

MTR Corporation Limited

**Shatin to Central Link –
Hung Hom to Admiralty Section**

Monthly EM&A Report No. 5

[Period from 1 to 30 September 2014]

(October 2014)

Verified by: Fredrick Leong 

Position: Independent Environmental Checker

Date: 13 October 2014

MTR Corporation Limited

**Shatin to Central Link –
Hung Hom to Admiralty Section**

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(October 2014)

Certified by: Richard Kwan 

Position: Environmental Team Leader

Date: 14 October 2014

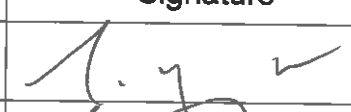

MTR Corporation Limited

Consultancy Agreements
No. C11033B

**Shatin to Central Link - Hung Hom to
Admiralty Section**

Monthly EM&A Report No. 5

[Period from 1 to 30 September 2014]

	Name	Signature
Prepared & Checked:	Joanne Tsoi	
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Version: A

Date: 14 October 2014

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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/A) was issued by Director of Environmental Protection (DEP) on 30 April 2014.

1.2 Project Programme

- 1.2.1 Four 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 2020. 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
1126	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	To be constructed (tentatively in November 2014)	Dragages Bouygues J.V.	AECOM Asia Co. Ltd.
1129	SCL – Advance Works for NSL	May 2014	Hsin Chong Construction Co. Ltd.	AECOM Asia Co. Ltd.
11227	Advance Works for NSL Cross Harbour Tunnels	August 2014	Concentric-Hong Kong River Joint Venture	Cinotech Consultants Ltd. (Cinotech)

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 fifth 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 September 2014.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1 EM&A Results

- 2.1.1 The EM&A Report for Works Contracts 1129, 1126 and 11227 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
1126	Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool	<ul style="list-style-type: none"> • Construction of Fitness Room and Kiosk; • Construction of Male Changing Room with HR Pump Room and Store Room; • Construction of Marshall Seats; • Construction of Weightlifting Room; • Landscaping and external works; and • Demolition of part of the existing spectator stand.
1129	Area W1	<ul style="list-style-type: none"> • Covered Walkway Installation; • H-piles Removal; • Installation of Pre-bore H-piles and Post Drilling.
	Area W2	<ul style="list-style-type: none"> • Fix Steel Plates; • Cast Base Slab; and • Site Reinstatement.
	Area W3	<ul style="list-style-type: none"> • Dig Trial Trench; and • Installation of Sheetpile.
11227	Shek O Casting Basin	<ul style="list-style-type: none"> • Seabed leveling works at channel exit; and • Rock filling works in Casting Basin.
	Victoria Harbour	<ul style="list-style-type: none"> • Deployment of silt curtain at the dredging area in Victoria Harbour; and • Dredging of trial trench in Victor Harbour.

- 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 and EP Condition 2.23.7. 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 ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1126					

Monitoring Station ID	Location	TSP Concentration ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1126					
AM2	Wan Chai Sports Ground ⁽¹⁾	74.9 – 128.6	160	260	No
AM3	Existing Harbour Road Sports Centre	40.4 – 105.5	169	260	No
Works Contract 1129 and 11227⁽²⁾					

Note:

- (1) 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.
(2) No TSP monitoring is required under Works Contracts 1129 and 11227.

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

Monitoring Station ID	Location	Noise Level (LAeq,30mins, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected ⁽¹⁾		
Works Contract 1126						
NM2 ⁽²⁾⁽³⁾	Harbour Centre (7/F)	71.6 – 75.2	69.6	71.6 – 73.8	75	No
Works Contract 1129						
NM1	Hoi Kung Court	70.0 – 71.1	71	< Baseline – 54.7	75	No
Works Contract 11227 ⁽⁴⁾						

Note:

- (1) The measured noise levels are corrected against the corresponding baseline noise levels.
(2) Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring. Alternative noise monitoring location proposed at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited. Impact noise monitoring was carried out at Harbour Centre from 20 August 2014 onwards.
(3) Since baseline noise monitoring at Harbour Centre was conducted between 1 and 14 September 2014, baseline corrected level was only applied on noise measured after 14 September 2014.
(4) No Noise monitoring is required under Works Contract 11227.

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

Locations		Parameters			
		Dissolved Oxygen (mg/L)		Depth- average Turbidity (NTU)	Depth- average Suspended Solids (mg/L)
		Surface & Middle	Bottom		
Shek O Casting Basin					
C3	Mean	7.0	6.2	1.8	4.0
	Range	6.0 – 9.2	5.6 – 8.3	1.4 – 2.0	3.3 – 4.3
C4	Mean	7.1	6.3	1.8	3.9
	Range	5.8 – 9.2	5.6 – 8.2	1.2 – 2.0	3.3 – 4.3
GB3	Mean	7.0	6.2	1.7	3.9
	Range	6.1 – 8.4	5.6 – 7.9	1.3 – 2.0	3.0 – 4.3

Locations	Parameters			
	Dissolved Oxygen (mg/L)		Depth- average Turbidity (NTU)	Depth- average Suspended Solids (mg/L)
	Surface & Middle	Bottom		
Action Level	6.8 (Dry season) 5.5 (Wet season)		5.0 (Dry season) 2.1 (Wet season)	9.3 (Dry season) 4.5 (Wet season)
Limit Level	6.5 (Dry season) 5.3 (Wet season)		5.6 (Dry season) 2.4 (Wet season)	9.3 (Dry season) 4.5 (Wet season)
Exceedance (Yes/No)	No	No	No	No
Victoria Harbour (Wet Season) ⁽²⁾				
C1	Mean	4.7	4.4	2.7
	Range	3.5 – 6.7	2.9 – 6.7	0.7 – 4.1
C2	Mean	4.9	4.6	3.6
	Range	4.0 – 6.9	2.8 – 6.8	2.3 – 4.6
14	Mean	4.5	4.1	3.1
	Range	3.2 – 6.1	2.7 – 6.2	1.8 – 4.4
A	Mean	4.4	4.1	3.0
	Range	3.2 – 5.9	2.8 – 5.9	1.6 – 4.0
WSD9	Mean	4.9	4.5	2.9
	Range	3.6 – 6.9	3.1 – 7.1	1.6 – 4.2
WSD17	Mean	5.1	4.4	3.7
	Range	3.9 – 7.8	2.8 – 5.8	2.3 – 5.2
Action Level	<2.1		5.3	4.4
Limit Level	<2		5.6	4.8
Exceedance (Yes/No)	No	No	No	No

Notes:

- (1) Marine water quality monitoring was conducted in the reporting period under Works Contract 11227.
- (2) As the construction activities in Victoria Harbour commenced on 11 September 2014, water quality monitoring in Victoria Harbour commenced on 12 September 2014. According to the Water Quality Monitoring Plan for Trial Trenching Works (WQMP) and the Baseline Water Quality Monitoring Report for Trial Trenching Works, water quality monitoring in Victoria Harbour will be carried out at two impact monitoring stations (namely A and WSD9) in dry season and four impact monitoring stations (namely A, WSD9, 14 and WSD17) in wet season.

2.1.4 No environmental complaints, notification of summons and successful prosecutions were received in the reporting period. Cumulative log for environmental complaints, notification of summons and successful prosecutions is provided in **Table 2.5**.

Table 2.5 Cumulative Log for Environmental Complaints, Notification of Summons and Successful Prosecutions

Works Contract	Environmental Complaints		Notification of Summons		Successful Prosecutions	
	Reporting Month	Cumulative Number	Reporting Month	Cumulative Number	Reporting Month	Cumulative Number
1126	0	0	0	0	0	0
1129	0	0	0	0	0	0
11227	0	0	0	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/A). 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/A)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	19 Dec 2012
Condition 2.3	Notification of Information of Community Liaison Groups	17 Mar 2014
Condition 2.5	Management Organisation of Main Construction Companies	4 Apr 2014
Condition 2.6	Construction Programme and EP Submission Schedule	19 Dec 2012
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP)	9 Jun 2014 (1 st Submission)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	9 Jun 2014 (1 st Submission)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1 st Submission) 12 Sept 2012 (2 nd Submission) 15 Oct 2012 (approved)
Condition 2.10	Silt Curtain Deployment Plan for Trial Trenching in Victoria Harbour	11 Jul 2014
Condition 2.11	Silt Screen Deployment Plan	11 Jul 2014
Condition 2.12	Sediment Management Plan	6 Jul 2012 (1 st Submission) 12 Sept 2012 (2 nd Submission) 15 Oct 2012 (approved) 3 Jul 2014 (3 rd submission)
Condition 2.14	Visual, Landscape, Tree Planting & Tree Protection Plan	14 Nov 2012 (1 st Submission) 15 Feb 2013 (2 nd Submission) 3 Dec 2013 (3 rd Submission) 21 Aug 2014 (4 th Submission)
Condition 2.23.1	Silt Curtain Deployment Plan for Shek O	23 Jul 2014 (1 st Submission) 31 Jul 2014 (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 Sept 2012 (1 st Submission) 12 Nov 2012 (2 nd Submission) 22 Nov 2012 (approved) CAR: 19 Mar 2013 (1 st Submission) 16 Apr 2013 (2 nd Submission) 21 May 2013 (3 rd Submission) 7 Jun 2013 (approved)
Condition 2.31.1	Silt Curtain Deployment Plan for Temporary Marine Works at Shek O Casting Basin	30 Jun 2014
Condition 3.3	Baseline Monitoring Report (for noise and air quality)	4 Dec 2013 (1 st Submission) 5 Feb 2014 (2 nd Submission)
	Baseline Water Quality Monitoring Report	23 Sept 2014 (1 st Submission)
	Baseline Water Quality Monitoring Report for Temporary Marine Works at Shek O Casting Basin	8 Jul 2014 (1 st Submission) 11 Aug 2014 (2 nd Submission)
Condition 3.4	Monthly EM&A Reports No.1 - 3	Reported in previous Monthly EM&A Reports
	Monthly EM&A Report No.4	12 Sept 2014

Appendix A

**Monthly EM&A Report for September 2014 – SCL Works
Contract 1129 Advance Works for NSL**

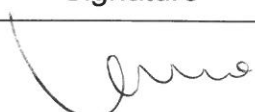
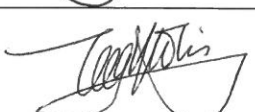
Hsin Chong Construction Co. Ltd.

**Shatin to Central Link -
Hung Hom to Admiralty Section**

**Works Contract 1129 -
Advance Works for NSL**

**Monthly EM&A Report for
September 2014**

October 2014

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

Version: 0

Date: 13 October 2014

Disclaimer

This Contract Specific Environmental Monitoring and Audit Manual is prepared for Hsin Chong Construction Co. Ltd and is given for its sole benefit in relation to and pursuant to SCL1129 and may not be disclosed to, quoted to or relied upon by any person other than Hsin Chong Construction Co. Ltd without our prior written consent. No person (other than Hsin Chong Construction Co. Ltd into whose possession a copy of this Manual comes may rely on this plan without our express written consent and Hsin Chong Construction Co. Ltd may not rely on it for any purpose other than as described above.

