	8.0	31.6 31.6	31.6	89.7 89.7	89.7	6.6 6.6	6.6		3.1 3.2	3.2		3 3	3.0	
				Bottom	6	21.1 21.0	21.1	8.1 8.1	8.1	32.0 32.1	32.1	89.7 89.7	89.7	6.6 6.6	6.6		4.4 4.3	4.4		3 3	3.0	
27-Apr-16	Rainy	Moderate	09:00	Surface	1	21.6 21.5	21.6	8.1 8.1	8.1	30.6 30.7	30.7	91.0 92.0	91.5	6.7 6.8	6.8	6.8	4.3 4.2	4.3	3.9	5 5	5.0	6.5
				Middle	3.5	21.6 21.5	21.6	8.1 8.2	8.2	30.7 31.0	30.9	91.9 92.3	92.1	6.8 6.8	6.8		4.2 4.1	4.2		6 6	6.0	
				Bottom	6	21.4 21.3	21.4	8.2 8.2	8.2	31.2 31.4	31.3	92.2 92.0	92.1	6.8 6.8	6.8		3.4 3.1	3.3		9 8	8.5	
29-Apr-16	Sunny	Calm	10:21	Surface	1	21.5 21.5	21.5	8.3 8.3	8.3	31.8 31.8	31.8	100.2 99.8	100.0	7.4 7.3	7.4	7.3	2.7 2.5	2.6	4.4	4 4	4.0	6.5
				Middle	3.5	21.1 21.4	21.3	8.3 8.3	8.3	32.3 32.5	32.4	100.1 100.7	100.4	7.4 7.4	7.4		5.3 5.2	5.3		8 9	8.5	
				Bottom	6	20.9 21.0	21.0	8.2 8.3	8.3	33.3 33.0	33.2	94.8 94.0	94.4	7.0 6.9	7.0		5.5 5.2	5.4		7 7	7.0	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 34 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	21:11	Surface	1	19.2 19.3	19.3	8.1 8.2	8.2	31.3 31.4	31.4	102.0 102.6	102.3	7.8 7.9	7.9	7.9	4.6 4.5	4.6	4.7	5 4	4.5	4.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.1 19.1	19.1	8.1 8.1	8.1	31.0 31.2	31.1	101.2 101.5	101.4	7.8 7.8	7.8		4.7 4.8	4.8		5 5	5.0	
5-Apr-16	Cloudy	Moderate	12:01	Surface	1	17.6 17.6	17.6	8.1 8.1	8.1	33.1 33.1	33.1	96.3 96.3	96.3	7.5 7.5	7.5	7.5	6.5 6.6	6.6	6.7	3 3	3.0	4.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	17.6 17.6	17.6	8.1 8.1	8.1	33.2 33.3	33.3	96.4 96.2	96.3	7.5 7.5	7.5		6.7 6.8	6.8		6 6	6.0	
7-Apr-16	Sunny	Moderate	13:16	Surface	1	22.6 22.4	22.5	8.1 8.2	8.2	28.8 30.9	29.9	104.4 100.2	102.3	7.6 7.3	7.5	7.4	2.9 2.4	2.7	4.6	6 7	6.5	6.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	22.4 22.4	22.4	8.1 8.2	8.2	29.0 30.0	29.5	100.5 98.0	99.3	7.4 7.2	7.3		6.3 6.6	6.5		5 6	5.5	
9-Apr-16	Cloudy	Moderate	14:24	Surface	1	20.5 20.5	20.5	8.2 8.1	8.2	31.1 31.0	31.1	94.7 94.3	94.5	7.1 7.1	7.1	7.1	2.0 2.0	2.0	3.4	5 5	5.0	4.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.2 20.4	20.3	8.2 8.2	8.2	31.7 31.8	31.8	94.3 94.8	94.6	7.1 7.1	7.1		4.7 4.7	4.7		4 4	4.0	
11-Apr-16	Cloudy	Moderate	16:11	Surface	1	20.2 20.5	20.4	8.1 8.1	8.1	31.5 31.3	31.4	95.9 96.0	96.0	7.2 7.2	7.2	7.2	3.9 4.0	4.0	5.2	7 7	7.0	5.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.1 20.2	20.2	8.2 8.2	8.2	32.2 32.2	32.2	96.2 95.8	96.0	7.2 7.2	7.2		6.4 6.4	6.4		4 4	4.0	
13-Apr-16	Sunny	Moderate	18:15	Surface	1	21.3 21.1	21.2	8.2 8.1	8.2	29.6 29.5	29.6	99.5 100.0	99.8	7.4 7.5	7.5	7.4	2.9 2.4	2.7	4.6	4 5	4.5	3.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	21.1 21.1	21.1	8.2 8.1	8.2	29.7 29.1	29.4	96.5 96.1	96.3	7.2 7.2	7.2		6.3 6.6	6.5		3 3	3.0	
15-Apr-16	Cloudy	Moderate	20:40	Surface	1	19.8 19.8	19.8	8.1 8.1	8.1	33.0 33.0	33.0	96.3 95.9	96.1	7.2 7.2	7.2	7.2	4.9 4.8	4.9	5.1	6 5	5.5	4.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.7 19.7	19.7	8.2 8.3	8.3	33.0 33.1	33.1	93.8 93.9	93.9	7.1 7.1	7.1		5.1 5.3	5.2		4 4	4.0	
18-Apr-16	Rainy	Moderate	11:27	Surface	1	21.0 20.9	21.0	8.0 8.0	8.0	30.6 30.7	30.7	97.0 96.2	96.6	7.2 7.2	7.2	7.2	2.6 2.5	2.6	4.2	4 4	4.0	5.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.7 20.6	20.7	8.0 8.0	8.0	30.7 30.8	30.8	94.3 94.1	94.2	7.1 7.1	7.1		6.0 5.5	5.8		7 6	6.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 34 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	12:22	Surface	1	20.7 20.7	20.7	8.2 8.2	8.2	32.2 32.2	32.2	95.2 95.5	95.4	7.1 7.1	7.1	7.1	4.3 4.3	4.3	3.6	3 3	3.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.7	20.7 20.7	20.7	8.2 8.2	8.2	32.3 32.3	32.3	95.5 95.5	95.5	7.1 7.1	7.1		2.9 2.9	2.9		5 5	5.0	
22-Apr-16	Cloudy	Moderate	13:25	Surface	1	22.0 21.9	22.0	8.0 8.1	8.1	32.1 32.1	32.1	101.7 100.8	101.3	7.4 7.3	7.4	7.4	2.6 2.5	2.6	2.7	5 4	4.5	4.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.7	21.7 21.6	21.7	8.2 8.2	8.2	32.0 32.1	32.1	99.3 98.8	99.1	7.3 7.2	7.3		2.8 2.7	2.8		4 4	4.0	
25-Apr-16	Sunny	Rough	14:46	Surface	1	22.1 22.0	22.1	8.0 8.0	8.0	31.2 31.4	31.3	86.5 86.7	86.6	6.3 6.3	6.3	6.3	3.4 3.5	3.5	3.8	6 5	5.5	5.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.6	22.0 21.9	22.0	8.0 8.0	8.0	31.4 31.5	31.5	86.6 86.5	86.6	6.3 6.3	6.3		3.8 4.1	4.0		5 5	5.0	
27-Apr-16	Cloudy	Moderate	14:06	Surface	1	23.1 22.9	23.0	8.1 8.1	8.1	28.9 29.0	29.0	95.7 95.3	95.5	6.9 6.9	6.9	6.9	3.5 3.5	3.5	3.1	4 3	3.5	6.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.7	22.5 22.4	22.5	8.1 8.1	8.1	29.5 29.6	29.6	95.1 94.9	95.0	6.9 6.9	6.9		2.6 2.7	2.7		8 9	8.5	
29-Apr-16	Cloudy	Calm	17:42	Surface	1	21.6 21.5	21.6	8.3 8.2	8.3	31.7 31.5	31.6	100.0 99.5	99.8	7.3 7.3	7.3	7.3	5.1 5.6	5.4	5.4	3 3	3.0	5.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.8	21.5 21.5	21.5	8.4 8.3	8.4	32.4 32.3	32.4	100.4 100.0	100.2	7.3 7.3	7.3		5.2 5.3	5.3		7 8	7.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at 34 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	14:07	Surface	1	19.8 19.8	19.8	8.0 8.0	8.0	31.0 30.8	30.9	101.0 101.2	101.1	7.7 7.7	7.7	7.8	4.0 4.2	4.1	4.8	5 4	4.5	3.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.7 19.6	19.7	8.1 8.1	8.1	30.8 30.9	30.9	101.8 101.8	101.8	7.8 7.8	7.8		5.3 5.5	5.4		3 3	3.0	
5-Apr-16	Cloudy	Moderate	17:36	Surface	1	17.6 17.6	17.6	8.2 8.2	8.2	33.3 33.4	33.4	96.6 96.5	96.6	7.6 7.5	7.6	7.6	6.8 7.0	6.9	7.1	3 3	3.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	17.6 17.6	17.6	8.2 8.2	8.2	33.6 33.6	33.6	96.4 96.4	96.4	7.5 7.5	7.5		7.4 7.2	7.3		5 5	5.0	
7-Apr-16	Fine	Moderate	19:26	Surface	1	21.9 22.4	22.2	8.1 8.1	8.1	29.3 29.1	29.2	104.7 106.5	105.6	7.7 7.8	7.8	7.7	3.6 4.3	4.0	5.5	3 3	3.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	22.2 21.9	22.1	8.1 8.1	8.1	29.3 28.8	29.1	102.6 101.6	102.1	7.5 7.5	7.5		7.6 6.4	7.0		5 5	5.0	
9-Apr-16	Cloudy	Moderate	08:23	Surface	1	20.5 20.5	20.5	8.1 8.1	8.1	31.0 31.1	31.1	97.3 97.6	97.5	7.3 7.3	7.3	7.3	3.6 4.2	3.9	4.5	3 3	3.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.0 20.1	20.1	8.2 8.2	8.2	31.9 31.8	31.9	97.4 97.4	97.4	7.3 7.3	7.3		5.0 5.0	5.0		5 5	5.0	
11-Apr-16	Cloudy	Moderate	09:19	Surface	1	20.4 20.2	20.3	8.1 8.2	8.2	31.3 31.5	31.4	96.2 95.6	95.9	7.2 7.2	7.2	7.2	5.1 5.7	5.4	6.2	4 5	4.5	4.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.8 19.9	19.9	8.2 8.2	8.2	32.4 32.2	32.3	95.8 95.8	95.8	7.2 7.2	7.2		7.0 6.9	7.0		4 4	4.0	
13-Apr-16	Fine	Moderate	10:55	Surface	1	22.0 22.5	22.3	8.1 8.2	8.2	29.7 31.8	30.8	98.6 95.5	97.1	7.3 6.9	7.1	7.0	3.2 3.9	3.6	5.1	4 5	4.5	6.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	22.3 22.0	22.2	8.1 8.2	8.2	29.9 30.9	30.4	95.5 92.5	94.0	7.0 6.8	6.9		7.2 6.0	6.6		9 9	9.0	
15-Apr-16	Cloudy	Moderate	13:26	Surface	1	19.9 19.9	19.9	8.1 8.1	8.1	33.0 33.0	33.0	97.5 97.1	97.3	7.3 7.3	7.3	7.3	5.0 5.0	5.0	5.7	3 3	3.0	3.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.9 19.9	19.9	8.2 8.2	8.2	33.0 33.0	33.0	95.3 94.7	95.0	7.2 7.1	7.2		6.4 6.3	6.4		3 3	3.0	
18-Apr-16	Rainy	Moderate	15:12	Surface	1	21.4 21.1	21.3	8.0 8.0	8.0	32.0 32.2	32.1	97.7 98.3	98.0	7.2 7.3	7.3	7.4	3.4 3.5	3.5	3.7	4 4	4.0	5.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.7 20.6	20.7	8.1 8.1	8.1	32.5 32.5	32.5	98.8 99.0	98.9	7.3 7.4	7.4		3.9 3.9	3.9		6 6	6.0	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 34 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	18:43	Surface	1	21.7 21.6	21.7	7.8 7.9	7.9	30.4 30.5	30.5	100.0 99.8	99.9	7.4 7.4	7.4	7.4	6.3 6.5	6.4	6.2	3 3	3.0	3.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.8	21.3 21.2	21.3	8.0 8.0	8.0	31.0 31.2	31.1	99.2 99.2	99.2	7.3 7.3	7.3		6.1 5.8	6.0		4 4	4.0	
22-Apr-16	Cloudy	Moderate	19:58	Surface	1	21.8 21.6	21.7	8.3 8.3	8.3	31.6 31.6	31.6	94.7 94.9	94.8	6.9 7.0	7.0	7.0	3.6 3.5	3.6	3.9	4 4	4.0	3.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.7	21.6 21.5	21.6	8.3 8.3	8.3	31.6 31.6	31.6	95.2 94.9	95.1	7.0 7.0	7.0		4.0 4.3	4.2		3 3	3.0	
25-Apr-16	Sunny	Rough	08:08	Surface	1	22.5 22.4	22.5	8.0 8.0	8.0	30.8 30.8	30.8	86.7 86.6	86.7	6.3 6.3	6.3	6.3	4.9 5.0	5.0	5.4	4 4	4.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.7	22.3 22.2	22.3	8.0 8.0	8.0	30.8 31.0	30.9	86.5 86.4	86.5	6.3 6.3	6.3		5.7 5.8	5.8		4 4	4.0	
27-Apr-16	Rainy	Moderate	09:17	Surface	1	22.7 22.6	22.7	8.0 8.1	8.1	29.5 29.6	29.6	93.6 93.7	93.7	6.8 6.8	6.8	6.8	2.0 2.1	2.1	2.7	4 4	4.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.8	22.2 22.2	22.2	8.1 8.1	8.1	30.1 30.1	30.1	92.5 92.1	92.3	6.8 6.7	6.8		3.0 3.3	3.2		4 4	4.0	
29-Apr-16	Sunny	Calm	10:39	Surface	1	21.6 21.5	21.6	8.2 8.3	8.3	31.5 31.7	31.6	100.0 99.6	99.8	7.3 7.3	7.3	7.4	3.4 3.4	3.4	3.7	4 4	4.0	5.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.9	21.2 21.3	21.3	8.3 8.4	8.4	32.6 32.4	32.5	100.0 100.2	100.1	7.3 7.4	7.4		4.0 3.8	3.9		7 7	7.0	

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-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	20:05	Surface	1	18.5 18.5	18.5	8.0 8.0	8.0	32.1 32.1	32.1	106.6 107.0	106.8	8.3 8.3	8.3	8.2	3.1 3.1	3.1	4.4	3 4	3.5	5.5
				Middle	3	18.5 18.5	18.5	7.9 8.0	8.0	32.0 32.1	32.1	105.1 106.2	105.7	8.1 8.2	8.2		4.6 4.9	4.8		7 7	7.0	
				Bottom	5	18.3 18.2	18.3	7.9 7.9	7.9	31.8 32.0	31.9	104.7 104.0	104.4	8.2 8.1	8.2		5.2 5.2	5.2		6 6	6.0	
5-Apr-16	Cloudy	Moderate	10:47	Surface	1	17.4 17.4	17.4	8.1 8.1	8.1	31.6 31.6	31.6	94.1 94.1	94.1	7.5 7.5	7.5	7.5	4.0 4.1	4.1	4.5	3 3	3.0	5.7
				Middle	3	17.4 17.4	17.4	8.1 8.1	8.1	31.8 31.9	31.9	94.1 94.1	94.1	7.5 7.5	7.5		4.4 4.5	4.5		6 6	6.0	
				Bottom	5	17.2 17.2	17.2	8.1 8.1	8.1	32.1 32.1	32.1	93.8 93.8	93.8	7.4 7.4	7.4		4.9 4.8	4.9		8 8	8.0	
7-Apr-16	Sunny	Moderate	12:00	Surface	1	22.0 22.4	22.2	8.1 8.1	8.1	28.9 29.1	29.0	99.7 101.1	100.4	7.4 7.4	7.4	7.4	2.1 2.1	2.1	3.6	5 5	5.0	5.0
				Middle	3	22.0 23.1	22.6	8.1 8.1	8.1	29.0 28.8	28.9	99.5 101.6	100.6	7.4 7.4	7.4		3.1 3.1	3.1		4 4	4.0	
				Bottom	5	22.7 22.9	22.8	8.1 8.1	8.1	29.1 28.9	29.0	100.8 101.3	101.1	7.4 7.4	7.4		5.5 5.6	5.6		6 6	6.0	
9-Apr-16	Cloudy	Moderate	13:22	Surface	1	20.7 20.4	20.6	8.2 8.2	8.2	31.2 31.0	31.1	94.9 94.2	94.6	7.1 7.1	7.1	7.0	2.7 2.8	2.8	4.5	5 5	5.0	4.3
				Middle	3	20.1 20.3	20.2	8.2 8.2	8.2	31.8 31.9	31.9	94.4 95.2	94.8	7.1 7.1	7.1		3.9 4.7	4.3		4 4	4.0	
				Bottom	5	19.8 20.0	19.9	8.2 8.2	8.2	31.9 31.8	31.9	88.1 88.9	88.5	6.7 6.7	6.7		5.9 7.1	6.5		4 4	4.0	
11-Apr-16	Cloudy	Moderate	15:09	Surface	1	20.4 20.3	20.4	8.2 8.2	8.2	31.5 31.7	31.6	96.2 95.6	95.9	7.2 7.2	7.2	7.1	2.6 2.4	2.5	4.1	6 5	5.5	4.8
				Middle	3	19.9 20.0	20.0	8.1 8.2	8.2	32.1 32.2	32.2	95.4 96.3	95.9	7.2 7.2	7.2		3.5 3.5	3.5		5 5	5.0	
				Bottom	5	19.6 19.7	19.7	8.2 8.1	8.2	32.3 32.3	32.3	89.4 89.6	89.5	6.8 6.8	6.8		6.2 6.4	6.3		4 4	4.0	
13-Apr-16	Sunny	Moderate	17:17	Surface	1	20.7 21.1	20.9	8.2 8.1	8.2	29.5 29.2	29.4	99.6 98.5	99.1	7.5 7.4	7.5	7.3	2.1 2.1	2.1	3.6	5 5	5.0	5.8
				Middle	3	20.7 21.8	21.3	8.2 8.1	8.2	29.3 28.7	29.0	98.1 98.3	98.2	7.4 7.3	7.4		3.2 3.1	3.2		5 5	5.0	
				Bottom	5	21.4 22.6	22.0	8.1 8.2	8.2	30.0 27.3	28.7	93.1 94.4	93.8	6.9 7.0	7.0		5.5 5.6	5.6		7 8	7.5	
15-Apr-16	Cloudy	Moderate	19:32	Surface	1	19.6 19.6	19.6	7.7 7.7	7.7	33.0 33.1	33.1	93.3 93.3	93.3	7.0 7.0	7.0	7.1	4.0 4.1	4.1	4.0	<2.5 <2.5	<2.5	3.3
				Middle	3.5	19.5 19.6	19.6	7.7 7.7	7.7	33.1 33.0	33.1	94.1 93.4	93.8	7.1 7.0	7.1		3.9 4.1	4.0		<2.5 <2.5	<2.5	
				Bottom	6	19.6 19.6	19.6	7.6 7.6	7.6	32.9 33.0	33.0	93.3 94.0	93.7	7.0 7.1	7.1		3.9 3.7	3.8		5 5	5.0	
18-Apr-16	Rainy	Moderate	10:06	Surface	1	21.1 21.0	21.1	8.0 8.0	8.0	29.9 29.9	29.9	99.1 98.6	98.9	7.4 7.4	7.4	7.3	3.1 3.5	3.3	4.0	5 6	5.5	5.5
				Middle	3	20.8 20.7	20.8	8.1 8.1	8.1	30.1 30.1	30.1	97.7 97.5	97.6	7.3 7.3	7.3		4.3 4.2	4.3		6 6	6.0	
				Bottom	5	20.5 20.5	20.5	8.2 8.2	8.2	30.3 30.2	30.3	96.9 96.6	96.8	7.3 7.3	7.3		4.5 4.4	4.5		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-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	11:09	Surface	1	21.0 21.0	21.0	7.8 7.9	7.9	31.2 31.2	31.2	100.3 100.6	100.5	7.5 7.5	7.5	7.4	3.6 3.6	3.6	4.1	5 5	5.0	5.2
				Middle	3	20.8 20.7	20.8	8.0 8.0	8.0	31.6 31.7	31.7	99.9 99.7	99.8	7.4 7.4	7.4		4.4 4.6	4.5		7 6	6.5	
				Bottom	5	20.7 20.7	20.7	8.0 8.1	8.1	31.8 31.8	31.8	99.7 99.5	99.6	7.4 7.4	7.4		4.2 4.2	4.2		4 4	4.0	
22-Apr-16	Cloudy	Moderate	12:20	Surface	1	21.2 21.1	21.2	8.0 8.1	8.1	31.9 32.0	32.0	98.9 98.5	98.7	7.3 7.3	7.3	7.2	3.9 3.7	3.8	4.0	5 5	5.0	4.3
				Middle	3	21.0 21.0	21.0	8.1 8.1	8.1	32.1 32.1	32.1	97.5 97.3	97.4	7.2 7.2	7.2		3.6 3.6	3.6		4 4	4.0	
				Bottom	5	20.9 20.9	20.9	8.1 8.2	8.2	32.2 32.1	32.2	96.8 96.6	96.7	7.2 7.2	7.2		4.5 4.7	4.6		4 4	4.0	
25-Apr-16	Sunny	Rough	13:48	Surface	1	20.9 20.9	20.9	7.9 7.9	7.9	32.2 32.2	32.2	89.1 89.2	89.2	6.6 6.6	6.6	6.6	3.0 3.1	3.1	4.4	5 5	5.0	4.2
				Middle	3	21.1 20.9	21.0	7.9 7.9	7.9	32.0 32.1	32.1	88.9 88.5	88.7	6.6 6.6	6.6		4.7 4.5	4.6		3 3	3.0	
				Bottom	5	21.2 21.2	21.2	7.9 7.9	7.9	31.9 31.8	31.9	88.8 88.8	88.8	6.6 6.6	6.6		5.4 5.4	5.4		5 4	4.5	
27-Apr-16	Cloudy	Moderate	15:10	Surface	1	23.1 23.0	23.1	8.1 8.1	8.1	28.3 28.5	28.4	99.4 99.3	99.4	7.2 7.2	7.2	7.3	2.6 2.5	2.6	2.8	4 4	4.0	5.7
				Middle	3	22.4 22.4	22.4	8.2 8.2	8.2	29.0 29.0	29.0	99.4 99.2	99.3	7.3 7.3	7.3		2.9 3.0	3.0		7 8	7.5	
				Bottom	5	22.2 22.1	22.2	8.2 8.2	8.2	29.0 29.1	29.1	99.2 99.1	99.2	7.3 7.3	7.3		2.8 2.9	2.9		6 5	5.5	
29-Apr-16	Cloudy	Calm	16:40	Surface	1	21.6 21.6	21.6	8.3 8.3	8.3	31.6 31.8	31.7	100.0 99.6	99.8	7.3 7.3	7.3	7.2	2.5 2.5	2.5	4.2	5 6	5.5	5.8
				Middle	3	21.2 21.3	21.3	8.2 8.3	8.3	32.2 32.3	32.3	99.4 100.3	99.9	7.3 7.4	7.4		4.0 4.0	4.0		7 7	7.0	
				Bottom	5	20.9 21.0	21.0	8.3 8.2	8.3	32.4 32.4	32.4	93.2 93.4	93.3	6.9 6.9	6.9		6.3 5.9	6.1		5 5	5.0	

Remarks: 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.

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 Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	12:49	Surface	1	19.4 19.3	19.4	7.9 7.9	7.9	30.5 31.0	30.8	107.4 107.8	107.6	8.3 8.3	8.3	8.3	3.4 3.6	3.5	3.3	3 3	3.0	5.3
				Middle	3	19.2 18.8	19.0	7.9 8.0	8.0	31.1 31.5	31.3	107.5 106.2	106.9	8.3 8.2	8.3		2.4 2.4	2.4		7 7	7.0	
				Bottom	5	18.8 18.7	18.8	7.9 7.9	7.9	31.5 31.7	31.6	105.8 105.7	105.8	8.2 8.2	8.2		4.0 4.2	4.1		6 6	6.0	
5-Apr-16	Cloudy	Moderate	16:29	Surface	1	17.4 17.4	17.4	8.2 8.2	8.2	32.0 32.0	32.0	95.9 95.8	95.9	7.6 7.6	7.6	7.6	4.2 4.2	4.2	3.8	4 3	3.5	5.5
				Middle	3.5	17.4 17.4	17.4	8.2 8.2	8.2	32.2 32.2	32.2	95.8 95.9	95.9	7.6 7.6	7.6		3.4 3.4	3.4		6 6	6.0	
				Bottom	6	17.4 17.4	17.4	8.2 8.2	8.2	32.4 32.4	32.4	95.7 95.7	95.7	7.6 7.6	7.6		3.7 3.8	3.8		7 7	7.0	
7-Apr-16	Fine	Moderate	18:28	Surface	1	21.1 21.1	21.1	8.1 8.1	8.1	29.1 28.8	29.0	104.3 102.6	103.5	7.8 7.7	7.8	7.6	2.8 3.3	3.1	4.5	5 5	5.0	5.2
				Middle	3.5	21.1 20.8	21.0	8.1 8.1	8.1	28.9 28.3	28.6	102.9 100.5	101.7	7.7 7.6	7.7		3.3 3.8	3.6		6 6	6.0	
				Bottom	6	21.1 20.7	20.9	8.1 8.1	8.1	29.7 26.9	28.3	96.7 95.2	96.0	7.2 7.3	7.3		6.4 7.3	6.9		4 5	4.5	
9-Apr-16	Cloudy	Moderate	07:17	Surface	1	20.6 20.4	20.5	8.2 8.2	8.2	31.1 31.4	31.3	93.9 94.0	94.0	7.0 7.1	7.1	7.0	3.1 3.1	3.1	4.3	5 5	5.0	5.3
				Middle	3.5	19.9 19.9	19.9	8.2 8.2	8.2	31.3 30.9	31.1	92.8 93.1	93.0	7.0 7.1	7.1		4.2 4.3	4.3		7 7	7.0	
				Bottom	6	19.9 19.7	19.8	8.1 8.1	8.1	32.0 31.6	31.8	88.1 88.0	88.1	6.7 6.7	6.7		5.5 5.6	5.6		4 4	4.0	
11-Apr-16	Cloudy	Moderate	08:12	Surface	1	20.4 20.2	20.3	8.3 8.2	8.3	31.7 31.6	31.7	100.6 100.4	100.5	7.5 7.6	7.6	7.5	2.5 2.6	2.6	3.5	3 3	3.0	4.3
				Middle	3	19.7 19.7	19.7	8.2 8.2	8.2	31.7 31.6	31.7	99.5 99.8	99.7	7.6 7.6	7.6		2.6 3.0	2.8		4 4	4.0	
				Bottom	5	19.6 19.7	19.7	8.1 8.1	8.1	32.5 32.3	32.4	94.4 95.4	94.9	7.1 7.2	7.2		5.4 4.8	5.1		6 6	6.0	
13-Apr-16	Fine	Moderate	09:40	Surface	1	21.2 21.2	21.2	8.1 8.1	8.1	29.8 30.0	29.9	93.6 94.2	93.9	7.0 7.0	7.0	7.0	3.0 3.5	3.3	4.4	9 9	9.0	5.8
				Middle	3	21.2 20.9	21.1	8.0 8.1	8.1	29.9 29.7	29.8	93.3 93.0	93.2	7.0 7.0	7.0		3.2 3.2	3.2		3 4	3.5	
				Bottom	5	21.2 20.8	21.0	8.0 8.1	8.1	30.0 29.8	29.9	93.4 92.9	93.2	7.0 7.0	7.0		6.6 6.9	6.8		5 5	5.0	
15-Apr-16	Cloudy	Moderate	12:12	Surface	1	19.8 19.8	19.8	7.5 7.5	7.5	32.5 32.5	32.5	91.3 91.3	91.3	6.9 6.9	6.9	7.0	3.5 3.3	3.4	3.7	<2.5 <2.5	<2.5	3.3
				Middle	3.5	19.7 19.7	19.7	7.6 7.6	7.6	32.6 32.6	32.6	92.0 92.1	92.1	6.9 7.0	7.0		4.0 3.9	4.0		5 5	5.0	
				Bottom	6	19.7 19.6	19.7	7.6 7.6	7.6	32.8 32.9	32.9	92.4 92.5	92.5	7.0 7.0	7.0		3.6 3.5	3.6		<2.5 <2.5	<2.5	
18-Apr-16	Rainy	Moderate	16:31	Surface	1	21.3 21.2	21.3	8.0 8.0	8.0	31.5 31.4	31.5	102.4 102.1	102.3	7.6 7.6	7.6	7.4	3.4 3.3	3.4	3.9	4 4	4.0	5.2
				Middle	3	20.9 20.8	20.9	8.0 8.0	8.0	31.7 31.8	31.8	99.5 98.3	98.9	7.4 7.3	7.4		3.9 4.2	4.1		5 5	5.0	
				Bottom	5	20.5 20.4	20.5	8.1 8.1	8.1	32.5 32.6	32.6	97.0 97.2	97.1	7.2 7.2	7.2		4.1 4.2	4.2		6 7	6.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at A - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	17:26	Surface	1	20.9 20.9	20.9	8.1 8.1	8.1	32.3 32.3	32.3	98.7 98.7	98.7	7.3 7.3	7.3	7.3	3.5 3.6	3.6	4.1	3 3	3.0	3.3
				Middle	3	20.9 20.9	20.9	8.1 8.1	8.1	32.2 32.3	32.3	99.0 98.9	99.0	7.3 7.3	7.3		3.8 3.8	3.8		3 3	3.0	
				Bottom	5	20.7 20.7	20.7	8.2 8.2	8.2	32.2 32.1	32.2	98.2 98.0	98.1	7.3 7.3	7.3		4.8 5.0	4.9		4 4	4.0	
22-Apr-16	Cloudy	Moderate	18:50	Surface	1	20.9 20.9	20.9	8.2 8.2	8.2	30.1 30.1	30.1	95.6 95.3	95.5	7.2 7.1	7.2	7.1	3.5 3.7	3.6	4.3	4 4	4.0	5.0
				Middle	3	20.8 20.7	20.8	8.2 8.2	8.2	32.1 32.1	32.1	95.1 95.1	95.1	7.1 7.1	7.1		4.4 4.3	4.4		6 6	6.0	
				Bottom	5	20.7 20.7	20.7	8.2 8.2	8.2	32.2 32.2	32.2	94.9 94.9	94.9	7.1 7.1	7.1		4.8 4.7	4.8		5 5	5.0	
25-Apr-16	Sunny	Rough	07:13	Surface	1	21.8 21.7	21.8	7.7 7.7	7.7	30.8 30.9	30.9	88.2 87.9	88.1	6.5 6.5	6.5	6.5	4.5 4.6	4.6	4.5	3 4	3.5	5.2
				Middle	3	21.4 21.3	21.4	7.8 7.8	7.8	31.3 31.4	31.4	88.5 88.4	88.5	6.5 6.5	6.5		4.0 4.0	4.0		5 5	5.0	
				Bottom	5	21.2 21.2	21.2	7.8 7.8	7.8	31.5 31.6	31.6	88.4 88.7	88.6	6.5 6.6	6.6		4.8 5.1	5.0		7 7	7.0	
27-Apr-16	Rainy	Moderate	08:07	Surface	1	21.8 21.6	21.7	8.1 8.1	8.1	29.7 29.7	29.7	92.6 92.8	92.7	6.8 6.9	6.9	6.8	3.8 3.9	3.9	4.0	6 5	5.5	5.7
				Middle	3	21.8 21.6	21.7	8.1 8.2	8.2	29.9 30.0	30.0	92.6 92.3	92.5	6.8 6.8	6.8		3.9 4.0	4.0		5 6	5.5	
				Bottom	5	21.5 21.5	21.5	8.2 8.2	8.2	30.3 30.2	30.3	92.1 91.9	92.0	6.8 6.8	6.8		4.1 4.1	4.1		6 6	6.0	
29-Apr-16	Sunny	Calm	09:32	Surface	1	21.6 21.5	21.6	8.4 8.4	8.4	31.8 31.7	31.8	104.5 104.5	104.5	7.7 7.7	7.7	7.6	3.2 3.2	3.2	4.2	4 4	4.0	5.2
				Middle	3.5	21.0 21.0	21.0	8.3 8.4	8.4	31.8 31.7	31.8	103.6 103.8	103.7	7.7 7.7	7.7		3.8 3.9	3.9		4 4	4.0	
				Bottom	6	20.9 21.0	21.0	8.3 8.2	8.3	32.6 32.4	32.5	98.4 99.4	98.9	7.3 7.3	7.3		5.4 5.4	5.4		7 8	7.5	

Remarks: 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.

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-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	20:29	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	30.0 30.0	30.0	111.4 111.5	111.5	8.8 8.8	8.8	8.6	5.1 4.9	5.0	4.6	4 5	4.5	5.2
				Middle	7	18.3 18.3	18.3	8.2 8.2	8.2	32.0 32.1	32.1	109.0 109.8	109.4	8.5 8.5	8.5		3.6 3.8	3.7		4 5	4.5	
				Bottom	13	18.4 18.4	18.4	8.2 8.2	8.2	31.7 31.7	31.7	108.6 108.8	108.7	8.4 8.5	8.5		5.1 4.9	5.0		7 6	6.5	
5-Apr-16	Cloudy	Moderate	11:17	Surface	1	17.4 17.4	17.4	8.1 8.1	8.1	32.2 32.2	32.2	96.6 96.6	96.6	7.6 7.6	7.6	7.6	2.1 2.0	2.1	3.5	3 3	3.0	4.0
				Middle	6.5	17.2 17.2	17.2	8.1 8.1	8.1	32.6 32.6	32.6	95.8 96.0	95.9	7.6 7.6	7.6		4.1 4.4	4.3		5 5	5.0	
				Bottom	12	17.2 17.2	17.2	8.1 8.1	8.1	32.7 32.8	32.8	95.5 95.7	95.6	7.6 7.6	7.6		4.0 4.1	4.1		4 4	4.0	
7-Apr-16	Sunny	Moderate	12:32	Surface	1	22.6 22.5	22.6	8.1 8.1	8.1	29.0 29.0	29.0	102.2 103.4	102.8	7.5 7.6	7.6	7.5	3.2 3.3	3.3	3.6	3 3	3.0	3.8
				Middle	7.5	22.5 22.2	22.4	8.1 8.1	8.1	29.0 28.9	29.0	101.3 102.1	101.7	7.4 7.5	7.5		2.1 2.6	2.4		<2.5 <2.5	<2.5	
				Bottom	14	22.5 22.1	22.3	8.1 8.1	8.1	29.0 28.9	29.0	100.5 101.2	100.9	7.4 7.5	7.5		5.3 4.8	5.1		6 6	6.0	
9-Apr-16	Cloudy	Moderate	13:44	Surface	1	20.3 20.5	20.4	8.1 8.2	8.2	31.8 32.0	31.9	101.9 101.4	101.7	7.6 7.6	7.6	7.4	2.9 2.7	2.8	3.7	3 3	3.0	4.3
				Middle	7	20.0 19.9	20.0	8.3 8.2	8.3	32.9 32.6	32.8	97.1 97.4	97.3	7.3 7.3	7.3		3.7 3.9	3.8		7 7	7.0	
				Bottom	13	19.7 19.9	19.8	8.3 8.3	8.3	32.6 32.7	32.7	96.1 96.4	96.3	7.3 7.2	7.3		4.3 4.9	4.6		3 3	3.0	
11-Apr-16	Cloudy	Moderate	15:32	Surface	1	20.0 20.2	20.1	8.2 8.2	8.2	32.5 32.5	32.5	102.8 102.7	102.8	7.7 7.7	7.7	7.5	2.9 2.5	2.7	3.7	3 3	3.0	3.5
				Middle	7	19.8 19.6	19.7	8.3 8.3	8.3	33.1 33.3	33.2	98.5 98.6	98.6	7.4 7.4	7.4		3.7 4.0	3.9		3 4	3.5	
				Bottom	13	19.6 19.8	19.7	8.3 8.3	8.3	33.1 33.0	33.1	97.7 98.1	97.9	7.4 7.4	7.4		4.9 4.2	4.6		4 4	4.0	
13-Apr-16	Sunny	Moderate	17:33	Surface	1	21.3 21.2	21.3	8.1 8.2	8.2	29.1 30.0	29.6	98.3 97.0	97.7	7.4 7.2	7.3	6.9	3.2 3.2	3.2	3.6	5 5	5.0	5.3
				Middle	7	21.2 20.9	21.1	8.2 8.2	8.2	29.3 28.8	29.1	92.6 91.5	92.1	6.9 6.9	6.9		2.1 2.6	2.4		6 6	6.0	
				Bottom	13	21.2 20.8	21.0	8.1 8.2	8.2	29.3 28.7	29.0	87.0 86.4	86.7	6.5 6.5	6.5		5.3 4.8	5.1		5 5	5.0	
15-Apr-16	Cloudy	Moderate	19:57	Surface	1	19.6 19.6	19.6	8.1 8.1	8.1	33.6 33.6	33.6	101.7 101.8	101.8	7.6 7.7	7.7	7.6	2.5 2.7	2.6	2.8	<2.5 <2.5	<2.5	3.8
				Middle	7.5	19.5 19.4	19.5	8.2 8.2	8.2	33.4 33.6	33.5	100.9 101.0	101.0	7.6 7.6	7.6		3.2 3.2	3.2		4 4	4.0	
				Bottom	14	19.5 19.5	19.5	8.2 8.2	8.2	33.3 33.3	33.3	100.0 100.1	100.1	7.5 7.6	7.6		2.6 2.8	2.7		5 5	5.0	
18-Apr-16	Rainy	Moderate	10:33	Surface	1	21.4 21.0	21.2	8.0 8.0	8.0	30.6 30.0	30.3	101.3 99.9	100.6	7.5 7.5	7.5	7.3	3.6 3.8	3.7	4.6	4 4	4.0	4.2
				Middle	7	20.7 20.7	20.7	8.1 8.1	8.1	30.2 30.2	30.2	96.3 95.5	95.9	7.2 7.2	7.2		4.4 4.6	4.5		4 5	4.5	
				Bottom	13	20.4 20.4	20.4	8.2 8.2	8.2	30.7 30.7	30.7	94.3 94.3	94.3	7.1 7.1	7.1		5.5 5.5	5.5		4 4	4.0	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	11:34	Surface	1	20.9 20.9	20.9	8.1 8.1	8.1	31.5 31.5	31.5	97.3 97.2	97.3	7.2 7.2	7.2	7.2	3.0 3.0	3.0	4.1	3 3	3.0	3.3
				Middle	6.5	20.6 20.6	20.6	8.2 8.2	8.2	31.9 32.0	32.0	97.1 97.3	97.2	7.2 7.3	7.3		4.0 4.0	4.0		3 3	3.0	
				Bottom	12	20.6 20.5	20.6	8.3 8.3	8.3	32.1 32.2	32.2	97.1 96.9	97.0	7.2 7.2	7.2		5.3 5.2	5.3		4 4	4.0	
22-Apr-16	Cloudy	Moderate	12:49	Surface	1	21.3 21.2	21.3	8.1 8.1	8.1	29.1 31.2	30.2	102.0 101.9	102.0	7.6 7.5	7.6	7.5	3.2 3.3	3.3	4.5	3 3	3.0	3.3
				Middle	7	21.1 20.9	21.0	8.2 8.2	8.2	31.3 31.5	31.4	101.5 100.6	101.1	7.5 7.5	7.5		5.4 5.2	5.3		4 4	4.0	
				Bottom	13	20.9 20.8	20.9	8.2 8.2	8.2	31.5 31.6	31.6	100.5 99.6	100.1	7.5 7.4	7.5		5.0 5.0	5.0		3 3	3.0	
25-Apr-16	Sunny	Rough	14:12	Surface	1	20.7 20.7	20.7	7.9 8.0	8.0	32.6 32.6	32.6	90.9 91.0	91.0	6.7 6.7	6.7	6.7	2.1 2.1	2.1	2.8	4 3	3.5	4.3
				Middle	7	20.7 20.7	20.7	7.9 7.9	7.9	32.6 32.6	32.6	89.8 90.6	90.2	6.7 6.7	6.7		3.3 3.1	3.2		4 3	3.5	
				Bottom	13	20.6 20.6	20.6	7.9 7.9	7.9	32.4 32.5	32.5	89.5 89.5	89.5	6.7 6.7	6.7		3.1 3.0	3.1		6 6	6.0	
27-Apr-16	Cloudy	Moderate	14:47	Surface	1	22.9 22.8	22.9	8.2 8.2	8.2	27.9 28.0	28.0	100.3 100.5	100.4	7.3 7.4	7.4	7.2	3.6 3.7	3.7	3.7	4 4	4.0	4.8
				Middle	7	21.9 21.8	21.9	8.2 8.2	8.2	29.2 29.3	29.3	97.0 96.3	96.7	7.2 7.1	7.2		3.7 3.6	3.7		5 5	5.0	
				Bottom	13	21.6 21.6	21.6	8.2 8.2	8.2	29.6 29.7	29.7	94.3 94.3	94.3	7.0 7.0	7.0		3.7 3.8	3.8		5 6	5.5	
29-Apr-16	Cloudy	Calm	17:03	Surface	1	21.3 21.5	21.4	8.3 8.4	8.4	32.6 32.7	32.7	107.0 106.9	107.0	7.8 7.8	7.8	7.6	2.3 2.0	2.2	3.1	3 4	3.5	4.0
				Middle	7	21.1 20.9	21.0	8.3 8.4	8.4	33.3 33.4	33.4	102.5 102.7	102.6	7.5 7.5	7.5		3.3 3.3	3.3		4 4	4.0	
				Bottom	13	20.9 21.1	21.0	8.4 8.3	8.4	33.2 33.1	33.2	101.7 102.2	102.0	7.5 7.5	7.5		3.7 3.9	3.8		5 4	4.5	

Remarks: 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.

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

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	13:20	Surface	1	19.4 19.4	19.4	8.1 8.2	8.2	30.4 30.6	30.5	110.2 110.6	110.4	8.5 8.5	8.5	8.5	3.2 3.3	3.3	4.1	5 5	5.0	5.8
				Middle	7	19.0 18.9	19.0	8.2 8.2	8.2	31.1 31.3	31.2	111.3 111.2	111.3	8.6 8.6	8.6		4.9 4.8	4.9		5 5	5.0	
				Bottom	13	18.7 18.6	18.7	8.2 8.2	8.2	31.5 31.6	31.6	109.6 109.4	109.5	8.5 8.5	8.5		4.1 4.0	4.1		7 8	7.5	
5-Apr-16	Cloudy	Moderate	16:56	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	32.1 32.1	32.1	96.7 96.3	96.5	7.7 7.6	7.7	7.6	1.9 2.0	2.0	4.0	3 4	3.5	5.2
				Middle	7	17.2 17.2	17.2	8.2 8.2	8.2	32.6 32.7	32.7	96.0 96.1	96.1	7.6 7.6	7.6		4.5 4.4	4.5		6 6	6.0	
				Bottom	13	17.1 17.1	17.1	8.1 8.1	8.1	32.7 32.8	32.8	95.7 95.3	95.5	7.6 7.5	7.6		5.3 5.4	5.4		6 6	6.0	
7-Apr-16	Fine	Moderate	18:44	Surface	1	20.7 20.6	20.7	8.1 8.1	8.1	28.7 29.6	29.2	101.2 100.0	100.6	7.7 7.6	7.7	7.3	3.7 4.0	3.9	4.2	3 3	3.0	4.0
				Middle	7.5	20.6 20.6	20.6	8.1 8.1	8.1	28.9 28.5	28.7	95.6 95.0	95.3	7.3 7.2	7.3		3.0 3.1	3.1		4 3	3.5	
				Bottom	14	20.6 20.6	20.6	8.1 8.1	8.1	29.0 28.3	28.7	90.1 90.1	90.1	6.8 6.9	6.9		5.6 5.8	5.7		5 6	5.5	
9-Apr-16	Cloudy	Moderate	07:40	Surface	1	20.0 20.0	20.0	8.2 8.2	8.2	31.4 31.5	31.5	97.9 98.1	98.0	7.4 7.4	7.4	7.4	3.5 2.9	3.2	4.0	5 4	4.5	5.8
				Middle	7.5	19.9 19.9	19.9	8.3 8.2	8.3	32.1 32.2	32.2	97.5 97.7	97.6	7.4 7.4	7.4		4.1 4.2	4.2		5 5	5.0	
				Bottom	14	19.7 19.7	19.7	8.3 8.3	8.3	31.7 32.1	31.9	96.7 96.9	96.8	7.3 7.3	7.3		4.8 4.1	4.5		8 8	8.0	
11-Apr-16	Cloudy	Moderate	08:35	Surface	1	19.8 19.8	19.8	8.2 8.2	8.2	31.9 31.9	31.9	96.9 96.5	96.7	7.3 7.3	7.3	7.3	2.1 1.7	1.9	2.4	4 5	4.5	4.2
				Middle	7.5	19.8 19.8	19.8	8.3 8.2	8.3	32.5 32.6	32.6	95.8 96.4	96.1	7.2 7.3	7.3		2.0 2.3	2.2		4 4	4.0	
				Bottom	14	19.5 19.5	19.5	8.3 8.3	8.3	32.4 32.3	32.4	95.4 94.7	95.1	7.2 7.2	7.2		3.0 3.1	3.1		4 4	4.0	
13-Apr-16	Fine	Moderate	10:12	Surface	1	20.8 20.7	20.8	8.1 8.1	8.1	29.9 30.0	30.0	94.3 95.4	94.9	7.1 7.2	7.2	7.1	3.9 4.2	4.1	4.4	5 4	4.5	5.5
				Middle	7	20.7 20.7	20.7	8.1 8.2	8.2	29.9 29.8	29.9	93.4 94.7	94.1	7.0 7.1	7.1		3.2 3.2	3.2		4 4	4.0	
				Bottom	13	20.7 20.7	20.7	8.1 8.1	8.1	29.9 29.8	29.9	92.6 94.0	93.3	7.0 7.1	7.1		5.8 6.0	5.9		8 8	8.0	
15-Apr-16	Cloudy	Moderate	12:41	Surface	1	19.7 19.7	19.7	8.2 8.2	8.2	32.7 32.7	32.7	98.8 99.1	99.0	7.5 7.5	7.5	7.6	1.8 2.0	1.9	2.4	3 4	3.5	3.7
				Middle	7.5	19.5 19.5	19.5	8.2 8.2	8.2	33.0 33.0	33.0	100.0 100.2	100.1	7.6 7.6	7.6		2.6 2.8	2.7		3 4	3.5	
				Bottom	14	19.5 19.5	19.5	8.3 8.3	8.3	33.2 33.3	33.3	100.6 100.6	100.6	7.6 7.6	7.6		2.6 2.7	2.7		4 4	4.0	
18-Apr-16	Rainy	Moderate	15:54	Surface	1	21.4 21.3	21.4	8.0 8.0	8.0	31.4 31.3	31.4	96.4 96.1	96.3	7.1 7.1	7.1	7.0	3.7 3.7	3.7	3.9	3 3	3.0	3.5
				Middle	7	20.7 20.7	20.7	8.1 8.1	8.1	31.2 31.2	31.2	93.9 94.0	94.0	7.0 7.0	7.0		4.2 4.3	4.3		3 3	3.0	
				Bottom	13	20.6 20.6	20.6	8.2 8.2	8.2	31.6 31.6	31.6	94.1 94.0	94.1	7.0 7.0	7.0		3.8 3.8	3.8		5 4	4.5	

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

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	17:51	Surface	1	21.0 20.9	21.0	8.3 8.3	8.3	32.4 32.4	32.4	99.4 99.2	99.3	7.3 7.3	7.3	7.3	4.7 4.8	4.8	4.0	3 3	3.0	4.8
				Middle	7	20.9 20.9	20.9	8.3 8.3	8.3	32.4 32.4	32.4	98.1 98.1	98.1	7.3 7.3	7.3		4.3 4.1	4.2		6 6	6.0	
				Bottom	13	20.7 20.7	20.7	8.2 8.2	8.2	32.5 32.5	32.5	98.4 98.2	98.3	7.3 7.3	7.3		2.8 3.3	3.1		6 5	5.5	
22-Apr-16	Cloudy	Moderate	19:18	Surface	1	20.7 20.6	20.7	8.2 8.2	8.2	31.6 31.6	31.6	99.9 99.8	99.9	7.4 7.5	7.5	7.5	2.5 2.6	2.6	4.3	4 4	4.0	5.0
				Middle	7	20.6 20.6	20.6	8.2 8.2	8.2	31.6 31.7	31.7	100.1 100.0	100.1	7.5 7.5	7.5		5.3 5.5	5.4		5 5	5.0	
				Bottom	13	20.6 20.6	20.6	8.2 8.2	8.2	31.7 31.7	31.7	99.1 99.0	99.1	7.4 7.4	7.4		5.1 4.9	5.0		6 6	6.0	
25-Apr-16	Sunny	Rough	07:36	Surface	1	21.1 21.2	21.2	8.0 8.0	8.0	31.5 31.6	31.6	90.0 90.3	90.2	6.7 6.7	6.7	6.7	3.3 3.4	3.4	3.7	4 4	4.0	4.8
				Middle	7	20.9 20.9	20.9	7.9 7.9	7.9	32.0 32.1	32.1	90.2 90.1	90.2	6.7 6.7	6.7		3.5 3.5	3.5		4 3	3.5	
				Bottom	13	20.8 20.8	20.8	7.9 8.0	8.0	32.2 32.2	32.2	90.0 89.9	90.0	6.7 6.7	6.7		4.2 4.3	4.3		7 7	7.0	
27-Apr-16	Rainy	Moderate	08:31	Surface	1	21.8 21.7	21.8	8.1 8.1	8.1	30.0 29.9	30.0	96.3 96.0	96.2	7.1 7.1	7.1	7.0	3.8 3.7	3.8	4.4	7 7	7.0	5.3
				Middle	7	21.7 21.5	21.6	8.2 8.2	8.2	30.8 30.9	30.9	95.4 94.2	94.8	7.0 7.0	7.0		4.5 4.2	4.4		4 4	4.0	
				Bottom	13	21.4 21.3	21.4	8.2 8.2	8.2	31.1 31.2	31.2	94.5 93.8	94.2	7.0 6.9	7.0		4.8 4.9	4.9		5 5	5.0	
29-Apr-16	Sunny	Calm	09:55	Surface	1	21.1 21.1	21.1	8.3 8.3	8.3	32.0 32.0	32.0	100.9 100.6	100.8	7.5 7.4	7.5	7.4	3.1 2.8	3.0	3.5	4 3	3.5	4.5
				Middle	7	21.1 21.1	21.1	8.4 8.3	8.4	32.7 32.7	32.7	99.8 100.4	100.1	7.3 7.4	7.4		3.2 3.2	3.2		5 5	5.0	
				Bottom	13	20.8 20.8	20.8	8.4 8.3	8.4	32.5 32.5	32.5	99.4 98.6	99.0	7.4 7.3	7.4		4.3 4.4	4.4		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 C2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	18:52	Surface	1	17.8 17.8	17.8	7.6 7.7	7.7	32.6 32.6	32.6	115.2 115.6	115.4	9.0 9.0	9.0	8.8	3.2 2.9	3.1	4.2	5 6	5.5	5.5
				Middle	9.5	17.7 17.7	17.7	7.8 7.8	7.8	32.9 32.9	32.9	112.3 112.8	112.6	8.8 8.8	8.8		3.9 3.7	3.8		6 6	6.0	
				Bottom	18	17.7 17.7	17.7	7.8 7.8	7.8	32.7 32.7	32.7	110.5 110.1	110.3	8.7 8.6	8.7		5.6 5.8	5.7		5 5	5.0	
5-Apr-16	Cloudy	Moderate	09:32	Surface	1	17.4 17.4	17.4	8.1 8.1	8.1	33.1 33.2	33.2	99.3 99.3	99.3	7.8 7.8	7.8	7.7	3.4 3.5	3.5	4.4	4 4	4.0	4.7
				Middle	9.5	17.2 17.2	17.2	8.1 8.1	8.1	33.4 33.4	33.4	98.0 97.9	98.0	7.7 7.7	7.7		3.5 3.5	3.5		3 3	3.0	
				Bottom	18	17.2 17.2	17.2	8.0 8.0	8.0	33.8 33.8	33.8	97.0 97.2	97.1	7.6 7.6	7.6		6.0 6.1	6.1		7 7	7.0	
7-Apr-16	Sunny	Moderate	10:52	Surface	1	22.4 22.4	22.4	8.1 8.2	8.2	28.4 27.9	28.2	98.2 97.5	97.9	7.2 7.2	7.2	7.2	2.8 2.7	2.8	3.7	3 3	3.0	3.3
				Middle	9.5	22.4 23.0	22.7	8.1 8.2	8.2	28.0 27.9	28.0	96.5 98.5	97.5	7.1 7.2	7.2		2.8 2.8	2.8		4 4	4.0	
				Bottom	18	22.4 22.5	22.5	8.1 8.1	8.1	28.0 28.2	28.1	97.7 97.9	97.8	7.2 7.2	7.2		5.5 5.6	5.6		3 3	3.0	
9-Apr-16	Cloudy	Moderate	12:25	Surface	1	20.3 20.5	20.4	8.1 8.2	8.2	31.2 31.5	31.4	101.8 101.4	101.6	7.7 7.6	7.7	7.4	2.2 2.3	2.3	3.2	6 6	6.0	5.3
				Middle	9.5	19.9 20.0	20.0	8.3 8.2	8.3	32.0 31.9	32.0	97.1 96.9	97.0	7.3 7.3	7.3		3.5 3.6	3.6		4 4	4.0	
				Bottom	18	19.8 20.0	19.9	8.3 8.3	8.3	32.1 32.3	32.2	96.1 96.5	96.3	7.3 7.3	7.3		3.7 3.7	3.7		6 6	6.0	
11-Apr-16	Cloudy	Moderate	14:13	Surface	1	20.1 20.3	20.2	8.2 8.2	8.2	31.7 31.8	31.8	103.4 102.7	103.1	7.8 7.7	7.8	7.5	2.8 2.9	2.9	3.3	4 5	4.5	5.0
				Middle	9.5	19.7 19.8	19.8	8.2 8.3	8.3	32.3 32.5	32.4	97.9 98.2	98.1	7.4 7.4	7.4		3.5 3.5	3.5		6 5	5.5	
				Bottom	18	19.6 19.7	19.7	8.3 8.3	8.3	32.5 32.7	32.6	97.2 97.5	97.4	7.4 7.4	7.4		3.3 3.9	3.6		5 5	5.0	
13-Apr-16	Sunny	Moderate	16:05	Surface	1	21.1 21.1	21.1	8.2 8.2	8.2	29.2 29.0	29.1	94.8 96.0	95.4	7.1 7.2	7.2	6.9	2.8 2.7	2.8	3.7	7 7	7.0	5.0
				Middle	9.5	21.1 22.7	21.9	8.2 8.2	8.2	28.6 29.5	29.1	93.0 96.6	94.8	7.0 7.0	7.0		2.8 2.8	2.8		5 5	5.0	
				Bottom	18	21.1 22.2	21.7	8.2 8.2	8.2	29.2 28.9	29.1	88.1 89.3	88.7	6.6 6.6	6.6		5.5 5.5	5.5		3 3	3.0	
15-Apr-16	Cloudy	Moderate	18:30	Surface	1	19.4 19.4	19.4	8.0 8.2	8.1	31.9 31.9	31.9	101.4 101.5	101.5	7.7 7.7	7.7	7.7	2.3 2.2	2.3	3.0	4 4	4.0	3.3
				Middle	9.5	19.4 19.4	19.4	8.1 8.1	8.1	31.9 31.9	31.9	101.1 101.0	101.1	7.7 7.7	7.7		2.8 2.8	2.8		3 3	3.0	
				Bottom	18	19.4 19.4	19.4	8.2 8.2	8.2	31.9 32.0	32.0	100.4 100.5	100.5	7.7 7.7	7.7		3.7 3.8	3.8		3 3	3.0	
18-Apr-16	Rainy	Moderate	09:08	Surface	1	20.7 20.5	20.6	8.0 8.0	8.0	30.3 30.5	30.4	99.5 99.9	99.7	7.5 7.5	7.5	7.6	3.2 3.2	3.2	4.5	4 4	4.0	4.5
				Middle	9.5	20.2 20.1	20.2	8.0 8.0	8.0	31.1 31.1	31.1	100.8 101.1	101.0	7.6 7.6	7.6		3.8 3.9	3.9		3 4	3.5	
				Bottom	18	20.1 20.0	20.1	8.1 8.2	8.2	31.2 31.2	31.2	102.1 102.5	102.3	7.7 7.8	7.8		6.3 6.5	6.4		6 6	6.0	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	10:10	Surface	1	20.5 20.5	20.5	8.3 8.3	8.3	31.1 31.2	31.2	105.1 105.4	105.3	7.9 7.9	7.9	7.9	3.3 3.1	3.2	4.1	4 4	4.0	4.2
				Middle	9	20.5 20.4	20.5	8.3 8.3	8.3	31.4 31.5	31.5	104.9 104.6	104.8	7.9 7.8	7.9		3.9 4.2	4.1		3 4	3.5	
				Bottom	17	20.4 20.4	20.4	8.4 8.4	8.4	31.6 31.7	31.7	104.9 105.0	105.0	7.9 7.9	7.9		4.9 4.9	4.9		5 5	5.0	
22-Apr-16	Cloudy	Moderate	11:03	Surface	1	20.9 20.9	20.9	8.2 8.2	8.2	32.7 32.7	32.7	98.0 97.9	98.0	7.2 7.2	7.2	7.3	3.5 3.4	3.5	4.1	3 3	3.0	3.7
				Middle	9	20.6 20.6	20.6	8.2 8.2	8.2	32.4 32.3	32.4	98.4 98.7	98.6	7.3 7.3	7.3		4.1 4.3	4.2		5 5	5.0	
				Bottom	17	20.6 20.6	20.6	8.3 8.3	8.3	32.1 32.1	32.1	99.3 99.4	99.4	7.4 7.4	7.4		4.6 4.4	4.5		3 3	3.0	
25-Apr-16	Sunny	Rough	12:37	Surface	1	20.8 20.8	20.8	8.2 8.2	8.2	33.0 33.0	33.0	94.2 94.2	94.2	7.0 7.0	7.0	6.9	3.3 3.3	3.3	3.9	3 3	3.0	4.0
				Middle	9	20.7 20.7	20.7	8.1 8.1	8.1	32.3 32.3	32.3	93.1 93.1	93.1	6.9 6.9	6.9		4.4 4.2	4.3		5 5	5.0	
				Bottom	17	20.7 20.7	20.7	8.0 8.0	8.0	32.2 32.3	32.3	92.8 92.8	92.8	6.9 6.9	6.9		4.1 4.0	4.1		4 4	4.0	
27-Apr-16	Cloudy	Moderate	16:03	Surface	1	21.9 21.9	21.9	8.2 8.2	8.2	30.4 30.5	30.5	96.5 96.6	96.6	7.1 7.1	7.1	7.2	3.4 3.2	3.3	4.4	7 7	7.0	5.5
				Middle	9.5	21.5 21.5	21.5	8.2 8.2	8.2	31.0 30.9	31.0	97.4 97.3	97.4	7.2 7.2	7.2		4.9 4.8	4.9		5 5	5.0	
				Bottom	18	21.4 21.4	21.4	8.2 8.3	8.3	30.9 30.9	30.9	97.5 97.5	97.5	7.2 7.2	7.2		4.9 5.0	5.0		5 4	4.5	
29-Apr-16	Cloudy	Calm	15:44	Surface	1	21.2 21.5	21.4	8.3 8.3	8.3	31.8 31.9	31.9	107.0 106.7	106.9	7.9 7.8	7.9	7.6	3.3 3.2	3.3	3.2	4 4	4.0	5.8
				Middle	9.5	20.9 20.9	20.9	8.3 8.4	8.4	32.4 32.5	32.5	101.8 101.7	101.8	7.5 7.5	7.5		3.3 3.3	3.3		5 5	5.0	
				Bottom	18	20.7 20.9	20.8	8.4 8.3	8.4	32.5 32.8	32.7	100.7 101.3	101.0	7.5 7.5	7.5		3.1 3.1	3.1		9 8	8.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	11:40	Surface	1	18.2 18.2	18.2	7.8 7.8	7.8	30.9 31.0	31.0	113.9 114.1	114.0	8.9 8.9	8.9	8.8	3.1 3.2	3.2	4.4	5 6	5.5	5.8
				Middle	9.5	18.1 18.1	18.1	7.9 7.9	7.9	32.0 32.1	32.1	114.0 114.3	114.2	8.9 8.9	8.9		3.5 3.5	3.5		4 4	4.0	
				Bottom	18	17.8 17.8	17.8	7.8 7.8	7.8	32.5 32.5	32.5	111.5 111.2	111.4	8.7 8.7	8.7		6.3 6.4	6.4		8 8	8.0	
5-Apr-16	Cloudy	Moderate	15:11	Surface	1	17.4 17.4	17.4	8.1 8.1	8.1	33.3 33.3	33.3	98.7 98.8	98.8	7.7 7.8	7.8	7.7	3.2 3.3	3.3	4.4	5 5	5.0	4.5
				Middle	9.5	17.4 17.4	17.4	8.1 8.1	8.1	33.8 33.8	33.8	98.5 98.6	98.6	7.7 7.7	7.7		4.3 4.3	4.3		4 4	4.0	
				Bottom	18	17.4 17.4	17.4	8.1 8.1	8.1	33.9 34.0	34.0	98.1 97.9	98.0	7.7 7.7	7.7		5.6 5.6	5.6		5 4	4.5	
7-Apr-16	Fine	Moderate	17:06	Surface	1	21.1 20.8	21.0	8.1 8.1	8.1	28.7 28.6	28.7	98.8 99.5	99.2	7.4 7.5	7.5	7.3	3.2 3.3	3.3	4.2	4 4	4.0	4.8
				Middle	9	21.0 20.7	20.9	8.1 8.1	8.1	28.2 29.1	28.7	96.8 97.2	97.0	7.3 7.4	7.4		3.1 3.1	3.1		6 7	6.5	
				Bottom	17	21.0 20.7	20.9	8.1 8.1	8.1	28.8 28.6	28.7	92.0 91.0	91.5	6.9 6.9	6.9		6.1 6.0	6.1		4 4	4.0	
9-Apr-16	Cloudy	Moderate	06:20	Surface	1	20.2 20.2	20.2	8.2 8.2	8.2	31.4 31.4	31.4	103.2 103.8	103.5	7.8 7.8	7.8	7.7	3.2 3.6	3.4	4.2	3 4	3.5	5.3
				Middle	9.5	19.9 19.9	19.9	8.2 8.3	8.3	32.2 31.9	32.1	100.3 101.2	100.8	7.6 7.6	7.6		4.4 4.9	4.7		6 7	6.5	
				Bottom	18	19.8 19.7	19.8	8.3 8.3	8.3	32.1 32.3	32.2	100.9 101.4	101.2	7.6 7.7	7.7		4.3 4.6	4.5		6 6	6.0	
11-Apr-16	Cloudy	Moderate	07:15	Surface	1	19.9 20.0	20.0	8.2 8.2	8.2	31.7 32.0	31.9	102.8 103.4	103.1	7.8 7.8	7.8	7.7	2.3 2.4	2.4	3.1	3 3	3.0	3.3
				Middle	9.5	19.8 19.6	19.7	8.2 8.2	8.2	32.5 32.4	32.5	100.6 101.0	100.8	7.6 7.6	7.6		3.9 3.5	3.7		4 4	4.0	
				Bottom	18	19.5 19.6	19.6	8.2 8.2	8.2	32.5 32.8	32.7	100.4 101.0	100.7	7.6 7.6	7.6		3.2 3.1	3.2		3 3	3.0	
13-Apr-16	Fine	Moderate	08:41	Surface	1	21.2 20.9	21.1	8.1 8.2	8.2	29.3 28.8	29.1	91.4 90.2	90.8	6.8 6.8	6.8	6.8	2.0 2.1	2.1	4.2	7 6	6.5	5.3
				Middle	9.5	21.1 20.8	21.0	8.1 8.2	8.2	28.9 28.9	28.9	89.6 90.0	89.8	6.7 6.8	6.8		3.4 3.6	3.5		4 4	4.0	
				Bottom	18	21.1 20.8	21.0	8.2 8.1	8.2	28.9 29.2	29.1	90.8 90.3	90.6	6.8 6.8	6.8		6.9 6.8	6.9		6 5	5.5	
15-Apr-16	Cloudy	Moderate	10:56	Surface	1	20.0 20.0	20.0	8.3 8.2	8.3	30.8 30.8	30.8	101.3 101.4	101.4	7.7 7.7	7.7	7.7	2.9 2.8	2.9	3.1	4 5	4.5	3.2
				Middle	9	19.7 19.7	19.7	8.4 8.3	8.4	31.3 31.3	31.3	100.9 100.8	100.9	7.7 7.7	7.7		3.0 3.0	3.0		<2.5 <2.5	<2.5	
				Bottom	17	19.6 19.6	19.6	8.3 8.3	8.3	31.5 31.6	31.6	101.0 101.0	101.0	7.7 7.7	7.7		3.5 3.4	3.5		<2.5 <2.5	<2.5	
18-Apr-16	Rainy	Moderate	17:32	Surface	1	20.9 20.8	20.9	8.0 8.0	8.0	32.9 32.9	32.9	101.5 101.5	101.5	7.5 7.5	7.5	7.5	2.0 2.1	2.1	4.3	3 3	3.0	4.8
				Middle	9	20.4 20.4	20.4	8.0 8.0	8.0	33.5 33.6	33.6	100.0 100.5	100.3	7.4 7.4	7.4		4.5 4.5	4.5		6 7	6.5	
				Bottom	17	20.1 20.0	20.1	8.1 8.1	8.1	34.2 34.3	34.3	100.2 100.3	100.3	7.4 7.5	7.5		6.4 6.4	6.4		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 C2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	16:19	Surface	1	20.6 20.6	20.6	8.5 8.5	8.5	32.2 32.2	32.2	105.1 105.0	105.1	7.8 7.8	7.8	7.8	3.4 3.3	3.4	4.1	3 3	3.0	3.7
				Middle	9	20.6 20.6	20.6	8.5 8.5	8.5	32.0 32.0	32.0	104.2 104.1	104.2	7.8 7.8	7.8		4.2 4.1	4.2		4 4	4.0	
				Bottom	17	20.5 20.4	20.5	8.4 8.4	8.4	32.2 32.3	32.3	104.3 104.3	104.3	7.8 7.8	7.8		4.6 4.7	4.7		4 4	4.0	
22-Apr-16	Cloudy	Moderate	17:36	Surface	1	20.7 20.7	20.7	8.0 8.0	8.0	32.3 32.3	32.3	99.4 99.3	99.4	7.4 7.4	7.4	7.4	4.4 4.4	4.4	4.3	6 5	5.5	5.8
				Middle	9	20.6 20.6	20.6	8.1 8.1	8.1	32.5 32.6	32.6	98.9 98.9	98.9	7.3 7.3	7.3		4.3 4.3	4.3		7 7	7.0	
				Bottom	17	20.5 20.5	20.5	8.2 8.2	8.2	32.6 32.6	32.6	99.1 99.3	99.2	7.4 7.4	7.4		4.1 4.0	4.1		5 5	5.0	
25-Apr-16	Sunny	Rough	06:07	Surface	1	21.2 21.2	21.2	8.0 7.7	7.9	30.9 31.0	31.0	92.7 92.6	92.7	6.9 6.9	6.9	6.9	3.2 3.0	3.1	4.3	5 5	5.0	5.8
				Middle	9	21.1 20.9	21.0	8.0 8.0	8.0	31.9 32.0	32.0	92.9 92.6	92.8	6.9 6.9	6.9		4.2 4.2	4.2		5 4	4.5	
				Bottom	17	20.9 20.9	20.9	8.0 8.0	8.0	32.0 32.0	32.0	92.6 92.5	92.6	6.9 6.9	6.9		5.5 5.5	5.5		8 8	8.0	
27-Apr-16	Rainy	Moderate	07:15	Surface	1	21.7 21.6	21.7	8.0 8.1	8.1	29.8 29.2	29.5	93.7 95.9	94.8	6.9 7.1	7.0	7.1	2.7 2.6	2.7	3.1	8 8	8.0	5.8
				Middle	9	21.5 21.5	21.5	8.2 8.2	8.2	30.7 30.5	30.6	95.6 95.7	95.7	7.1 7.1	7.1		3.2 3.3	3.3		5 6	5.5	
				Bottom	17	21.2 21.3	21.3	8.2 8.2	8.2	30.8 30.7	30.8	95.8 96.2	96.0	7.1 7.1	7.1		3.1 3.2	3.2		4 4	4.0	
29-Apr-16	Sunny	Calm	08:35	Surface	1	21.0 21.2	21.1	8.3 8.3	8.3	31.7 32.1	31.9	106.4 107.4	106.9	7.9 7.9	7.9	7.8	3.4 3.4	3.4	4.2	5 6	5.5	5.8
				Middle	9.5	21.0 20.7	20.9	8.4 8.4	8.4	32.6 32.5	32.6	104.5 104.6	104.6	7.7 7.8	7.8		5.2 4.9	5.1		5 5	5.0	
				Bottom	18	20.6 20.8	20.7	8.4 8.4	8.4	32.5 32.9	32.7	104.0 104.9	104.5	7.7 7.7	7.7		4.2 4.2	4.2		7 7	7.0	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at WSD17 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	19:20	Surface	1	17.9 17.9	17.9	8.0 8.0	8.0	32.4 32.4	32.4	114.1 114.7	114.4	8.9 9.0	9.0	8.8	2.9 2.8	2.9	4.2	3 4	3.5	5.5
				Middle	6.5	17.9 17.9	17.9	8.0 7.9	8.0	32.6 32.6	32.6	111.3 111.3	111.3	8.7 8.7	8.7		3.8 3.9	3.9		6 6	6.0	
				Bottom	12	17.8 17.9	17.9	7.9 8.0	8.0	32.4 32.5	32.5	110.2 109.3	109.8	8.6 8.5	8.6		5.9 5.8	5.9		7 7	7.0	
5-Apr-16	Cloudy	Moderate	09:59	Surface	1	17.2 17.2	17.2	8.1 8.1	8.1	33.3 33.3	33.3	96.9 97.0	97.0	7.6 7.6	7.6	7.7	3.9 4.0	4.0	4.4	3 3	3.0	5.3
				Middle	6.5	17.1 17.1	17.1	8.1 8.1	8.1	33.5 33.5	33.5	97.1 97.1	97.1	7.7 7.7	7.7		4.5 4.3	4.4		5 5	5.0	
				Bottom	12	17.1 17.1	17.1	8.1 8.1	8.1	34.2 34.2	34.2	99.5 99.1	99.3	7.8 7.8	7.8		4.6 4.8	4.7		8 8	8.0	
7-Apr-16	Sunny	Moderate	11:10	Surface	1	22.9 22.3	22.6	8.1 8.1	8.1	27.8 27.9	27.9	103.1 103.0	103.1	7.6 7.6	7.6	7.5	2.9 2.9	2.9	3.9	4 4	4.0	5.3
				Middle	7	22.4 22.3	22.4	8.1 8.1	8.1	27.7 27.9	27.8	100.7 100.9	100.8	7.4 7.5	7.5		3.4 3.1	3.3		7 7	7.0	
				Bottom	13	22.3 22.3	22.3	8.1 8.1	8.1	27.8 27.9	27.9	100.4 99.9	100.2	7.4 7.4	7.4		5.5 5.6	5.6		5 5	5.0	
9-Apr-16	Cloudy	Moderate	12:41	Surface	1	19.9 20.3	20.1	8.3 8.3	8.3	31.2 31.5	31.4	100.3 101.2	100.8	7.6 7.6	7.6	7.6	1.7 2.0	1.9	3.8	5 5	5.0	5.7
				Middle	7	19.7 19.7	19.7	8.2 8.2	8.2	32.1 31.9	32.0	100.1 99.7	99.9	7.6 7.6	7.6		4.4 4.5	4.5		7 7	7.0	
				Bottom	13	19.7 19.6	19.7	8.3 8.3	8.3	32.2 32.1	32.2	100.2 99.5	99.9	7.6 7.5	7.6		5.0 5.0	5.0		5 5	5.0	
11-Apr-16	Cloudy	Moderate	14:30	Surface	1	19.8 20.1	20.0	8.3 8.3	8.3	31.9 32.0	32.0	102.3 103.0	102.7	7.7 7.7	7.7	7.7	1.7 2.1	1.9	4.3	4 4	4.0	5.5
				Middle	7	19.5 19.6	19.6	8.3 8.2	8.3	32.7 32.3	32.5	101.9 101.2	101.6	7.7 7.7	7.7		5.3 5.8	5.6		7 8	7.5	
				Bottom	13	19.6 19.5	19.6	8.3 8.3	8.3	32.8 32.6	32.7	101.3 100.6	101.0	7.7 7.6	7.7		5.4 5.5	5.5		5 5	5.0	
13-Apr-16	Sunny	Moderate	16:22	Surface	1	22.6 21.0	21.8	8.2 8.2	8.2	29.3 28.8	29.1	101.5 97.5	99.5	7.4 7.3	7.4	7.0	2.9 3.0	3.0	4.0	4 3	3.5	5.0
				Middle	7	22.1 21.0	21.6	8.2 8.2	8.2	28.7 28.9	28.8	93.4 91.8	92.6	6.9 6.9	6.9		3.4 3.1	3.3		4 5	4.5	
				Bottom	13	21.0 21.0	21.0	8.2 8.2	8.2	28.8 28.9	28.9	89.5 88.2	88.9	6.7 6.6	6.7		5.5 5.6	5.6		7 7	7.0	
15-Apr-16	Cloudy	Moderate	18:51	Surface	1	19.4 19.4	19.4	7.7 7.7	7.7	32.1 32.1	32.1	100.7 100.8	100.8	7.7 7.7	7.7	7.7	2.5 2.4	2.5	2.8	<2.5 <2.5	<2.5	3.0
				Middle	7	19.4 19.4	19.4	7.8 7.8	7.8	32.2 32.2	32.2	101.0 100.7	100.9	7.7 7.7	7.7		2.8 2.7	2.8		3 3	3.0	
				Bottom	13	19.4 19.4	19.4	8.0 8.0	8.0	32.0 32.0	32.0	100.9 100.8	100.9	7.7 7.7	7.7		3.0 3.1	3.1		4 3	3.5	
18-Apr-16	Rainy	Moderate	09:23	Surface	1	20.5 20.4	20.5	8.0 8.0	8.0	30.6 30.6	30.6	99.4 99.4	99.4	7.5 7.5	7.5	7.6	3.5 3.6	3.6	4.2	4 4	4.0	4.5
				Middle	6.5	20.1 20.1	20.1	8.0 8.0	8.0	31.0 31.0	31.0	100.3 100.5	100.4	7.6 7.6	7.6		4.2 4.2	4.2		5 5	5.0	
				Bottom	12	19.9 16.4	18.2	8.1 8.1	8.1	31.0 32.9	32.0	102.7 97.4	100.1	7.8 7.8	7.8		4.6 4.8	4.7		4 5	4.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at WSD17 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	10:28	Surface	1	20.7 20.6	20.7	8.1 8.1	8.1	31.3 31.4	31.4	98.9 98.8	98.9	7.4 7.4	7.4	7.4	4.3 4.1	4.2	4.5	5 5	5.0	4.3
				Middle	6.5	20.5 20.7	20.6	8.2 8.2	8.2	31.8 32.8	32.3	99.4 100.3	99.9	7.4 7.4	7.4		4.7 4.6	4.7		4 4	4.0	
				Bottom	12	20.4 20.4	20.4	8.4 8.4	8.4	32.1 32.2	32.2	100.1 100.7	100.4	7.5 7.5	7.5		4.5 4.6	4.6		4 4	4.0	
22-Apr-16	Cloudy	Moderate	11:34	Surface	1	20.6 20.7	20.7	8.2 8.3	8.3	32.4 32.4	32.4	99.0 99.0	99.0	7.4 7.3	7.4	7.4	4.5 4.7	4.6	4.6	6 6	6.0	5.0
				Middle	6.5	20.7 20.6	20.7	8.3 8.3	8.3	32.2 32.3	32.3	98.6 98.3	98.5	7.3 7.3	7.3		4.4 4.6	4.5		3 3	3.0	
				Bottom	12	20.6 20.6	20.6	8.3 8.3	8.3	32.6 32.6	32.6	98.9 99.2	99.1	7.3 7.4	7.4		4.7 4.5	4.6		6 6	6.0	
25-Apr-16	Sunny	Rough	13:05	Surface	1	20.8 20.8	20.8	8.1 8.2	8.2	32.1 32.1	32.1	93.7 94.0	93.9	7.0 7.0	7.0	6.9	3.7 3.6	3.7	4.6	5 5	5.0	5.0
				Middle	6.5	20.7 20.7	20.7	8.2 8.2	8.2	32.2 32.2	32.2	93.3 93.3	93.3	6.9 6.9	6.9		4.9 5.0	5.0		4 4	4.0	
				Bottom	12	20.8 20.7	20.8	8.2 8.2	8.2	32.2 32.2	32.2	93.4 93.2	93.3	6.9 6.9	6.9		5.3 5.1	5.2		6 6	6.0	
27-Apr-16	Cloudy	Moderate	15:47	Surface	1	22.8 22.6	22.7	8.1 8.1	8.1	29.7 29.9	29.8	95.2 94.9	95.1	6.9 6.9	6.9	7.1	4.2 4.2	4.2	4.3	4 5	4.5	5.3
				Middle	6.5	21.7 21.6	21.7	8.2 8.2	8.2	31.0 31.2	31.1	96.9 97.1	97.0	7.1 7.1	7.1		4.1 4.1	4.1		4 4	4.0	
				Bottom	12	21.3 21.3	21.3	8.2 8.2	8.2	31.6 31.6	31.6	97.1 97.2	97.2	7.2 7.2	7.2		4.6 4.5	4.6		7 8	7.5	
29-Apr-16	Cloudy	Calm	16:02	Surface	1	21.0 21.3	21.2	8.3 8.4	8.4	31.9 32.1	32.0	106.1 106.8	106.5	7.9 7.9	7.9	7.8	2.0 1.7	1.9	3.8	3 3	3.0	4.8
				Middle	6.5	20.7 20.8	20.8	8.4 8.4	8.4	32.8 32.4	32.6	105.8 105.0	105.4	7.8 7.8	7.8		4.7 5.6	5.2		3 3	3.0	
				Bottom	12	20.8 20.7	20.8	8.4 8.3	8.4	32.9 32.6	32.8	105.1 104.4	104.8	7.8 7.7	7.8		4.4 4.4	4.4		9 8	8.5	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at WSD17 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	12:09	Surface	1	18.6 18.5	18.6	8.2 8.2	8.2	30.7 30.8	30.8	117.1 117.8	117.5	9.1 9.2	9.2	9.0	3.2 3.3	3.3	4.1	4 4	4.0	4.7
				Middle	7	18.4 18.3	18.4	8.3 8.2	8.3	31.8 31.9	31.9	115.7 115.1	115.4	9.0 9.0	9.0		4.6 4.5	4.6		7 7	7.0	
				Bottom	13	18.0 18.0	18.0	8.0 8.1	8.1	32.4 32.3	32.4	110.9 111.3	111.1	8.7 8.7	8.7		4.3 4.3	4.3		3 3	3.0	
5-Apr-16	Cloudy	Moderate	15:41	Surface	1	17.4 17.4	17.4	8.1 8.1	8.1	33.4 33.4	33.4	97.3 97.3	97.3	7.6 7.6	7.6	7.6	3.1 3.1	3.1	4.3	4 3	3.5	4.2
				Middle	6.5	17.2 17.2	17.2	8.1 8.1	8.1	33.7 33.7	33.7	97.2 97.2	97.2	7.6 7.6	7.6		4.4 4.3	4.4		3 3	3.0	
				Bottom	12	17.2 17.2	17.2	8.1 8.1	8.1	34.0 34.1	34.1	97.0 97.0	97.0	7.6 7.6	7.6		5.4 5.5	5.5		6 6	6.0	
7-Apr-16	Fine	Moderate	17:28	Surface	1	20.6 20.6	20.6	8.2 8.1	8.2	28.9 28.5	28.7	101.9 100.8	101.4	7.7 7.7	7.7	7.3	2.9 3.0	3.0	4.0	3 3	3.0	3.7
				Middle	7	20.6 20.6	20.6	8.2 8.2	8.2	28.4 28.5	28.5	94.9 95.1	95.0	7.2 7.2	7.2		2.4 2.7	2.6		3 3	3.0	
				Bottom	13	20.6 20.6	20.6	8.2 8.2	8.2	28.4 28.6	28.5	92.8 91.6	92.2	7.1 7.0	7.1		6.3 6.5	6.4		5 5	5.0	
9-Apr-16	Cloudy	Moderate	06:36	Surface	1	20.0 20.2	20.1	8.3 8.3	8.3	31.3 31.5	31.4	98.4 98.6	98.5	7.4 7.4	7.4	7.4	2.8 3.0	2.9	4.0	6 6	6.0	5.7
				Middle	7	20.1 19.8	20.0	8.3 8.3	8.3	32.0 32.1	32.1	97.8 97.5	97.7	7.4 7.4	7.4		4.7 4.6	4.7		7 7	7.0	
				Bottom	13	20.0 20.0	20.0	8.3 8.2	8.3	32.3 32.3	32.3	98.3 97.8	98.1	7.4 7.4	7.4		4.4 4.5	4.5		4 4	4.0	
11-Apr-16	Cloudy	Moderate	07:31	Surface	1	19.9 20.0	20.0	8.2 8.3	8.3	31.7 32.0	31.9	98.3 98.6	98.5	7.4 7.4	7.4	7.4	1.3 1.3	1.3	3.3	3 3	3.0	4.3
				Middle	7	19.9 19.7	19.8	8.3 8.3	8.3	32.6 32.4	32.5	98.2 97.5	97.9	7.4 7.4	7.4		4.1 4.2	4.2		6 6	6.0	
				Bottom	13	19.9 19.7	19.8	8.3 8.2	8.3	32.8 32.6	32.7	98.4 97.3	97.9	7.4 7.3	7.4		4.3 4.6	4.5		4 4	4.0	
13-Apr-16	Fine	Moderate	08:54	Surface	1	20.7 20.7	20.7	8.2 8.2	8.2	28.7 28.8	28.8	94.5 95.4	95.0	7.2 7.2	7.2	7.1	3.1 3.2	3.2	4.2	3 4	3.5	5.8
				Middle	7	20.7 20.7	20.7	8.1 8.1	8.1	28.6 28.8	28.7	93.0 93.4	93.2	7.1 7.1	7.1		2.6 2.9	2.8		7 7	7.0	
				Bottom	13	20.7 20.7	20.7	8.2 8.1	8.2	28.7 28.8	28.8	92.9 92.4	92.7	7.0 7.0	7.0		6.5 6.7	6.6		7 7	7.0	
15-Apr-16	Cloudy	Moderate	11:21	Surface	1	19.4 19.4	19.4	7.9 7.9	7.9	31.9 31.9	31.9	101.1 101.1	101.1	7.7 7.7	7.7	7.8	3.0 2.8	2.9	3.8	3 3	3.0	2.7
				Middle	7	19.4 19.4	19.4	8.0 8.0	8.0	31.9 32.0	32.0	101.9 101.8	101.9	7.8 7.8	7.8		3.3 3.4	3.4		<2.5 <2.5	<2.5	
				Bottom	13	19.5 19.4	19.5	8.0 8.1	8.1	31.8 31.9	31.9	101.5 102.0	101.8	7.7 7.8	7.8		4.9 5.0	5.0		<2.5 <2.5	<2.5	
18-Apr-16	Rainy	Moderate	17:00	Surface	1	21.2 21.1	21.2	8.0 8.0	8.0	32.0 31.9	32.0	101.0 100.6	100.8	7.4 7.4	7.4	7.3	3.3 3.3	3.3	3.7	4 4	4.0	5.7
				Middle	7	20.7 20.5	20.6	8.1 8.1	8.1	31.8 31.9	31.9	97.5 97.0	97.3	7.3 7.2	7.3		3.9 3.9	3.9		8 8	8.0	
				Bottom	13	20.2 20.2	20.2	8.1 8.1	8.1	34.2 34.3	34.3	97.2 97.3	97.3	7.2 7.2	7.2		3.8 3.8	3.8		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 WSD17 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	16:39	Surface	1	20.7 20.7	20.7	8.4 8.4	8.4	32.6 32.6	32.6	100.6 100.4	100.5	7.5 7.4	7.5	7.5	4.1 4.0	4.1	4.5	6 6	6.0	4.3
				Middle	6.5	20.6 20.6	20.6	8.4 8.4	8.4	32.8 32.8	32.8	100.9 100.8	100.9	7.5 7.5	7.5		4.8 4.6	4.7		4 4	4.0	
				Bottom	12	20.6 20.6	20.6	8.3 8.4	8.4	33.1 33.1	33.1	100.1 99.9	100.0	7.4 7.4	7.4		4.5 4.7	4.6		3 3	3.0	
22-Apr-16	Cloudy	Moderate	18:03	Surface	1	20.6 20.6	20.6	8.1 8.1	8.1	30.6 30.6	30.6	98.7 98.6	98.7	7.4 7.4	7.4	7.4	2.1 2.2	2.2	4.3	7 7	7.0	5.7
				Middle	6.5	20.5 20.4	20.5	8.2 8.2	8.2	30.6 32.7	31.7	97.8 97.9	97.9	7.4 7.3	7.4		5.5 5.2	5.4		5 5	5.0	
				Bottom	12	20.4 20.4	20.4	8.2 8.2	8.2	32.8 32.9	32.9	98.0 98.2	98.1	7.3 7.3	7.3		5.3 5.4	5.4		5 5	5.0	
25-Apr-16	Sunny	Rough	06:33	Surface	1	20.9 20.9	20.9	8.2 8.2	8.2	29.6 29.6	29.6	93.5 93.6	93.6	7.0 7.0	7.0	6.9	3.6 3.4	3.5	4.1	5 5	5.0	4.7
				Middle	6.5	20.9 20.9	20.9	8.2 8.2	8.2	31.7 31.7	31.7	93.6 93.6	93.6	6.9 6.9	6.9		4.3 4.0	4.2		4 4	4.0	
				Bottom	12	20.8 20.8	20.8	8.2 8.2	8.2	31.9 31.9	31.9	92.8 92.7	92.8	6.9 6.9	6.9		4.6 4.7	4.7		5 5	5.0	
27-Apr-16	Rainy	Moderate	07:30	Surface	1	21.6 21.6	21.6	8.1 8.1	8.1	28.2 28.1	28.2	93.7 94.9	94.3	7.0 7.1	7.1	7.1	3.1 3.4	3.3	4.2	7 6	6.5	4.7
				Middle	7	21.6 21.6	21.6	8.2 8.2	8.2	29.3 29.2	29.3	95.0 95.1	95.1	7.1 7.1	7.1		4.5 4.5	4.5		4 4	4.0	
				Bottom	13	21.4 21.4	21.4	8.2 8.2	8.2	29.6 29.6	29.6	94.2 93.8	94.0	7.0 7.0	7.0		4.8 4.5	4.7		4 3	3.5	
29-Apr-16	Sunny	Calm	08:51	Surface	1	21.1 21.2	21.2	8.4 8.4	8.4	31.7 32.1	31.9	102.0 102.4	102.2	7.5 7.5	7.5	7.5	2.2 2.5	2.4	4.0	5 5	5.0	5.0
				Middle	7	21.1 20.9	21.0	8.4 8.4	8.4	32.7 32.5	32.6	102.1 101.3	101.7	7.5 7.5	7.5		4.4 4.5	4.5		4 4	4.0	
				Bottom	13	21.1 20.9	21.0	8.4 8.4	8.4	32.9 32.7	32.8	102.3 101.2	101.8	7.5 7.5	7.5		5.3 4.7	5.0		6 6	6.0	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at WSD9 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	21:29	Surface	1	18.4 18.4	18.4	8.1 8.2	8.2	32.6 32.6	32.6	114.1 114.6	114.4	8.8 8.9	8.9	8.7	2.7 2.6	2.7	3.6	3 3	3.0	4.0
				Middle	3.5	18.4 18.4	18.4	8.1 8.1	8.1	32.6 32.6	32.6	112.4 112.9	112.7	8.7 8.7	8.7		3.1 3.2	3.2		4 4	4.0	
				Bottom	6	18.2 18.3	18.3	8.2 8.2	8.2	32.2 32.3	32.3	110.5 110.5	110.5	8.6 8.6	8.6		4.7 4.8	4.8		5 5	5.0	
5-Apr-16	Cloudy	Moderate	12:20	Surface	1	17.8 17.8	17.8	8.1 8.2	8.2	33.5 33.5	33.5	99.2 99.2	99.2	7.7 7.7	7.7	7.7	4.7 4.0	4.4	4.5	5 5	5.0	5.3
				Middle	3.5	17.8 17.8	17.8	8.2 8.2	8.2	33.8 33.9	33.9	99.2 99.3	99.3	7.7 7.7	7.7		3.9 3.9	3.9		6 6	6.0	
				Bottom	6	17.6 17.6	17.6	8.1 8.3	8.2	33.9 33.9	33.9	98.9 98.8	98.9	7.7 7.7	7.7		5.1 5.1	5.1		5 5	5.0	
7-Apr-16	Sunny	Moderate	13:33	Surface	1	22.5 22.6	22.6	8.1 8.1	8.1	31.7 30.1	30.9	99.6 98.7	99.2	7.2 7.2	7.2	7.0	2.7 2.8	2.8	3.9	3 3	3.0	5.3
				Middle	3.5	23.1 22.4	22.8	8.1 8.1	8.1	31.5 30.3	30.9	99.7 94.4	97.1	7.1 6.9	7.0		2.9 3.0	3.0		6 6	6.0	
				Bottom	6	22.8 22.4	22.6	8.1 8.1	8.1	30.9 30.4	30.7	95.4 93.3	94.4	6.9 6.8	6.9		5.7 5.8	5.8		7 7	7.0	
9-Apr-16	Cloudy	Moderate	14:47	Surface	1	20.2 20.1	20.2	8.3 8.1	8.2	31.2 31.3	31.3	101.2 100.7	101.0	7.6 7.6	7.6	7.6	2.4 2.1	2.3	4.2	5 5	5.0	4.7
				Middle	3.5	19.9 20.0	20.0	8.3 8.0	8.2	31.7 31.8	31.8	99.9 100.4	100.2	7.6 7.6	7.6		4.7 4.8	4.8		5 5	5.0	
				Bottom	6	19.9 19.8	19.9	8.3 8.1	8.2	31.7 32.2	32.0	99.9 100.1	100.0	7.6 7.6	7.6		5.0 5.9	5.5		4 4	4.0	
11-Apr-16	Cloudy	Moderate	16:34	Surface	1	20.0 19.9	20.0	8.3 8.3	8.3	31.7 31.8	31.8	102.6 102.1	102.4	7.7 7.7	7.7	7.7	2.1 2.4	2.3	4.2	5 4	4.5	4.8
				Middle	3.5	19.7 19.8	19.8	8.3 8.3	8.3	32.1 32.2	32.2	101.3 101.2	101.3	7.7 7.6	7.7		5.2 4.3	4.8		4 5	4.5	
				Bottom	6	19.7 19.8	19.8	8.3 8.3	8.3	32.3 32.5	32.4	100.8 101.6	101.2	7.6 7.7	7.7		6.1 5.0	5.6		5 6	5.5	
13-Apr-16	Sunny	Moderate	18:30	Surface	1	22.2 21.3	21.8	8.1 8.2	8.2	28.6 29.6	29.1	101.8 101.0	101.4	7.5 7.5	7.5	7.1	2.7 2.7	2.7	3.8	6 5	5.5	5.2
				Middle	3.5	21.8 21.1	21.5	8.1 8.2	8.2	29.0 30.4	29.7	94.3 95.5	94.9	7.0 7.1	7.1		2.9 3.0	3.0		7 7	7.0	
				Bottom	6	21.5 21.1	21.3	8.1 8.2	8.2	28.9 30.3	29.6	88.9 90.1	89.5	6.6 6.7	6.7		5.7 5.7	5.7		3 3	3.0	
15-Apr-16	Cloudy	Moderate	21:01	Surface	1	19.5 19.5	19.5	7.6 7.8	7.7	33.3 33.3	33.3	95.7 95.6	95.7	7.2 7.2	7.2	7.2	2.3 2.5	2.4	3.2	3 3	3.0	3.2
				Middle	3.5	19.5 19.5	19.5	7.5 7.8	7.7	33.3 33.3	33.3	95.8 95.8	95.8	7.2 7.2	7.2		3.1 3.4	3.3		4 4	4.0	
				Bottom	6	19.6 19.5	19.6	7.9 7.8	7.9	33.0 33.2	33.1	95.0 95.0	95.0	7.2 7.2	7.2		3.9 4.0	4.0		<2.5 <2.5	<2.5	
18-Apr-16	Rainy	Moderate	11:50	Surface	1	20.8 20.8	20.8	8.0 8.0	8.0	30.8 30.8	30.8	91.4 91.3	91.4	6.8 6.8	6.8	7.0	3.6 3.2	3.4	3.9	4 5	4.5	5.8
				Middle	3.5	20.6 20.5	20.6	8.0 8.0	8.0	31.0 31.0	31.0	92.8 93.4	93.1	7.0 7.0	7.0		2.9 3.0	3.0		6 7	6.5	
				Bottom	6	20.4 20.4	20.4	8.1 8.1	8.1	31.1 31.1	31.1	94.6 94.8	94.7	7.1 7.1	7.1		5.2 5.5	5.4		7 6	6.5	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at WSD9 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	12:42	Surface	1	20.9 20.8	20.9	8.0 8.0	8.0	32.0 32.1	32.1	100.5 100.6	100.6	7.4 7.5	7.5	7.5	6.2 6.3	6.3	4.5	4 4	4.0	3.3
				Middle	3.5	20.6 20.6	20.6	8.1 8.1	8.1	32.4 32.5	32.5	100.8 101.3	101.1	7.5 7.5	7.5		3.5 3.8	3.7		3 3	3.0	
				Bottom	6	20.6 20.6	20.6	8.2 8.2	8.2	32.6 32.6	32.6	101.0 101.0	101.0	7.5 7.5	7.5		3.5 3.7	3.6		3 3	3.0	
22-Apr-16	Cloudy	Moderate	13:43	Surface	1	21.9 21.8	21.9	8.0 8.0	8.0	32.9 32.9	32.9	96.2 95.9	96.1	7.0 7.0	7.0	7.0	3.2 3.3	3.3	4.5	5 5	5.0	5.5
				Middle	3.5	21.5 21.5	21.5	8.1 8.1	8.1	32.8 32.8	32.8	94.6 94.9	94.8	6.9 6.9	6.9		5.4 5.0	5.2		5 5	5.0	
				Bottom	6	21.2 21.2	21.2	8.2 8.2	8.2	32.7 32.7	32.7	94.9 95.3	95.1	7.0 7.0	7.0		4.9 5.1	5.0		6 7	6.5	
25-Apr-16	Sunny	Rough	15:01	Surface	1	21.1 21.1	21.1	8.1 8.1	8.1	32.6 32.6	32.6	96.4 96.4	96.4	7.1 7.1	7.1	7.1	1.7 1.7	1.7	2.2	7 7	7.0	5.7
				Middle	3.5	21.2 21.1	21.2	8.1 8.1	8.1	33.1 32.8	33.0	96.3 96.0	96.2	7.1 7.1	7.1		2.1 2.0	2.1		5 5	5.0	
				Bottom	6	21.3 21.3	21.3	8.0 8.0	8.0	32.0 32.0	32.0	95.7 95.7	95.7	7.0 7.0	7.0		2.8 2.9	2.9		5 5	5.0	
27-Apr-16	Cloudy	Moderate	13:45	Surface	1	21.9 21.9	21.9	8.2 8.2	8.2	30.6 30.7	30.7	97.0 96.9	97.0	7.1 7.1	7.1	7.1	3.6 3.5	3.6	3.8	4 4	4.0	5.8
				Middle	3.5	21.8 21.8	21.8	8.2 8.2	8.2	31.5 31.4	31.5	96.7 96.7	96.7	7.1 7.1	7.1		3.5 3.6	3.6		7 6	6.5	
				Bottom	6	21.7 21.7	21.7	8.2 8.2	8.2	31.3 31.2	31.3	96.6 96.6	96.6	7.1 7.1	7.1		4.2 4.0	4.1		7 7	7.0	
29-Apr-16	Cloudy	Calm	18:05	Surface	1	21.4 21.4	21.4	8.3 8.3	8.3	31.8 32.0	31.9	107.1 106.8	107.0	7.9 7.8	7.9	7.8	1.7 1.6	1.7	3.4	5 5	5.0	4.5
				Middle	3.5	21.2 21.3	21.3	8.4 8.3	8.4	32.3 32.4	32.4	105.9 105.9	105.9	7.8 7.8	7.8		3.9 4.1	4.0		4 4	4.0	
				Bottom	6	21.2 21.3	21.3	8.4 8.4	8.4	32.5 32.6	32.6	105.5 106.3	105.9	7.8 7.8	7.8		4.5 4.5	4.5		4 5	4.5	