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EXECUTIVE SUMMARY

Shatin to Central Link Contract 1129 – Advance Works for North South Link (NSL) (hereafter called “the Project”) covers part of the construction of the Shatin to Central Link (SCL) which aimed to comprises advance works for NSL – the extension of the existing East Rail Line (EAL) to Hong Kong Island.

The Project covers construction activities at Percival Street Footbridge, Causeway Flyover, Tunnel Approach Rest Garden (TARG) and demolition works at existing abandoned culvert near Wan Shing Street.

The EM&A programme commenced on 2 May 2014. The impact EM&A for the Project includes noise monitoring.

As informed by the Contractor, a part of works area in W2 has been handed over to other SCL contract on 25 and 27 August 2014,

This report documents the findings of EM&A works conducted in the period between 1 and 30 September 2014. As informed by the Contractor, major activities in the reporting period were:

Area W1

- Covered Walkway Installation;
- H-piles Removal; and
- Installation of Pre-bore H-piles and Post Drilling.

Area W2

- Fix Steel Plates;
- Cast Base Slab; and
- Site Reinstatement.

Area W3

- Dig Trial Trench; and
- Installation of Sheetpile.

Breaches of Action and Limit Levels for Noise

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:-

Area W1

- H-piles Removal;
- H-piles Installation; and
- Post Drilling.

Area W2

- Site Reinstatement

Area W3

- Sheet Pile Installation.

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

1 INTRODUCTION

Hsin Chong Construction Co. Ltd (HC) was commissioned by MTR as the Civil Contractor for Works Contract 1129. AECOM Asia Company Limited (AECOM) was appointed by HC 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 fifth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 30 September 2014.

1.2 Report Structure

- 1.2.1 This monthly EM&A Report is organised 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) (VEP-433/2014) was applied on 2 April 2014 and the latest EP (EP No. EP-436/2012/A) was issued by the Director of Environmental Protection (DEP) on 30 April 2014.
- 2.1.3 The construction of the SCL is divided into different civil construction works contracts and the Project covers construction activities at Percival Street Footbridge, Causeway Flyover, TARG and demolition works at existing abandoned culvert near Wan Shing Street under the EP.
- 2.1.4 As informed by the Contractor, a part of works area in W2 has been handed over to other SCL contract on 25 and 27 August 2014. The works areas and site location of the Project is shown in **Figure 1.1**.

2.2 Site Description

- 2.2.1 The major construction activities under Works Contract 1129 include:
- (a) Removal of 10 nos. of abandoned steel H-piles, provision of temporary staircase and diversion of pedestrians at Percival Street Footbridge; (Works Area W1)
 - (b) Underpinning of Pier A5 of Causeway Flyover including installation of 6 nos. 600mm diameter concrete bored piles and construction of pile cap; (Works Area W1)
 - (c) Site clearance, temporary take-up, storage and handover of feature stone at existing TARG, tree removal and utility diversions. Construction of temporary box culvert (in dry/wet season) without breakthrough of existing culvert at TARG; (Area W2) and
 - (d) Diversion and temporary support of utilities to facilitate pile extraction works at existing abandoned culvert near Wan Shing Street. Demolition on part of the abandoned culvert and removal of 6 nos. of 18" concrete square driven piles. Construction of minor slip road to facilitate road diversion. (Works Area W3)

2.3 Construction Programme and Activities

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

Area W1

- Covered Walkway Installation;
- H-piles Removal; and
- Installation of Pre-bore H-piles and Post Drilling.

Area W2

- Fix Steel Plates;
- Cast Base Slab; and
- Site Reinstatement.

Area W3

- Dig Trial Trench; and
- Installation of Sheetpile.

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. T.C. Lam	3143 9129	3127 6424
		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
HC	Contractor	Senior Project Manager	Mr. Nelson Cheng	2602 0918/ 9302 5927	2774 9322
		Assistant Environmental Manager	Mr. Andy Leung	9489 0035	
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	22 Mar 2012	-	Superseded by EP-436/2012/A on 30 Apr 2014	-
EP-436/2012/A	30 Apr 2014	-	Valid	-
Construction Noise Permit				
GW-RS0617-14	20 Jun 2014	19 Sep 2014	Superseded by GW-RS1024-14 on 24 Sep 2014	Applied for plant mobilization
GW-RS1024-14	24 Sep 2014	20 Mar 2015	Valid	Applied for plant mobilization
GW-RS0860-14	19 Aug 2014	18 Feb 2015	Cancelled on 28 Sep 2014	Applied for underpinning at W1B

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
GW-RS0859-14	19 Aug 2014	18 Feb 2015	Valid	Applied for water pump at W1B (2300-0700)
GW-RS1042-14	29 Sep 2014	28 Mar 2015	Valid	Applied for work at W1 (1900-2300)
GW-RS0975-14	15 Sep 2014	14 Mar 2015	Valid	Applied for UMP installation at Wan Shing Street (2100-0600)
Wastewater Discharge License				
WT00018771-2014	4 Apr 2014	30 Apr 2019	Valid	-
Chemical Waste Producer Registration				
WPN5213-135-H35 63-01	26 Feb 2014	End of Contract	Valid	For Hung Hing Flyover & Percival Street (Area W1)
WPN5213-135-H35 64-01	26 Feb 2014	End of Contract	Valid	For Canal Road Flyover & Tunnel Approach Rest Garden (Area W2)
WPN5213-134-H35 65-01	26 Feb 2014	End of Contract	Valid	For Tunnel Approach Road & Wan Shing Footbridge (Area W3)
Billing Account for Construction Waste Disposal				
7019335	13 Feb 2014	End of Contract	Valid	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
370021	28 Jan 2014	End of Contract	Valid	-

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Noise Monitoring

Monitoring Requirements

- 3.1.1 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 3.1** 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 3.1 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

- 3.1.2 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 3.2 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	Rion (Model No. NL-31 (S/N: 00320528)) and B&K (Model No. 2238 (S/N: 2285692))
Acoustic Calibrator	Rion (Model No. NC-73 (S/N: 10307223))

Monitoring Locations

- 3.1.3 The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manuals for SCL (HUH-ADM) of the Project. Location of the noise monitoring station is summarised in **Table 3.3** and shown in **Figure 3.1**.

Table 3.3 Noise Monitoring Stations during Construction Phase

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

Monitoring Methodology**3.1.4 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.

3.1.5 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

- 3.1.6 The schedule for environmental monitoring in September 2014 is provided in **Appendix F**.

3.2 Landscape and Visual

- 3.2.1 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/A)	Monthly EM&A Report for August 2014	12 September 2014

5 MONITORING RESULTS

5.1 Construction Noise Monitoring

- 5.1.1 The monitoring results for noise are summarized in **Table 5.1** and the monitoring data is provided in **Appendix G**.

Table 5.1 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 – 54.7	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.

- 5.1.2 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 5.1.3 No Limit Level exceedance of noise was recorded at all monitoring stations in the reporting month.
- 5.1.4 The event and action plan is annexed in **Appendix H**.
- 5.1.5 Major noise sources during the monitoring included construction noise from the Project site, nearby traffic noise and the community.

5.2 Waste Management

- 5.2.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.
- 5.2.2 As advised by the Contractor, 1,214m³ of inert C&D material was generated (1,032m³ was disposed as public fills at CWPFBP and 182m³ was disposed as fill bank at TKO137) in the reporting month. 11.3m³ of 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. The waste flow table is annexed in **Appendix J**.
- 5.2.3 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.
- 5.2.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.3 Landscape and Visual

- 5.3.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted on 4 and 18 September 2014. 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 4, 11, 18, 25 September 2014. The one held on 11 September 2014 was a joint inspection with the IEC, ER, the Contractor and the ET. No site inspection was conducted by EPD during the reporting month. 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	4 September 2014	<ul style="list-style-type: none"> Improper coverage of stockpile was observed at W3. The Contractor was reminded to cover the stockpile with tarpaulin sheet or similar fabric. 	The item was rectified by the Contractor on 5 September 2014.
		<ul style="list-style-type: none"> Reminder: The Contractor was reminded to water the exposed works area timely as dust suppression. 	The item was improved by the Contractor on 5 September 2014
	25 September 2014	<ul style="list-style-type: none"> Improper coverage of stockpile was observed at W2. The Contractor was reminded to cover the stockpile with tarpaulin sheet or similar fabric. 	The item was rectified by the Contractor on 25 September 2014.
Noise	N/A	N/A	N/A
Water Quality	11 September 2014	<ul style="list-style-type: none"> Accumulation of groundwater/seawater was observed at W2. The Contractor was reminded to ensure the provision of water treatment to the accumulated water before discharge. 	The item was rectified by the Contractor on 12 September 2014.
	25 September 2014	<ul style="list-style-type: none"> Stagnant water accumulated between the concrete bunding edge and wetsep was observed at W1. The Contractor was reminded to remove the stagnant water properly. 	The item was rectified by the Contractor on 26 September 2014.
Waste/ Chemical Management	11 September 2014	<ul style="list-style-type: none"> Oil stain was observed on ground due to the removal of oily mixture within the drip tray at W1. The Contractor was reminded to clear the oil stain and dispose of as chemical waste. 	The item was rectified by the Contractor on 11 September 2014.
		<ul style="list-style-type: none"> Lubricants were observed placed on ground without provision of drip tray at W1. The Contractor was reminded to provide drip tray to avoid leakage. 	The item was rectified by the Contractor on 12 September 2014.
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

- 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 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.
- 7.1.2 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 I**.

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 I**.

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Next Two Month

8.1.1 The major construction works in October and November 2014 will be:

Area W1

- H-piles Removal;
- H-piles Installation;
- Post Drilling;
- Backfilling and Ground Preparation Work
- Construct Pile Cap;
- Installation of Sheetpile; and
- ELS Works.

Area W2

- Site Reinstatement

Area W3

- Sheet Pile Installation.;
- Diversion of Fresh Water Main; and
- Installation of Sheetpile.

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 Month

8.3.1 The tentative schedule for environmental monitoring in October 2014 is provided in **Appendix F**.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

- 9.1.1 Noise monitoring was carried out in the reporting month.
- 9.1.2 No noise complaint was received in the reporting month. Hence, no Action Level exceedance was recorded.
- 9.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 9.1.4 4 nos. of environmental site inspections were carried out in September 2014. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.
- 9.1.5 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.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Implement effective measures to avoid surface runoff into the drainage system.

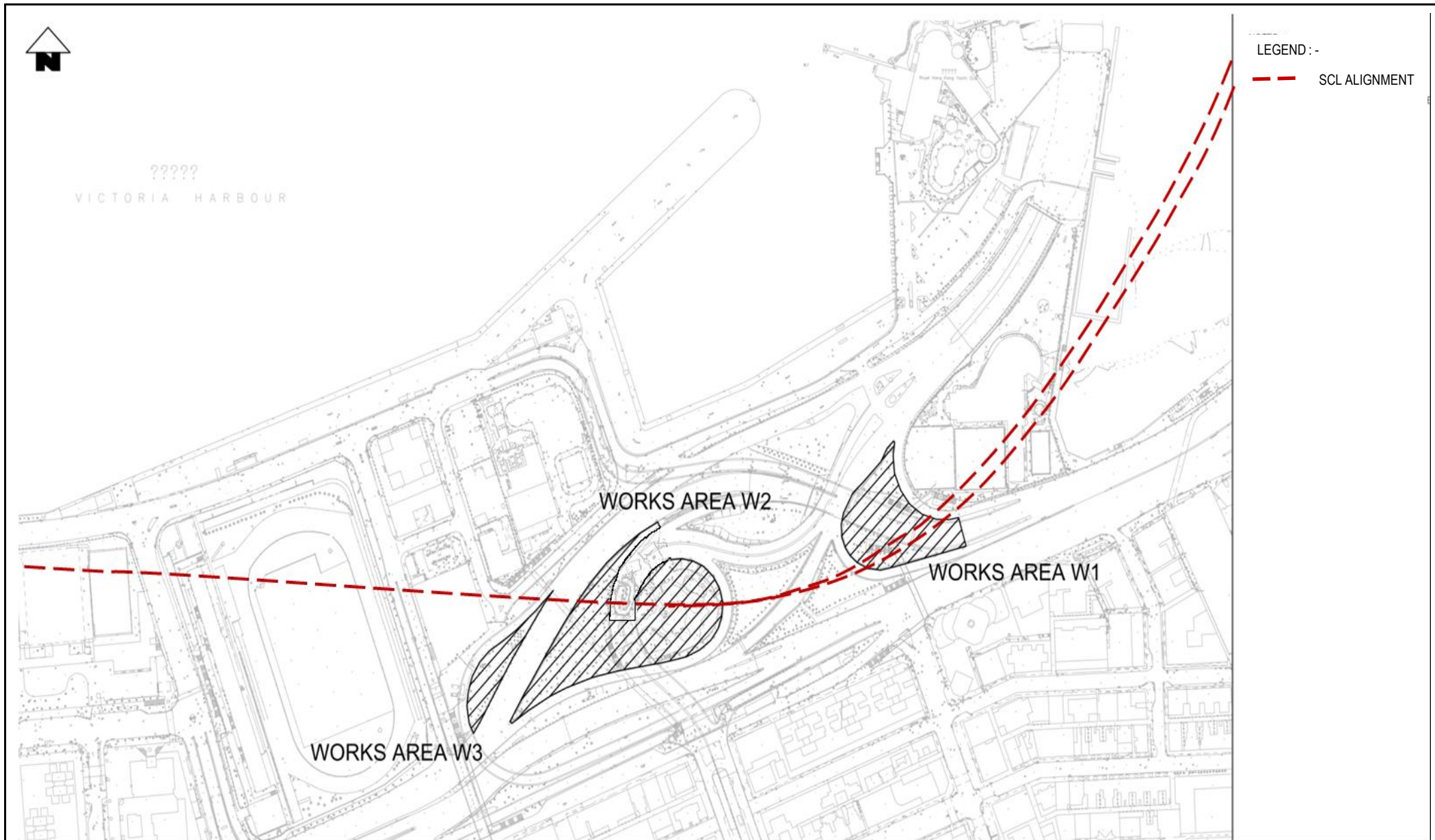
Chemical and Waste Management

- Provide proper chemical and construction waste management.

Permits/licenses

- No specific observation was identified in the reporting month.

FIGURES



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CONTRACT 1129
ADVANCED WORKS FOR NSL