Remarks: 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.

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at WSD9 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Apr-16	Cloudy	Moderate	14:28	Surface	1	19.5 19.4	19.5	8.0 8.1	8.1	31.1 31.2	31.2	114.3 114.3	114.3	8.7 8.7	8.7	8.7	3.0 3.2	3.1	4.3	6 6	6.0	4.0
				Middle	3.5	19.0 18.9	19.0	8.1 8.2	8.2	31.7 31.8	31.8	114.4 114.4	114.4	8.8 8.8	8.8		3.8 3.9	3.9		4 3	3.5	
				Bottom	6	18.8 18.7	18.8	8.2 8.2	8.2	32.1 32.2	32.2	113.0 111.9	112.5	8.7 8.6	8.7		6.0 5.7	5.9		<2.5 <2.5	<2.5	
5-Apr-16	Cloudy	Moderate	17:53	Surface	1	17.7 17.6	17.7	8.2 8.2	8.2	33.9 33.9	33.9	98.4 98.0	98.2	7.7 7.6	7.7	7.7	2.2 2.6	2.4	4.1	3 3	3.0	3.0
				Middle	3.5	17.7 17.5	17.6	8.3 8.3	8.3	33.9 33.9	33.9	98.6 98.2	98.4	7.7 7.7	7.7		4.6 4.7	4.7		3 3	3.0	
				Bottom	6	17.6 17.5	17.6	8.3 8.3	8.3	34.0 34.0	34.0	98.4 98.3	98.4	7.7 7.7	7.7		5.2 5.2	5.2		3 3	3.0	
7-Apr-16	Fine	Moderate	19:41	Surface	1	22.3 21.3	21.8	8.1 8.1	8.1	28.2 29.3	28.8	106.1 105.1	105.6	7.8 7.9	7.9	7.4	2.4 2.7	2.6	4.0	4 4	4.0	3.7
				Middle	3.5	22.0 21.2	21.6	8.1 8.1	8.1	28.6 30.1	29.4	98.7 99.7	99.2	7.3 7.4	7.4		3.4 3.6	3.5		4 4	4.0	
				Bottom	6	21.3 21.2	21.3	8.1 8.1	8.1	28.5 30.0	29.3	92.6 94.3	93.5	7.0 7.0	7.0		5.9 6.0	6.0		3 3	3.0	
9-Apr-16	Cloudy	Moderate	08:44	Surface	1	20.1 20.1	20.1	8.2 8.3	8.3	31.5 31.6	31.6	99.8 99.9	99.9	7.5 7.5	7.5	7.5	2.3 2.4	2.4	4.4	5 5	5.0	5.7
				Middle	3.5	19.9 19.9	19.9	8.3 8.3	8.3	32.0 32.0	32.0	99.8 99.8	99.8	7.5 7.5	7.5		4.0 4.1	4.1		6 6	6.0	
				Bottom	6	19.9 19.8	19.9	8.2 8.2	8.2	32.3 32.4	32.4	100.1 99.3	99.7	7.5 7.5	7.5		6.5 6.6	6.6		6 6	6.0	
11-Apr-16	Cloudy	Moderate	09:41	Surface	1	19.9 19.9	19.9	8.2 8.3	8.3	31.8 32.0	31.9	98.5 98.2	98.4	7.4 7.4	7.4	7.4	1.4 1.6	1.5	2.9	3 4	3.5	3.8
				Middle	3.5	19.7 19.8	19.8	8.3 8.3	8.3	32.4 32.6	32.5	98.1 98.4	98.3	7.4 7.4	7.4		2.1 2.1	2.1		3 3	3.0	
				Bottom	6	19.7 19.7	19.7	8.2 8.2	8.2	32.8 32.7	32.8	98.8 97.9	98.4	7.4 7.4	7.4		4.4 5.5	5.0		5 5	5.0	
13-Apr-16	Fine	Moderate	11:14	Surface	1	22.4 21.4	21.9	8.2 8.1	8.2	32.6 31.0	31.8	94.5 91.8	93.2	6.8 6.8	6.8	6.6	2.6 2.9	2.8	4.2	7 7	7.0	5.3
				Middle	3.5	22.1 21.3	21.7	8.1 8.1	8.1	32.4 31.2	31.8	93.1 87.7	90.4	6.7 6.5	6.6		3.6 3.8	3.7		4 5	4.5	
				Bottom	6	21.4 21.3	21.4	8.1 8.1	8.1	31.9 31.3	31.6	88.2 86.7	87.5	6.5 6.4	6.5		6.1 6.2	6.2		5 4	4.5	
15-Apr-16	Cloudy	Moderate	13:47	Surface	1	19.8 19.8	19.8	7.9 7.9	7.9	32.4 32.4	32.4	92.9 93.0	93.0	7.0 7.0	7.0	7.1	2.6 2.6	2.6	3.3	<2.5 <2.5	<2.5	<2.5
				Middle	3.5	19.7 19.7	19.7	7.9 7.9	7.9	32.5 32.6	32.6	93.9 94.1	94.0	7.1 7.1	7.1		3.3 3.4	3.4		<2.5 <2.5	<2.5	
				Bottom	6	19.6 19.6	19.6	7.9 8.0	8.0	32.8 32.9	32.9	94.5 94.7	94.6	7.1 7.1	7.1		3.9 3.7	3.8		<2.5 <2.5	<2.5	
18-Apr-16	Rainy	Moderate	14:54	Surface	1	22.1 21.9	22.0	8.0 8.0	8.0	29.8 29.9	29.9	91.1 90.8	91.0	6.7 6.7	6.7	6.8	3.0 3.1	3.1	4.5	4 4	4.0	5.2
				Middle	3.5	21.0 20.9	21.0	8.1 8.1	8.1	30.5 30.6	30.6	91.1 90.9	91.0	6.8 6.8	6.8		4.4 4.3	4.4		6 6	6.0	
				Bottom	6	20.7 20.6	20.7	8.1 8.1	8.1	30.8 30.9	30.9	91.5 91.7	91.6	6.9 6.9	6.9		5.9 6.2	6.1		5 6	5.5	

Remarks: *DA: Depth-Averaged

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

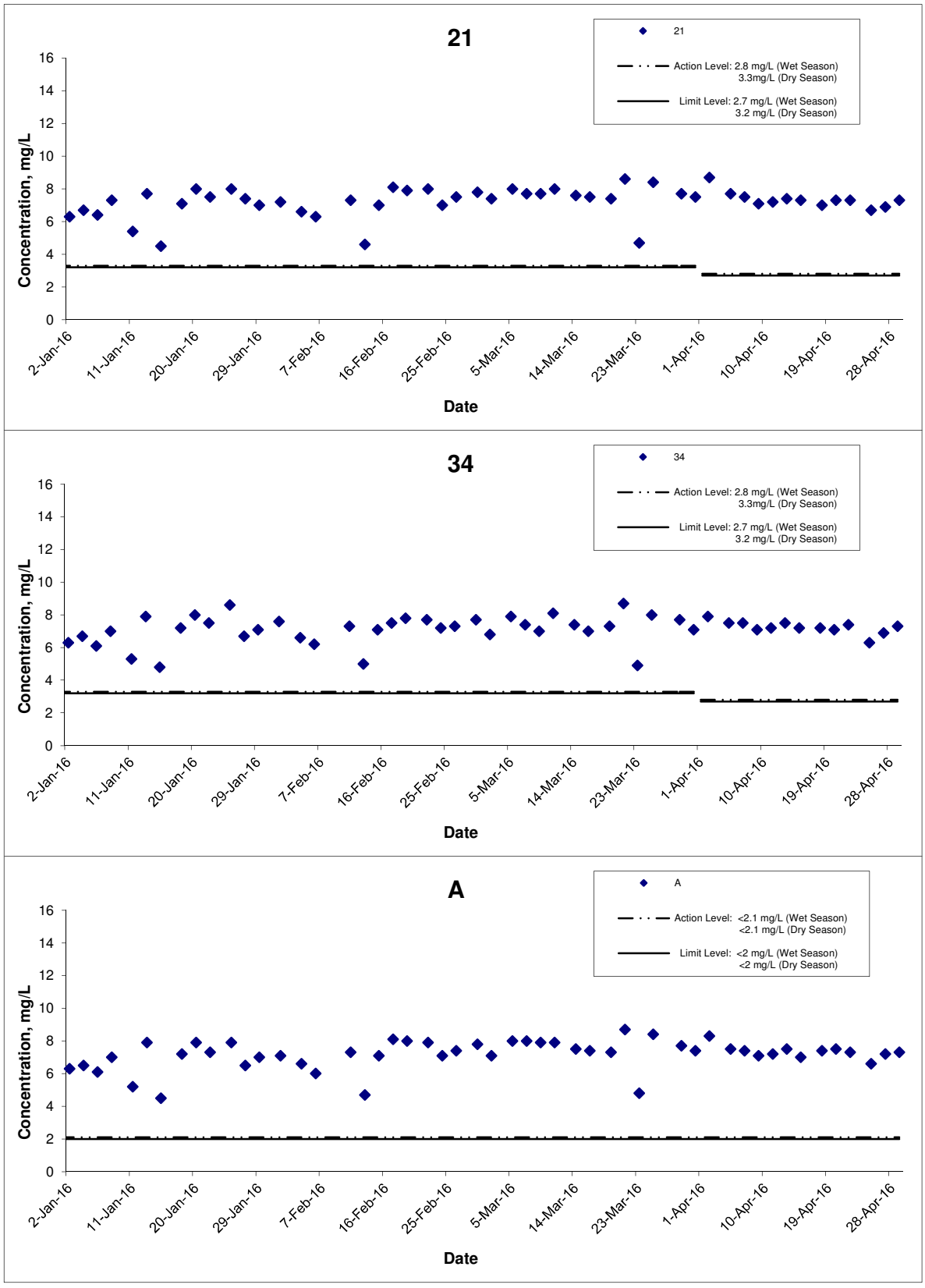
Water Quality Monitoring Results at WSD9 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
20-Apr-16	Cloudy	Moderate	19:10	Surface	1	21.5 21.5	21.5	8.4 8.4	8.4	32.8 32.8	32.8	103.1 103.2	103.2	7.5 7.5	7.5	7.5	3.6 3.7	3.7	4.3	4 4	4.0	3.7
				Middle	3.5	21.4 21.4	21.4	8.3 8.3	8.3	32.9 32.9	32.9	102.6 102.3	102.5	7.5 7.5	7.5		4.5 4.5	4.5		4 4	4.0	
				Bottom	6	21.4 21.4	21.4	8.3 8.3	8.3	32.9 33.0	33.0	102.3 102.5	102.4	7.5 7.5	7.5		4.7 4.8	4.8		3 3	3.0	
22-Apr-16	Cloudy	Moderate	20:14	Surface	1	21.0 21.0	21.0	8.2 8.2	8.2	32.6 32.6	32.6	95.4 95.1	95.3	7.0 7.0	7.0	7.0	3.2 3.3	3.3	4.6	3 3	3.0	4.3
				Middle	3.5	20.9 20.9	20.9	8.2 8.2	8.2	32.5 32.5	32.5	94.4 94.5	94.5	7.0 7.0	7.0		4.2 4.5	4.4		5 5	5.0	
				Bottom	6	20.8 20.8	20.8	8.2 8.2	8.2	32.5 32.5	32.5	94.5 94.6	94.6	7.0 7.0	7.0		6.0 5.9	6.0		5 5	5.0	
25-Apr-16	Sunny	Rough	08:23	Surface	1	21.5 21.4	21.5	7.9 8.0	8.0	31.3 31.5	31.4	96.5 97.2	96.9	7.1 7.2	7.2	7.2	2.9 2.8	2.9	3.1	5 4	4.5	5.3
				Middle	3.5	21.4 21.4	21.4	8.0 8.0	8.0	31.6 31.6	31.6	97.2 97.2	97.2	7.2 7.2	7.2		3.0 2.9	3.0		5 5	5.0	
				Bottom	6	21.3 21.3	21.3	8.0 8.0	8.0	31.7 31.7	31.7	96.8 97.2	97.0	7.1 7.2	7.2		3.6 3.4	3.5		7 6	6.5	
27-Apr-16	Rainy	Moderate	09:38	Surface	1	22.4 22.2	22.3	8.0 8.1	8.1	30.0 30.2	30.1	97.9 97.5	97.7	7.1 7.1	7.1	7.1	3.7 3.8	3.8	4.0	5 5	5.0	5.3
				Middle	3.5	22.0 22.0	22.0	8.2 8.2	8.2	31.1 31.1	31.1	97.0 96.8	96.9	7.1 7.1	7.1		3.8 3.9	3.9		5 5	5.0	
				Bottom	6	21.7 21.7	21.7	8.2 8.2	8.2	31.1 31.1	31.1	96.8 96.7	96.8	7.1 7.1	7.1		4.3 4.3	4.3		6 6	6.0	
29-Apr-16	Sunny	Calm	11:01	Surface	1	21.3 21.4	21.4	8.4 8.3	8.4	32.0 32.1	32.1	102.9 102.8	102.9	7.6 7.5	7.6	7.6	2.5 2.6	2.6	3.8	4 4	4.0	5.5
				Middle	3.5	21.1 21.3	21.2	8.3 8.4	8.4	32.5 32.7	32.6	102.5 103.0	102.8	7.5 7.5	7.5		3.7 3.2	3.5		4 3	3.5	
				Bottom	6	21.2 21.2	21.2	8.4 8.3	8.4	33.0 32.9	33.0	103.4 102.5	103.0	7.6 7.5	7.6		5.4 5.1	5.3		9 9	9.0	

Remarks: 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.