WORKS AREA AND SITE LOCATION OF SCL1129

Project No.: -

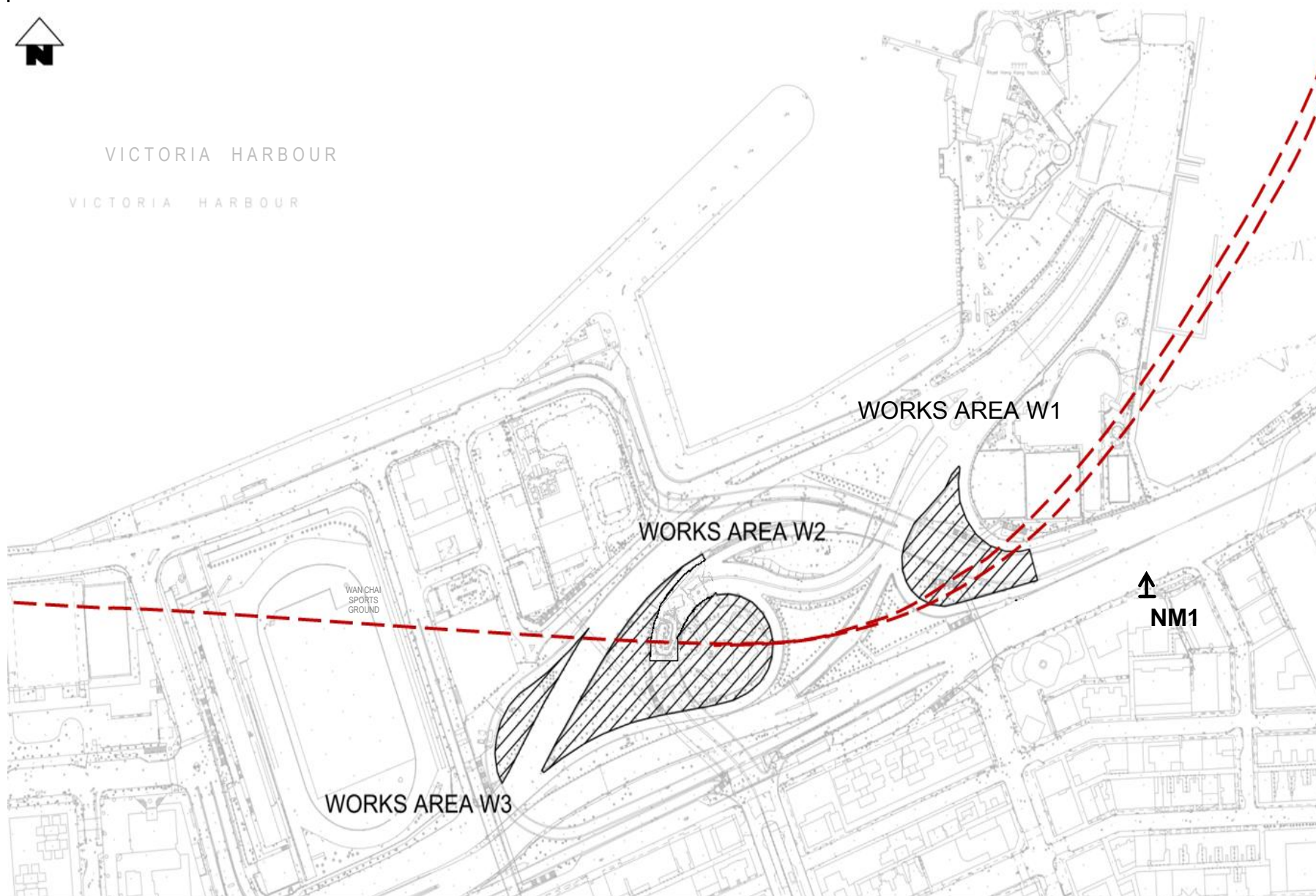
Date: September 2014

Figure 1.1



VICTORIA HARBOUR

VICTORIA HARBOUR



LEGEND :-

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CONTRACT 1129

ADVANCED WORKS FOR NSL

LOCATION OF AIR-BORNE NOISE SENSITIVE RECEIVER NM1

Project No.: -

Date: September 2014

Figure 3.1

APPENDIX A

Construction Programme



CONTRACT 1129 - ADVANCE WORK FOR NSL



Activity ID	Activity Name	Duration	BL Project Start	BL Project Finish	Start	Finish	TF	Variance - BL Project Finish Date	Qtr 3, 2014		Qtr 4, 2014		
									Aug	Sep	Oct	Nov	
MTRC-1129 - Advance Work for NSL (Working Programme) 3MRP Aug													
Schedule of Completion Obligations													
Section of the Works										Schedule of Completion Obligations			
01129.CD002C	Complete all works of box culvert at Tunnel Approach Rest Garden (Wk43/14)	0d		26-Oct-14		26-Oct-14*	0d	0d	Section of the Works				
Vacation Dates for Works Areas										Complete all works of box culvert at Tunnel Approach Rest Garden (Wk43/14)			
01129.VD1100	Works Area 1129.W2B	0d		24-Aug-14		24-Aug-14 A		0d	Vacation Dates for Works Areas				
01129.VD1080	Works Area 1129.W2A	0d		26-Oct-14		26-Oct-14*	0d	0d	Works Area 1129.W2B				
Schedule of Milestones										Works Area 1129.W2A			
Cost Centre A - Preliminaries										Schedule of Milestones			
01129.MSA01-1	Approval of Contractor's submissions and all Permanent Works Material Control Schedules (Wk 15/14) S/S	0d				31-Aug-14*	-139d		Cost Centre A - Preliminaries				
01129.MSA03	Engineer's confirmation of satisfactory implementation of PMS, QHSE management requirements (Wk39/14)	0d		28-Sep-14		28-Sep-14*	0d	0d	Approval of Contractor's submissions and all Permanent Works Material Control Schedules (Wk 15/14) S/S				
Cost Centre B - Percival Street Footbridge										Engineer's confirmation of satisfactory implementation of PMS, QHSE management requirements (Wk39/14)			
01129.MSB01	MS for Steel pile removal and temp staircase approval and Scheme for Util. Protection agreed (Wk35/14-31-Aug-14) Rev	0d		25-May-14		31-Aug-14*	0d	-98d	Cost Centre B - Percival Street Footbridge				
01129.MSB02-1	70% steel pile removal works in number completed (Wk43/14) S/S	0d				26-Oct-14*	0d		MS for Steel pile removal and temp staircase approval and Scheme for Util. Protection agreed (Wk35/14-31-Aug-14) Rev				
01129.MSB02	70% steel pile removal works in number completed (Wk45/14: 09-Nov-14)	0d		26-Oct-14		09-Nov-14*	0d	-14d	70% steel pile removal works in number completed (Wk43/14) S/S				
Cost Centre C - Causeway Flyover & Hung Hing Flyover										70% steel pile removal works in number completed (Wk45/14: 09-Nov-14)			
01129.MSC01-1	Method Statement for new foundation works and underpinning approved (Wk21/14) S/S	0d				31-Aug-14*	-97d		Cost Centre C - Causeway Flyover & Hung Hing Flyover				
01129.MSC02-1	All piling works for Pier A5 completed and all relevant tests accepted. (Wk39/14) S/S	0d				28-Sep-14*	0d		Method Statement for new foundation works and underpinning approved (Wk21/14) S/S				
01129.MSC02	All piling works for Pier A5 completed and all relevant tests accepted. (16-Nov-14 Wk46/14) - Revised	0d		28-Sep-14		16-Nov-14*	0d	-49d	All piling works for Pier A5 completed and all relevant tests accepted. (Wk39/14) S/S				
Cost Centre D - Box Culvert at Tunnel Approach Rest Garden										All piling works for Pier A5 completed and all relevant tests accepted. (16-Nov-14 Wk46/14) - Revised			
01129.MSD02-1	Transpl. wrks at Area 1129.W2a&b, temp channel cofferdam & 70% bulk excav'n by vol. complete (Wk 30/14) S/S	0d				31-Jul-14 A			Cost Centre D - Box Culvert at Tunnel Approach Rest Garden				
01129.MSD02	Transpl. wrks at Area 1129.W2a&b, temp channel cofferdam & 70% bulk excav'n by vol. complete (31-Aug-14,Wk35/14) S/S	0d		27-Jul-14		31-Jul-14 A		-4d	Transpl. wrks at Area 1129.W2a&b, temp channel cofferdam & 70% bulk excav'n by vol. complete (Wk 30/14) S/S				
01129.MSD03	Complete all works within Cost Centre D (Wk39/14)	0d		28-Sep-14		06-Oct-14*	-8d	-8d	Transpl. wrks at Area 1129.W2a&b, temp channel cofferdam & 70% bulk excav'n by vol. complete (31-Aug-14,Wk35/14) S/S				
Cost Centre E - Abandoned Box Culvert Underneath Gloucester Road										Complete all works within Cost Centre D (Wk39/14)			
01129.MSE01-1	TTMS for Gloucester rd, Works w/in WA W2c & west side of Canal Road Flyover tree felling completed (Wk17/14)S/S	0d				31-Aug-14*	-125d		Cost Centre E - Abandoned Box Culvert Underneath Gloucester Road				
01129.MSE02a	Gloucester Rd traff. divertn approaching Cross Harbour Tunnel implemented & MS for SI works approved (Wk35/14) Rev	0d				31-Aug-14*	0d		TTMS for Gloucester rd, Works w/in WA W2c & west side of Canal Road Flyover tree felling completed (Wk17/14)S/S				
01129.MSE02	Gloucester Rd traff. divertn approaching Cross Harbour Tunnel implemented & MS for SI works approved (Wk30/14)	0d		27-Jul-14		01-Sep-14*	-35d	-35d	Gloucester Rd traff. divertn approaching Cross Harbour Tunnel implemented & MS for SI works approved (Wk35/14) Rev				
Cost Centre F - Associated Works										Gloucester Rd traff. divertn approaching Cross Harbour Tunnel implemented & MS for SI works approved (Wk30/14)			
01129.MSF01	Installation of geotechnical instrumentations within Works Areas (WA 1, 2 & 3) completed. (31-Aug-14 Wk35/14) Revised	0d		30-Mar-14		31-Aug-14*	0d	-154d	Cost Centre F - Associated Works				
01129.MSF02A	50%tree compensation works at various areas in Wan Chai district completed (Wk39/14)	0d				29-Sep-14*	-1d		Installation of geotechnical instrumentations within Works Areas (WA 1, 2 & 3) completed. (31-Aug-14 Wk35/14) Revised				
Cost Centre H - Underpinning of Piers 19 & 20 of Canal Road Flyover (Option 2) - Not Exercised										50%tree compensation works at various areas in Wan Chai district completed (Wk39/14)			
01129.MSH01	MS for temporary cofferdam and excavation works approved (Wk 25/14)	0d		22-Jun-14		31-Aug-14*	-69d	-69d	Cost Centre H - Underpinning of Piers 19 & 20 of Canal Road Flyover (Option 2) - Not Exercised				
01129.MSH02	30% of PBH pile in number completed. (Wk46/14)	0d		16-Nov-14		16-Nov-14*	0d	0d	MS for temporary cofferdam and excavation works approved (Wk 25/14)				
Preliminaries and General Requirements										30% of PBH pile in number completed. (Wk46/14)			
Submissions										Preliminaries and General Requirements			
Method of Construction										Submissions			
01129.PG1050	Approval of Methods of Construction	28d	16-Mar-14	12-Apr-14	29-Apr-14 A	01-Aug-14 A		-110d	Method of Construction				
Method Statement / Other Submission										Approval of Methods of Construction			
01129.PG1610	Submission of Geotechnical Instrumentation and Monitoring Plan	56d	20-Jan-14	28-Mar-14	20-Mar-14 A	06-Sep-14	967d	-162d	Method Statement / Other Submission				
01129.PG1620	Approval of Geotechnical Instrumentation and Monitoring Plan	28d	29-Mar-14	25-Apr-14	28-Mar-14 A	13-Sep-14	960d	-141d	Submission of Geotechnical Instrumentation and Monitoring Plan				
01129.PG1370	Submission of Proposal for Training of Workers	72d	20-Jan-14	17-Apr-14	16-Jun-14 A	20-Sep-14*	-156d	-156d	Approval of Geotechnical Instrumentation and Monitoring Plan				
01129.PG1380	Approval of Proposal for Training of Workers	28d	18-Apr-14	15-May-14	29-Aug-14 A	13-Sep-14*	-121d	-121d	Submission of Proposal for Training of Workers				
Programme Submission										Approval of Proposal for Training of Workers			
01129.PG1493	Time Chainage Programme Submission	45d	20-Jan-14	15-Mar-14	19-Aug-14 A	25-Aug-14 A		-163d	Programme Submission				
01129.PG1494	Approval of Time Chainage Programme	28d	16-Mar-14	12-Apr-14	22-Aug-14 A	26-Aug-14 A		-136d	Time Chainage Programme Submission				
Implementation										Approval of Time Chainage Programme			
Implementation of SA and Risk Mngt and Design for Safety and Constructibility										Implementation			
01129.PG1260	Audit of System Assurance and Risk Management and Design for Safety and Constructability Risk Register	1d	30-May-14	30-May-14	31-Aug-14	31-Aug-14	-93d	-93d	Implementation of SA and Risk Mngt and Design for Safety and Constructibility				
01129.PG1210	Engineer's Confirmation of Satisfactory Implementation	28d	31-May-14	27-Jun-14	01-Sep-14	28-Sep-14*	-93d	-93d	Audit of System Assurance and Risk Management and Design for Safety and Constructability Risk Register				
Implementation of Programme Mngt System										Engineer's Confirmation of Satisfactory Implementation			
01129.PG1220	Implementation of Programme Management System (1st)	46d	16-Jun-14	31-Jul-14	16-Jul-14 A	05-Sep-14	-35d	-36d	Implementation of Programme Mngt System				
01129.PG1270	Audit of Programme Management System (1st)	1d	01-Aug-14	01-Aug-14	06-Aug-14 A	06-Aug-14 A		-5d	Implementation of Programme Management System (1st)				
01129.PG1230	Engineer's Confirmation of Satisfactory Implementation (1st) (26-Sep-14)	56d	02-Aug-14	26-Sep-14	06-Sep-14	31-Oct-14*	-35d	-35d	Audit of Programme Management System (1st)				
Implementation of Quality, Health and Safety and Env't Mngt										Engineer's Confirmation of Satisfactory Implementation (1st) (26-Sep-14)			
										Implementation of Quality, Health and Safety and Env't Mngt			

Activity ID	Activity Name	Duration	BL Project Start	BL Project Finish	Start	Finish	TF	Variance- BL Project Finish Date	Qtr 3, 2014		Qtr 4, 2014	
									Aug	Sep	Oct	Nov
01129.PG1240	Implementation of Quality, Health and Safety and Environmental Management Requirements	66d	24-Jun-14	28-Aug-14	21-May-14 A	28-Sep-14	-31d	-31d	Implementation of Quality, Health and Safety and Environmental Management Requirements			
01129.PG1280	Audit of Quality, Health and Safety and Environmental Management	1d	29-Aug-14	29-Aug-14	29-Sep-14	29-Sep-14	-31d	-31d	Audit of Quality, Health and Safety and Environmental Management			
01129.PG1250	Engineer's Confirmation of Satisfactory Implementation (27-Sep-15)	28d	30-Aug-14	26-Sep-14	30-Sep-14	27-Oct-14*	-31d	-31d	Engineer's Confirmation of Satisfactory Implementation (27-Sep-15)			
Construction Works												
Contract Work 1 - H-Pile Removal & Percival Street Footbridge Modification												
Submissions and Approvals									Submissions and Approvals			
01129.CW11012B	Method Statement for Pre-bored H-piles Submission	28d	25-Feb-14	28-Mar-14	29-Apr-14 A	17-Sep-14	-111d	-139d	Method Statement for Pre-bored H-piles Submission			
01129.CW11022B	Method Statement Approval for Pre-bored H-piles	28d	29-Mar-14	25-Apr-14	20-May-14 A	20-Sep-14	12d	-148d	Method Statement Approval for Pre-bored H-piles			
01129.CW11042B	Method Statement Approval for H-pile Removal (Wk21/14: 25 May 2014)	28d	11-Apr-14	08-May-14	03-Jun-14 A	27-Sep-14*	-135d	-142d	Method Statement Approval for H-pile Removal (Wk21/14: 25 May 2014)			
01129.CW11032B	Method Statement for H-pile Removal Submission (Alternative Method)	28d	08-Mar-14	10-Apr-14	18-Jun-14 A	25-Sep-14	-111d	-136d	Method Statement for H-pile Removal Submission (Alternative Method)			
01129.CW11210B40	Staircase Supplier and Subcontractor Submission and Approval	12d			30-Jul-14 A	13-Aug-14 A			Staircase Supplier and Subcontractor Submission and Approval			
01129.CW11210B10	Submission of Staircase Shop Drawings	28d	03-Jul-14	04-Aug-14	08-Aug-14 A	06-Oct-14	12d	-51d	Submission of Staircase Shop Drawings			
01129.CW11170B	Method Statement for Temporary Staircase Erection Submission	14d	08-Mar-14	10-Apr-14	19-Aug-14 A	17-Sep-14	12d	-129d	Method Statement for Temporary Staircase Erection Submission			
01129.CW11180B	Method Statement Approval for Temporary Staircase Erection (Wk35/14: 31 Aug 2014)	28d	11-Apr-14	08-May-14	31-Aug-14	27-Sep-14	1d	-142d	Method Statement Approval for Temporary Staircase Erection (Wk35/14: 31 Aug 2014)			
01129.CW11002Ba	Contingency Plan for Works Adjacent to EBS Submission	28d	20-Jan-14	24-Feb-14	01-Sep-14	06-Oct-14	64d	-181d	Contingency Plan for Works Adjacent to EBS Submission			
01129.CW11210B30	CNP Submission and Approval for Steelwork Erection for Eastern Pile Cap	12d			01-Sep-14*	15-Sep-14	0d		CNP Submission and Approval for Steelwork Erection for Eastern Pile Cap			
01129.CW11003Ba	Contingency Plan for Works Adjacent to EBS Approval	28d	25-Feb-14	24-Mar-14	07-Oct-14	03-Nov-14	74d	-224d	Contingency Plan for Works Adjacent to EBS Approval			
01129.CW11210B20	Approval of Staircase Shop Drawings	35d	05-Aug-14	01-Sep-14	07-Oct-14	10-Nov-14	14d	-70d	Approval of Staircase Shop Drawings			
Site Construction									Site Construction			
01129.CW11161B1	Works Area Handover Preparation	0d		22-Oct-14		01-Sep-14	141d	42d	Works Area Handover Preparation			
Geotechnical Instrumentation (for Areas W1a and W1c)									Geotechnical Instrumentation (for Areas W1a and W1c)			
01129.CW11050B	Instrumentation Installation for Areas W1a and W1C	63d	05-Mar-14	23-May-14	04-Mar-14 A	18-Sep-14	9d	-98d	Instrumentation Installation for Areas W1a and W1C			
01129.CW11050B3	Utility Monitoring Point Installation (12 nos.)	63d			09-Apr-14 A	05-Aug-14 A			Utility Monitoring Point Installation (12 nos.)			
01129.CW11050B6	Inclinometer Installation (5 nos.)	63d			20-May-14 A	18-Sep-14	9d		Inclinometer Installation (5 nos.)			
Works Area W1A									Works Area W1A			
01129.CW11150a	Hoarding Graphic Erection	6d			31-Jul-14 A	06-Aug-14 A			Hoarding Graphic Erection			
01129.CW11110	Covered Walkway Installation	6d			27-Aug-14 A	12-Sep-14	59d		Covered Walkway Installation			
Works Area W1C									Works Area W1C			
Western Pile Cap									Western Pile Cap			
01129.CW11091B	Remove 6 nos. (2 Trial + 4 Remaining) H-piles	84d	25-Jun-14	04-Oct-14	27-Jun-14 A	22-Oct-14	1d	-15d	Remove 6 nos. (2 Trial + 4 Remaining) H-piles			
01129.CW1a1091	Submission of Assessment Report and Decision by MTR (For Remaining 8 Piles)	35d			22-Jul-14 A	01-Sep-14	1d		Submission of Assessment Report and Decision by MTR (For Remaining 8 Piles)			
01129.CW1a1091	Assessment Report on Pile P2 Extraction Submitted for BD Review	24d			13-Aug-14 A	10-Sep-14	1d		Assessment Report on Pile P2 Extraction Submitted for BD Review			
01129.CW1a1091	Friction Release Holes to Batch 1 Piles (P1, P5, P6, P10)	12d			11-Sep-14	24-Sep-14	1d		Friction Release Holes to Batch 1 Piles (P1, P5, P6, P10)			
01129.CW1a1091	Extension of Batch 1 Piles (P1, P5, P6, P10)	2d			25-Sep-14	26-Sep-14	1d		Extension of Batch 1 Piles (P1, P5, P6, P10)			
01129.CW1a1091	Backfilling and Ground Preparation Work	2d			27-Sep-14	29-Sep-14	1d		Backfilling and Ground Preparation Work			
01129.CW1a1091	Removal of Batch 1 Piles (P1, P5, P6, P10) by Jacking Method	10d			30-Sep-14	13-Oct-14	1d		Removal of Batch 1 Piles (P1, P5, P6, P10) by Jacking Method			
01129.CW1a1091	Removal Verification by Drilling Holes (4 nos.) (incl. grouting)	8d			14-Oct-14	22-Oct-14	1d		Removal Verification by Drilling Holes (4 nos.) (incl. grouting)			
01129.CW1a1091	Friction Release Holes to Batch 2 Piles (P3, P4, P7, P8)	12d			23-Oct-14	05-Nov-14	1d		Friction Release Holes to Batch 2 Piles (P3, P4, P7, P8)			
01129.CW11220B	Remove Remaining 4 Nos. H-piles	47d	06-Oct-14	19-Nov-14	23-Oct-14	16-Dec-14	1d	-23d	Remove Remaining 4 Nos. H-piles			
01129.CW1a1091	Extension of Batch 2 Piles (P3, P4, P7, P8)	2d			06-Nov-14	07-Nov-14	1d		Extension of Batch 2 Piles (P3, P4, P7, P8)			
01129.CW1a1091	Backfilling and Ground Preparation Work	2d			08-Nov-14	10-Nov-14	1d		Backfilling and Ground Preparation Work			
01129.CW1a1091	Removal of Batch 2 Piles (P3, P4, P7, P8) by Jacking Method	10d			11-Nov-14	21-Nov-14	1d		Removal of Batch 2 Piles (P3, P4, P7, P8) by Jacking Method			
01129.CW1a1091	70% steel pile removal works in number completed (Wk43/14 : 26 Oct 2014)	4d			12-Nov-14	15-Nov-14	27d		70% steel pile removal works in number completed (Wk43/14 : 26 Oct 2014)			
01129.CW1a1091	Removal Verification by Drilling Holes (4 nos.) (incl. grouting)	8d			22-Nov-14	01-Dec-14	1d		Removal Verification by Drilling Holes (4 nos.) (incl. grouting)			
Eastern Pile Cap									Eastern Pile Cap			
01129.CW11120B	Installation of Pre-Bored H-Pile P3	5d			08-Aug-14 A	02-Sep-14	7d		Installation of Pre-Bored H-Pile P3			
01129.CW11120B	Install 4 nos. Pre-bored H-piles + 4 nos. minipiles	33d	26-Apr-14	19-Jun-14	08-Aug-14 A	18-Sep-14	49d	-76d	Install 4 nos. Pre-bored H-piles + 4 nos. minipiles			
01129.CW11120B	Installation of Pre-Bored H-Pile P4	5d			11-Aug-14 A	02-Sep-14	7d		Installation of Pre-Bored H-Pile P4			
01129.CW11120B	Installation of Pre-Bored H-Pile P1	5d			12-Aug-14 A	02-Sep-14	7d		Installation of Pre-Bored H-Pile P1			
01129.CW11120B	Installation of Pre-Bored H-Pile P2	5d			15-Aug-14 A	02-Sep-14	7d		Installation of Pre-Bored H-Pile P2			
01129.CW11120B	Post-Drilling	3d			01-Sep-14	03-Sep-14	55d		Post-Drilling			
01129.CW11120B	Submission of Piling Records	2d			03-Sep-14	04-Sep-14	49d		Submission of Piling Records			
01129.CW11120B	Pile Load Test Location Selection	5d			05-Sep-14	11-Sep-14	49d		Pile Load Test Location Selection			
01129.CW11120B	Set-Up Plant and Installation of Reaction Pile including Rebar Installation and Grouting (4 nos. Reaction Piles)	6d			12-Sep-14	18-Sep-14	49d		Set-Up Plant and Installation of Reaction Pile including Rebar Installation and Grouting (4 nos. Reaction Piles)			
01129.CW11146B	28 days to Achieve Concrete Strength	22d	03-Jul-14	06-Aug-14	19-Sep-14	16-Oct-14	49d	-58d	28 days to Achieve Concrete Strength			
01129.CW11146B	Set-up for Load Test	4d			13-Oct-14	16-Oct-14	49d		Set-up for Load Test			
01129.CW11146B	Load Testing	4d			17-Oct-14	21-Oct-14	49d		Load Testing			
01129.CW11146B	Plant Demobilization	2d			22-Oct-14	23-Oct-14	49d		Plant Demobilization			
01129.CW11142B	Construct Eastern Pile Cap	18d	07-Aug-14	30-Aug-14	24-Oct-14	13-Nov-14	49d	-61d	Construct Eastern Pile Cap			