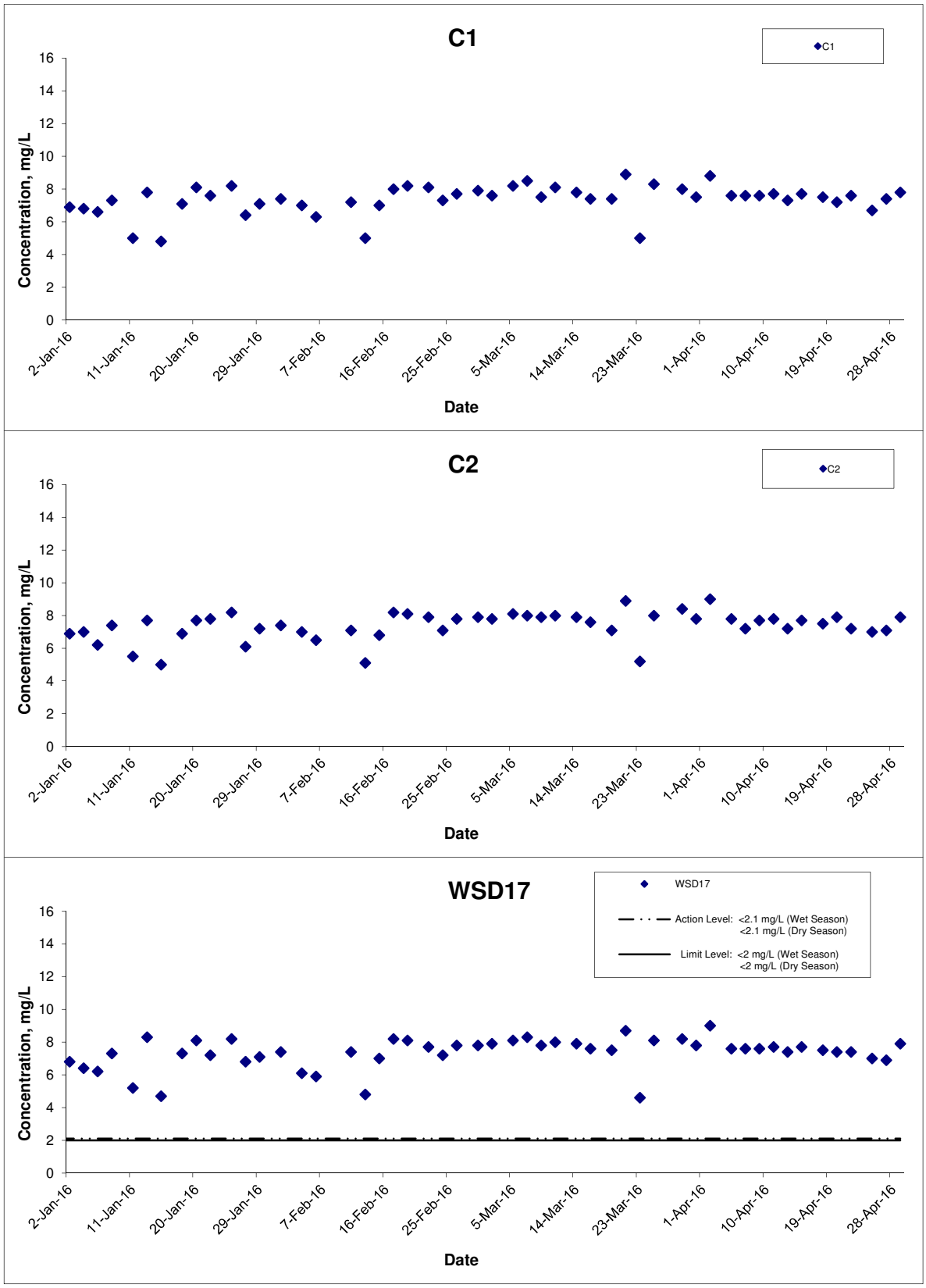
Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen (Surface) at Mid-Ebb Tide



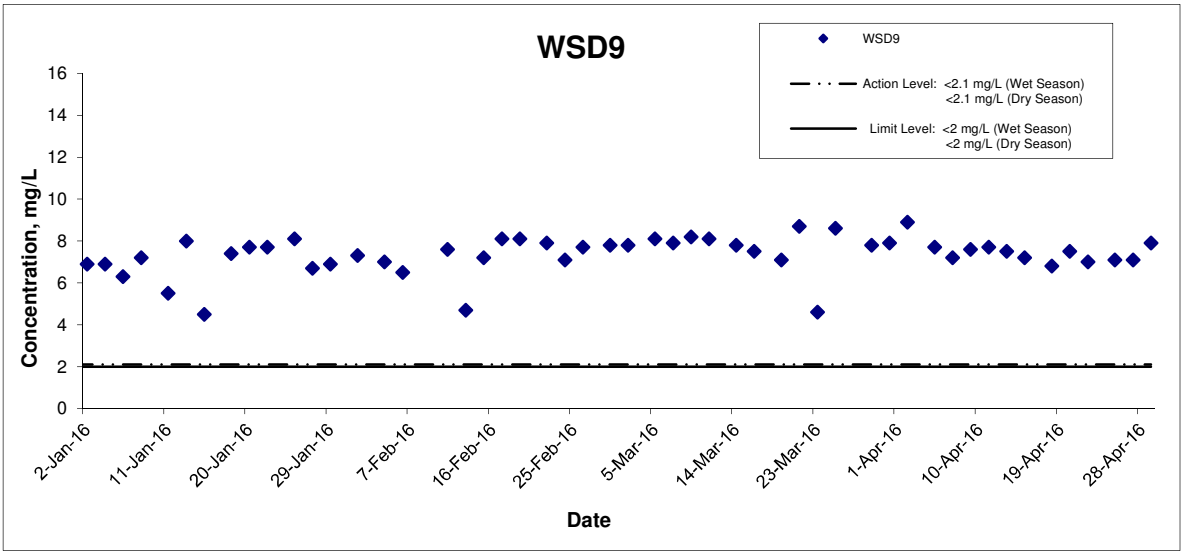
Title		Scale	Project No.
Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels		N.T.S	MA14047
Graphical Presentation of Water Quality Monitoring Results		Date: Apr 16	Appendix: D

Dissolved Oxygen (Surface) at Mid-Ebb Tide



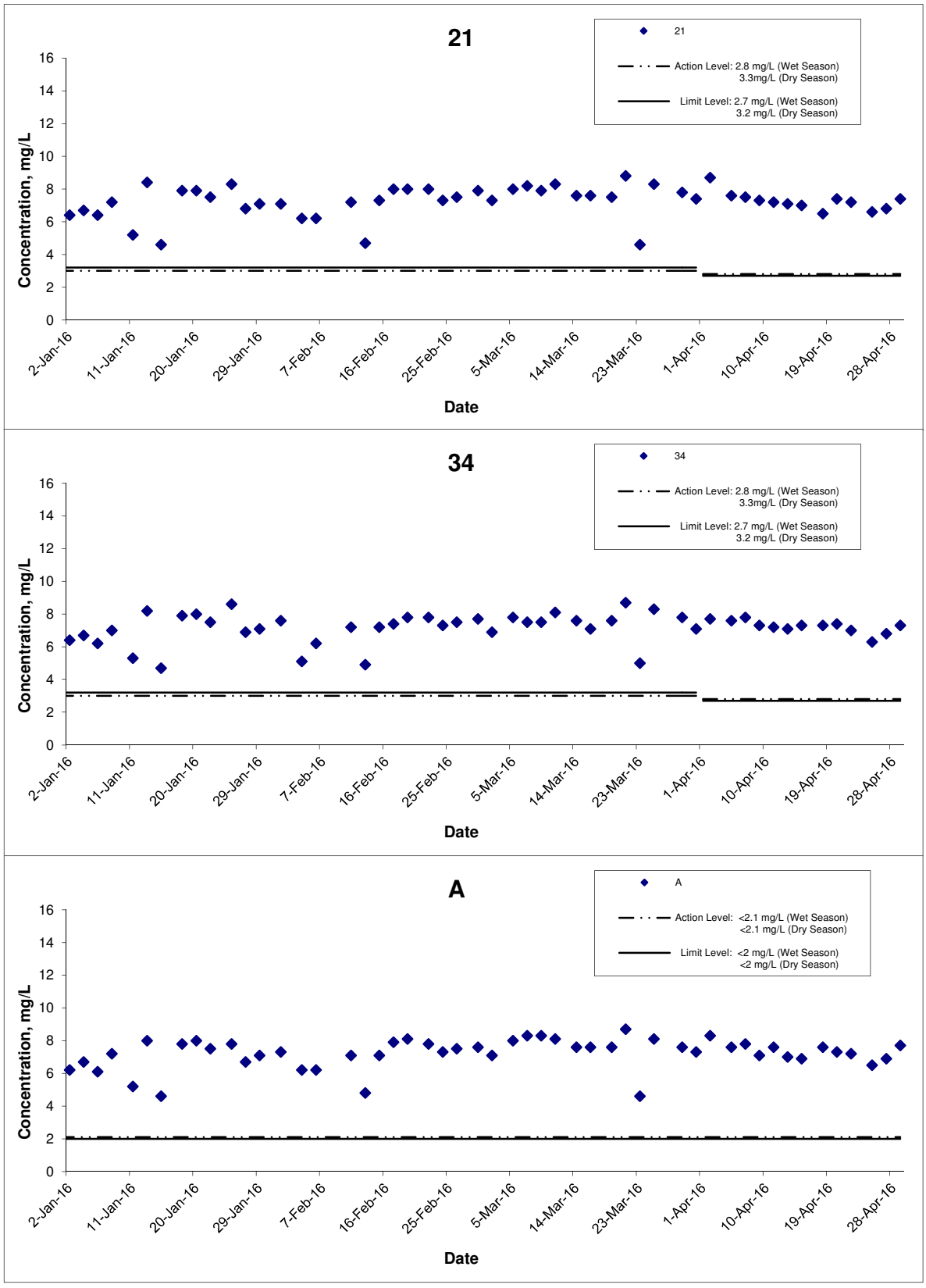
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Surface) at Mid-Ebb Tide



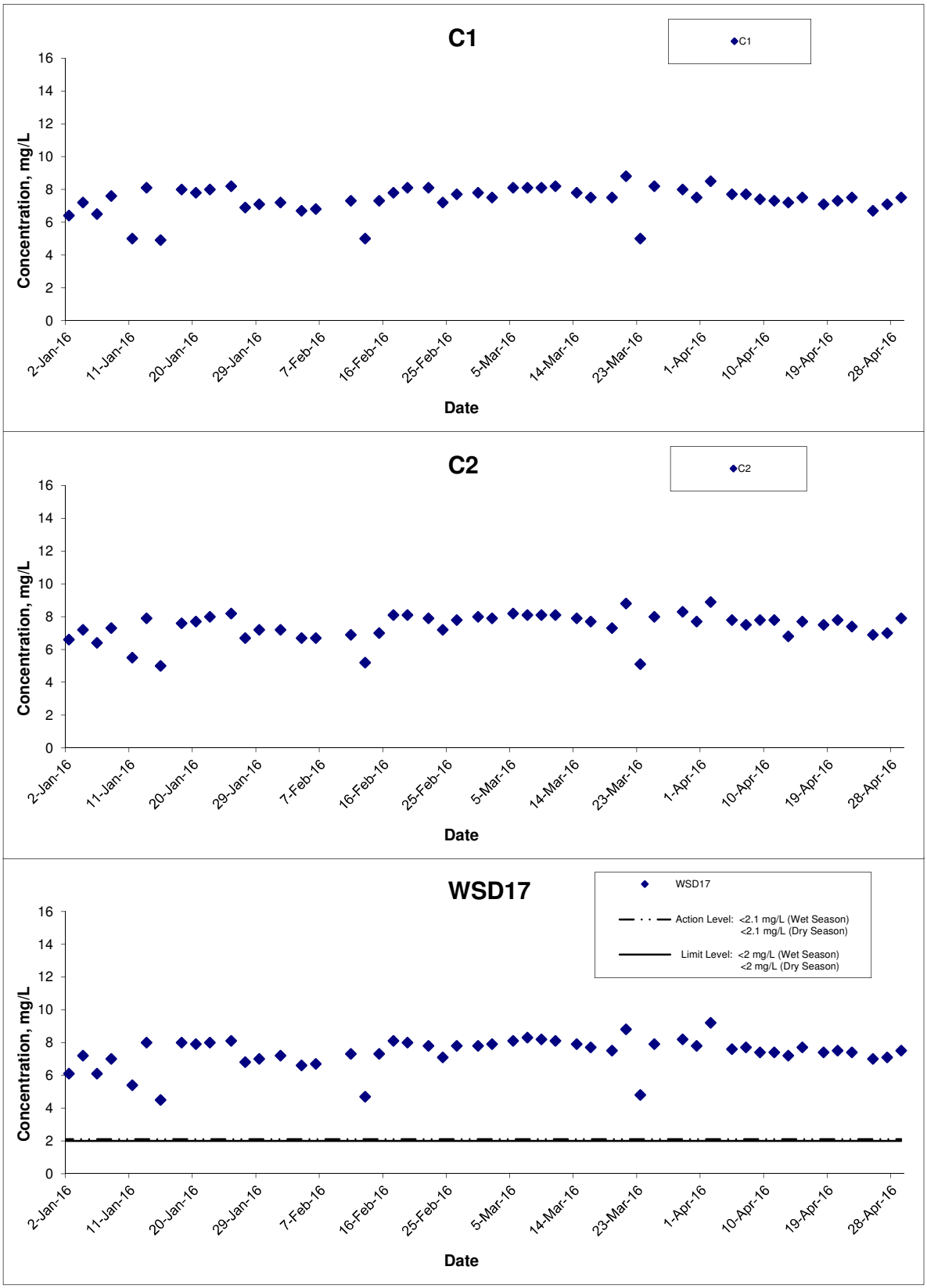
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



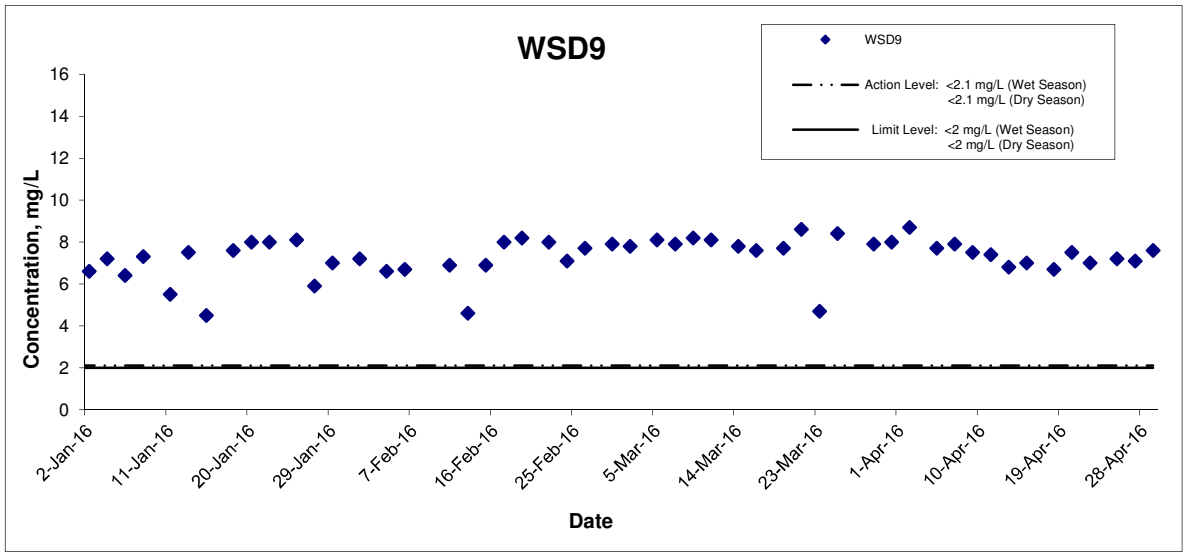
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



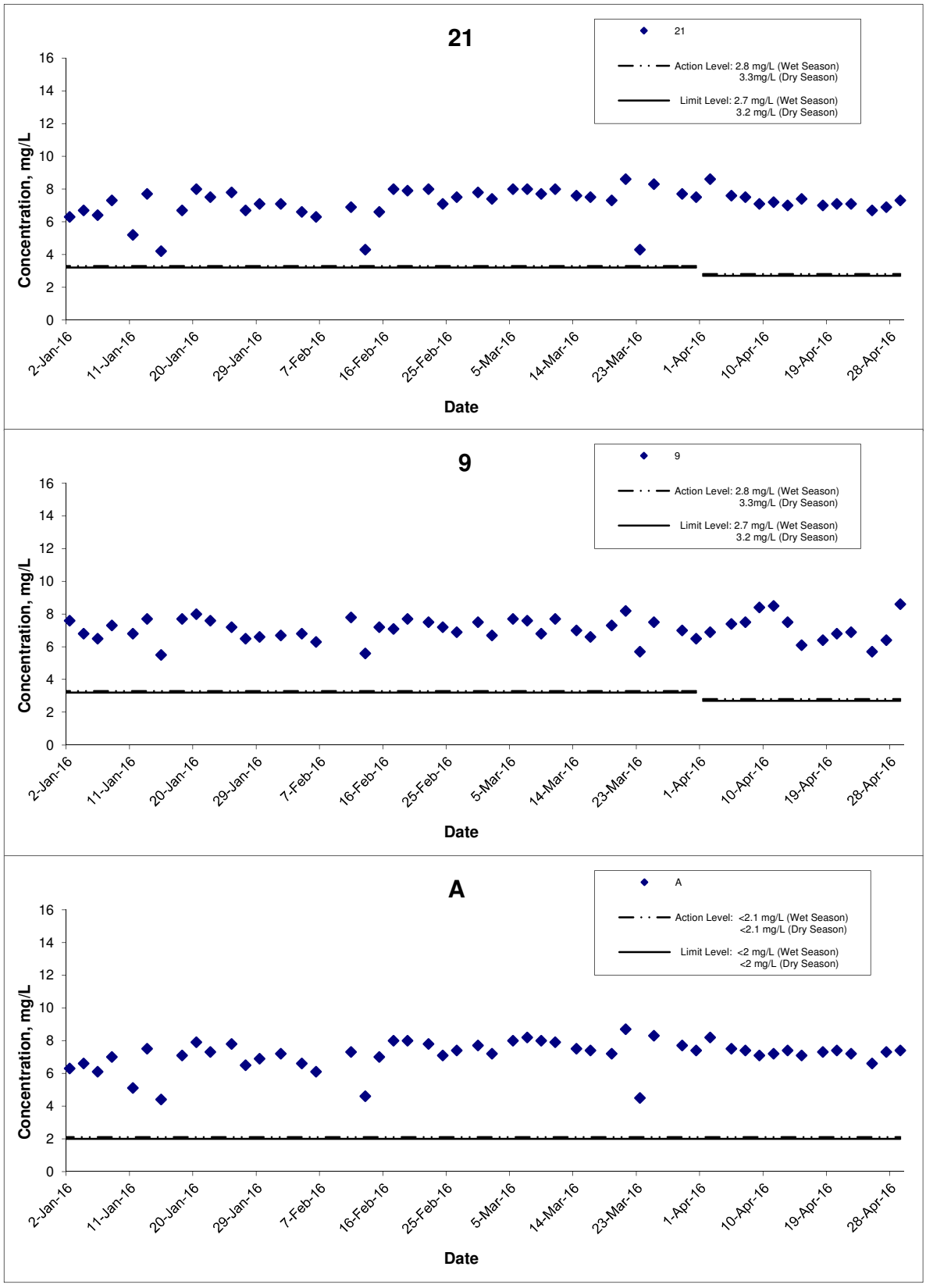
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



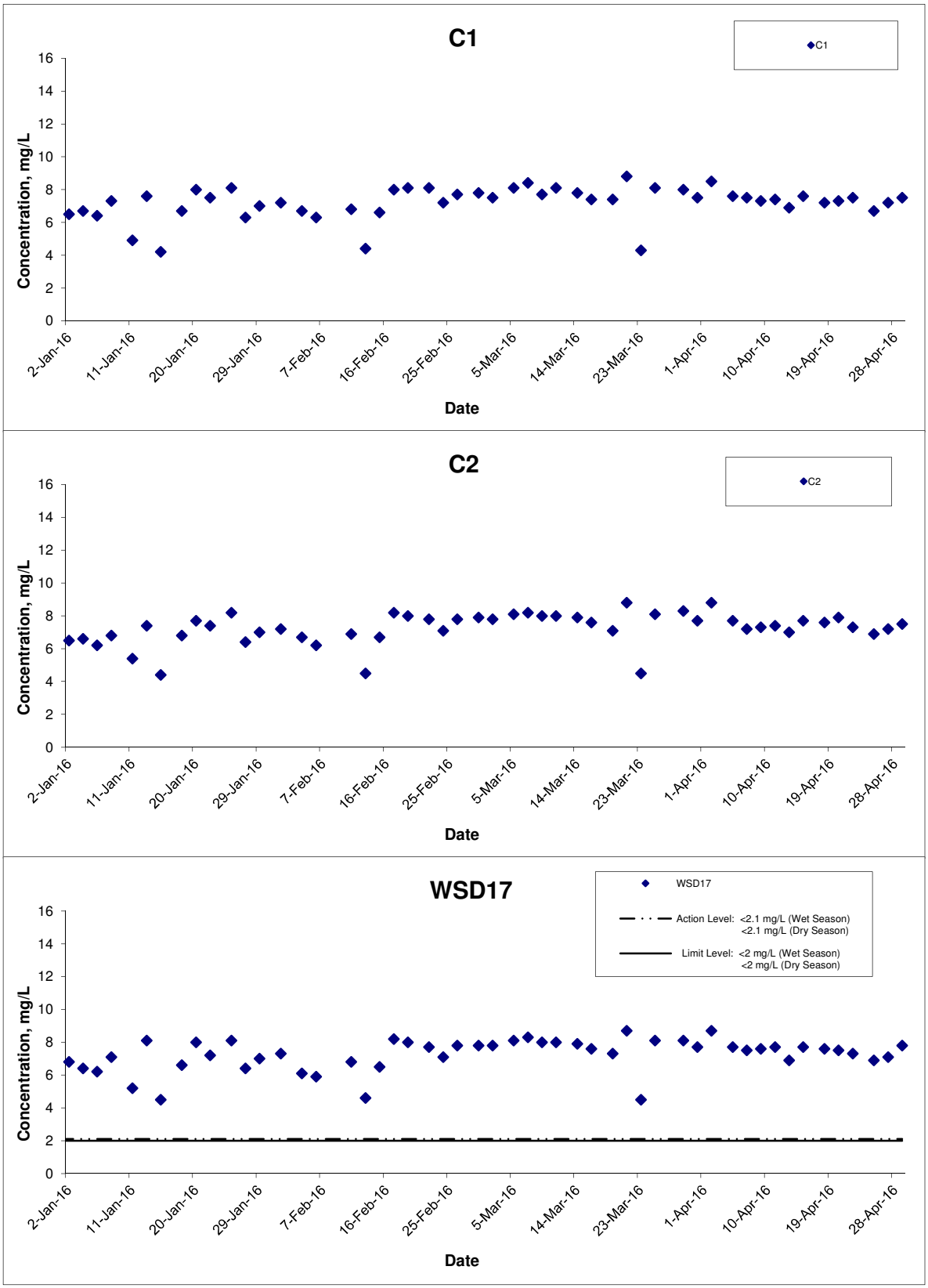
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



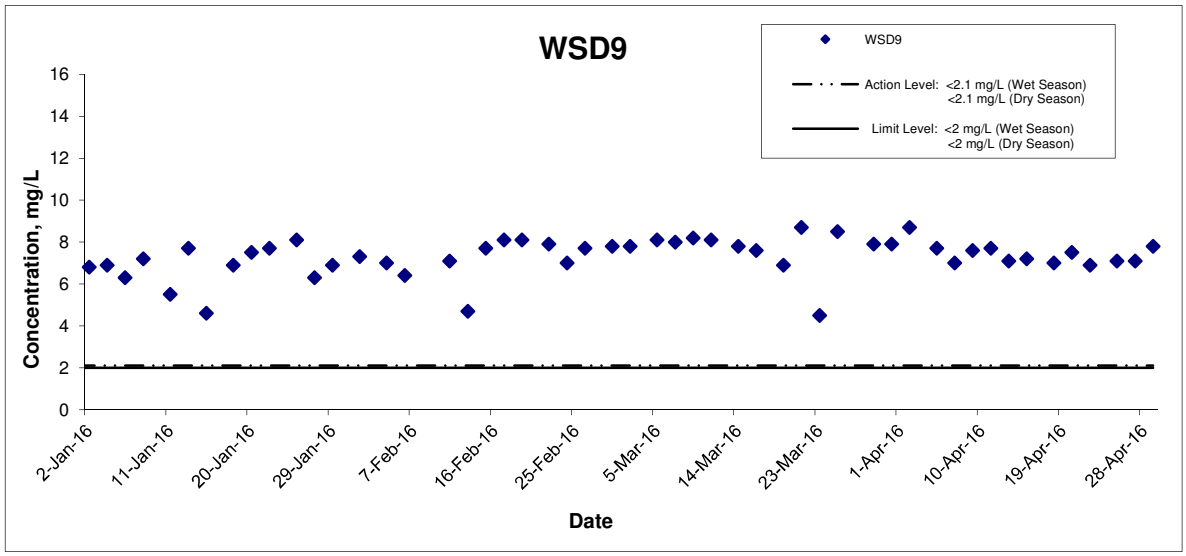
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



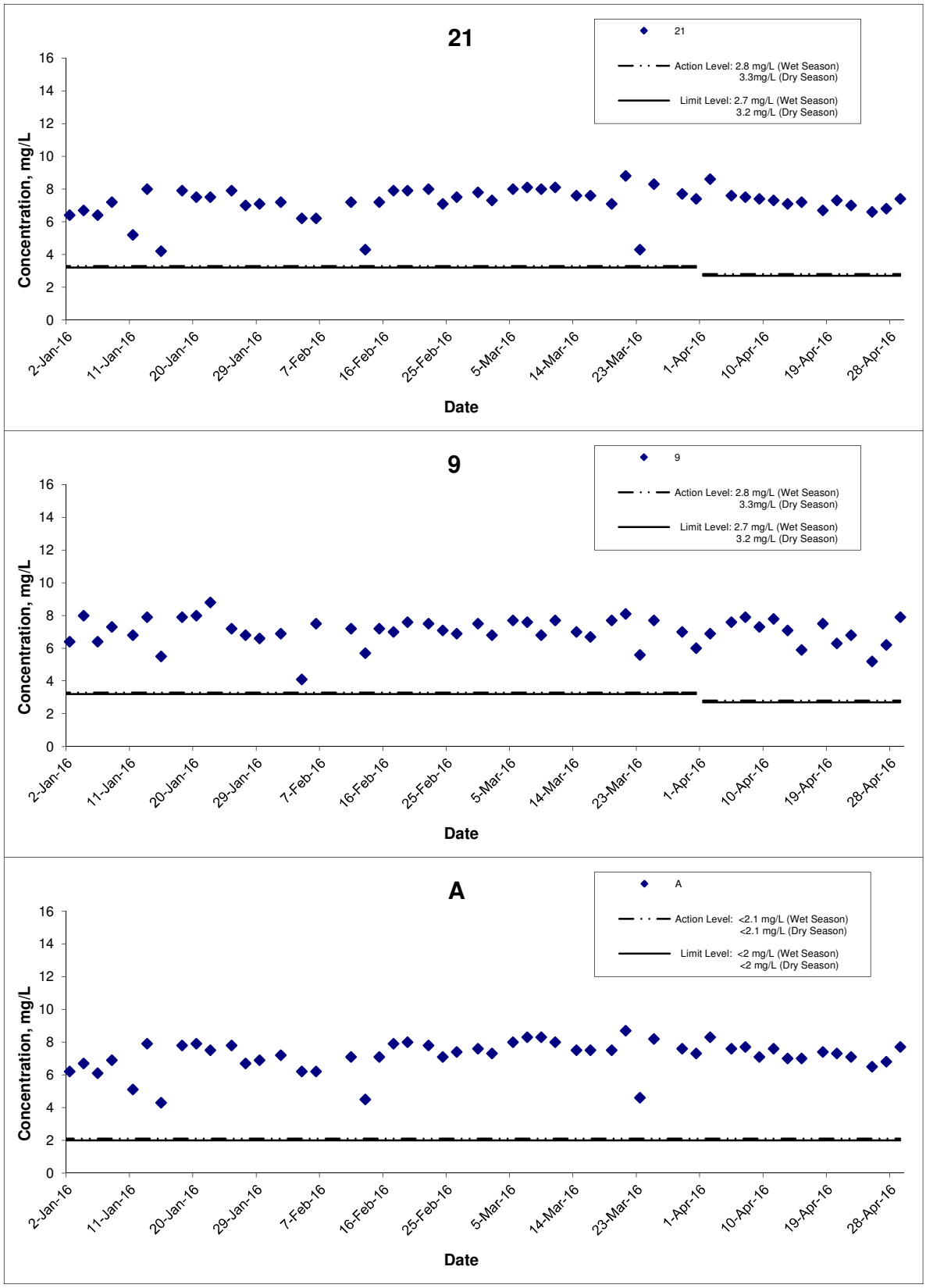
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



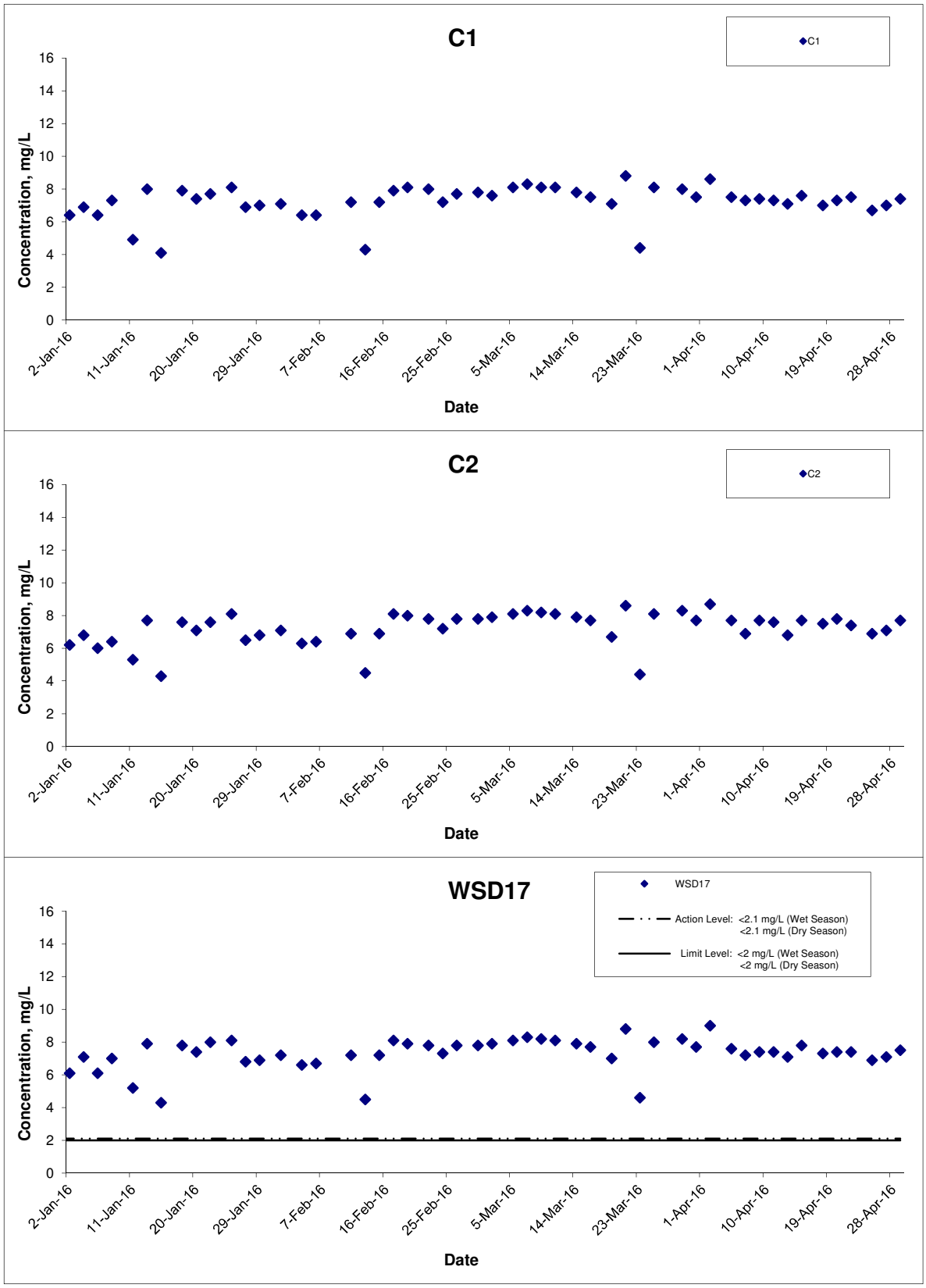
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



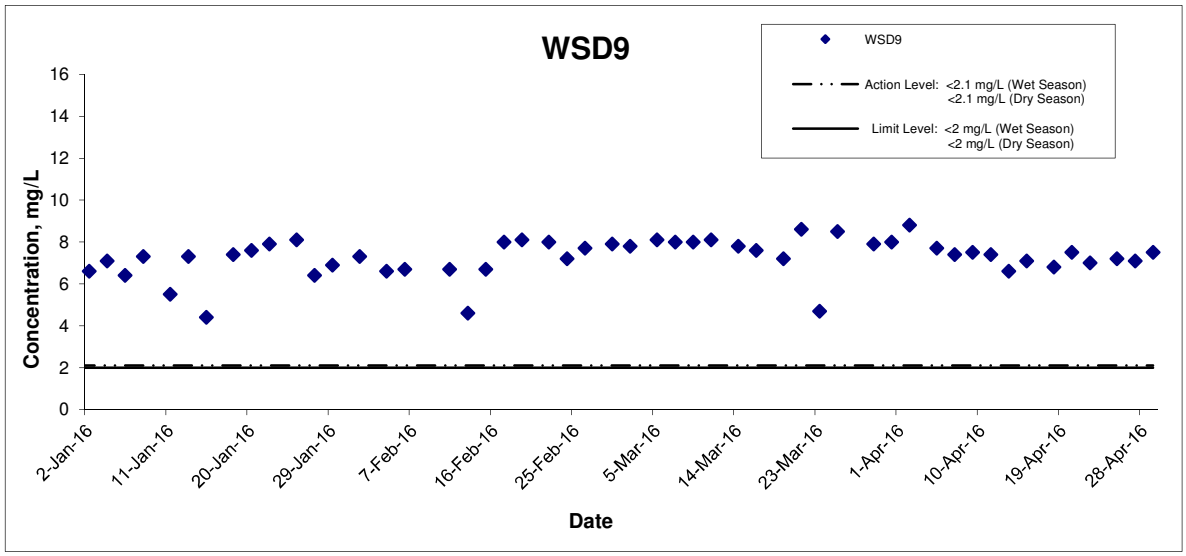
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



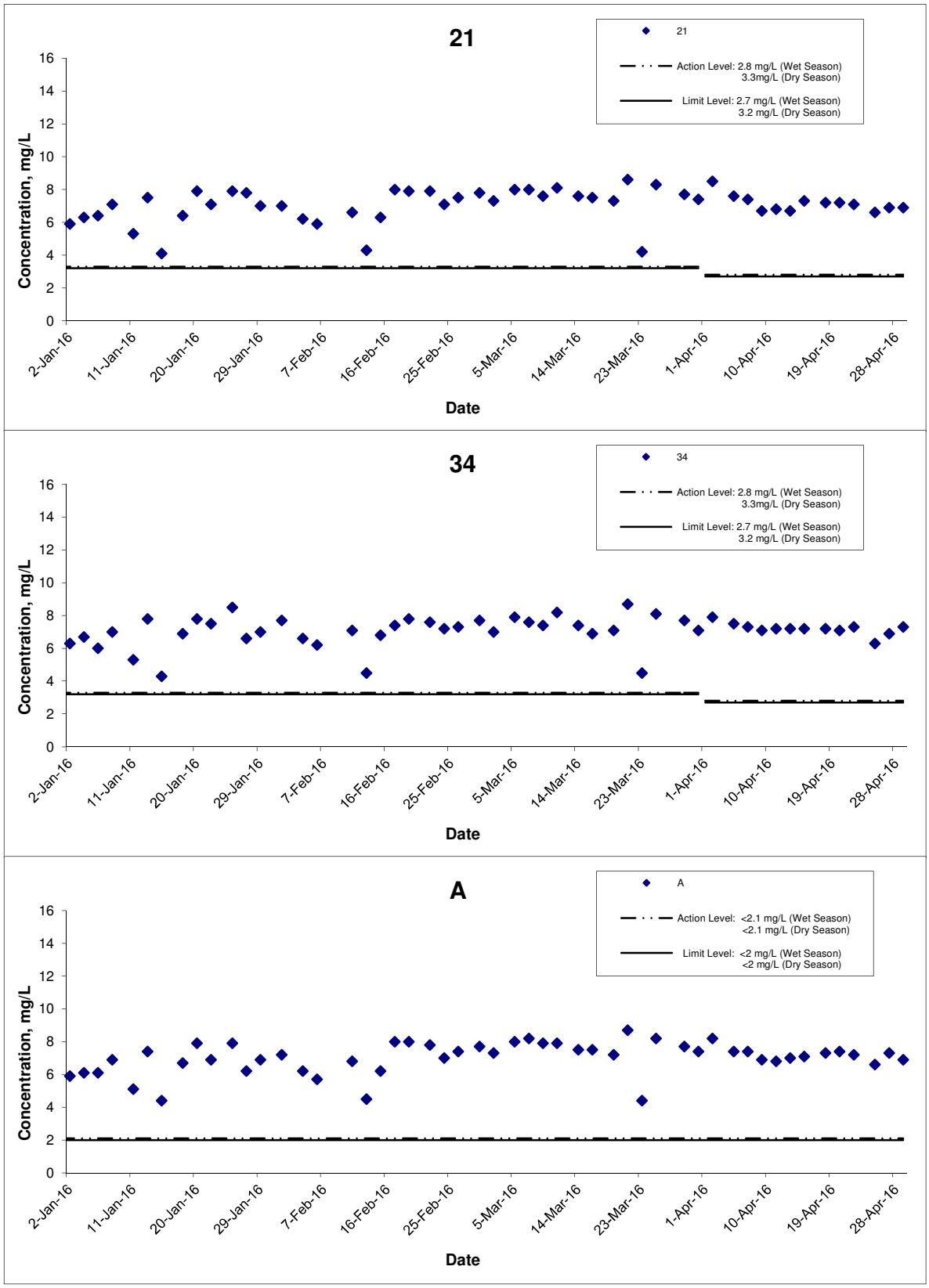
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



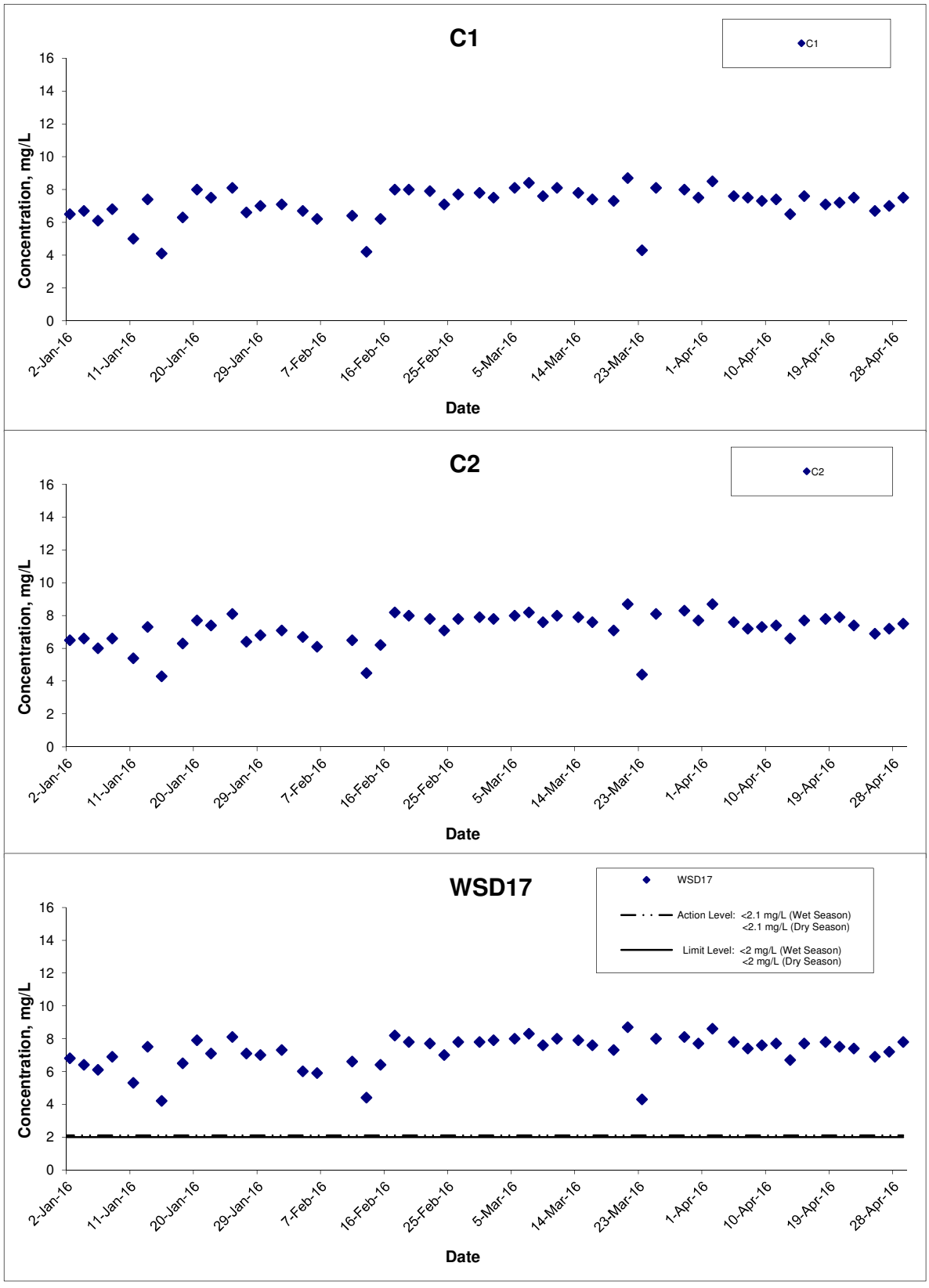
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



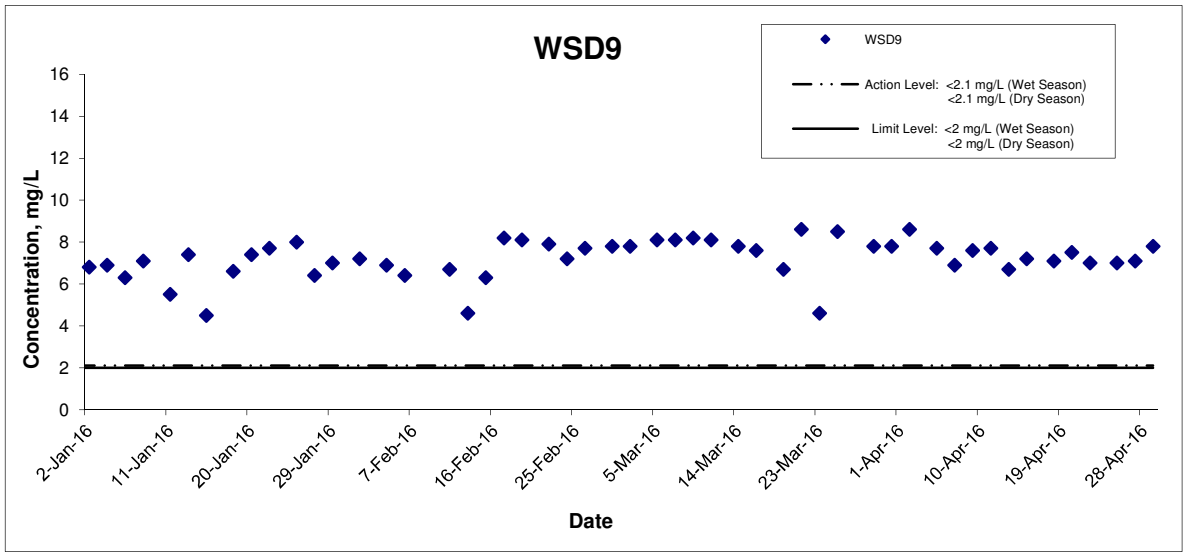
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



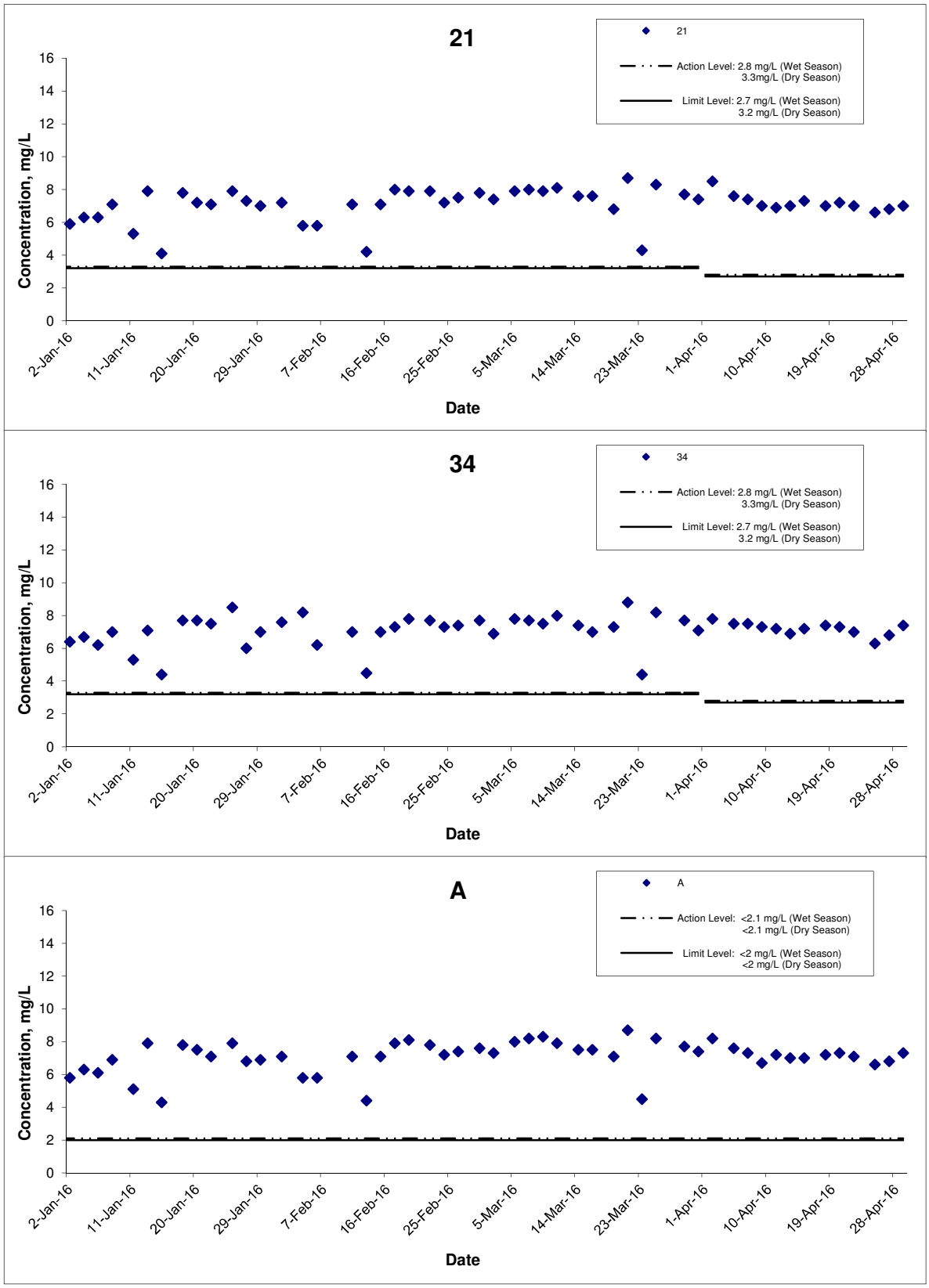
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



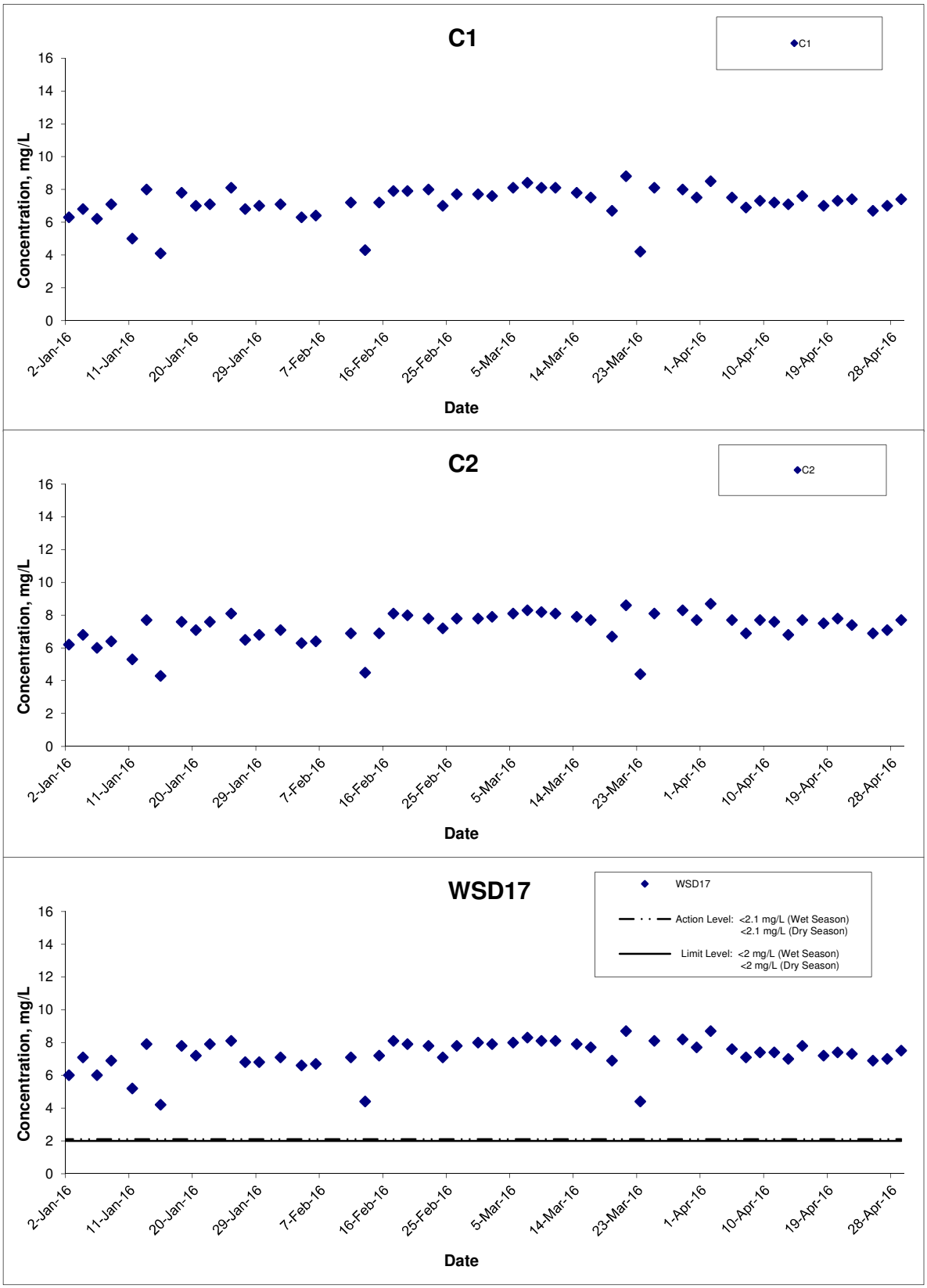
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



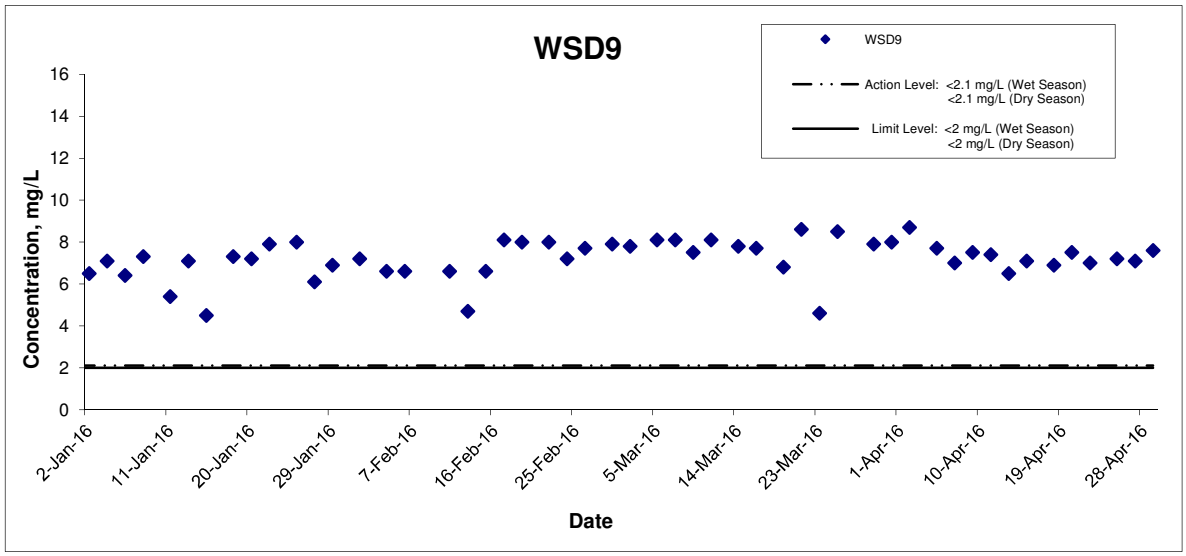
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



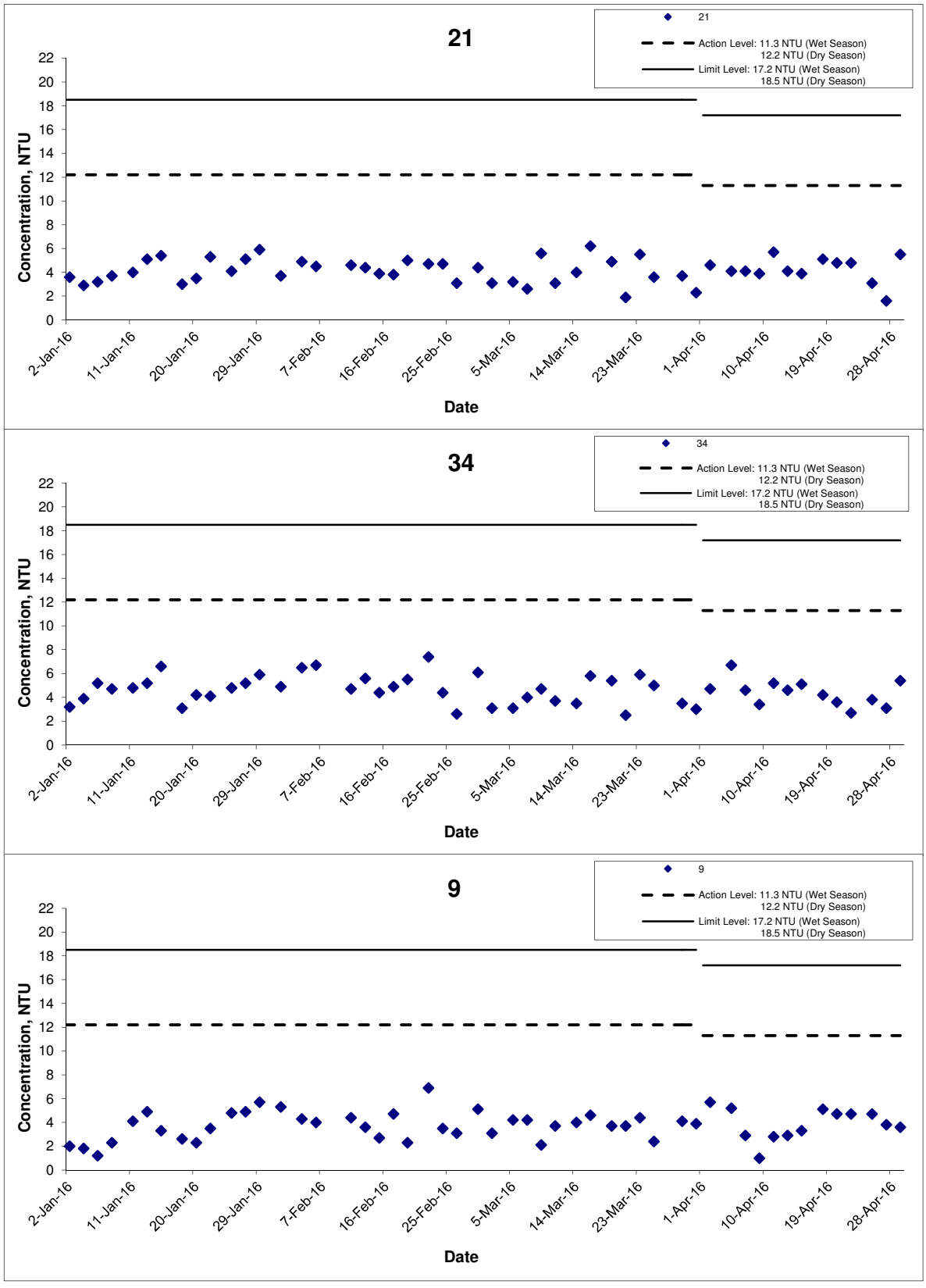
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



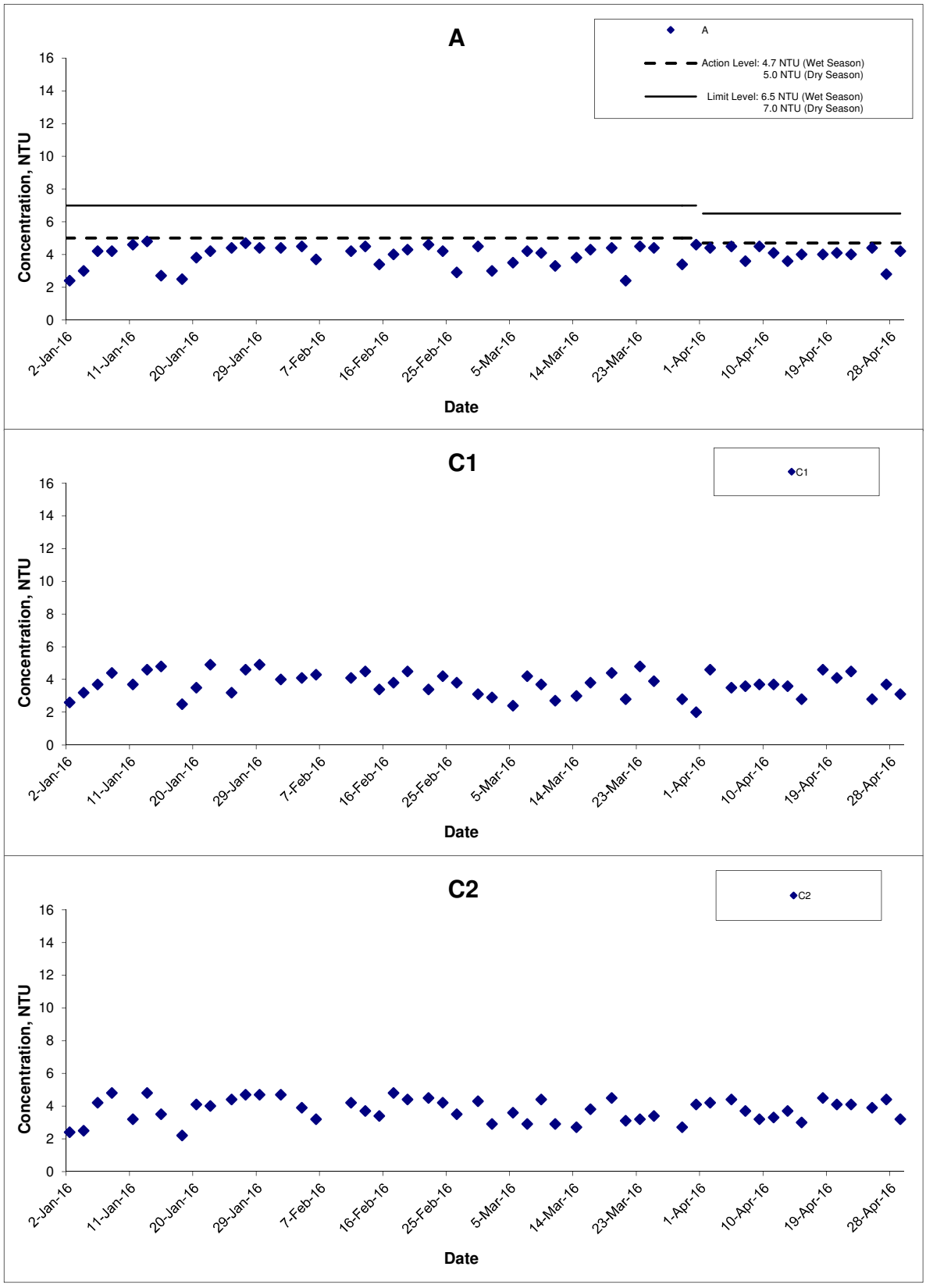
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



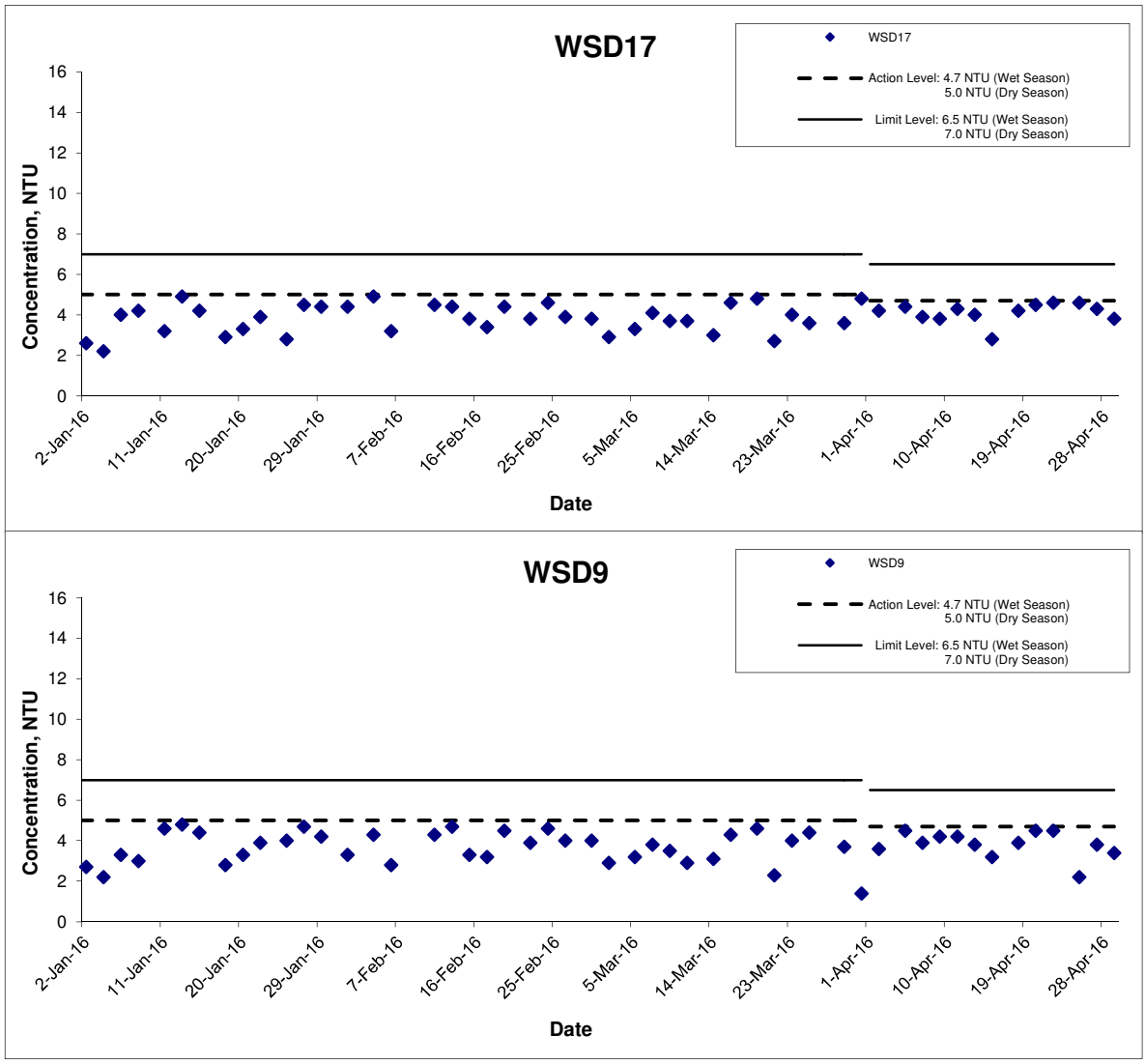
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



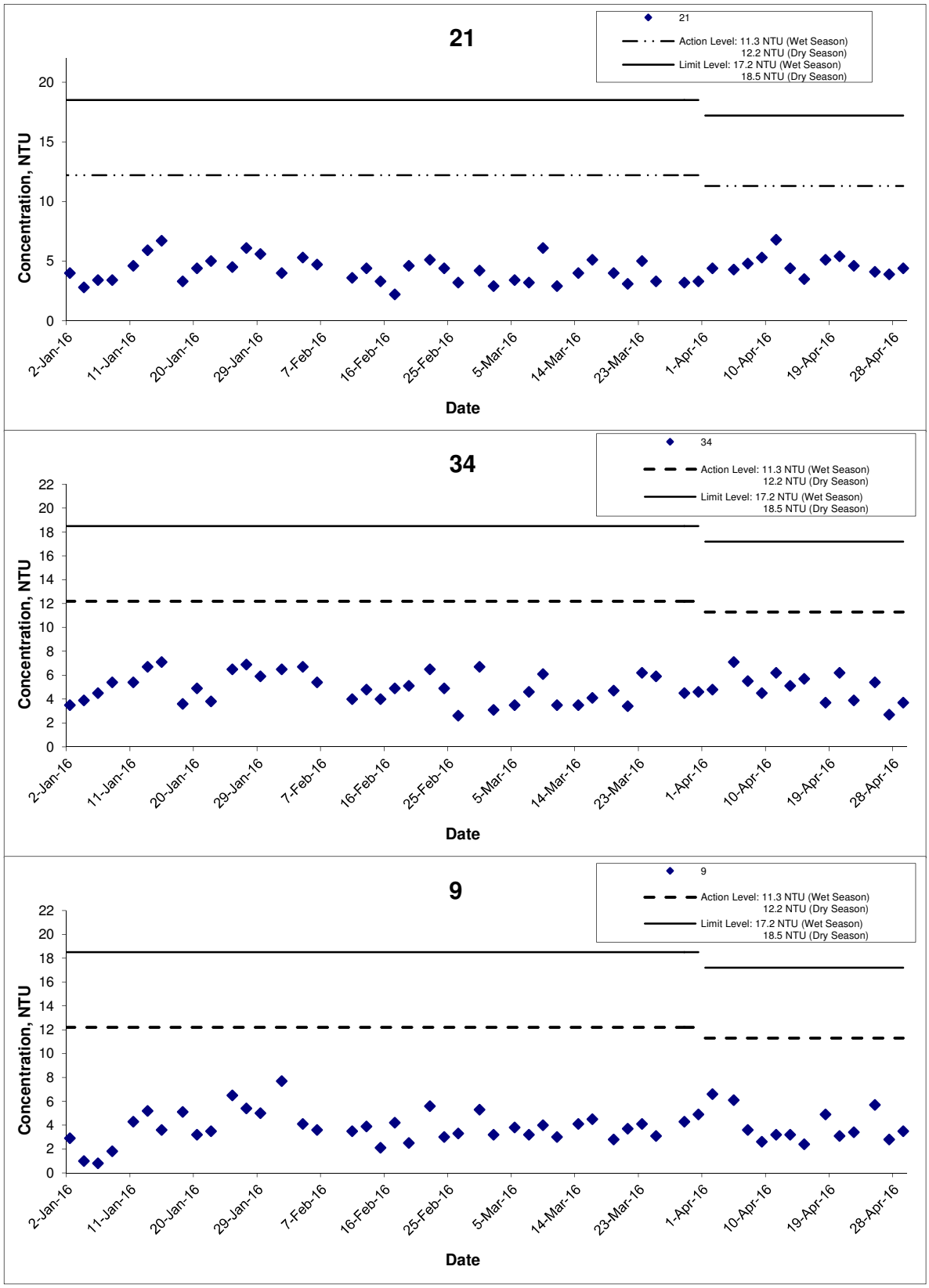
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



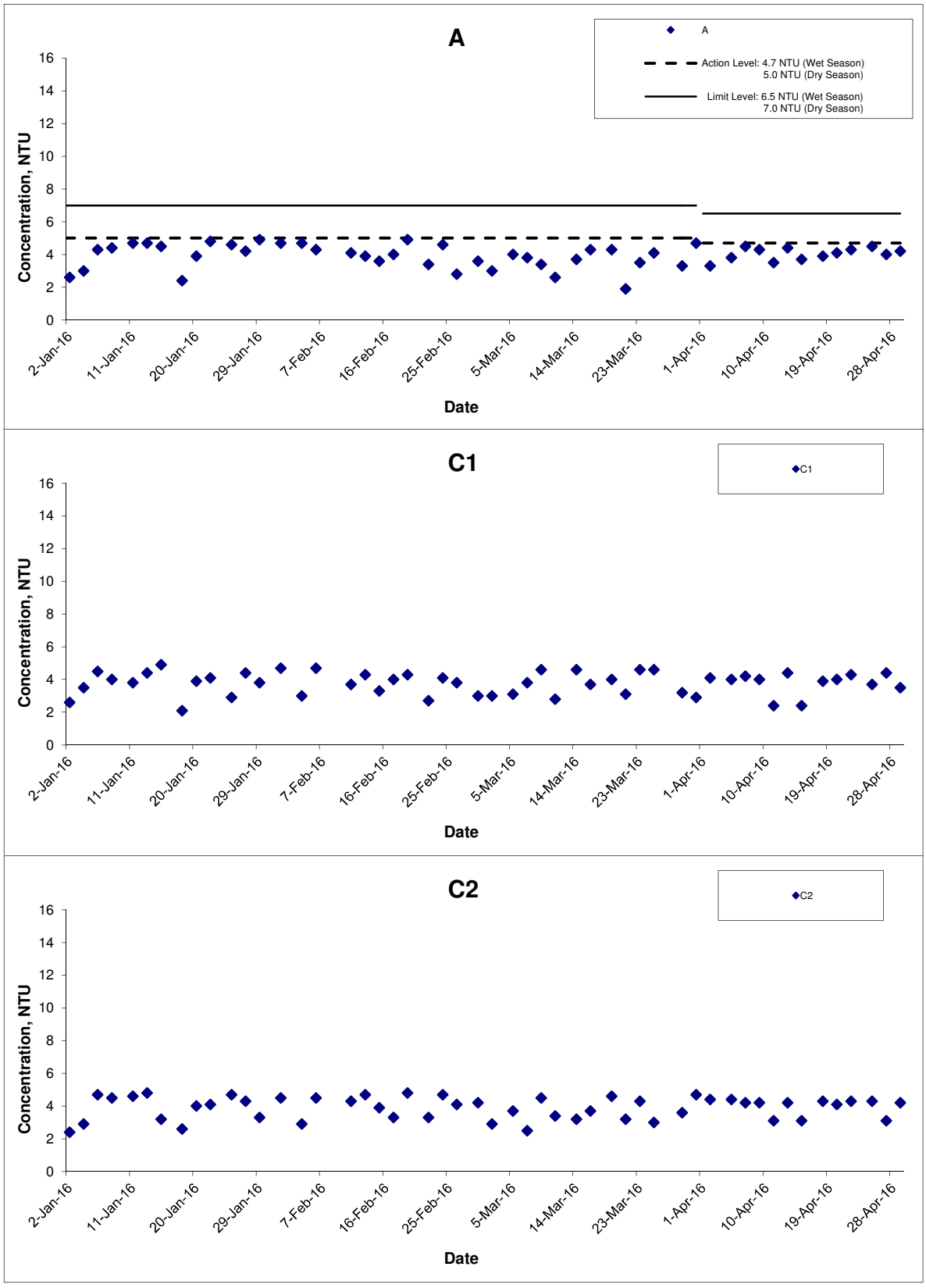
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Turbidity (Depth-averaged) at Mid-Flood Tide



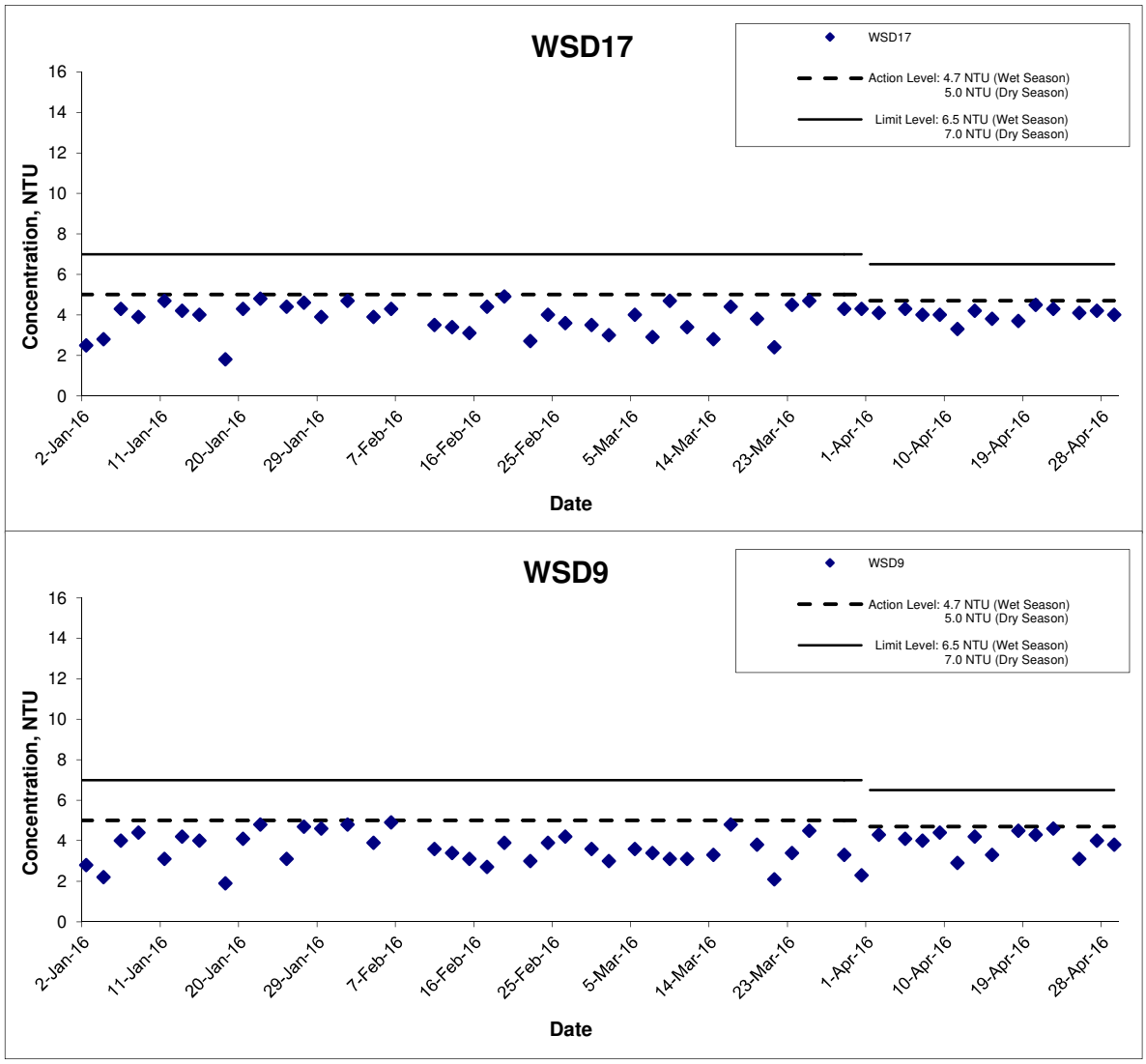
Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

Turbidity (Depth-averaged) at Mid-Flood Tide



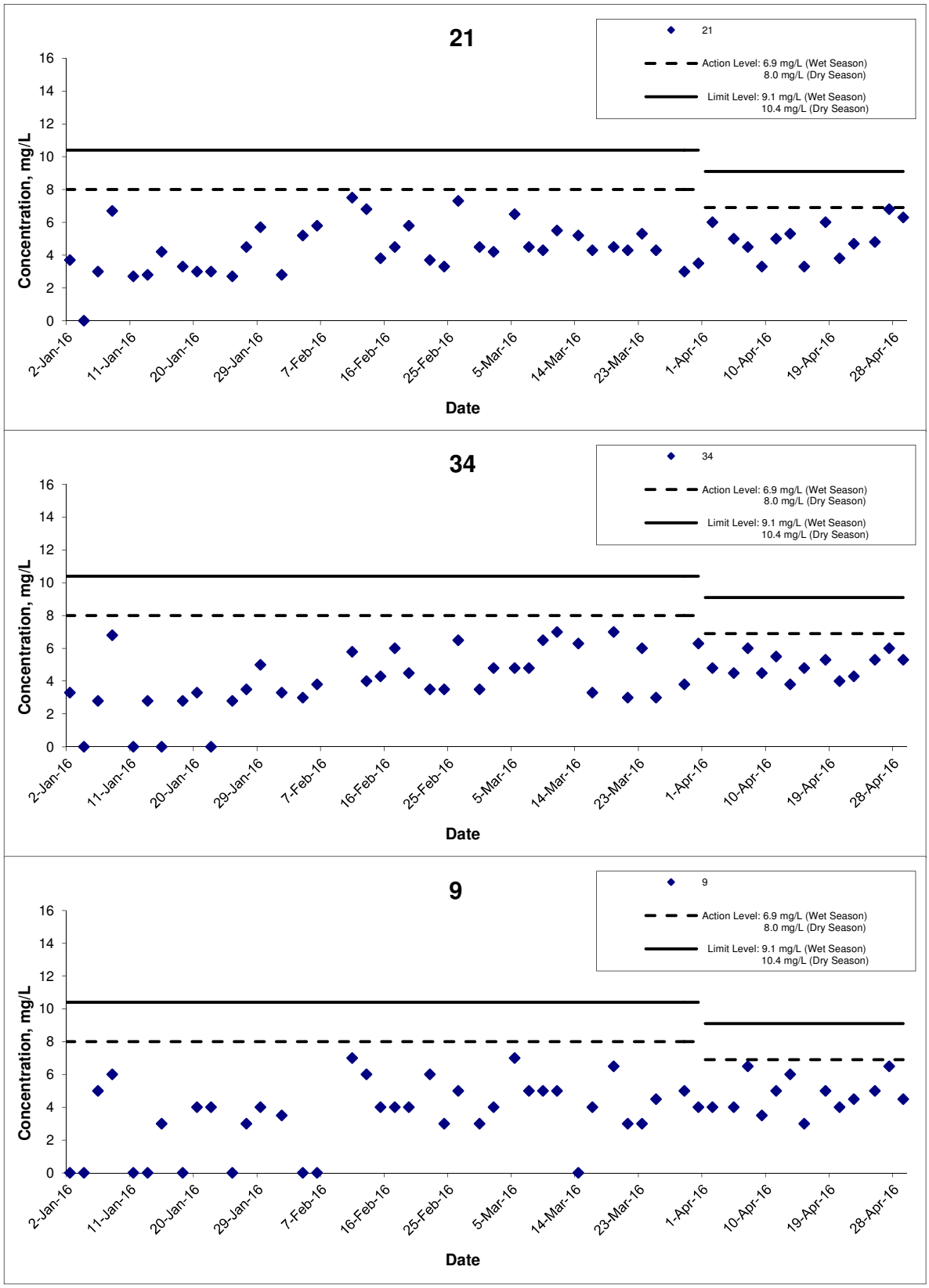
Title	Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA14047	CINOTECH
		Date Apr 16	Appendix D	