Actual Level of Effort

Primary Baseline

Actual Work

Remaining Work

Critical Remaining Work

Summary

Milestone

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Date	Revision	Checked	Approved
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Activity ID	Activity Name	Duration	BL Project Start	BL Project Finish	Start	Finish	TF	Variance - BL Project Finish Date	Qtr 3, 2014		Qtr 4, 2014	
									Aug	Sep	Oct	Nov
Temporary Staircase												
01129.CW11210B	Staircase Off-site Fabrication and Delivery	40d	06-Sep-14	23-Dec-14	11-Nov-14	29-Dec-14	12d	-3d				
Contract Work 2 - Causeway Flyover Underpinning												
01129.CW21160C10	SLG/RA TTMS Approval for Diversion of Pedestrian Area	0d				20-Aug-14 A			<div>◆ SLG/RA TTMS Approval for Diversion of Pedestrian Area</div> <div>◆ TTA Implementation for Plant Equipment Mobilisation</div> <div>■ Plant and Equipment Mobilisation</div> <div>CNP Submission and Approval for Night Time Work (19:00 to 23:00)</div>			
01129.CWa21080	TTA Implementation for Plant Equipment Mobilisation	0d				20-Aug-14 A						
01129.CWa21090	Plant and Equipment Mobilisation	1d			20-Aug-14 A	20-Aug-14 A						
01129.CW21160C60	CNP Submission and Approval for Night Time Work (19:00 to 23:00)	12d			01-Sep-14	15-Sep-14	19d					
Submissions and Approvals												
01129.CW11002B50	Design Submission for ELS	28d			25-Apr-14 A	17-Sep-14	773d					
01129.CW21330C	Method Statement for Pre-bored H-piles Submission	28d	19-Feb-14	22-Mar-14	29-Apr-14 A	17-Sep-14	17d	-144d				
01129.CW21340C	Method Statement Approval for Pre-bored H-piles	28d	23-Mar-14	19-Apr-14	20-May-14 A	27-Sep-14	12d	-161d				
01129.CW11002B70	Method Statement for Construction of Pile Cap and Load Transfer Submission	28d			04-Jul-14 A	17-Sep-14	773d					
01129.CW11002B60	Design Approval for ELS	28d			15-Jul-14 A	17-Sep-14	28d					
01129.CW11002B80	Method Statement for Construction of Pile Cap and Load Transfer Approval	28d			25-Jul-14 A	25-Sep-14	116d					
01129.CW11002B10	TTMS Submission for Pedestrian Walkway Diversion (GUR062)	14d			28-Jul-14 A	25-Sep-14	2d					
01129.CW11002B30	Method Statement for Pile Load Test Submission	12d			01-Sep-14*	15-Sep-14	-23d					
01129.CW11002B40	Method Statement for Pile Load Test Approval	21d			16-Sep-14	11-Oct-14	10d					
Site Construction												
01129.CW21161B	Works Area Handover Preparation	0d		27-Sep-14		22-Oct-14	2d	-19d				
Geotechnical Instrumentation												
01129.CW21040C	Instrumentation Installation	4d	05-Mar-14	23-May-14	11-Mar-14 A	05-Aug-14 A		-60d				
01129.CW21040C4	Instrumentation Installation Extensometer (2 nos.)	63d			14-Jul-14 A	05-Aug-14 A						
Works Area W1B (Underpinning at Pier A5)												
01129.CW21051C	Install 6 Pre-bored H-piles within low headroom	77d	03-Jul-14	07-Oct-14	20-May-14 A	11-Oct-14	2d	-4d				
01129.CW21050Ca	Open Excavation to Increase Headroom for P1, P2 & P3 - Stage 1	21d			31-Jul-14 A	09-Aug-14 A						
01129.CW21050C	Open Excavation for Pre-bored H-piles	44d	09-Jun-14	11-Jun-14	31-Jul-14 A	20-Aug-14 A		-58d				
01129.CW21050Cb	Open Excavation to Increase Headroom for P4, P5 & P6 - Stage 2	29d			06-Aug-14 A	20-Aug-14 A						
01129.CW11002B2	SLG Review and Approval for TTMS of Pedestrian Walkway Diversion	7d			20-Aug-14 A	21-Aug-14 A						
01129.CW21051Cc	Drilling and Permanent Casing for P1, P2 & P3	15d			22-Aug-14 A	26-Sep-14	9d					
01129.CW21160C4	Set-Up Grout Station	1d			28-Aug-14 A	29-Aug-14 A						
01129.CW21160C5	Grouting Trial	12d			29-Aug-14 A	29-Aug-14 A						
01129.CW21051Cd	Drilling and Permanent Casing for P4, P5 & P6	16d			29-Aug-14 A	19-Sep-14	7d					
01129.CW21070C6	SLG/HyD Review and Approval of URS Report	13d			01-Sep-14	16-Sep-14	18d					
01129.CW21051Cc	Submission of Drilling Records	6d			20-Sep-14	26-Sep-14	7d					
01129.CW21051Cb	Install H-Pile Sections P4, P5 & P6 within low headroom (Incl. Grouting)	12d			26-Sep-14	11-Oct-14	2d					
01129.CW21051Ca	Install H-Pile Sections P1, P2 & P3 within low headroom (Incl. Grouting)	12d			27-Sep-14	13-Oct-14	9d					
01129.CW21051Cc	Determine Post Drill Location	5d			27-Sep-14	04-Oct-14	7d					
01129.CWa21070	Post Drilling (2 nos.)	8d			11-Oct-14	20-Oct-14	2d					
01129.CW21051Ct	Submission of Piling Records	2d			13-Oct-14	14-Oct-14	2d					
01129.CW21120B8	Pile Load Test Location Selection	6d			15-Oct-14	21-Oct-14	2d					
01129.CW21070C	Sheet Pile and ELS Works	42d	16-Oct-14	31-Oct-14	21-Oct-14	08-Dec-14	2d	-32d				
01129.CW21070C2	Sheetpiling	18d			21-Oct-14	10-Nov-14	2d					
01129.CW21060C1	Set-Up Plant and Installation of Reaction Piles (4 nos. Minipiles) on Low Headroom	7d			22-Oct-14	29-Oct-14	2d					
01129.CW21060C2	Reaction Piles Re-bar Installation and Grouting	4d			30-Oct-14	03-Nov-14	2d					
01129.CW21110C1	Develop Concrete Strength	12d			04-Nov-14	17-Nov-14	2d					
01129.CW21070C5	Set-up for Load Test	6d			11-Nov-14	17-Nov-14	2d					
01129.CW21060C	Pile Load Test (Wk46/14: 16 Nov 2014)	4d	21-Aug-14	15-Oct-14	18-Nov-14	21-Nov-14	2d	-32d				
01129.CW21070C3	ELS Works and Excavation	14d			22-Nov-14	08-Dec-14	2d					
01129.CW21070C7	Demobilization of Loading Test Equipment	2d			22-Nov-14	24-Nov-14	14d					
01129.CW21110C	Preparation Work and Pile Cap Construction	20d	01-Nov-14	17-Nov-14	29-Nov-14	22-Dec-14	2d	-30d				
Contract Work 3 - Box Culvert Diversion												
01129.CD002C10D	Complete all works of box culvert at Tunnel Approach Rest Garden (Wk43/14: 26 Oct 2014)	0d		26-Oct-14		26-Oct-14*	0d	0d				
Submissions and Approvals												
01129.CW31140D	Method Statement for ELS submission	28d	29-Mar-14	07-May-14	09-May-14 A	17-Sep-14	10d	-111d				
01129.CW31150D	Method Statement Approval for ELS	28d	08-May-14	04-Jun-14	29-May-14 A	20-Sep-14	9d	-108d				
01129.CW31002Ba	Contingency Plan for Works Adjacent to EBS Submission	28d	25-Feb-14	28-Mar-14	01-Sep-14	06-Oct-14	-5d	-153d				
01129.CW31003Ba	Contingency Plan for Works Adjacent to EBS Approval	21d	29-Mar-14	25-Apr-14	16-Sep-14	06-Oct-14	-9d	-164d				
Geotechnical Instrumentation												
01129.CW41070E	Instrumentation Installation (Worksite 1129.W2)	12d	10-Mar-14	22-Mar-14	06-Mar-14 A	01-Aug-14 A		-105d				

Actual Level of Effort

Primary Baseline

Actual Work

Remaining Work

Critical Remaining Work

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Milestone

Summary

3-MONTH-ROLLING PROGRAMME (AUGUST 2014)