Turbidity (Depth-averaged) at Mid-Flood Tide



Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

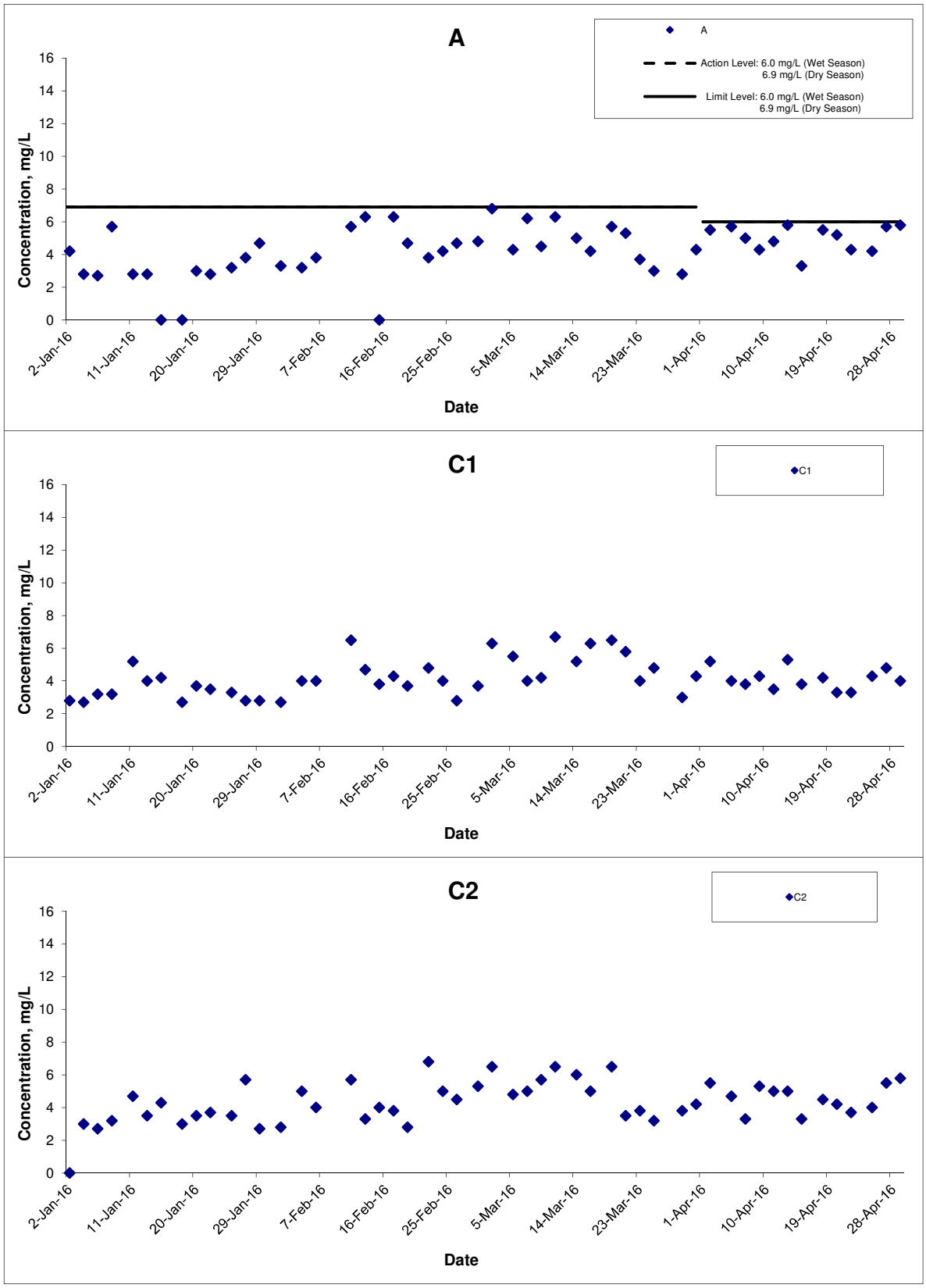
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

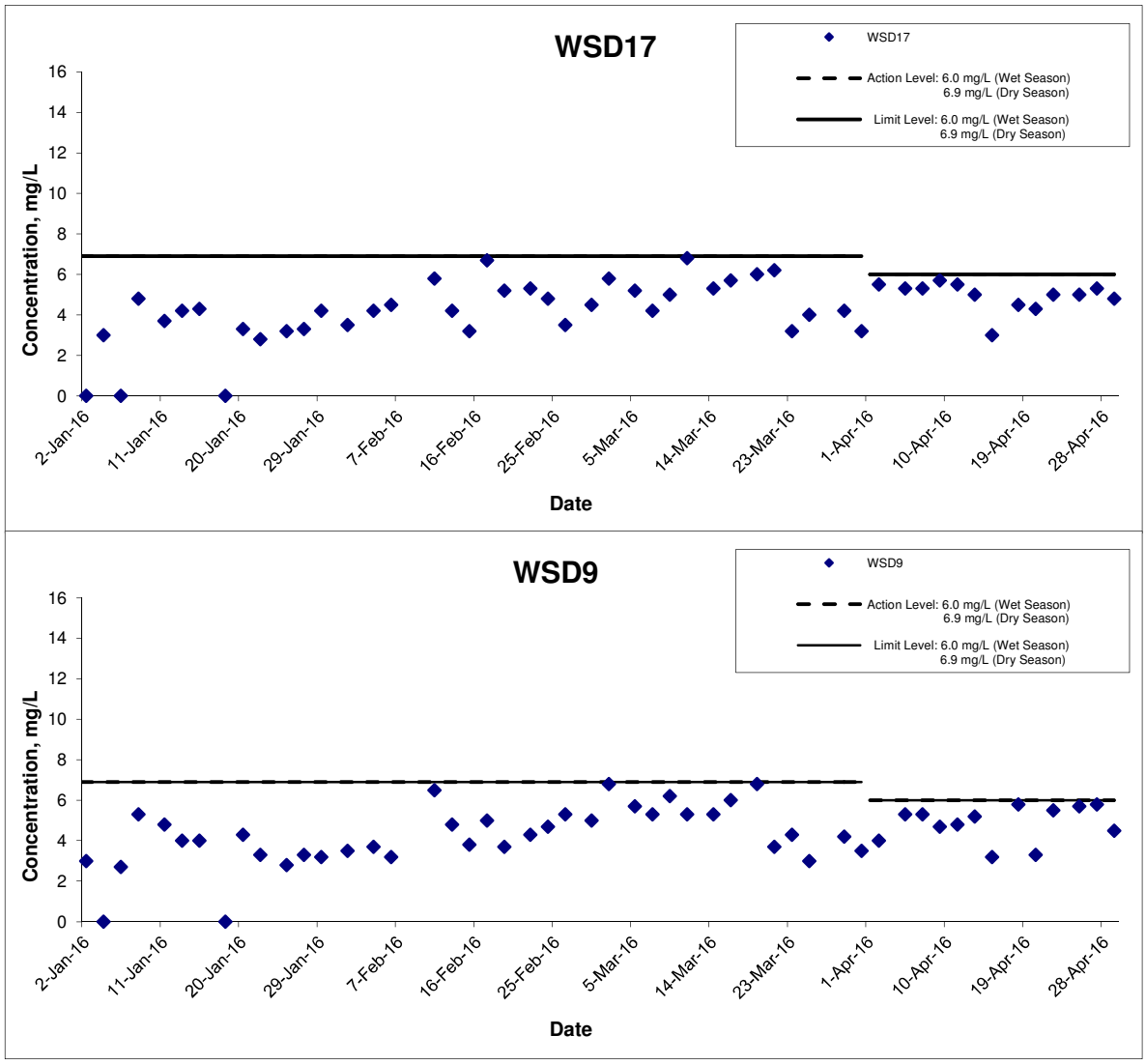
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

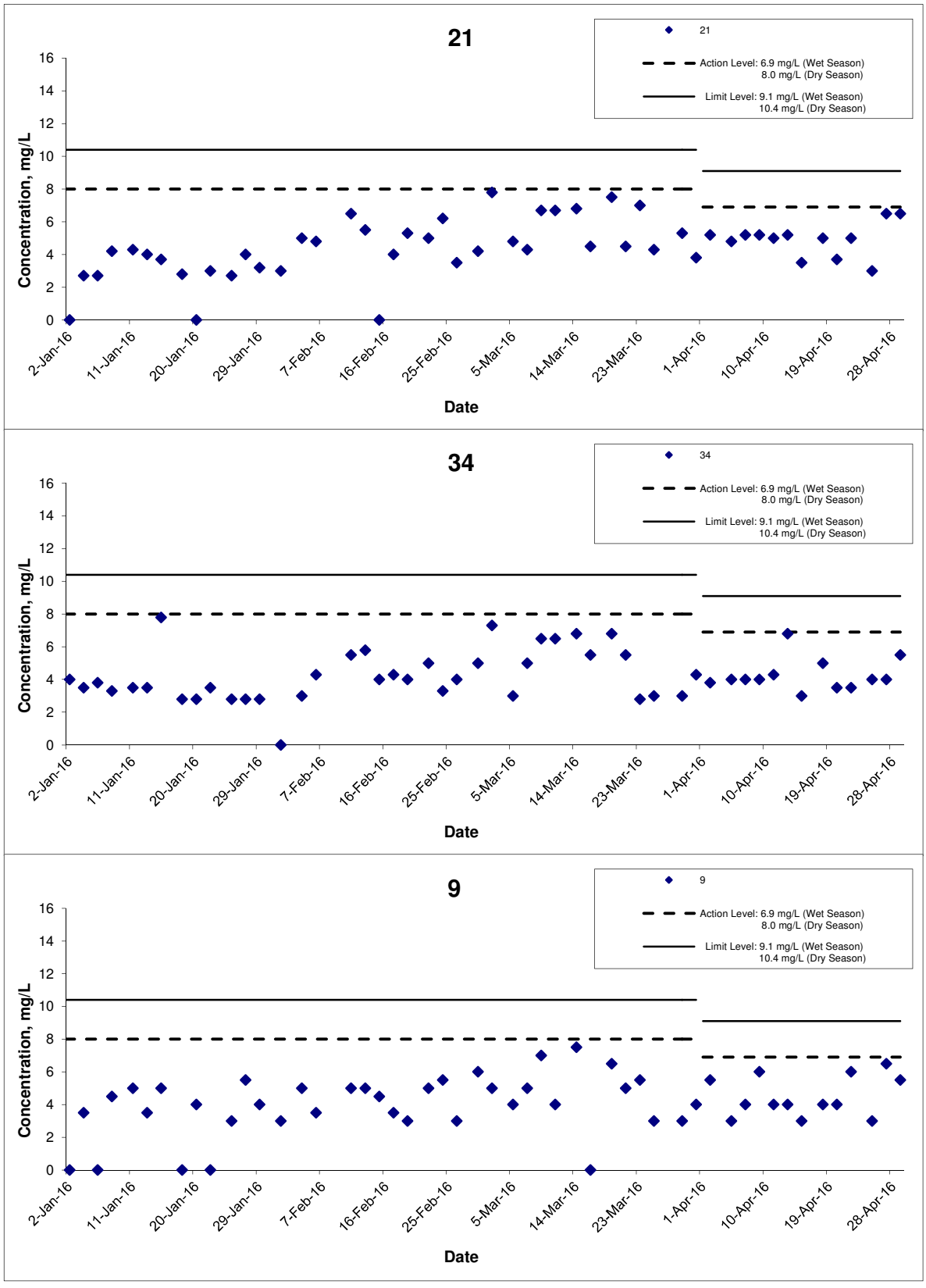
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

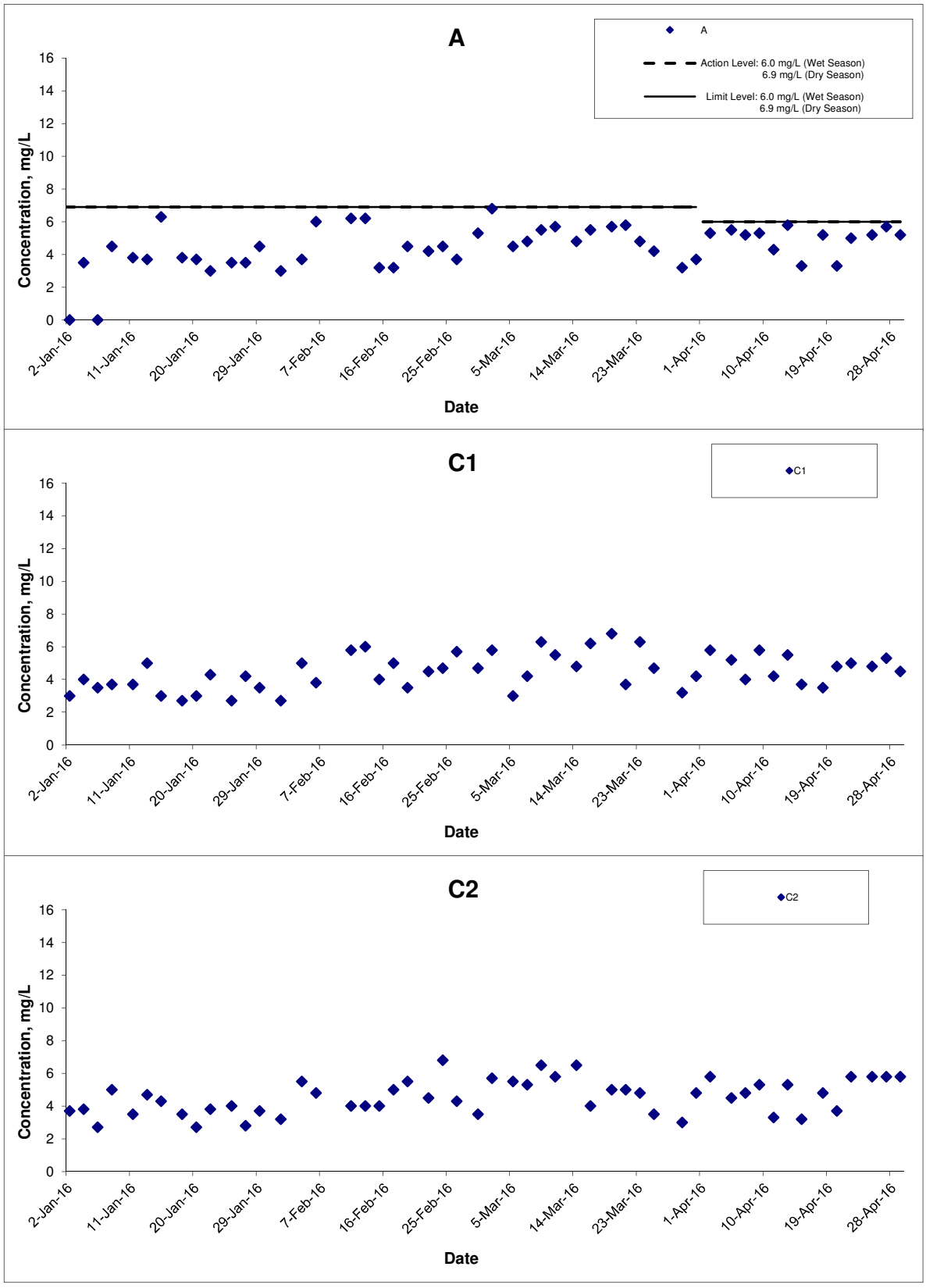
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

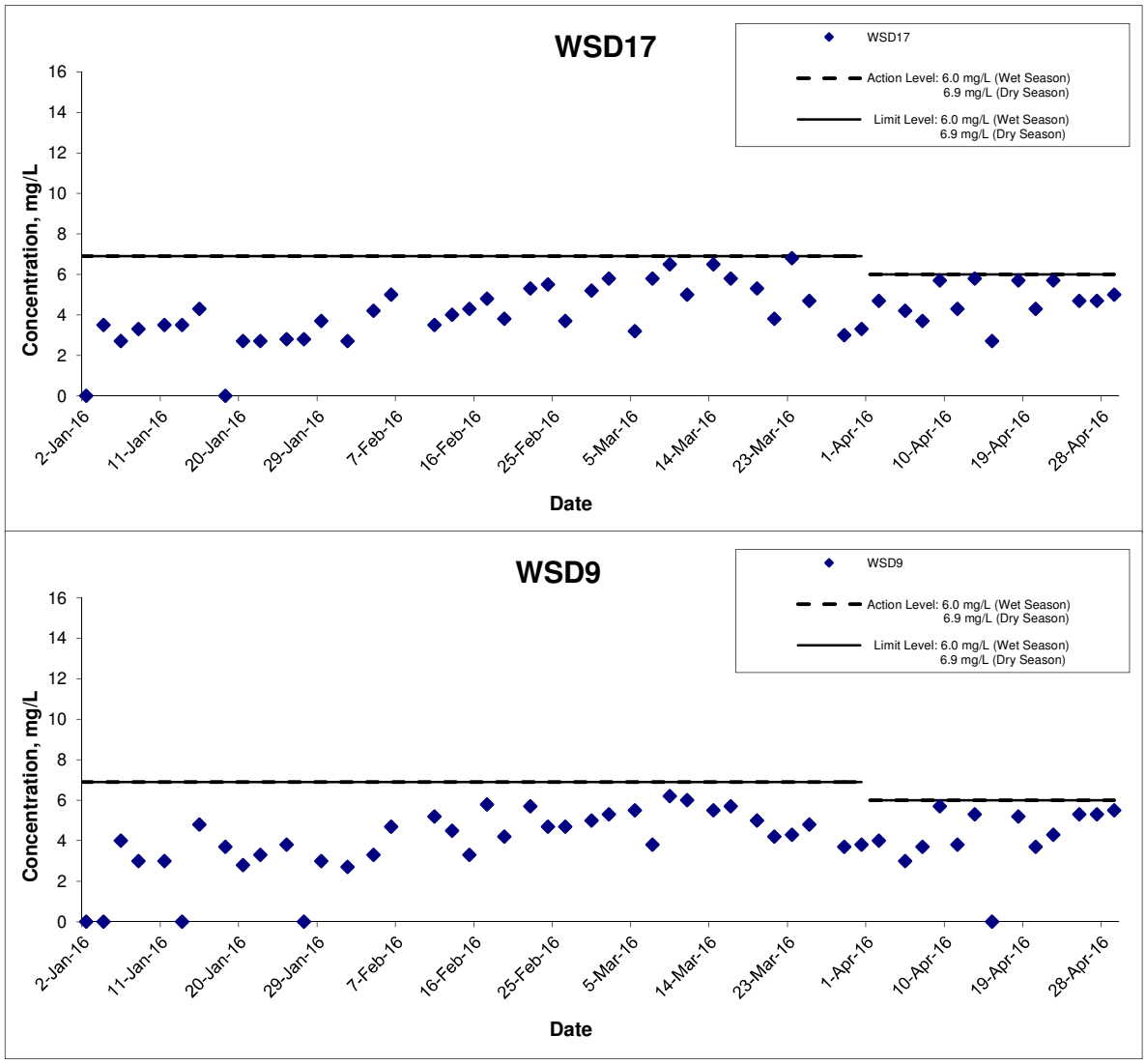
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

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



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title: Shatin to Central Link – Contract 1121 Advance Works for NSL Cross Harbour Tunnels Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA14047	CINOTECH
	Date: Apr 16	Appendix: D	

APPENDIX E
COPIES OF CALIBRATION CERTIFICATES

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 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: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/160115-1
Date of Issue:	2016-01-15
Date Received:	2016-01-15
Date Tested:	2016-01-15
Date Completed:	2016-01-15
Next Due Date:	2016-04-14
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Multiparameter Water Quality Probe
Manufacturer	: Aquaread Ltd
Model No.	: AP-2000-D
Serial No.	: 135240520
Equipment No.	: W.18.04

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 64 %

Test Specifications:

Dissolved Oxygen, Conductivity & Salinity Sensor,
1. Performance check against Winkler titration
2. Conductivity performance check with Potassium Chloride standard solution
3. Salinity performance check with Sodium Chloride standard solution

Turbidity Sensor, Batch: 12213
1. Calibration check with Formazin standard solution

pH / ORP electrode, Batch: 13504
1. Calibration check with standard pH buffer
2. Redox performance check with ZoBell's standard solution

Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. Aquaprobe AP-2000 Manual
2. In-house method with reference to APHA and ISO standards
   Conductivity (APHA 20ed 2510), Salinity (APHA 20ed 2520B)
   Dissolved Oxygen (APHA 20ed 4500-O C), Turbidity (APHA 19ed 2130 B),
   pH (ISO 10523, Section 9.1 and APHA 19ed 4500-H+ B) ,
   Redox electrode (APHA 20ed 2580)

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 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.:	C/W/160115-1
Date of Issue:	2016-01-15
Date Received:	2016-01-15
Date Tested:	2016-01-15
Date Completed:	2016-01-15
Next Due Date:	2016-04-14
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Instrument Reading	Theoretical Value		
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 0.2

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	0.00 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_n , pH unit	0.00	Less than 0.02

6. Redox Meter check

Redox, mV		Acceptable range
Instrument Reading	Theoretical Value	
228	229	229±10

7. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	1.00 ± 0.05

**********END OF REPORT**********

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 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: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/160212-1
Date of Issue:	2016-02-12
Date Received:	2016-02-12
Date Tested:	2016-02-12
Date Completed:	2016-02-12
Next Due Date:	2016-05-11
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Multiparameter Water Quality Probe
Manufacturer	: Aquaread Ltd
Model No.	:AP-2000-D
Serial No.	:122630720
Equipment No.	: W.18.06

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 62 %

Test Specifications:

Dissolved Oxygen, Conductivity & Salinity Sensor,
1. Performance check against Winkler titration
2. Conductivity performance check with Potassium Chloride standard solution
3. Salinity performance check with Sodium Chloride standard solution

Turbidity Sensor, Batch: 12213
1. Calibration check with Formazin standard solution

pH / ORP electrode, Batch: 11933
1. Calibration check with standard pH buffer
2. Redox performance check with ZoBell's standard solution

Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. Aquaprobe AP-2000 Manual
2. In-house method with reference to APHA and ISO standards
   Conductivity (APHA 20ed 2510), Salinity (APHA 20ed 2520B)
   Dissolved Oxygen (APHA 20ed 4500-O C), Turbidity (APHA 19ed 2130 B),
   pH (ISO 10523, Section 9.1 and APHA 19ed 4500-H+ B) ,
   Redox electrode (APHA 20ed 2580)

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

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	C/W/160212-1
Date of Issue:	2016-02-12
Date Received:	2016-02-12
Date Tested:	2016-02-12
Date Completed:	2016-02-12
Next Due Date:	2016-05-11

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Instrument Reading	Theoretical Value		
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 0.2

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	0.00 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_n , pH unit	0.00	Less than 0.02

6. Redox Meter check

Redox, mV		Acceptable range
Instrument Reading	Theoretical Value	
228	229	229±10

7. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	1.00 ± 0.05

**********END OF REPORT**********

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 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: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/160212-3
Date of Issue:	2016-02-12
Date Received:	2016-02-12
Date Tested:	2016-02-12
Date Completed:	2016-02-12
Next Due Date:	2016-05-11
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Multiparameter Water Quality Probe
Manufacturer	: Aquaread Ltd
Model No.	:AP-2000-D
Serial No.	: 122430520
Equipment No.	: W.18.08

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 62 %

Test Specifications:

Dissolved Oxygen, Conductivity & Salinity Sensor,
1. Performance check against Winkler titration
2. Conductivity performance check with Potassium Chloride standard solution
3. Salinity performance check with Sodium Chloride standard solution

Turbidity Sensor, Batch: 12213
1. Calibration check with Formazin standard solution

pH / ORP electrode, Batch: 11933
1. Calibration check with standard pH buffer
2. Redox performance check with ZoBell's standard solution

Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. Aquaprobe AP-2000 Manual
2. In-house method with reference to APHA and ISO standards
   Conductivity (APHA 20ed 2510), Salinity (APHA 20ed 2520B)
   Dissolved Oxygen (APHA 20ed 4500-O C), Turbidity (APHA 19ed 2130 B),
   pH (ISO 10523, Section 9.1 and APHA 19ed 4500-H+ B) ,
   Redox electrode (APHA 20ed 2580)

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
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TEST REPORT

Test Report No.:	C/W/160212-3
Date of Issue:	2016-02-12
Date Received:	2016-02-12
Date Tested:	2016-02-12
Date Completed:	2016-02-12
Next Due Date:	2016-05-11
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Instrument Reading	Theoretical Value		
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 0.2

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	0.00 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_n , pH unit	0.00	Less than 0.02

6. Redox Meter check

Redox, mV		Acceptable range
Instrument Reading	Theoretical Value	
228	229	229±10

7. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	1.00 ± 0.05

**********END OF REPORT**********

APPENDIX F
QUALITY CONTROL REPORTS FOR SS LABORATORY ANALYSIS

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24665
Date of Issue:	2016/04/05
Date Received:	2016/04/02
Date Tested:	2016/04/02
Date Completed:	2016/04/05
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/02
Number of Sample: 84
Custody No.: MA14047/160402

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	3	3	2	92

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24669
Date of Issue:	2016/04/06
Date Received:	2016/04/05
Date Tested:	2016/04/05
Date Completed:	2016/04/06
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/05
Number of Sample: 84
Custody No.: MA14047/160405

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	5	5	2	100

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24680
Date of Issue:	2016/04/08
Date Received:	2016/04/07
Date Tested:	2016/04/07
Date Completed:	2016/04/08
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/07
Number of Sample: 84
Custody No.: MA14047/160407

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	3	3	0	104

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24695
Date of Issue:	2016/04/11
Date Received:	2016/04/09
Date Tested:	2016/04/09
Date Completed:	2016/04/11
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/09
Number of Sample: 84
Custody No.: MA14047/160409

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	5	5	1	101

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24699
Date of Issue:	2016/04/12
Date Received:	2016/04/11
Date Tested:	2016/04/11
Date Completed:	2016/04/12
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/11
Number of Sample: 84
Custody No.: MA14047/160411

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	5	4	4	96

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24714
Date of Issue:	2016/04/14
Date Received:	2016/04/13
Date Tested:	2016/04/13
Date Completed:	2016/04/14
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

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

Sampling Date: 2016/04/13

Number of Sample: 84

Custody No.: MA14047/160413

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	6	6	2	101

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: **Cinotech Consultants Limited**
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24732
Date of Issue:	2016/04/18
Date Received:	2016/04/15
Date Tested:	2016/04/15
Date Completed:	2016/04/18
Page:	1 of 1

ATTN: **Ms. Mei Ling Tang**

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

Sampling Date: 2016/04/15

Number of Sample: 84

Custody No.: MA14047/160415

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	3	3	2	99

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24740
Date of Issue:	2016/04/19
Date Received:	2016/04/18
Date Tested:	2016/04/18
Date Completed:	2016/04/19
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/18
Number of Sample: 84
Custody No.: MA14047/160418

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	4	4	1	103

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24751
Date of Issue:	2016/04/21
Date Received:	2016/04/20
Date Tested:	2016/04/20
Date Completed:	2016/04/21
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/20
Number of Sample: 84
Custody No.: MA14047/160420

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	4	4	0	98

**********END OF REPORT**********

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

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24767
Date of Issue:	2016/04/25
Date Received:	2016/04/22
Date Tested:	2016/04/22
Date Completed:	2016/04/25
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/22
Number of Sample: 84
Custody No.: MA14047/160422

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	5	4	6	90

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24779
Date of Issue:	2016/04/26
Date Received:	2016/04/25
Date Tested:	2016/04/25
Date Completed:	2016/04/26
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/25
Number of Sample: 84
Custody No.: MA14047/160425

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	7	7	1	101

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24794
Date of Issue:	2016/04/28
Date Received:	2016/04/27
Date Tested:	2016/04/27
Date Completed:	2016/04/28
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/27
Number of Sample: 84
Custody No.: MA14047/160427

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	4	4	2	99

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, 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: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	24811
Date of Issue:	2016/05/03
Date Received:	2016/04/29
Date Tested:	2016/04/29
Date Completed:	2016/05/03
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.1121 - NSL Cross Harbour Tunnels
Sampling Date: 2016/04/29
Number of Sample: 84
Custody No.: MA14047/160429

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
WSD9se	5	5	1	92

**********END OF REPORT**********

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

Patrick Tse

PATRICK TSE
Laboratory Manager

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: April 2016

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Water Quality Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

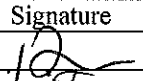
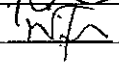
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	160407
Date	7 April 2016 (Thursday)
Time	14:00 – 16:00

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. ***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***	
160407-R02	• To provide proper NRMM label to air compressor in Shek O Casting Basin.	E 22
	Part F - Construction Noise Impact • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management***	
160407-R01	• To clear the oil-water mixture in the drip tray in Shek O Casting Basin and clear the oil stain on paved ground near drip tray	G 9, 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.:160329), the item 160329-R02 and 160329-R03 were remarked as 160407-R01 and 160407-R02 respectively.	

	Name	Signature	Date
Recorded by	Johnny Fung		7 April 2016
Checked by	Dr. Priscilla Choy		7 April 2016

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	160411
Date	11 April 2016 (Monday)
Time	14:00 – 16:30

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.	
	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	
160411-O02	• NRMM label was not provided to air compressor in Shek O Casting Basin. The Contractor is reminded to provide proper NRMM label or remove the air compressor from site.	E 22
160411-R03	• To cover the stockpile of dusty material and cement bags by impervious material in Hung Hom marine platform.	E 6
160411-R04	• To repair the dust curtain in Hung Hom barging facility.	E 21
160411-R06	• Provide proper top and 3 side enclosure to grout mixer in Hung Hom works area.	E 11
	Part F - Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
160411-O01	• Oil-water mixture observed in the drip tray in Shek O Casting Basin. The Contractor is reminded to clear the mixture to prevent leakage of chemical out of drip tray.	G 9, 10
160411-R05	• Provide drip trays to chemical containers in Hung Hom.	G 9, 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.:160407), the item 160407-R01 and 160407-R02 were remarked as 160411-O01 and 160411-O02 respectively.	

	Name	Signature	Date
Recorded by	Johnny Fung		11 April 2016
Checked by	Dr. Priscilla Choy		11 April 2016

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	160418
Date	18 April 2016 (Monday)
Time	14:00 – 17:00

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

Ref. No.	Remarks/Observations	Related Item No.
160418-O02	*Part B – Water Quality* • Silt curtain is observed "open" for Hung Hom marine works area. The Contractor is reminded to close the silt curtain during the marine works.	B 36
160418-O03	• Small amount of water observed discharged into the sea near Hung Hom seawall. The Contractor is reminded to avoid discharge of effluent into seawater.	B 6
160418-R04	• To clear the general refuse and construction waste in the drainage channel of Shek O Casting Basin.	B 7
160418-R05	• Spillage of sediment from mechanical grab should be avoided outside of frame type silt curtain in Hung Hom.	B 22, 29
	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.	
160418-R01	*Part G – Waste/Chemical Management* • Chemical leakage observed within drip tray and on paved ground in Shek O. The Contractor is reminded to clear the oil as chemical waste.	G 9, 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.:160411), the item 160411-O01 was remarked as 160418-R01.	

	Name	Signature	Date
Recorded by	Johnny Fung		18 April 2016
Checked by	Dr. Priscilla Choy		18 April 2016

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	160425
Date	25 April 2016 (Monday)
Time	14:00 – 17:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality	
160425-O01	• Silty surface runoff observed discharged into sea within silt curtain at Hung Hom. The Contractor is reminded to prevent surface runoff out of site.	B 6
160425-O02	• Silty seawater and general refuse observed near the finger pier at Hung Hom. The Contractor is reminded to locate the source of silty water discharge into sea. It is also reminded to remove the general refuse on sea.	B 26
160425-R04	• Stockpile of sand should be covered properly in Hung Hom.	B 10
160425-R05	• To remove the general refuse and construction waste in the drainage channel of Shek O Casting Basin.	B 7
	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	
160425-R03	• Provide drip tray to chemical container in Hung Hom.	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.:160418), the item 160418-O03 and 160418-R04 were remarked as 160425-O01 and 160425-R05 respectively.	

	Name	Signature	Date
Recorded by	Johnny Fung		25 April 2016
Checked by	Dr. Priscilla Choy		25 April 2016

APPENDIX I
EVENT AND ACTION PLANS

Event and Action Plan for Marine Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
Action level being exceeded by one sampling day	1. Inform the Contractor, IEC and ER; 2. Check monitoring data, all plant, equipment and the Contractor's working methods; and 3. Discuss remedial measures with the IEC and Contractor.	1. Discuss with the ET, ER and Contractor on the implemented mitigation 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 mitigation 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. Supervise the implementation of agreed remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with the ET, IEC and ER and propose remedial measures to IEC and ER; and 7. Implement the agreed remedial measures.
Action level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Inform the Contractor, IEC and ER; 3. Check monitoring data, all plant, equipment and the Contractor's working methods; 4. Discuss remedial measures with the IEC and Contractor; and 5. Ensure 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 the 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. 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.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; and 7. Implement the agreed remedial measures.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Inform the Contractor, IEC, EPD and ER; 3. Rectify unacceptable practice; 4. Check monitoring data, all plant, equipment and the Contractor's working methods; 5. Discuss with the ET and IEC and propose remedial measures to the IEC, EPD and ER; and 6. 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.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET , IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; and 6. Implement the agreed remedial measures.
2. Limit level being exceeded by more than one consecutive sampling days	1. Inform the Contractor, IEC, EPD and ER; 2. Check monitoring data, all plant, equipment and the Contractor's working methods; 3. Discuss remedial measures with the IEC, EPD, ER and Contractor; 4. Ensure remedial measures are implemented; and 5. 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.	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; 4. Discuss with the the ET, IEC and Contractor on the effectiveness of the implemented remedial measures; and 5. Consider and instruct, if necessary,	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; 7. Implement the agreed remedial measures; and

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

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1121 - 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 achieve?	Status
Cultural Heritage 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	Construction phase	EIAO	N/A
Ecology (Construction Phase)							
S 5.133	The following mitigation measures in controlling water quality change shall be implemented: - Installation of silt curtains around the dredgers, where appropriate, during dredging activities; - Use of closed grab dredger during dredging; and - Reduction of dredging rate	To minimize changes in water quality impact on marine flora and fauna	Contractor	All reclamation and dredging works areas	Construction phase	• EIAO-TM	N/A N/A N/A
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	Minimise the contamination of wastewater discharge	Contractor	All land based works areas	Construction phase	• EIAO-TM	^
ERR S3.6.3	Installation of floating type silt curtains around the area of construction and removal of earth bund	Minimize indirect impact to the nearby subtidal and intertidal flora and fauna	Contractor	Shek O Casting Basin	Construction phase	• 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
Fisheries Impact							
S5.132	The size of the dredging and underwater blasting areas shall be minimized as much as possible	To minimize loss of fishing ground and fisheries resources	Contractor/ MTR	All dredging and underwater blasting works areas	Construction phase	• EIAO-TM	N/A
S5.133	Mitigation measures recommended in Sections 11.200 to 11.207, 11.209 to 11.211 and 11.213 to 11.256 of the EIA Report to control water quality, i.e. use of effective site drainage in land-based construction site and installation of silt curtain surrounding the dredging point, use of closed grab dredger and reduction of dredging rate shall be implemented.	To minimize change in water quality impact on fisheries resources and operation	Contractor	Works Areas	Construction phase	• EIAO-TM	N/A
S6.59	After completion of armour rock filling, the final surfaces of the protective armour tock layer shall be checked by ultrasonic sounding survey. Measures such as removing the rock or breaking the rock into pieces shall be implemented in case of non-compliance	To minimize the IMT protrusion above the seabed	Contractor	Along IMT laying works areas	Construction phase	• EIAO-TM	N/A
Landscape & Visual (Construction Phase)							
Table 7.9	CM3 - Control of night-time lighting glare	Minimize the night time glare due to the Project during construction phase	MTR	All works sites	Construction phase	• 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
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 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	^
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	^

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/m^2 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/m^2 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) Vehicles leaving the barging facilities – Pass vehicles through the wheel washing facilities provided at site exits.						^
S8.63	For concrete batching plant, the requirements and mitigation measures stipulated in the Guidance Note on the Best	To minimize dust impact	Contractor	Concrete Batching Plant	Construction phase	APCO	^

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
	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: (i) 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. (ii) 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. (iii) 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. (iv) 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. (v) Loading of concrete from mixer into transit mixer of a truck – Directly load the concrete from the mixer into the	To minimize dust impact	Contractor	Concrete Batching Plant	Construction phase	APCO	^ ^ ^ ^ ^

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
	transit mixer of a truck in "wet form". (vi) 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. (vii) Transportation of materials within the plant – Provide watering twice a day would be provided.						^ ^
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/m^2 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/m^2 for Kowloon side and 1.0 L/m^2 for Hong	To minimize dust impact	Contractor	Works areas at: • Hung Hom • Cross Harbour section up to Breakwater of CBTS Breakwater of CBTS to SOV • Shek O Casting Basin	Construction phase	APCO	^

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
	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 near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body	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	^ ^ ^ * ^ 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
	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.						N/A
	- 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						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
	program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						
Air Quality (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	All construction sites	Construction stage	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	#
Construction Noise (Airborne)							
S9.55	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may	Control construction airborne noise	Contractor	Works areas	Construction phase	• 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
	be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • 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 9.16	The following quiet PME shall be used: • Crane lorry, mobile • Crane, mobile • Asphalt paver • Backhoe with hydraulic breaker • Breaker, excavator mounted (hydraulic)	To minimize construction noise impact	Contractor	Works areas at: • Hung Hom • Cross Harbour section up to Breakwater of CBTS	Construction stage	• EIAO-TM	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
	• 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			• Breakwater of CBTS to SOV			
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	To minimize construction noise impact	Contractor	Works areas at: • Cross Harbour section up to Breakwater of CBTS • Breakwater of CBTS to SOV	Construction stage	• EIAO-TM	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
	• Concrete pump, stationary/lorry mounted • Excavator • Generator • Grout pump • Hand held breaker • Hydraulic breaker • Saw, concrete						
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	Construction stage	• EIAO-TM	N/A
Water Quality (Construction Phase)							
S11.200 & 201	All excavation and tunnel construction works will be undertaken within the cofferdam and there will be no open dredging. Removal of fender piles of Hung Hom Bypass and minor	To minimize release of sediment and contaminants during temporary reclamation.	Contractor	Marine works at Hung Hom Landfall	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
	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.						N/A
S11.202	All temporary reclamation works will adopt an approach where temporary seawalls will first be formed to enclose each phase of the temporary reclamation. Installation of diaphragm 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 site. Demolition of temporary reclamation including the demolition of the diaphragm wall and dredging to the existing seabed levels will also be carried out behind the temporary seawall.	To minimize loss of fines and contaminants during temporary reclamations	Contractor	All temporary reclamation works areas	Construction phase	• EIAO-TM • WPCO	N/A 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
	Temporary seawall will be removed after completion of all excavation and dredging works for demolition of the temporary reclamation.						N/A
S11. 202	During construction of the temporary reclamation, temporary seawall will be partially constructed to protect the nearby seawater intakes from further dredging activities. For example, the seawalls along the southeast and northeast boundaries of PW1.1 shall be constructed first (above high 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.	To minimize water quality impact upon the cooling water intakes in CBTS from temporary reclamation works	Contractor	Temporary reclamation works areas in CBTS	Construction phase	• EIAO-TM • WPCO	N/A
S11. 202	Dredging will 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 CBTS	Contractor	All temporary reclamation and dredging works areas within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
S11. 202 & Table 11.25	Silt curtains will be deployed to fully enclose the closed grab dredger and shall be extended from water surface to the seabed, as far as practicable, during any dredging operation.	To minimize loss of fines and contaminants during dredging in CBTS	Contractor	All temporary reclamation and dredging 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
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	N/A
S11. 203 & Table 11.24	No more than two dredgers (of about 8 m^3 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 m^3 per day (and 281 m^3 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	N/A
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 sand pump method	To minimize water quality impact in CBTS from marine construction activities	Contractor	All marine works areas within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
ERR 6.7.1	Fill materials removed by air lift or sand pumping method shall be stored inside impermeable compartment of the barge	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
		activities					
ERR 6.7.1	Bulk filling operation within CBTS shall be carried out by closed grab dredger and/or by feeding the fill material into a down pipe for placing of fill materials	To minimize water quality impact in CBTS from marine construction activities	Contractor	All marine works areas within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
EP 2.18.1a	Pipe piles shall be used to form temporary seawalls for IMT construction within CBTS.	To minimize water quality impact in CBTS from IMT construction	Contractor	IMT construction works within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
EP 2.18.1b	The temporary seawalls shall not be removed before completion of all dredging or filling works for IMT construction, except for a small section of pipe piles adjoining IMT11 to facilitate the necessary dredging works for placing the IMT11.	To minimize water quality impact in CBTS from IMT construction	Contractor	IMT construction works within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
EP 2.18.1j	Water quality monitoring shall be conducted at cooling water intake 9 for Windsor House during IMT construction within CBTS. The monitoring frequency, parameters, equipment and methodology shall follow those for dredging and filling as stipulated in the EM&A Manual.	To minimize water quality impact in CBTS from IMT construction	Contractor	IMT construction works within CBTS	Construction phase	• EIAO-TM • WPCO	N/A
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	To minimize loss of fines and contaminants during IMT construction	Contractor	Marine works areas in Victoria Harbour	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
	filling along the IMT alignment shall not be undertaken at the same time.						
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	N/A
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	N/A
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 Harbour	Contractor	Construction of northern IMT segment in the near shore region within 200 m from the Hung Hom landfall	Construction phase	• EIAO-TM • WPCO	^