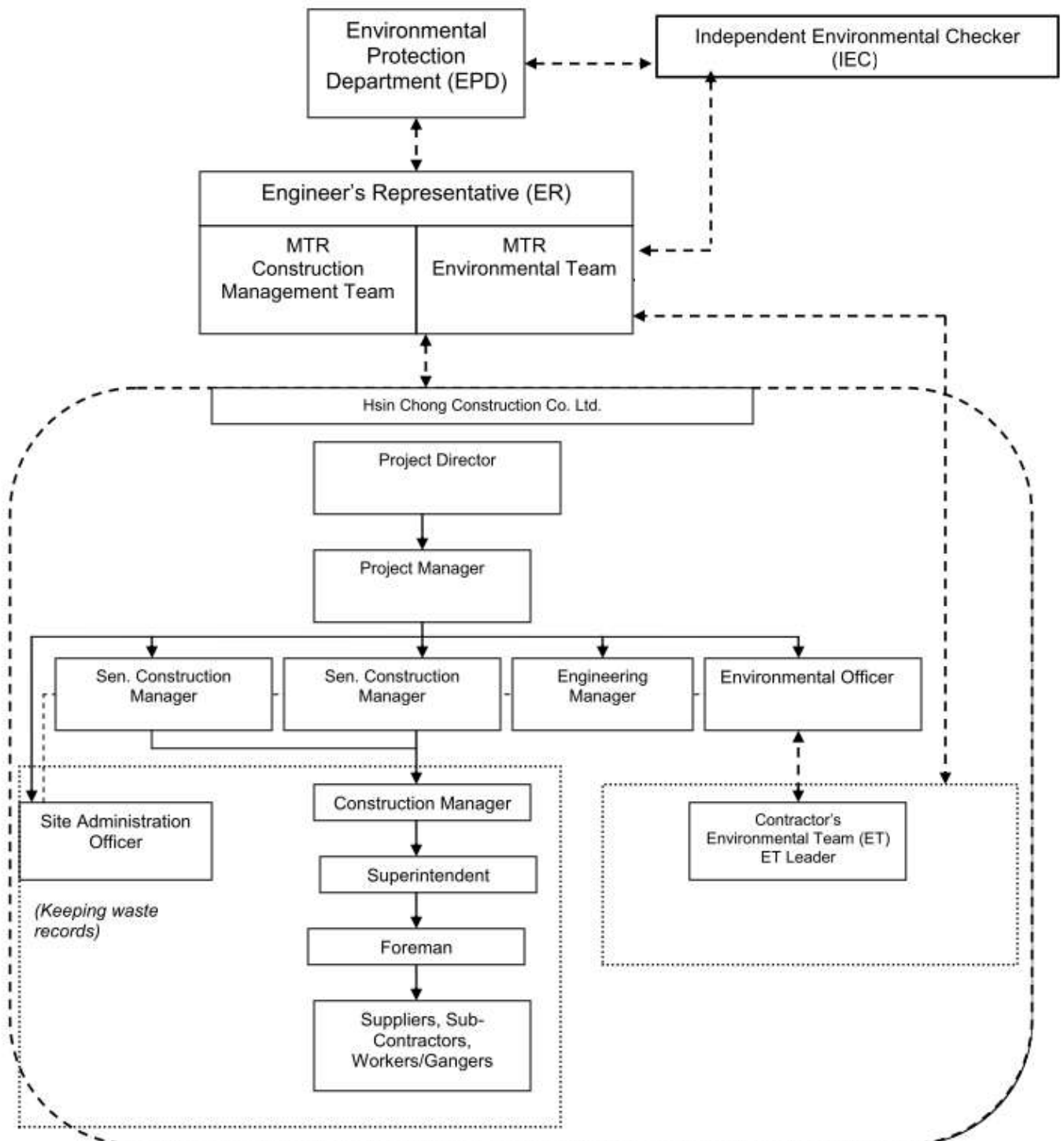
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Activity ID	Activity Name	Duration	BL Project Start	BL Project Finish	Start	Finish	TF	Variance - BL Project Finish Date	Qtr 3, 2014				Qtr 4, 2014					
									Aug	Sep	Oct	Nov						
	01129.CW31160D	Instrumentation Installation Extensometer (3 nos.)	45d	05-Mar-14	30-Apr-14	19-Jun-14 A	01-Aug-14 A		-76d	Instrumentation Installation Extensometer (3 nos.)								
	Site Construction									Site Construction								
	01129.CW3a1220	Excavation Works	21d			12-Jul-14 A	30-Sep-14	-4d		Excavation Works								
	01129.CW31220D20	ELS Installation (Northern Portion)	21d			13-Jul-14 A	30-Aug-14 A			ELS Installation (Northern Portion)								
	01129.CW31220D	ELS Works	21d	26-Jul-14	19-Aug-14	13-Jul-14 A	30-Aug-14 A		-9d	ELS Works								
	01129.CW31220D30	ELS Installation (Southern Portion)	21d			20-Jul-14 A	30-Aug-14 A			ELS Installation (Southern Portion)								
	01129.CW3a1180	Pipe Laying for Temp. 675mm dia. Drain pipe Diversion	14d			21-Jul-14 A	23-Aug-14 A			Pipe Laying for Temp. 675mm dia. Drain pipe Diversion								
	01129.CW31190D	Fix Steel Plates	10d	20-Aug-14	22-Sep-14	25-Aug-14 A	13-Sep-14	-4d	7d	Fix Steel Plates								
	01129.CW3a1181D	Lagging Installation for Existing Drains (Middle Portion)	11d			28-Aug-14 A	13-Sep-14	-4d		Lagging Installation for Existing Drains (Middle Portion)								
	01129.CW31190D10	Cast Base Slab (Wk39/14: 28 Sep 14)	1d	23-Sep-14	24-Sep-14	20-Sep-14	20-Sep-14*	-4d	3d	Cast Base Slab (Wk39/14: 28 Sep 14)								
	01129.CW31200D	Site Reinstatement	10d	25-Sep-14	08-Oct-14	23-Sep-14	06-Oct-14	-5d	2d	Site Reinstatement								
	Contract Work 4 - Pile Removal at Tunnel Approach Road																	
	Submissions and Approvals									Submissions and Approvals								
	Method Statements									Method Statements								
	01129.CW41160E	Method Statement Approval for Concrete Piles Removal Work	28d	17-Aug-14	13-Sep-14	20-May-14 A	31-Jul-14 A		44d	Method Statement Approval for Concrete Piles Removal Work								
	01129.CW41121E	Method Statement for Site Investigation Works to ascertain the locations of existing piles and utilities	28d	26-Apr-14	30-May-14	12-Jun-14 A	17-Sep-14	-30d	-91d	Method Statement for Site Investigation Works to ascertain the locations of existing piles and utilities								
	01129.CW41122E	MS Approval for Site Investigation Works to Ascertain Locations of Existing Piles and Utilities (Wk30/14: 27 Jul 14)	28d	31-May-14	27-Jun-14	30-Jun-14 A	21-Sep-14	-35d	-86d	MS Approval for Site Investigation Works to Ascertain Locations of Existing Piles and Utilities (Wk30/14: 27 Jul 14)								
	01129.CW41003B1	Bridge Condition Survey Report Submission	28d	20-Jan-14	24-Feb-14	01-Sep-14	06-Oct-14	143d	-181d	Bridge Condition Survey Report Submission								
	01129.CW41002Ba	Contingency Plan for Works Adjacent to EBS Submission	28d	16-Jul-14	16-Aug-14	01-Sep-14	06-Oct-14	9d	-40d	Contingency Plan for Works Adjacent to EBS Submission								
	01129.CW41003Ba	Contingency Plan for Works Adjacent to EBS Approval	28d	17-Aug-14	13-Sep-14	07-Oct-14	03-Nov-14	10d	-51d	Contingency Plan for Works Adjacent to EBS Approval								
	01129.CW41003B2	Bridge Condition Survey Report Approval	28d	25-Feb-14	24-Mar-14	07-Oct-14	03-Nov-14	174d	-224d	Bridge Condition Survey Report Approval								
	Site Construction																	
	Works Area W3B																	
	Stage 1																	
	01129.CW4a1191	Dig Trial Trench to Identify Northern Utilities Alignment for Sheet Piling Installation	12d			20-Jul-14 A	26-Aug-14 A			Dig Trial Trench to Identify Northern Utilities Alignment for Sheet Piling Installation								
	01129.CW41260E	Trial Pit for Utilities Detection (32-Way HKT, 1 Milt. Cable, 4x REACH Cables, DN150 FWMain, DN1800 Sewer)	12d	09-Aug-14	22-Aug-14	21-Jul-14 A	25-Aug-14 A		-1d	Trial Pit for Utilities Detection (32-Way HKT, 1 Milt. Cable, 4x REACH Cables, DN150 FWMain, DN1800 Sewer)								
	01129.CW41260E	Trial Pit for Utilities Detection (32-Way PCCW Cable)	12d			21-Jul-14 A	25-Aug-14 A			Trial Pit for Utilities Detection (32-Way PCCW Cable)								
	01129.CW41260E	Trial Pit for Utilities Detection (4x REACH Cables)	12d			21-Jul-14 A	04-Aug-14 A			Trial Pit for Utilities Detection (4x REACH Cables)								
	01129.CW41260E	Trial Pit for Utilities Detection (DN150 Fresh Water Main)	12d			21-Jul-14 A	18-Aug-14 A			Trial Pit for Utilities Detection (DN150 Fresh Water Main)								
	01129.CW4a1171	Dig Trial Trench to Expose Box Culvert Northern MJ for Pile Location Identification	22d			23-Jul-14 A	04-Aug-14 A			Dig Trial Trench to Expose Box Culvert Northern MJ for Pile Location Identification								
	01129.CW4a1161	Liaison with Utilities Undertakers	33d			25-Jul-14 A	17-Sep-14	39d		Liaison with Utilities Undertakers								
	01129.CW4a1181	Proposal of Precautionary Measures to HKT, Military Cable & HyD Structure	23d			30-Jul-14 A	15-Sep-14	41d		Proposal of Precautionary Measures to HKT, Military Cable & HyD Structure								
	01129.CW41170E	Utilities Identification and Protection of Southern Utilities Alignment for Sheet Piles Demarcation	12d	23-Aug-14	17-Oct-14	23-Aug-14 A	30-Aug-14 A		39d	Utilities Identification and Protection of Southern Utilities Alignment for Sheet Piles Demarcation								
	01129.CW41171E	Installation of Southern Sheet Piles	24d	18-Oct-14	14-Nov-14	28-Aug-14 A	30-Sep-14	28d	37d	Installation of Southern Sheet Piles								
	01129.CW41181E	Existing Pile Location Confirmed/Accepted by Engineer (52/14: 28 Dec 14)	14d	09-Dec-14	24-Dec-14	01-Sep-14	17-Sep-14	83d	82d	Existing Pile Location Confirmed/Accepted by Engineer (52/14: 28 Dec 14)								
	01129.CW4a1201	Cable Slewing, Disconnection, Protection Measures for Sheet Piling Installation	45d			18-Sep-14	11-Nov-14	2d		Cable Slewing, Disconnection, Protection Measures for Sheet Piling Installation								
	01129.CW41190E	Pile Removal 1 no. Pre-Drilling Work	6d	07-Jan-15	13-Jan-15	03-Oct-14	09-Oct-14	54d	79d	Pile Removal 1 no. Pre-Drilling Work								
	01129.CW41230E	Temp. Diversion of DN150 DI Fresh Water Main to Southern Sheet Pile	32d	17-Apr-15	30-Apr-15	03-Oct-14	08-Nov-14	28d	138d	Temp. Diversion of DN150 DI Fresh Water Main to Southern Sheet Pile								
	01129.CW4a1211	Proposal for Ground Improvement Works (Optional. In case Soil Profile Changes after Pile Removal)	42d			10-Oct-14	27-Nov-14	54d		Proposal for Ground Improvement Works (Optional. In case Soil Profile Changes after Pile Removal)								
	01129.CW41172E	Installation of Northern Sheet Piles	24d	15-Nov-14	28-Nov-14	12-Nov-14	09-Dec-14	2d	-9d	Installation of Northern Sheet Piles								
	Geotechnical Instrumentation									Geotechnical Instrumentation								
	01129.CW41151E	Instrumentation Installation WA3	34d	16-Jul-14	08-Aug-14	05-May-14 A	17-Sep-14	2d	-33d	Instrumentation Installation WA3								
	01129.CW41151E30	Utility Monitoring Point Installation (16 nos.)	20d			07-Jul-14 A	17-Sep-14	53d		Utility Monitoring Point Installation (16 nos.)								
	01129.CW41151E20	Ground Settlement Marker Installation (9 nos.)	34d			16-Jul-14 A	19-Aug-14 A			Ground Settlement Marker Installation (9 nos.)								
	01129.CW41151E40	OBS/ Piezometer Installation (1 no.)	27d			11-Aug-14 A	27-Aug-14 A			OBS/ Piezometer Installation (1 no.)								
	01129.CW41151E60	Inclinometer Installation (3 nos.)	27d			12-Aug-14 A	17-Sep-14	2d		Inclinometer Installation (3 nos.)								
	01129.CW41151E70	Extensometer (2 nos.)	27d			23-Aug-14 A	30-Aug-14 A			Extensometer (2 nos.)								
	Associated Works									Associated Works								
	01129.AW1011F30	Sourcing of Plants	20d			21-Jul-14 A	03-Sep-14	784d		Sourcing of Plants								
	01129.AW1011F40	Submission of Plant Sample Photos for Approval	6d			24-Jul-14 A	06-Sep-14	0d		Submission of Plant Sample Photos for Approval								
	01129.AW1001F	Compensate 7 nos. trees at Wan Chai District (Tai Wo Street Playground)	3d	12-Jul-14	15-Jul-14	01-Sep-14	03-Sep-14	-1d	-43d	Compensate 7 nos. trees at Wan Chai District (Tai Wo Street Playground)								
	01129.AW1009F	Compensate Shrubs + Ground Cover + Grass at Wan Chai Gap Park	23d	27-May-14	11-Jul-14	01-Sep-14	27-Sep-14	-1d	-66d	Compensate Shrubs + Ground Cover + Grass at Wan Chai Gap Park								
	01129.AW1004F	Compensate 2 nos. trees at Wan Chai District (Tai Tam Reservoir Road Sitting-out Area)	1d	16-Jul-14	16-Jul-14	01-Sep-14	01-Sep-14	-1d	-40d	Compensate 2 nos. trees at Wan Chai District (Tai Tam Reservoir Road Sitting-out Area)								
	01129.AW1010F	Compensate 24 nos. of trees at Wan Chai Gap Park	6d	20-May-14	26-May-14	01-Sep-14	06-Sep-14	-1d	-87d	Compensate 24 nos. of trees at Wan Chai Gap Park								
	01129.AW1007F	Compensate 25 nos. trees + Ground Cover + Grass at Tung Lo Wan Garden	23d	29-Jul-14	11-Sep-14	02-Sep-14	29-Sep-14	-1d	-15d	Compensate 25 nos. trees + Ground Cover + Grass at Tung Lo Wan Garden								
	01129.AW1005F	Compensate 5 nos. trees and Ground Cover at Wan Chai District (Lockhart Road Playground)	5d	23-Jul-14	28-Jul-14	02-Sep-14	06-Sep-14	-1d	-35d	Compensate 5 nos. trees and Ground Cover at Wan Chai District (Lockhart Road Playground)								
	01129.AW1003F	Compensate 3 nos. trees and planter at Wan Chai District (Hong Kong Tennis Centre)	5d	17-Jul-14	22-Jul-14	02-Sep-14	06-Sep-14	-1d	-40d	Compensate 3 nos. trees and planter at Wan Chai District (Hong Kong Tennis Centre)								
	01129.AW1008F	Compensate 5 nos. + Grass at Tai Hang Road Children Playground (Wk39/14 : 28 Sep 2014)	12d	12-Sep-14	25-Sep-14	16-Sep-14	29-Sep-14*	-1d	-3d	Compensate 5 nos. + Grass at Tai Hang Road Children Playground (Wk39/14 : 28 Sep 2014)								
	Optional Construction Works																	
	Actual Level of Effort									Date								
	Primary Baseline									Revision								
	Actual Work									Checked								
	Remaining Work									Approved								
	Critical Remaining Work									31-Aug-14								
	Summary									Rev.-								
	Milestone									AB								
										NC								

APPENDIX B

Project Organization Structure

Appendix B Project Organisation Structure

APPENDIX C

Environmental Mitigation Measures Implementation Schedule

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	V
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

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Air Quality						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> 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
Construction Dust Impact						
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/m ² 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 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
S8.90	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. 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 	To minimize dust impacts	Contractor	Works areas	Construction phase	@