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
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: • Charge shall be placed in cores within the rock in order 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	To protect the water quality in Victoria Harbour from any possible underwater blasting	Contractor	Marine works areas in Victoria Harbour	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
	conducted prior to any underwater blasting.						
Table 11.23	Silt screens shall be installed at the WSD Flushing Water Intakes at Kowloon Station, Tai Wan, Quarry Bay and Wan Chai (namely Intakes 14, WSD9, WSD17 and A respectively) during any dredging / filling works outside the CBTS for temporary reclamation at SCL2 or for IMT construction	To protect the beneficial use of flushing water intakes in Victoria Harbour from dredging / filling activities	Contractor	Flushing water intake points in Victoria Harbour	Construction phase	• EIAO-TM • WPCO	N/A
S11.210 - S11.211 & Table 11.24 ERR S6.7.1	If the marine works for SCL are to be carried out concurrently with other 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 2,500 m^3 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 156 m^3 per hour (if there are other concurrent marine works in Victoria Harbour) and the maximum working hour for	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

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 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 m^3 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 m^3 per hour (if there is no 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. Only one chiseling machine or hydraulic breaker 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
	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 1,500m^3 per day • the hourly production rate shall not exceed 93m^3						N/A N/A
S11.215	The following good site practices shall be undertaken during filling and dredging: • mechanical grabs, if used, shall be designed and maintained to avoid spillage and sealed tightly while being lifted; • 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 and dredgers shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • construction activities shall not cause foam, oil,	To minimize loss of fines and contaminants from dredging / filling	Contractor	Marine works areas	Construction phase	• EIAO-TM • WPCO	* ^ ^ ^

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
	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 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 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 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. ・Stockpiling of construction and demolition materials and	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	・ EIAO-TM ・ WPCO	^ *

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
	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 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 the potential water quality impacts from any marine piling works: • The potential release of sediment or excavated materials could be controlled through the installation of silt curtains surrounding the working area as necessary. • Spoil shall be collected by sealed hopper barges for proper disposal.	To minimize release of sediment and pollutants from marine piling activities	Contractor	Marine piling works areas	Construction phase	・EIAO-TM ・WPCO	^ ^
S11.218	Silt screens are recommended to be deployed at the seawater intakes during the construction works period. Regular maintenance of the silt screens and refuse collection shall be performed at the silt screens at regular intervals on a daily basis. The Contractor shall be responsible for keeping the water behind the silt screen free from floating rubbish and debris during the impact monitoring period.	To avoid the pollutant and refuse entrapment problems at the silt screens to be installed at the water intakes.	Contractor	Proposed silt screens at water intakes	Construction phase	・EIAO-TM ・WPCO	^
S11.219	It is recommended that collection and removal of floating	To minimize water	Contractor	Marine works	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
	refuse shall be performed within the marine construction areas at regular intervals on a daily basis. The Contractor shall be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish during the dredging works.	quality impacts from illegal dumping and littering from marine vessels and runoff from the coastal area		area	phase	• WPCO • WDO	
S11.220 & 221	Any wastewater including washdown waters and any concrete curing waters generated from the casting basin shall be drained to the wastewater treatment unit. Appropriate treatment process such as sedimentation and oil removal shall be employed for the wastewater treatment units so that any discharge from the casting basin will comply with 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 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	To minimize water quality impacts from the washdown, flooding and draining operation at Shek O Casting Basin	Contractor	Shek O Casting Basin	Construction phase	• EIAO-TM • WPCO	^

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
	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 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.	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 & 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
S11.248	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	• EIAO-TM • WPCO • TM-DSS • WDO	^
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 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	• EIAO-TM • WPCO	N/A N/A N/A 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
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	N/A
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	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	• EIAO-TM • WPCO • TM-DSS • WDO	*

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) (General) Regulation shall be observed and complied with for control of chemical wastes.						
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.	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	• EIAO-TM • WPCO • TM-DSS • WDO	#
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	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	• EIAO-TM • WPCO • TM-DSS • WDO	^ N/A 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
	adequate space shall be allocated to the storage area.						
ERR S 8.5.1	Floating type silt curtains would be installed around the area of construction and removal of earth bund during the respective works.	minimize water quality impact at Shek O Casting Basin	Contractor	Shek O Casting Basin	Construction phase	• WPCO	^
Waste Management (Construction Waste)							
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.	reduce waste management impacts	Contractor	All works sites	Construction phase	• Waste Disposal Ordinance (Cap. 354) • Land (Miscellaneous Provisions) Ordinance (Cap. 28) • DEVB TCW No. 6/2010	^ ^ ^ ^ # ^
S12.76	***Good Site Practices and Waste Reduction Measures***	achieve waste	Contractor	All works sites	Construction	• Waste Disposal	

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
	(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 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.	reduction			phase	Ordinance (Cap. 354) • Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^ ^ ^
S12.77	***Good Site Practices and Waste Reduction Measures (Con't)*** - The Contractor shall prepare and implement a WMP as	achieve waste reduction	Contractor	All works sites	Construction phase	• ETWB TCW No. 19/2005	^

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
	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 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.	achieve waste reduction	Contractor	All works sites	Construction phase	• ETWB TCW No. 19/2005	^
S12.79	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:	minimize potential adverse environmental impacts arising from waste storage	Contractor	All works sites	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
	- 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						^ ^ ^ ^
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	minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All works sites	Construction phase	-	N/A ^ ^ 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
	- 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						^ ^ ^
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	minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All works sites	Construction phase	• DEVB TCW No. 6/2010	^
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.	minimize potential adverse environmental impacts during the handling, transportation and disposal of C&D materials	Contractor	All works sites	Construction phase	• DEVB TCW No. 6/2010 • ETWB TCW No. 33/2002 • ETWB TCW No. 19/2005	^ ^

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 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						^ ^
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 authorityof 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	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^
S12.89	***Sediments*** The contractor for the excavation / dredging works shall apply for the site allocations of marine sediment disposal based on	To determine the best handling and disposal option of the sediments	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea	^

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 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.					Ordinance	
S12.91-12.94	***Sediments*** - 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,	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	^

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
	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 selfmonitoring devices as specified by the DEP. - In order to minimise the exposure to contaminated materials, workers shall, when necessary, wear						^ ^ ^

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
	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 rupture of the containers and sediment loss due to impact of thecontainer 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	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S12.97	***Containers for Storage of Chemical Waste*** The Contractor shall register with EPD as a chemical waste	register with EPD as a Chemical waste	Contractor	All works sites	Construction phase	・Code of Practice on 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
	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	producer and store chemical waste in appropriate containers				Packaging, Labelling and Storage of Chemical Wastes	^ ^ ^
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;	prepare appropriate storage areas for chemical waste at works areas	Contractor	All works sites	Construction phase	• Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	^ ^ ^ ^

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
	- Be covered to prevent rainfall from entering; and - Be properly arranged so that incompatible materials are adequately separated.						^ ^
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.	clearly label the chemical waste at works areas	Contractor	All works sites	Construction phase	• Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	^
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	All works sites	Construction phase	• Waste Disposal (Chemical Waste) (General) Regulation	^
S12.101	***General Refuse*** General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical	properly store and separate from other C&D materials for	Contractor	All works sites	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
	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.	subsequent collection and disposal					
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.	facilitate recycling of recyclable portions of refuse	Contractor	All works sites	Construction phase	-	^
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	raise workers' awareness on recycling issue	Contractor	All works sites	Construction phase	-	^

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 2016 (year)

Contract No: SCL1121
Date Reported: April 2016

Month		Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill from 1111	Imported Fill from 1112	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000tonne)
Jan	1.062	0.000	0.000	19.544	0.000	7.242	13.218	0.000	0.000	0.000	0.000	0.111
Feb	0.308	0.000	0.000	8.572	0.000	3.812	4.306	0.000	0.000	0.000	0.000	0.081
Mar	1.990	0.000	0.000	8.095	0.000	4.132	3.478	0.000	**0.462**	0.000	0.000	0.123
Apr	**1.325**	**0.000**	**0.000**	**16.374**	**0.000**	**3.691**	**11.359**	**0.000**	**0.377**	**0.000**	**0.000**	**0.171**
May												
June												
July												
Aug												
Sept												
Oct												
Nov												
Dec												
Total	**4.685**	**0.000**	**0.000**	**52.285**	**0.000**	**18.877**	**32.361**	**0.000**	**0.839**	**0.000**	**0.000**	**0.486**

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) "*" The inert C&D was delivered to the Hong Hum Barging Point and disposed by 1112.

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

Monthly Summary of Marine Sediment Flow for 2016 (year)

Contract No: SCL1121
Date Reported: April 2016

Month	Volume of Sediments Generated Monthly Bulk Volume)															
	Type 1 – Open Sea Disposa				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 1121	Disposed	Generated from 1111	Generated from 1112	Generated from 1121	Disposed	Generated from 1111	Generated from 1112	Generated from 1121	Disposed	Generated from 1111	Generated from 1112	Generated from 1121	Disposed
Unit	(in '000m^3)				(in '000m^3)				(in '000m^3)				(in '000m^3)			
Jan	0.013	16.584	5.342	21.801	0	0	0	0	0	0.019	21.339	21.339	0	0	0	0
Feb	0.003	1.253	10.172	11.566	0	0	0	0	0	4.041	11.111	15.152	0	0	0	0
Mar	0	3.850	10.842	14.694	0	0	0	0	0	2.298	29.771	32.087	0	0	0	0
Apr	**0**	**0**	**6.253**	**6.253**	**0**	**0**	**6.825**	**6.825**	**0**	**0.358**	**31.814**	**31.814**	**0**	**0**	**0.557**	**0.557**
May																
June																
Sub-Total	**0.016**	**21.687**	**32.609**	**54.314**	**0**	**0**	**6.825**	**6.825**	**0**	**6.716**	**94.035**	**100.392**	**0**	**0**	**0.557**	**0.557**
July																
Aug																
Sept																
Oct																
Nov																
Dec																
Total	**0.016**	**21.687**	**32.609**	**54.314**	**0**	**0**	**6.825**	**6.825**	**0**	**6.716**	**94.035**	**100.392**	**0**	**0**	**0.557**	**0.557**

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
EPD Ref.: K01/RE/00006773-16	Not Specified / Harbourfront Horizon, Hung Hom	Public / 23 March 2016	A resident of Block A, Harbourfront Horizon complains about the construction noise at about 12am from SCL construction sites at Hung Hom.	After investigation, the construction noise was not generated from this Project during the time of complaint. Despite, the Contractor was reminded to fully implement the relevant noise mitigation measures according to the EM&A Manual on site, such as: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • mobile plant should be sited as far away from NSR as possible and practicable; and • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSR.	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
--	--	--	--	--	--

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 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
Total	**5**	**0**	**0**

Appendix C

Monthly EM&A Report for April 2016 – SCL Works Contract 1123 Exhibition Station and Western Approach Tunnel

AECOM

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
April 2016

[May 2016]

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

Version: 0	Date: 11 May 2016

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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 30 April 2016. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Exhibition Station (PTI Area)	• Utilities Diversion/ Protection • Provision of Temporary Footbridge • Demolition Ferry Pier Footbridge • Prebored socket H-Piles (PBSH) & King Post • Diaphragm Wall Works • Remove Temporary PTI and Reinstatement
Exhibition Station (Swimming Pool Area)	• Diaphragm Wall Works
Exhibition Station (Tunnel at Tonnochy Road)	• Diaphragm Wall Works
Western Approach Tunnel WAT	• Diaphragm Wall Works
Western Vent Shaft (WVS)	• Diaphragm Wall Works

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

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 complaint and no 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
Exhibition Station (PTI Area)	• Utilities Diversion/ Protection • Pile/obstruction Removal • Provision of Temporary Footbridge • Demolition Ferry Pier Footbridge • Prebored socket H-Piles (PBSH) & King Post • Diaphragm Wall Works • Remove Temporary PTI and Reinstatement
Exhibition Station (Swimming Pool Area)	• Pile/obstruction Removal • Bridge Assmbly • Diaphragm Wall Works
Exhibition Station (Tunnel at Tonnochy Road)	• Diaphragm Wall Works • Utilities Diversion/ Protection
Western Approach Tunnel WAT	• Temporary Fire Escape Access for HKCEC • Diaphragm Wall Works
Western Vent Shaft (WVS)	• Diaphragm Wall Works

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

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 eleventh monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 30 April 2016.

1.2 Report Structure

1.2.1 This monthly EM&A Report is orgainised 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/D) was issued by the Director of Environmental Protection (DEP) on 5 February 2016.

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**.

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 (PTI Area)	• Utilities Diversion/ Protection • Provision of Temporary Footbridge • Demolition Ferry Pier Footbridge • Prebored socket H-Piles (PBSH) & King Post • Diaphragm Wall Works • Remove Temporary PTI and Reinstatement
Exhibition Station (Swimming Pool Area)	• Diaphragm Wall Works
Exhibition Station (Tunnel at Tonnochy Road)	• Diaphragm Wall Works
Western Approach Tunnel WAT	• Diaphragm Wall Works
Western Vent Shaft (WVS)	• Diaphragm Wall Works

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
MTR	Residential Engineer (ER)	Construction Manager	Mr. Walter Lam	3959 2128	3959 2200
		SCL Project Environmental Team Leader	Mr. Richard Kwan	2688 1283	2993 7577
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
JV	Contractor	Project Director	Mr. Jan Torka	3973 0846	31051126
		Environmental Manager	Mr. Chris Chan	6463 2318	
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. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-436/2012/D	5-Feb-16	-	Valid	-
Construction Noise Permit				
GW-RS1085-15	8-Oct-15	1-Apr-16	Valid	An area near the junction of Convention Avenue and Fleming Road (W12T)
GW-RS1366-15	16-Dec-15	13-Jun-16	Valid	An Area at Wan Chai Sports Ground (W1a, W1b)
GW-RS0059-16	27-Jan-16	26-Jul-16	Valid	An area near Hong Kong Convention and Exhibition Centre (Area A & C, including open areas)
GW-RS0070-16	30-Jan-16	29-Jul-16	Valid	An area near Harbour Road Sports Centre (W9a9b)
GW-RS0256-16	18-Mar-16	30-Apr-16	Valid	A section of Convention Avenue near Fleming Road and a section of Fleming Road near Convention Avenue
GW-RS0270-16	18-Mar-16	30-Jun-16	Valid	An area near Hong Kong Convention and Exhibition Centre (Area A & C)
GW-RS0329-16	5-Apr-16	4-Oct-16	Valid	An area near the junction of Convention Avenue and Fleming Road (Zone 1)
GW-RS0339-16	9-Apr-16	6-Oct-16	Valid	An area near the junction of Convention Avenue and Fleming Road (W12T)
GW-RS0361-16	18-Apr-16	8-May-16	Valid	An area near Convention Avenue (Zone 1)
GW-RS0388-16	23-Apr-16	30-Apr-16	Valid	A section of Convention Avenue near Tonnochy Road (W6T)
GW-RS0394-16	25-Apr-16	21-Oct-16	Valid	An area near Harbour Road Sports Centre (Zone 3)
GW-RS0396-16	25-Apr-16	21-Oct-16	Valid	An Area at Wan Chai Sports Ground (Zone 4)
Wastewater Discharge License				
WT00021388-2015	14-Apr-15	30-Apr-20	Valid	For Site Portions W16, W17, W18a
WT00021864-2015	15-Jun-15	30-Jun-20	Valid	For Site Portion W12T (PTI)
WT00022480-2015	4-Sep-15	30-Sep-20	Valid	For site portion W1a, W1b
WT00022482-2015	4-Sep-15	30-Sep-20	Valid	For site portion W9a, W9b
WT00023006-2015	26-Nov-15	30-Nov-20	Valid	For site portion W6T
Chemical Waste Producer Registration				
5213-135-L2881-01	02-Apr-15	End of the Project	Valid	For Whole Site

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Billing Account for Construction Waste Disposal				
7021736	16-Feb-15	End of Contract	Valid	For Disposal of C&D Waste
Notification Under Air Pollution Control (Construction Dust) Regulation				
385128	04-Feb-15	End of Contract	Valid	For Whole Site

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:10380 and 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]	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.

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.
(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 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/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.

(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 April 2016 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	B&K (Model No. 2238 (S/N: 2800927), (S/N: 2800930))
Acoustic Calibrator	Rion (Model No. NC-73 (S/N: 10307223))

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.
[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 and EPD's formal approval is awaited in August 2014.

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:

(i) frequency weighting: A
(ii) time weighting: Fast
(iii) time measurement: $L_{eq(30\text{-}minutes)}$ 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}, L_{10} and L_{90} 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 April 2016 is provided in **Appendix F**.

3.3 Continuous noise monitoring

3.3.1 According to EP conditions under EP-436/2012/B (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 October 2015 and July 2015 respectively, it is predicted that no residual air-borne construction noise impact excceding 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.**

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/D)	Monthly EM&A Report for March 2016	14 April 2016

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 ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM2#	51.7	34.1 – 69.0	160	260
AM3	66.6	53.1 – 88.6	169	260

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

5.1.3 No Action and Limit Level exceedance was 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 – 69.8	75

(*) Baseline correction will be made to the measured L_{eq} when the measured noise level exceeded the corresponding baseline noise level and presented in the table.

5.2.2 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.

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.

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, 4,944m^3 of inert C&D material was generated (4,514m^3 was disposed of as public fill and 12m^3 were reused in other projects) in the reporting month. 418m^3 of imported fill from other project. 64m^3 general refuse was generated in the reporting month. 5,315kg of metals, 350kg of paper/cardboard packaging material and 10kg of plastic was collected by recycling contractor in the reporting month. 400kg of chemical waste was collected by licensed contractor in the reporting period. 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 Practise 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 1, 15 and 29 April 2016. 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**.

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, 5 site inspections were carried out on 1, 8, 15, 22 and 29 April 2016. Joint inspection with the IEC, ER, the Contractor and the ET was conducted on 15 April 2016. 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	8 Apr 16	• Mud trail was observed at the entrance of Zone 1 (PTI). The Contractor should ensure the vehicle wheels are fully washed before leaving site.	The item was rectified by the Contractor on 11 Apr 16.
	15 Apr 16	• Mud trail was observed at the entrance of Zone 1. The Contractor should remove the mud trail and ensure the vehicle wheels are fully washed before leaving site.	The item was rectified by the Contractor on 15 Apr 16.
		• Sand material placed near the public road was observed at Zone 2. The Contractor should provide preventive measures to prevent site material deposit on public area.	The item was rectified by the Contractor on 20 Apr 16.
	29 Apr 16	• Reminder: The Contractor was reminded to enhance the enclosure of the cement mixing plant at WAT to avoid dust emission.	The item will be followed up in May 16.
Noise	Nil	Nil	Nil
Water Quality	1 Apr 16	• Potential surface runoff from the site was observed at Zone1&2 (PTI). The Contractor should provide sufficient preventive measures on site.	The item was rectified by the Contractor on 6 Apr 16.
	15 Apr 16	• Reminder: The Contractor was reminded to provide sufficient preventive measures along the water barriers at Zone 2 and the gully at Zone 1 to prevent potential runoff from site.	The item was rectified by the Contractor on 20 Apr 16.
	22 Apr 16	• Reminder: Debris was found accumulated on the gullies in Zone 3. The Contractor was reminded to remove the debris regularly to prevent drainage blockage.	The item was rectified by the Contractor on 26 Apr 16.
		• Reminder: Water was observed accumulated in general site during heavy rain. The Contractor was reminded to implement preventive measures to prevent from water runoff overflow.	
	29 Apr 16	• Silty water ponding was observed at the entrance of Zone 1. The Contractor should remove the water ponding properly.	The item will be followed up in May 16.
		• Reminder: The Contractor was reminded to keep the u-channel clean at Zone 4.	
Waste/ Chemical Management	1 Apr 16	• Open drain hole of drip tray was observed at Zone 1&2 (PTI). The Contractor should cover the drain hole of drip tray to prevent leakage.	The item was rectified by the Contractor on 6 Apr 16.
	15 Apr 16	• Oil stain was observed at Zone 2. The Contractor should remove the oil stain and dispose of as chemical waste properly.	The item was rectified by the Contractor on 15 Apr 16.
	22 Apr 16	• Chemical containers inside the chemical storage cupboard in Zone 1 were found without chemical labels. The Contractor should affix chemical labels on those containers.	The item was rectified by the Contractor on 26 Apr 16.
Landscape & Visual	Nil	Nil	Nil
Permits/ Licenses	1 Apr 16	• Reminder: The Contractor was reminded to display the copy of EP at the new site entrance of Zone 1&2 (under the footbridge) for public information.	The item was rectified by the Contractor on 6 Apr 16.

All 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.

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**.

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works in between May 2016 and July 2016 will be:

Location	Site Activities (to be updated)
Exhibition Station (PTI Area)	• Utilities Diversion/ Protection • Pile/obstruction Removal • Provision of Temporary Footbridge • Demolition Ferry Pier Footbridge • Prebored socket H-Piles (PBSH) & King Post • Diaphragm Wall Works • Remove Temporary PTI and Reinstatement
Exhibition Station (Swimming Pool Area)	• Pile/obstruction Removal • Bridge Assmbly • Diaphragm Wall Works
Exhibition Station (Tunnel at Tonnochy Road)	• Diaphragm Wall Works • Utilities Diversion/ Protection
Western Approach Tunnel WAT	• Temporary Fire Escape Access for HKCEC • Diaphragm Wall Works
Western Vent Shaft (WVS)	• Diaphragm Wall Works

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 May 2016 and July 2016 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 All 24-hour TSP monitoring results 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 5 nos. of environmental site inspections were carried out in April 2016. 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 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

- Implement effective/preventive measures and provide sufficient wheel washing facility to avoid dust impact.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Implement effective/preventive measures to avoid water quality impact.

Chemical and Waste Management

- Provide proper chemical/chemical waste management.

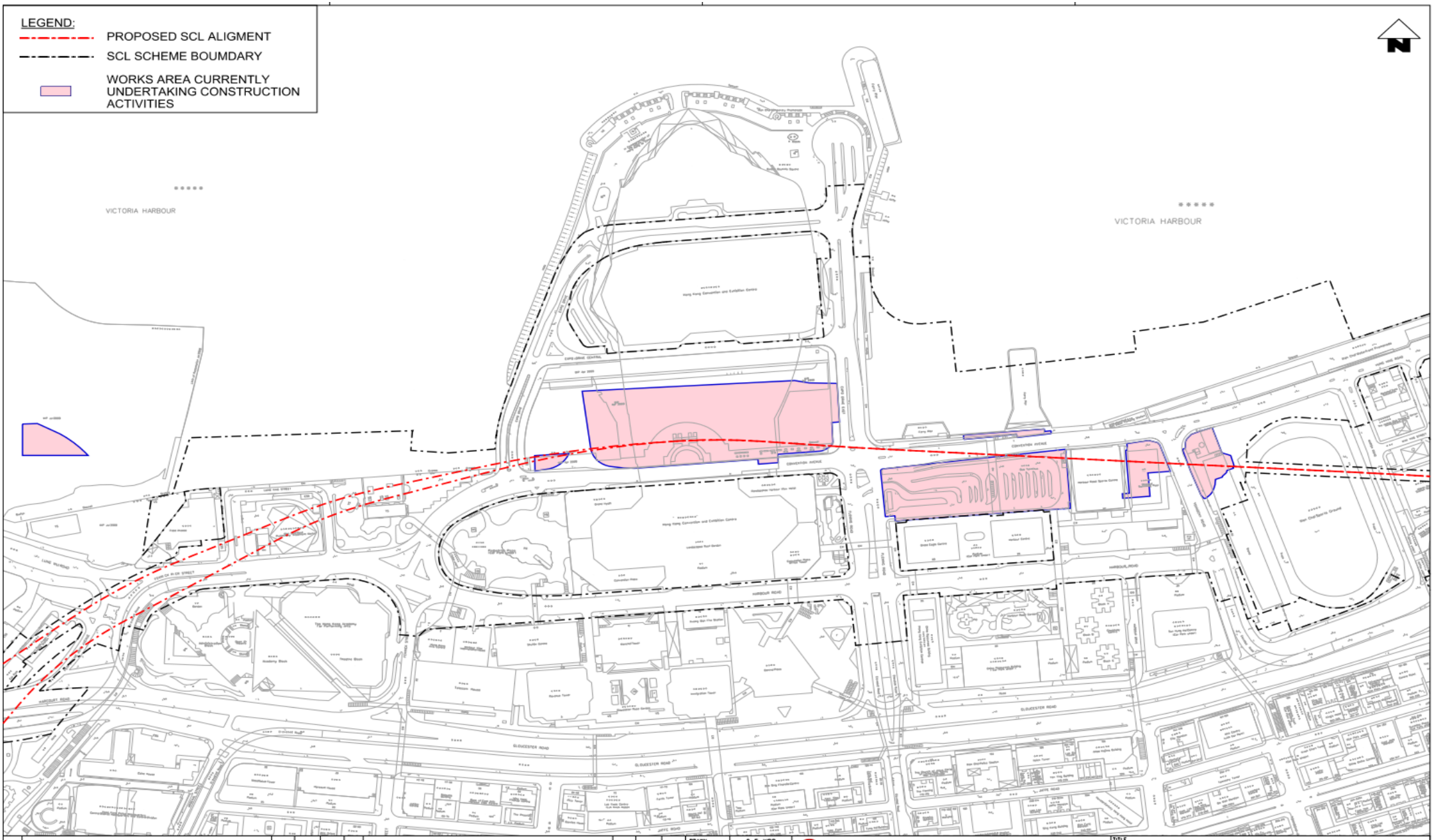
Landscape & Visual Impact

- No specific observation was identified in the reporting month.

Permits/licenses

- Display the latest permit at every site entrance/exit for public information.

FIGURES



REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	C.F.WOO
DESIGNED	---
CHECKED	---
APPROVED	---
DATE	19/MAR/2015

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SHATIN TO CENTRAL LINK – CONTRACT 1123

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TITLE

CONTRACT 1123
EXHIBITION STATION AND WESTERN APPROACH TUNNEL

SITE LAYOUT PLAN

SCALE	DRAWING NO.	REV.
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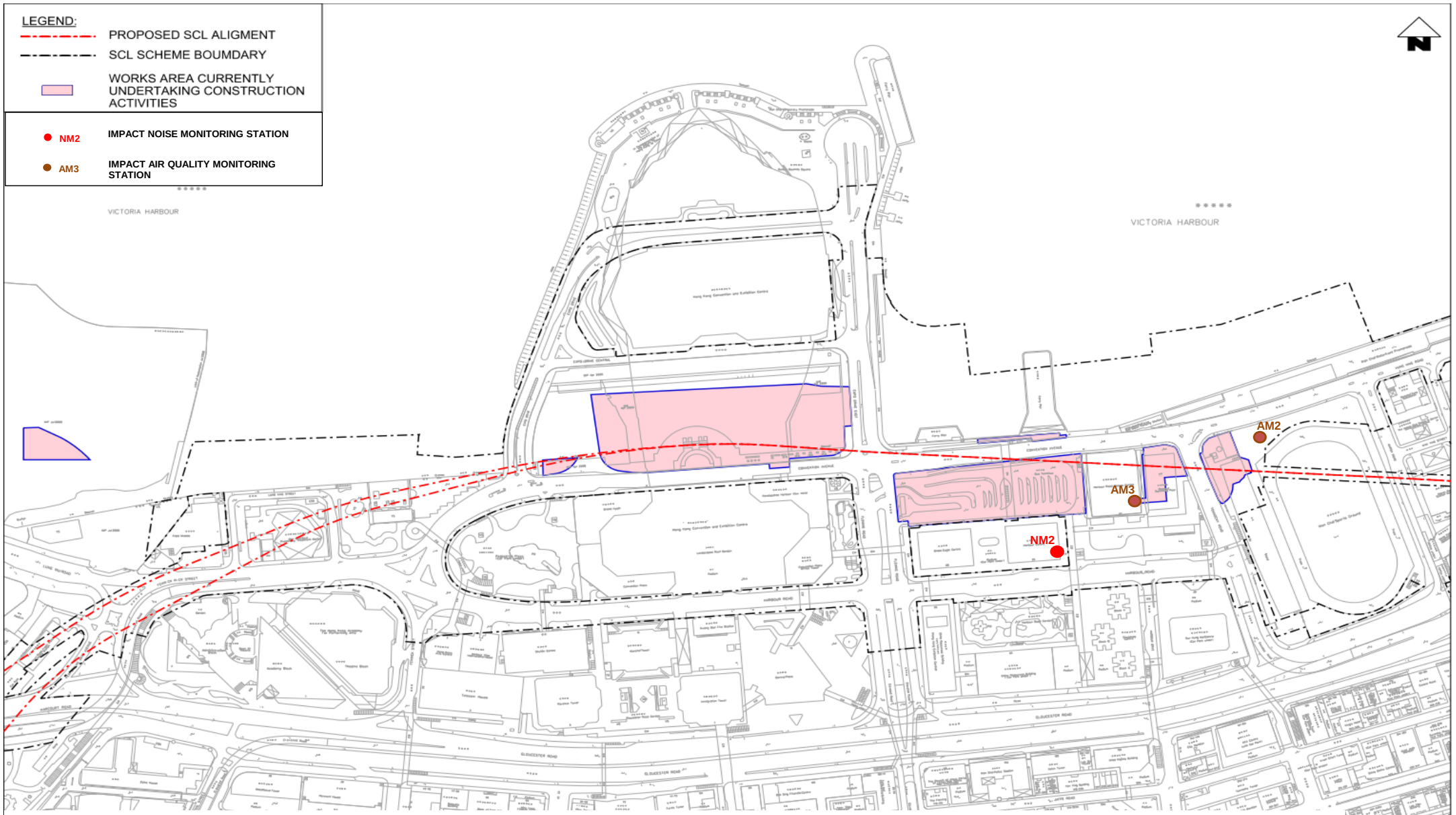

* The air quliaty monitoring at AM2 was handed over from Contract SCL1128 on 28 October 2015.

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	C.F.WOO
DESIGNED	---
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TITLE
CONTRACT 1123
EXHIBITION STATION AND WESTERN APPROACH TUNNEL
LOCATION OF NOISE AND AIR QUALITY MONITORING

SCALE 1 : 3000 @A3

DRAWING NO. FIGURE 3.1

REV. E

APPENDIX A

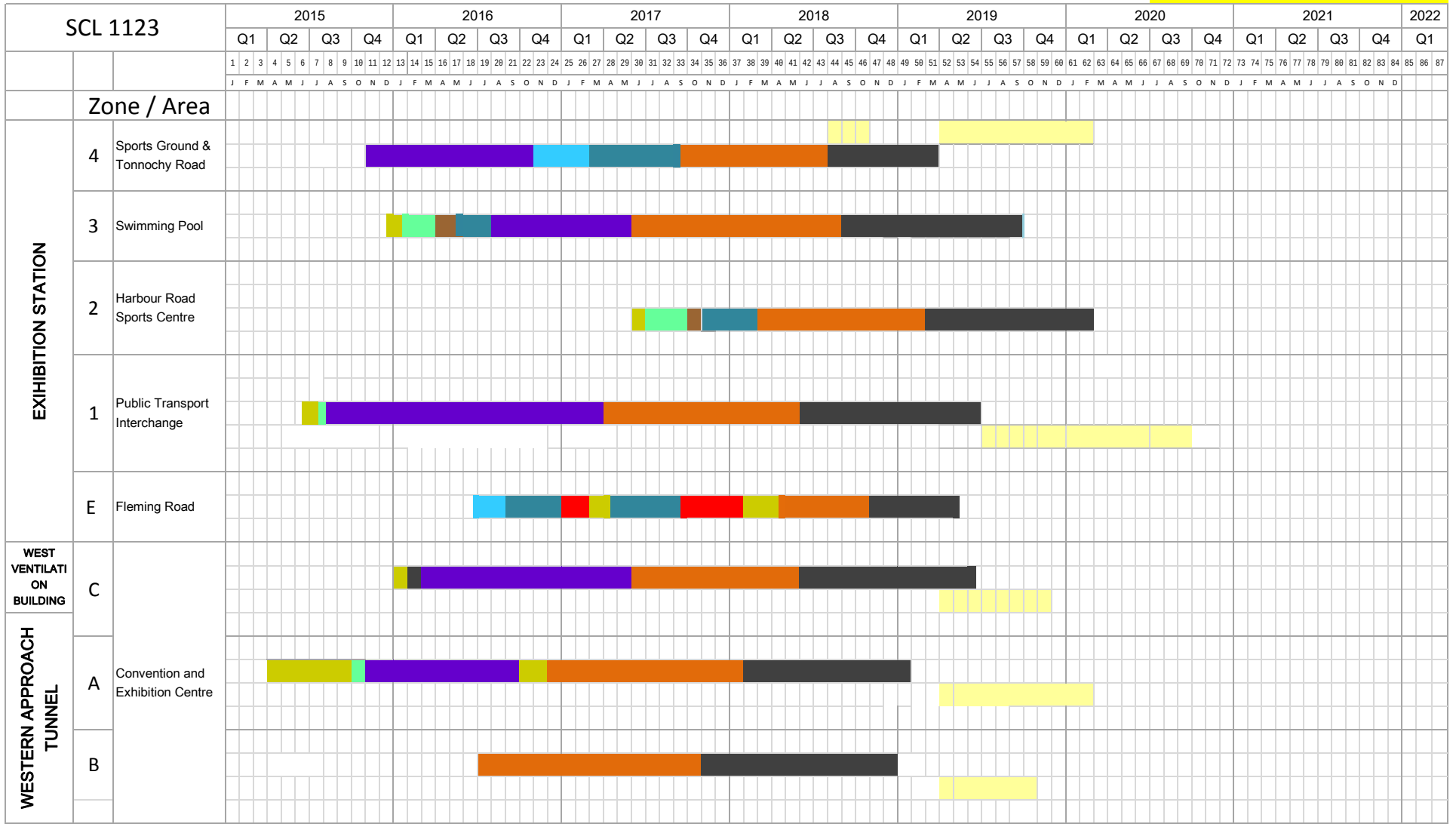
Construction Programme

MTR SCL 1123 - Exhibition Station and Western Approach Tunnel

High Level Programme

Leighton - China State Joint Venture

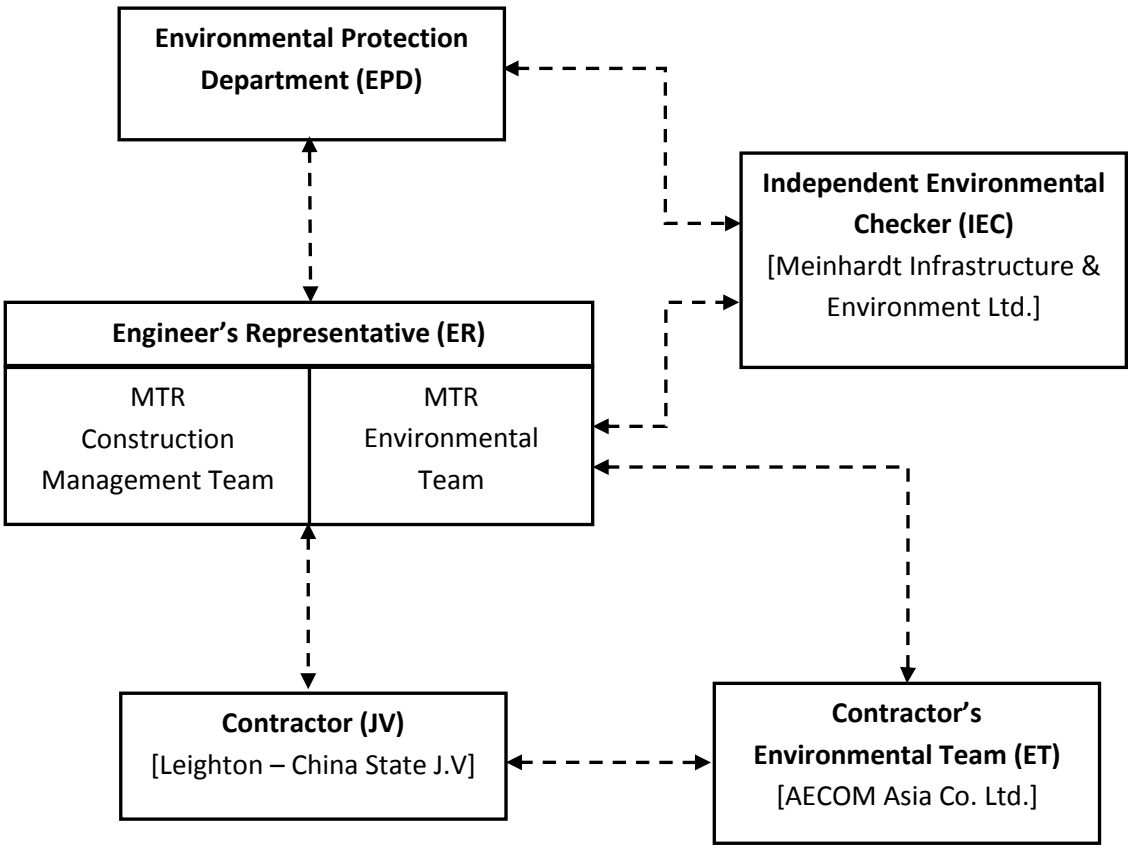
PMP-rev.B 16/06/2015



APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure



APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

Appendix C – Environmental Mitigation Implementation Schedule

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 Heritage 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 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 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/m^2 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	To minimize dust impacts	Contractor	All barging points	Construction phase	N/A

Appendix C – Environmental Mitigation Implementation Schedule

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
	equivalent intensity of no less than 1.0L/m^2 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.					
S8.63	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)* 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: (i) 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. (ii) 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. (iii) 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. (iv) 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. (v) 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”. (vi) 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. (vii) 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	N/A

Appendix C – Environmental Mitigation Implementation Schedule

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
S8.90	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 process in order to enforce controls and modify method of work if dusty conditions arise	To minimize dust impacts	Contractor	Works areas	Construction phase	V V V V N/A @ N/A V N/A V V 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
/	***Dust suppression measures (con't)*** • The portion of any road where along the site boundary should be kept clear of dusty materials.	To minimize dust impacts	Contractor	Works areas	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 areas	Construction phase	V V V
Airborne Noise Impact						
Construction 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 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	To minimize construction noise impact	Contractor	Works areas	Construction phase	V N/A V V N/A

Appendix C – Environmental Mitigation Implementation Schedule

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
	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					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 Tunnel	Construction phase	V V N/A V N/A N/A N/A N/A N/A V V V V V N/A N/A N/A 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 breaker • Saw, concrete	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 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 N/A

Appendix C – Environmental Mitigation Implementation Schedule

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 Quality Impact						
Construction 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. • Stockpiling of construction and demolition materials and 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 disposed of as soon as possible to avoid being washed into the nearby receiving waters.	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 V N/A
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” shall be followed where practicable. <u>Surface Run-off</u> • 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 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 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. • 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. • Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be 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 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.	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	Works areas	Construction Phase	@ V V V N/A N/A 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
	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 bentonite slurries shall either be dewatered or mixed with inert fill material for disposal to a public filling area.					N/A
	• 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 as far as practicable. Surplus unpolluted water will be discharged into storm drains.					N/A
	• 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 tank on a regular basis.					N/A
	• Drainage serving an open oil filling point shall be connected to storm drains via petrol interceptors with peak storm bypass.					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.					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

Appendix C – Environmental Mitigation Implementation Schedule

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) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. 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

Appendix C – Environmental Mitigation Implementation Schedule

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 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	Construction Phase	N/A N/A N/A
Waste Management Implications						
Construction 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; • 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 Work Sites	Construction Phase	V V V N/A N/A N/A
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 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.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	N/A N/A N/A V V 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

Appendix C – Environmental Mitigation Implementation Schedule

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; • 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	Work Sites	Construction Phase	N/A N/A 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 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 collection and disposal	Contractor	Work Sites	Construction Phase	V V N/A V V 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. • 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	Work Sites	Construction Phase	V N/A V 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

Appendix C – Environmental Mitigation Implementation Schedule

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: • 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	Work Sites	Construction Phase	V V @

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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; • 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	Work Sites	Construction Phase	V V V 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
/	***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 N/A
Land Contamination 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

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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;	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

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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
	• 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.					

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 $\mu g/m^3$	260 $\mu g/m^3$
AM3	Existing Harbour Road Sports Centre	169 $\mu g/m^3$	260 $\mu g/m^3$

* 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 E

Calibration Certificates of Equipments

AECOM Asia Company Limited
TSP High Volume Sampler
Field Calibration Report

Station: Wanchai Sports Ground
Cal. Date: 22-Mar-16
Equipment No.: A-001-72T

Operator: Leung Yiu Ting
Next Due Date: 22-May-16
Serial No. 809

Ambient Condition			
Temperature, Ta (K)	290	Pressure, Pa (mmHg)	758.8

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.97831	Intercept, bc	0.01264
Last Calibration Date:	29-May-15	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-May-16				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	7.0	2.68	1.35	48.0	48.62
13	6.2	2.52	1.27	42.0	42.54
10	4.8	2.22	1.12	34.0	34.44
7	3.2	1.81	0.91	26.0	26.34
5	2.4	1.57	0.79	20.0	20.26

By Linear Regression of Y on X

Slope , mw = 48.6150 **Intercept, bw =** -18.3417

Correlation Coefficient* = 0.9906

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2}$ = **44.29**

Remarks:

QC Reviewer: K Y Shum Signature: Date: 22/3/16

AECOM Asia Company Limited
TSP High Volume Sampler
Field Calibration Report

Station	Exiting Harbour Road Sports Centre (AM3)	Operator:	Suen Hon Yeung
Cal. Date:	22-Mar-16	Next Due Date:	22-May-16
Equipment No.:	A-001-15T	Serial No.	10380

Ambient Condition			
Temperature, Ta (K)	290	Pressure, Pa (mmHg)	758.8

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.97831	Intercept, bc	0.01264
Last Calibration Date:	29-May-15	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-May-16				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	7.5	2.77	1.40	46.0	46.59
13	6.1	2.50	1.26	38.0	38.49
10	4.9	2.24	1.13	32.0	32.41
7	4.0	2.03	1.02	26.0	26.34
5	2.9	1.72	0.87	20.0	20.26

By Linear Regression of Y on X

Slope , mw = **49.7583** **Intercept, bw =** **-23.5489**

Correlation Coefficient* = **0.9954**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **40.61**

Remarks:

QC Reviewer: Ky Shum Signature: Date: 22/3/16

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 29, 2015 Rootsmeter S/N 0438320 Ta (K) - 297
Operator Tisch Orifice I.D. - 0988 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3980	3.2	2.00
2	NA	NA	1.00	0.9910	6.3	4.00
3	NA	NA	1.00	0.8790	7.8	5.00
4	NA	NA	1.00	0.8380	8.6	5.50
5	NA	NA	1.00	0.6890	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9934	0.7106	1.4125
0.9893	0.9983	1.9976
0.9872	1.1231	2.2334
0.9862	1.1769	2.3424
0.9809	1.4237	2.8251

Qstd slope (m) = 1.97831
intercept (b) = 0.01264
coefficient (r) = 0.99985

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7123	0.8866
0.9917	1.0007	1.2539
0.9896	1.1258	1.4019
0.9886	1.1797	1.4703
0.9833	1.4271	1.7732

Qa slope (m) = 1.23878
intercept (b) = 0.00793
coefficient (r) = 0.99985

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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Fax : (852) 2555 7533

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-02 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800927	,	2791214
Adaptors used:	-	,	-

Item submitted by

N-009 06

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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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HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-02 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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 Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	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	
	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 Uncertainty (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.

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800930	,	2250455
Adaptors used:	-	,	-

Item submitted by

N·009·07

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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 Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	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	
	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 Uncertainty (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.

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA1203 03 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10307223
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Dec-2015

Date of test: 03-Dec-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2239857	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	50 ± 10 %
Air pressure:	1010 ± 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.

3, 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.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 04-Dec-2015 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA1203 03 **Page:** 2 **of** 2

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	94.04	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 = 0.002 dB**

Estimated expanded uncertainty 0.005 dB

3, 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 = 987.5 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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.

- End -

Calibrated by: Fung Chi Yip **Date:** 03-Dec-2015

Checked by: Lam Tze Wai **Date:** 04-Dec-2015

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.

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel
Impact Monitoring Schedule for April 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Apr	2-Apr
3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
		Air Quality	Noise			
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
	Air Quality	Noise				Air Quality
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
	Noise				Air Quality	
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
				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
AM3 Existing Harbour Road Sports Centre

Monitoring Frequency
24-hr TSP Once every 6 days

Noise Monitoring Station
NM2 Harbour Centre

Monitoring Frequency
Once per week

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel
Tentative Impact Monitoring Schedule for May 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-May	2-May	3-May	4-May	5-May	6-May	7-May
			Air Quality	Noise		
8-May	9-May	10-May	11-May	12-May	13-May	14-May
		Air Quality	Noise		Air Quality	
15-May	16-May	17-May	18-May	19-May	20-May	21-May
	Noise			Air Quality		
22-May	23-May	24-May	25-May	26-May	27-May	28-May
			Air Quality	Noise		
29-May	30-May	31-May				
		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
AM3 Existing Harbour Road Sports Centre

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 June 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jun	2-Jun	3-Jun	4-Jun
			Noise			
5-Jun	6-Jun	7-Jun	8-Jun	9-Jun	10-Jun	11-Jun
	Air Quality	Noise				Air Quality
12-Jun	13-Jun	14-Jun	15-Jun	16-Jun	17-Jun	18-Jun
	Noise		Air Quality			
19-Jun	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun
		Air Quality	Noise			
26-Jun	27-Jun	28-Jun	29-Jun	30-Jun		
	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
AM3 Existing Harbour Road Sports Centre

Monitoring Frequency
24-hr TSP Once every 6 days

Noise Monitoring Station
NM2 Harbour Centre

Monitoring Frequency
Once per week

Shatin to Central Link Contract 1123 - Exhibition Station and Western Approach Tunnel
Tentative Impact Monitoring Schedule for July 2016

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

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

Air Quality Monitoring Station
AM2 Wan Chai Sports Ground
AM3 Existing Harbour Road Sports Centre

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

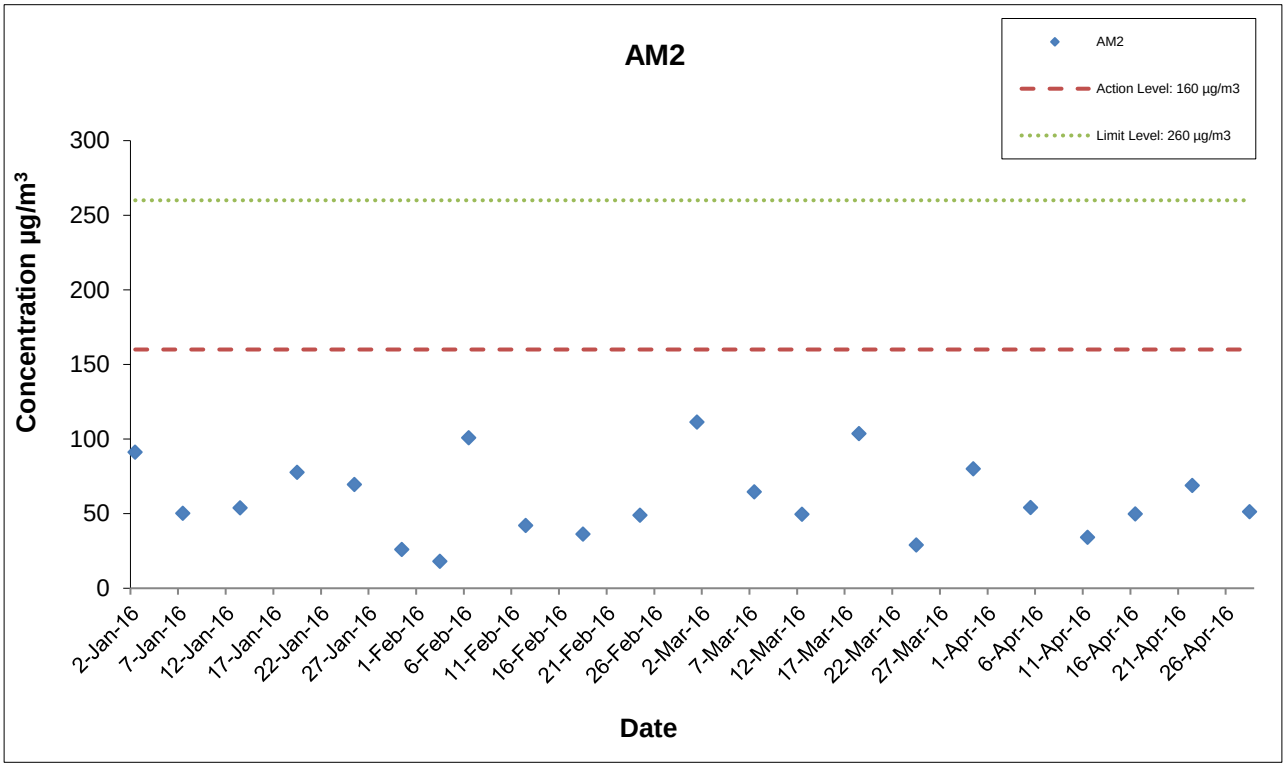
Appendix G
Air Quality Monitoring Results

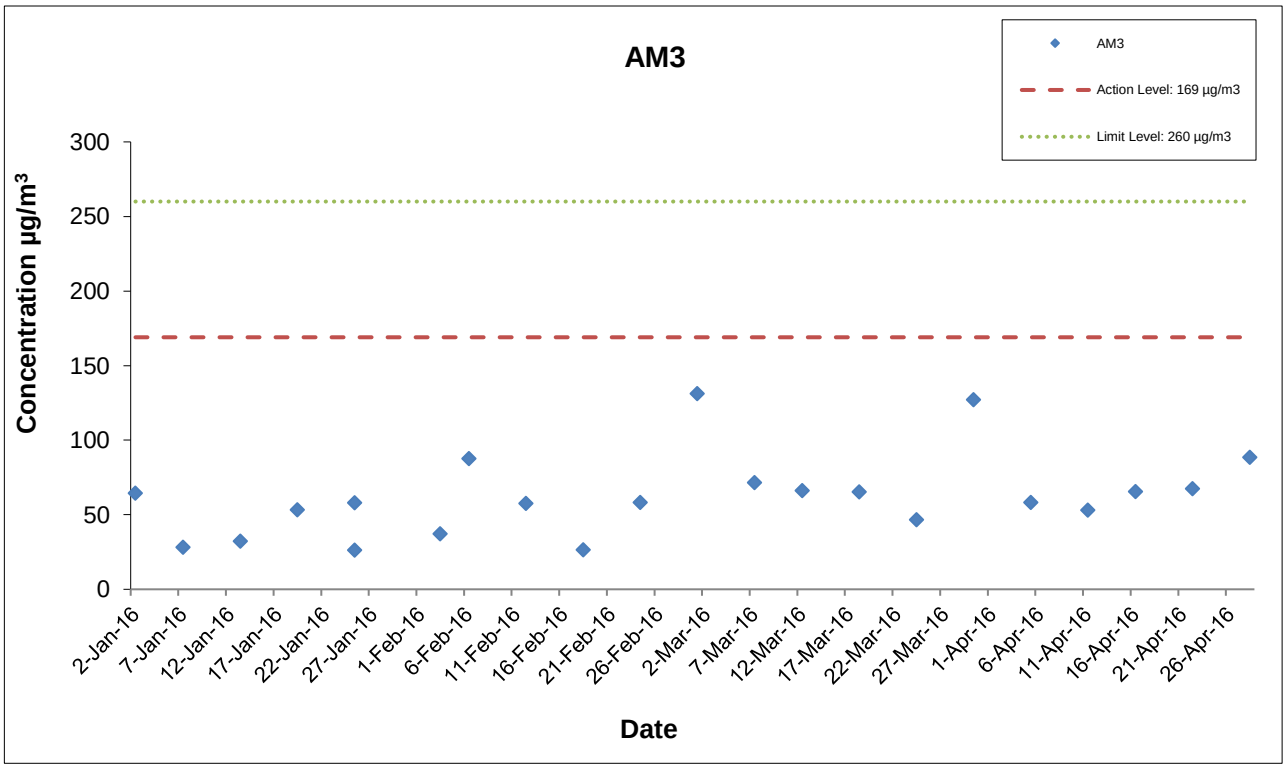
24-hour TSP Monitoring Results at Station AM2 (Wan Chai Sports Ground)

Start		End		Weather	Air	Atmospheric	Flow Rate (m^3/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (^oC)	Pressure (hPa)	Initial	Final	(m^3/min)	(m^3)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	($\mu g/m^3$)
5-Apr-16	0:00	6-Apr-16	0:00	Cloudy	22.3	1013.3	1.26	1.26	1.26	1818.7	2.8555	2.9538	0.0983	18402.06	18426.06	24.00	54.0
11-Apr-16	0:00	12-Apr-16	0:00	Cloudy	21.5	1010.1	1.26	1.26	1.26	1818.7	2.8833	2.9454	0.0621	18426.06	18450.06	24.00	34.1
16-Apr-16	0:00	17-Apr-16	0:00	Cloudy	24.7	1010.5	1.26	1.26	1.26	1818.7	2.8577	2.9484	0.0907	18450.06	18474.06	24.00	49.9
22-Apr-16	0:00	23-Apr-16	0:00	Cloudy	24.9	1008.2	1.26	1.26	1.26	1818.7	2.7937	2.9192	0.1255	18474.06	18498.06	24.00	69.0
28-Apr-16	0:00	29-Apr-16	0:00	Sunny	26.0	1010.4	1.26	1.26	1.26	1818.7	2.8982	2.9916	0.0934	18498.06	18522.06	24.00	51.4
																Average	**51.7**
																Minimum	**34.1**
																Maximum	**69.0**

24-hour TSP Monitoring Results at Station AM3 (Existing Harbour Road Sports Centre)

Start		End		Weather	Air	Atmospheric	Flow Rate (m^3/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (^oC)	Pressure (hPa)	Initial	Final	(m^3/min)	(m^3)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	($\mu g/m^3$)
5-Apr-16	0:00	6-Apr-16	0:00	Cloudy	22.3	1013.3	1.27	1.27	1.27	1833.1	2.8677	2.9743	0.1066	4747.82	4771.82	24.00	58.2
11-Apr-16	0:00	12-Apr-16	0:00	Cloudy	21.5	1010.1	1.27	1.27	1.27	1833.1	2.9040	3.0014	0.0974	4771.82	4795.82	24.00	53.1
16-Apr-16	0:00	17-Apr-16	0:00	Cloudy	24.7	1010.5	1.27	1.27	1.27	1833.1	2.8580	2.9783	0.1203	4795.82	4819.82	24.00	65.6
22-Apr-16	0:00	23-Apr-16	0:00	Cloudy	24.9	1008.2	1.27	1.27	1.27	1833.1	2.8582	2.9821	0.1239	4819.82	4843.82	24.00	67.6
28-Apr-16	0:00	29-Apr-16	0:00	Sunny	26.0	1010.4	1.27	1.27	1.27	1833.1	2.8931	3.0555	0.1624	4843.82	4867.82	24.00	88.6
																Average	**66.6**
																Minimum	**53.1**
																Maximum	**88.6**

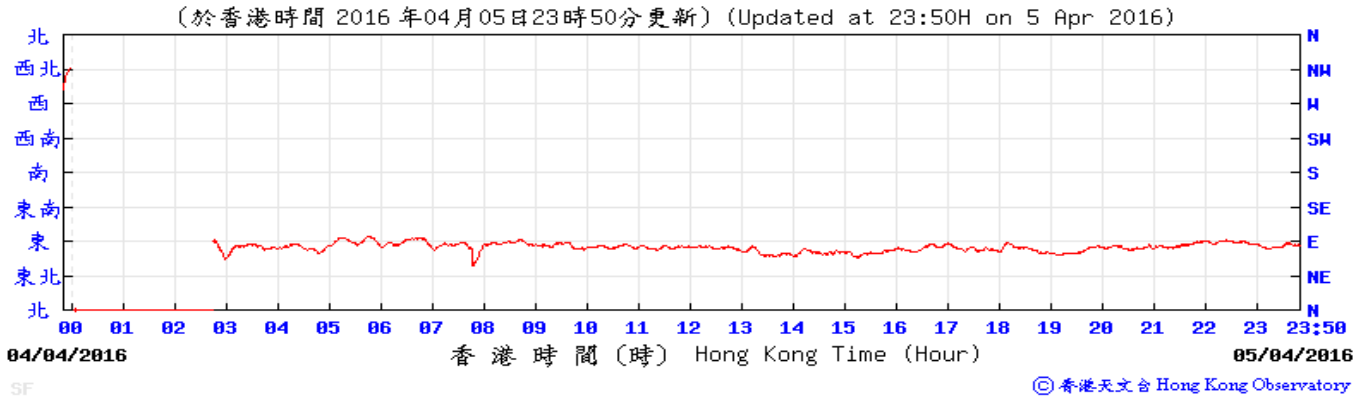


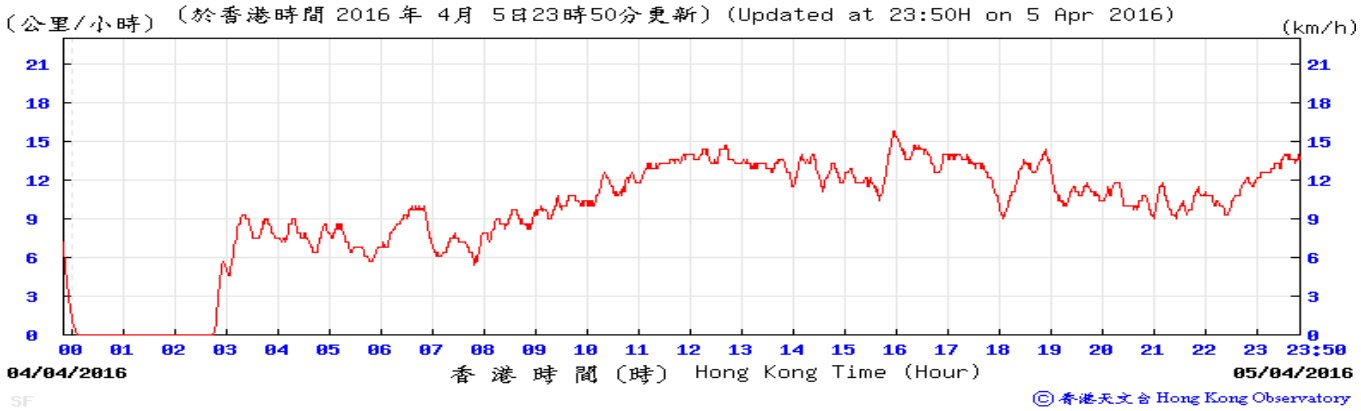


* The monitoring station at AM2 was handed over from Contract SCL1128 on 28 October 2015.

Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

5-Apr-16



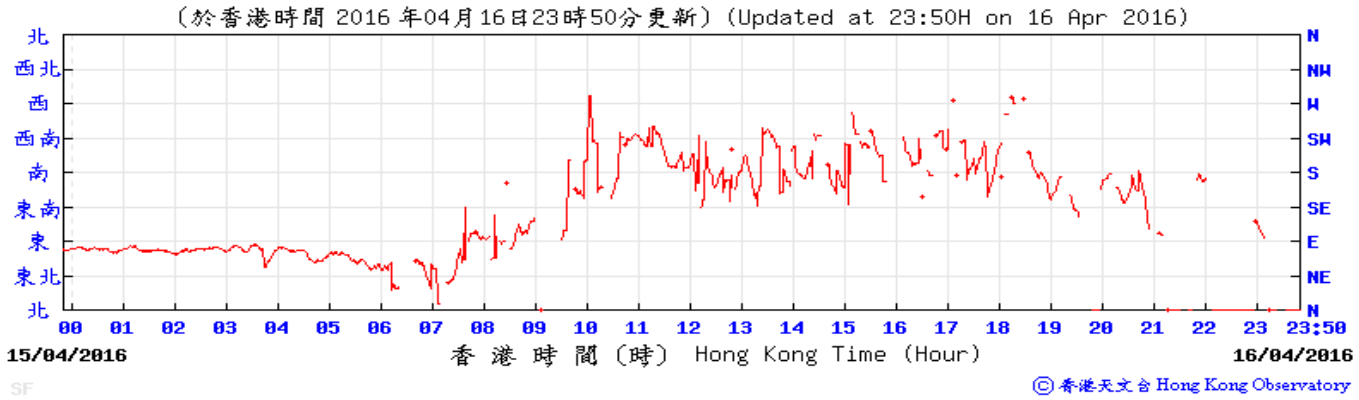


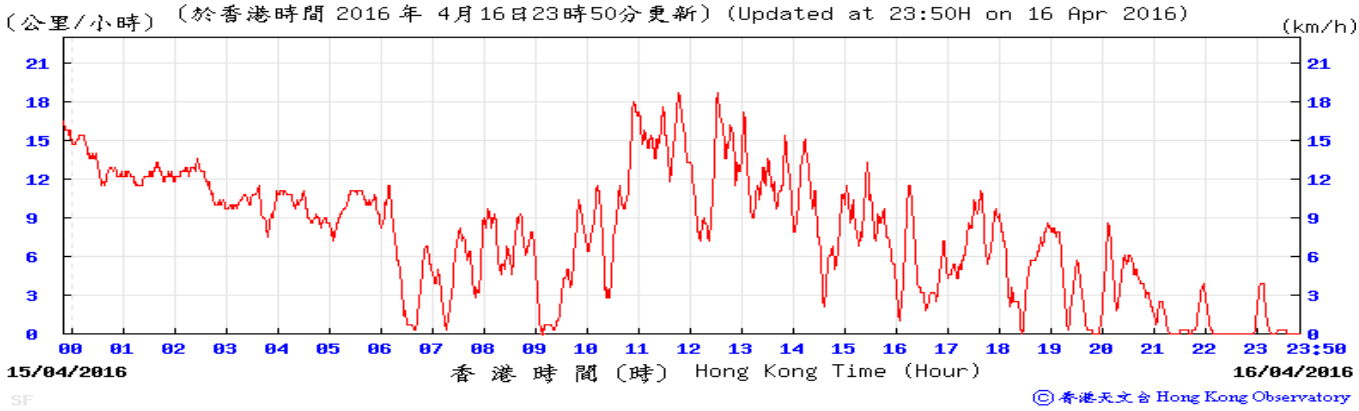
11-Apr-16

No meteorological information was availiable from the HKO.

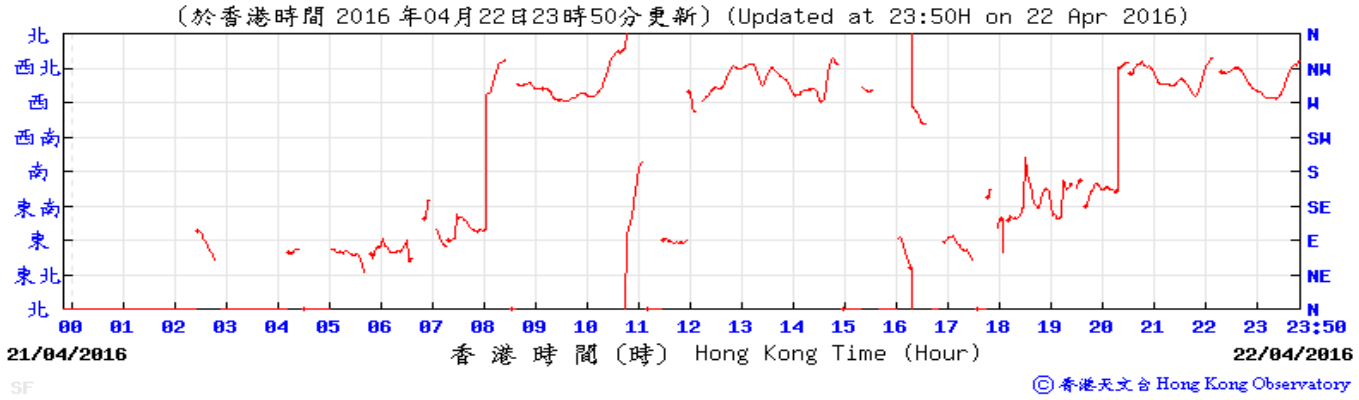
Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

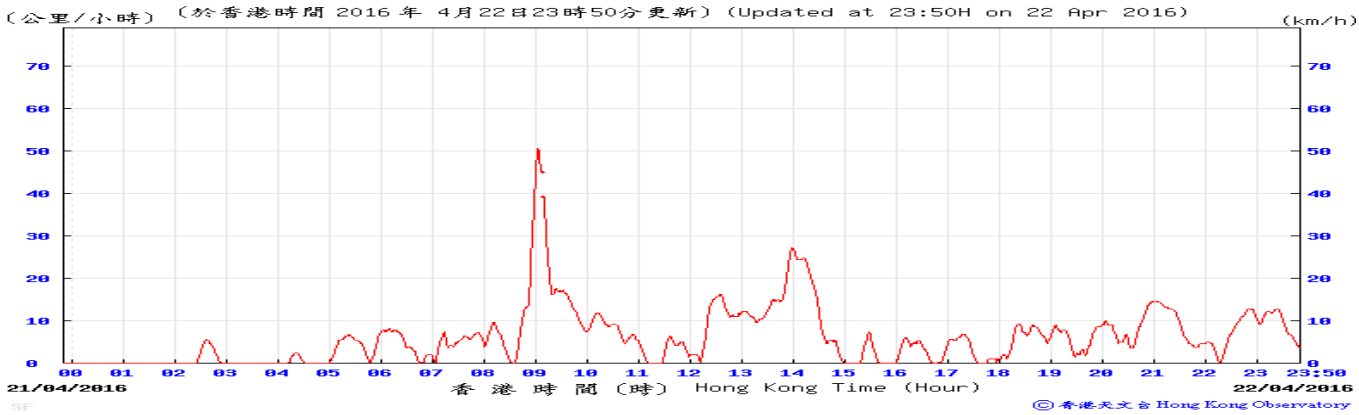
16-Apr-16





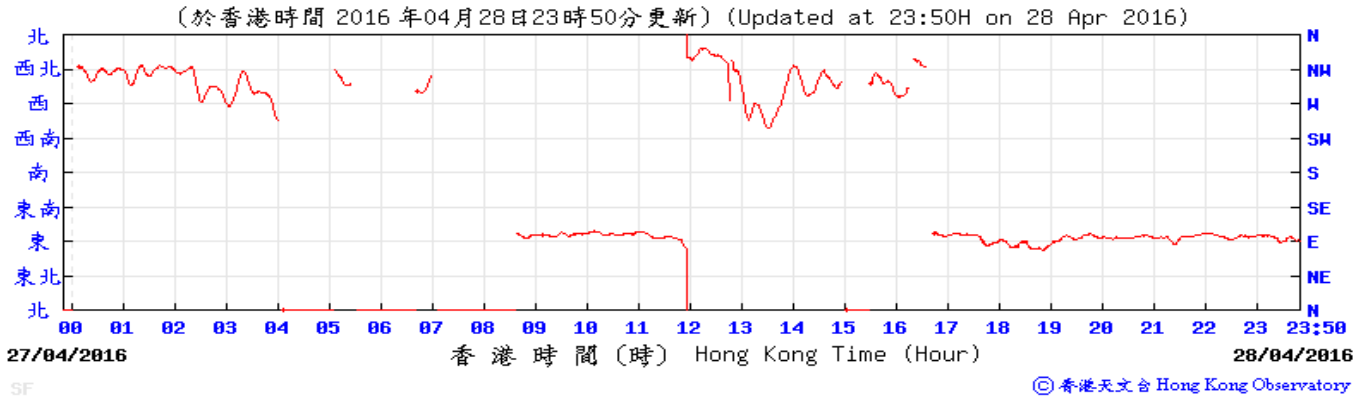
22-Apr-16

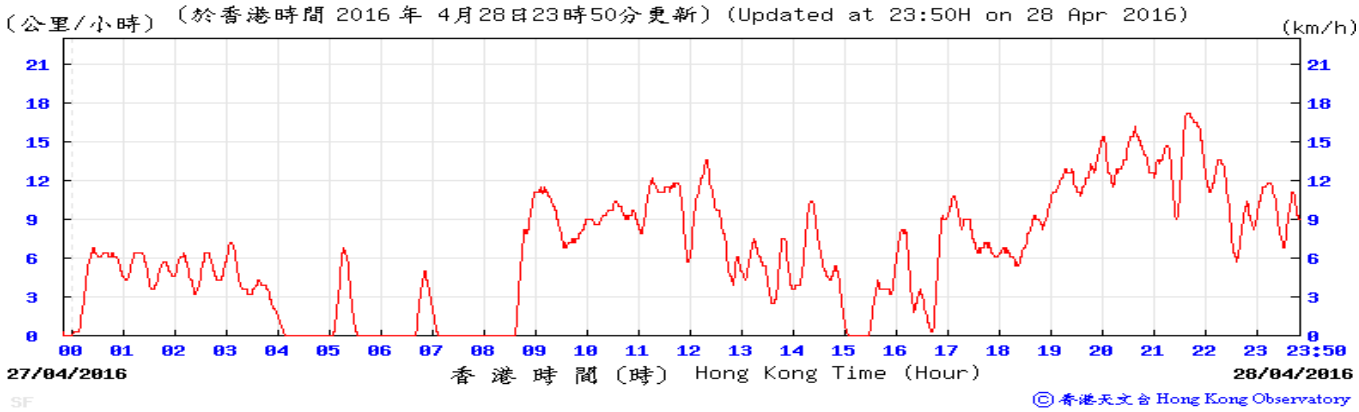




Appendix G – Extract of Meteorological Observations for Star Ferry Automatic Weather Station, April 2016

28-Apr-16





APPENDIX H

Noise Monitoring Results and their Graphical Presentations

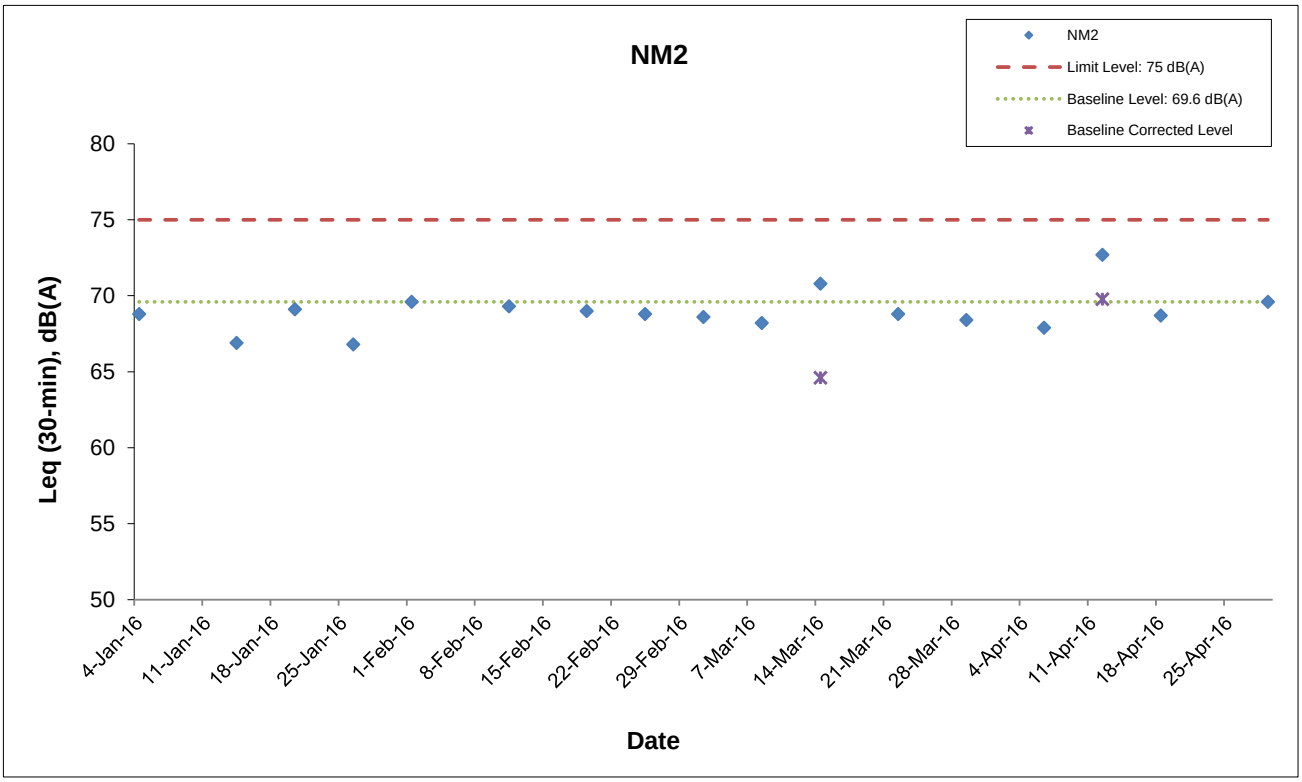
Appendix H Regular Construction Noise Monitoring Results

Daytime Noise Monitoring Results at Station NM2 (Harbour Centre)

Date	Weather Condition	Noise Level for 30-min, dB(A)+				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
6-Apr-16	Cloudy	14:17	64.4	69.1	67.9	<Baseline	69.6	75	N
12-Apr-16	Fine	14:16	69.0	74.5	72.7	69.8	69.6	75	N
18-Apr-16	Cloudy	13:00	66.0	69.5	68.7	<Baseline	69.6	75	N
29-Apr-16	Sunny	14:00	68.0	72.0	69.6	=Baseline	69.6	75	N

+ - Façade measurement

Appendix H Regular Construction Noise Monitoring Results



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

Graphical Presentation of Impact Noise Monitoring Results

Date: May 2016

Appendix H

APPENDIX I

Event Action Plan

Appendix I Event Action Plan

Event / Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	1. Inform the Contractor, IEC and ER; 2. Discuss with the Contractor and IEC on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples	1. Inform the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

Appendix I Event Action Plan

EVENT	ACTION			
	ET	IEC	ER	Contractor
LIMIT LEVEL				
Exceedance for one sample	1. Inform the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ET, ER and Contractor on possible remedial measures; 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise implementation of remedial measures.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify Contractor, IEC, EPD and ER ; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented; 5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken; 6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with ET, ER, and Contractor on the potential remedial measures; 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; 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(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; 6. 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

EVENT	ACTION			
	ET	IEC	ER	Contractor
Exceedance of Action Level	1. Notify the Contractor, IEC and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the contractor; and 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of complaint in writing; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise implementation of remedial measures.	1. Investigate the complaint and propose remedial measures; 2. Report the results of investigation to the IEC, ET and ER; 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification; and 4. 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.	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures; and 4. Review and advise the 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 ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix I Event Action Plan

Event and Action Plan for Continuous Noise Monitoring

EVENT	ACTION			
	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 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	4
Notification of summons	-	-	-	0	0
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 2016

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	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	4.845	0.000	0.000	0.000	4.659	0.186	12.023	0.755	0.010	0.000	0.031
Feb	4.795	0.000	0.000	0.000	4.795	0.000	2.620	0.000	0.990	0.000	0.020
Mar	5.456	0.000	0.000	0.055	5.401	0.000	14.352	0.480	0.018	0.000	0.033
Apr	4.944	0.000	0.000	0.012	4.514	0.418	5.315	0.350	0.010	0.400	0.064
May											
Jun											
Sub-total	20.040	0.000	0.000	0.067	19.369	0.604	34.310	1.585	1.028	0.400	0.149
July											
August											
September											
October											
November											
December											
Total	20.040	0.000	0.000	0.067	19.369	0.604	34.310	1.585	1.028	0.400	0.149

Comments:

1) Assumption: The densities of Rock, Soil, Mixed Rock and Soil, and Regular Spoil are 2.0 ton/m^3; the density of general refuse is 1.0 ton/m^3; the density of waste oil is 1.0 kg/L.
2) The cut-off date of waste amount in Apr is 30/4/2016 for Public Fill facilities and Landfill.
3) The amounts of waste in Apr are 64.15 tons for Landfill and 9028.05 tons for Public Fill.
4) The amount of C&D materials reused in other project in Apr is 23.64 tons, for cut-off date as 30/4/2016.
   (Reused in Contract HK/2009/01 Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre)
5) The amount of Import fill in Apr is 835.73 tons, for cut-off date as 30/4/2016.
6) The amount of metal waste generated in Apr is 5315 kg, for cut-off date as 30/4/2016.
7) The amount of paper waste generated in Apr is 350 kg, for cut-off date as 30/4/2016.
8) The amount of plastic waste generated in Apr is 10 kg, for cut-off date as 30/4/2016.
9) The amounts of chemical waste generated in Apr are 200 kg oil rags and 200L spent lube oil, for cut-off date as 30/4/2016.