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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
	boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. <ul style="list-style-type: none"> • 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 					
Airborne Noise Impact						
Construction Phase						
S9.55	The following good site practices shall be implemented: <ul style="list-style-type: none"> • 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
S9.56 & Table 9.16	The following quiet PME shall be used: <ul style="list-style-type: none"> • 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 	To minimize construction noise impact	Contractor	Works areas at: <ul style="list-style-type: none"> • 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 	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
	<ul style="list-style-type: none"> Lorry Wheel loader Roller vibratory 			<ul style="list-style-type: none"> to north of ADM South of ADM to Overrun Tunnel 		
S9.58 – S9.59 & Table 9.17	Movable noise barrier shall be used for the following PME: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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
Water Quality Impact						
Construction Phase						
S11.222 to 11.245	The site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” shall be followed where practicable. <u>Surface Run-off</u> <ul style="list-style-type: none"> 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 	To minimize water quality impacts from construction site runoff and general construction activities	Contractor	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
	<p>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.</p> <ul style="list-style-type: none"> • 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. <p><u>Boring and Drilling Water</u></p> <ul style="list-style-type: none"> • 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. <p><u>Wheel Washing Water</u></p> <ul style="list-style-type: none"> • 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. <p><u>Bentonite Slurries</u></p> <ul style="list-style-type: none"> • 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 					

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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
	<p>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.</p> <p><u>Water for Testing & Sterilization of Water Retaining Structures and Water Pipes</u></p> <ul style="list-style-type: none"> 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. <p><u>Acid Cleaning, Etching and Pickling Wastewater</u></p> <ul style="list-style-type: none"> 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. <p><u>Wastewater from Site Facilities</u></p> <ul style="list-style-type: none"> 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. 					
S11.246 & 11.247	<p>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.</p> <p>Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.</p>	To minimize water quality impacts due to sewage generated from construction workforce	Contractor	Works areas	Construction Phase	V
S11.248	<p>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.</p>	To minimize impact from discharge of uncontaminated groundwater	Contractor	Works areas	Construction Phase	@
S11.249	<p>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</p>	To control site run-off generated from any	Contractor	Any potential contaminated areas 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
	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.	potential contaminated works areas.		be identified from the Stage 2 SI		
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
S11.253	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	To minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction Phase	V

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	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.					
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	V
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: <ul style="list-style-type: none"> 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
Waste Management Implications						
Construction Phase						
S12.75	Good Site Practices and Waste Reduction Measures <ul style="list-style-type: none"> 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

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S12.76	Good Site Practices and Waste Reduction Measures (con't) <ul style="list-style-type: none"> 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	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. The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.	To achieve waste reduction	Contractor	All Work Sites	Construction Phase	V
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: <ul style="list-style-type: none"> 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	V
S12.80	Storage, Collection and Transportation of Waste (con't) Waste haulier with appropriate permits shall be employed by the Contractor for the collection and transportation of waste from works areas to respective disposal	To minimize potential adverse environmental	Contractor	Work Sites	Construction Phase	V

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	outlets. The following suggestions shall be enforced to minimize the potential adverse impacts: <ul style="list-style-type: none"> 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 	impacts arising from waste collection and disposal				
S12.81	Storage, Collection and Transportation of Waste (con't) <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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
S12.88	Sediments <ul style="list-style-type: none"> 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
S12.89	Sediments (con't) <ul style="list-style-type: none"> 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 	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

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
	proponent shall also be responsible for the application of all necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged and excavated sediment prior to the commencement of the excavation works.					
S12.91 – 12.94	Sediments (con't) <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> 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 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	Work Sites, Sediment disposal sites	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
	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.					
/	Accidental spillage To prevent accidental spillage of chemicals, the following is recommended: <ul style="list-style-type: none"> • 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	@
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: <ul style="list-style-type: none"> • 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
S12.98	Chemical Waste Storage Area <ul style="list-style-type: none"> • 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
S12.99	Chemical Waste <ul style="list-style-type: none"> • 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	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
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 <i>Waste Disposal (Chemical Waste) (General) Regulation</i> .	To monitor the generation, reuse and disposal of chemical waste	Contractor	Work Sites	Construction Phase	V
S12.101	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector shall be employed by the contractor to 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

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**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)

APPENDIX E

Calibration Certificates of Equipments



CERTIFICATE OF CALIBRATION

Certificate No.: 14CA0305 06-01

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.:	2285692	2250420
Adaptors used:	-	-

Item submitted by

Customer Name: AECOM ASIA CO. LTD.
Address of Customer: -
Request No.: -
Date of receipt: 05-Mar-2014

Date of test: 07-Mar-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 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 $\pm 20\%$.
- 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 response of the Sound Level Meter.

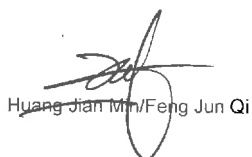
Test results

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: 12-Mar-2014

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA0305 06-01

Page 2 of 2

1, Electrical Tests

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

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	1.0	
	Lin	Pass	2.0	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	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	
		Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	A	Pass	0.3	
	C	Pass	0.3	
Frequency weightings	Lin	Pass	0.3	
		Pass	0.3	
		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	0.5
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

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

Calibrated by:

Date:

Fung Chi Yip

07-Mar-2014

- End -

Checked by:

Date:

Lam Tze Wai

12-Mar-2014

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.



CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-01

Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	, Microphone
Manufacturer:	Rion Co., Ltd.	, Rion Co., Ltd.
Type/Model No.:	NL-31	, UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	, 90565
Adaptors used:	-	, -

Item submitted by

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 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 $\pm 20\%$.
- 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 responsiveness of the Sound Level Meter.

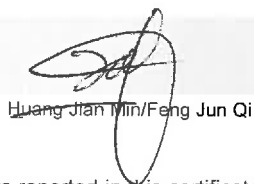
Test results

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.

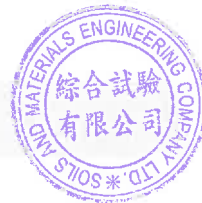
Actual Measurement data are documented on worksheets.

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 11-Nov-2013

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 13CA1107 01-01

Page 2 of 2

1, Electrical Tests

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

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	1.0	
	Lin	Pass	2.0	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	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	
		Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	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	N/A	N/A	
	Repeated at frequency of 100 Hz	N/A	N/A	
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:

Date:

Fung Chi Yip

08-Nov-2013

Checked by:

Date:

Lam Tze Wai

11-Nov-2013

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.



CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-02

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Rion Co., Ltd.
Type/Model No.: NC-73
Serial/Equipment No.: 10307223 / N.004.08
Adaptors used: -

Item submitted by

Customer: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 10 hPa

Test specifications

- 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.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

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

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

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 11-Nov-2013

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 13CA1107 01-02

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.

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	93.86	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 = 988.6 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 = 0.2 %

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:

Date: 08-Nov-2013

Fung Chi Yip

Checked by:

Date: 11-Nov-2013

Lam Tze Wai

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 1129 - Advance Works for NSL
Impact Environmental Monitoring Schedule for September 2014**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep
			Noise (NM1)			
7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep
	Noise (NM1)					
14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep
					Noise (NM1)	
21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep
					Noise (NM1)	
28-Sep	29-Sep	30-Sep				

Noise Monitoring Station

NM1 Hoi Kung Court

Monitoring Frequency

Once per week

Shatin to Central Link Contract 1129 - Advance Works for NSL
Tentative Impact Environmental Monitoring Schedule for October 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Oct	2-Oct	3-Oct	4-Oct
					Noise (NM1)	
5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct
			Noise (NM1)			
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
	Noise (NM1)					
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
		Noise (NM1)				
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
	Noise (NM1)					

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

Noise Monitoring Station

NM1 Hoi Kung Court

Monitoring Frequency

Once per week

APPENDIX G

Noise Monitoring Results and their Graphical Presentations

Appendix G - Impact Daytime Construction Noise Monitoring Results

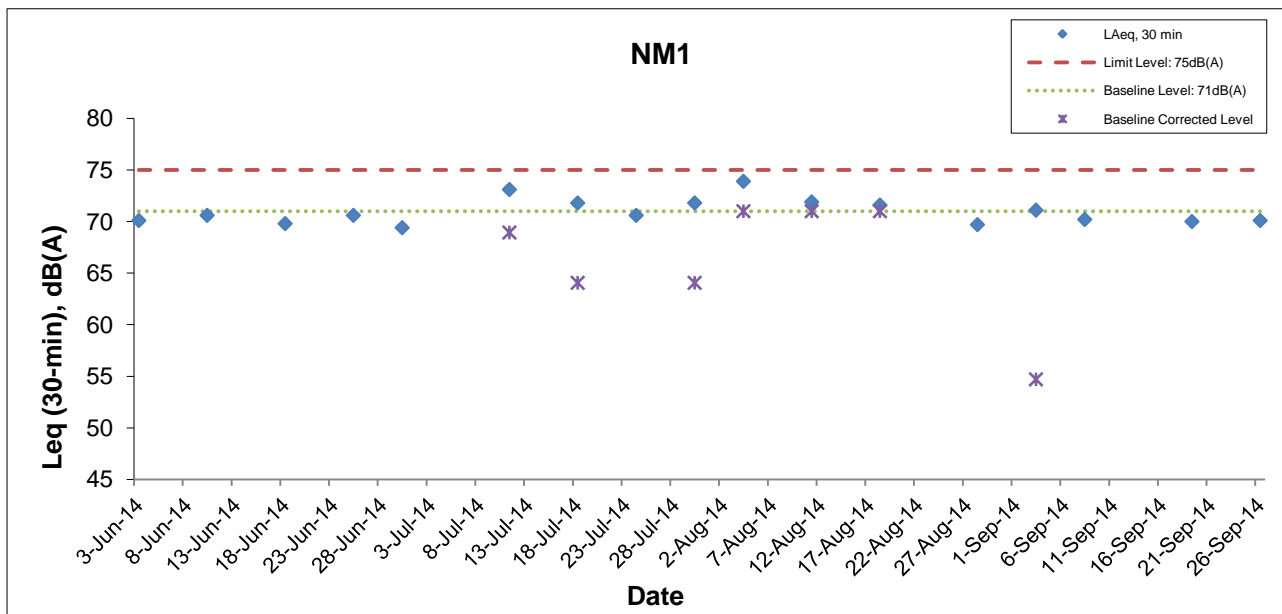
Daytime Noise Monitoring Results at Station NM1 - Hoi Kung Court, Rooftop-20/F

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				
3-Sep-14	Sunny	11:10	69.7	72.4	71.1	54.7	71	75	N
8-Sep-14	Cloudy	9:30	68.2	71.4	70.2	<Baseline Level	71	75	N
19-Sep-14	Sunny	10:40	69.0	73.0	70.0	<Baseline Level	71	75	N
26-Sep-14	Sunny	15:30	68.0	71.7	70.1	<Baseline Level	71	75	N

Remark:

* Façade measurement.

-The measured Leq is corrected against the corresponding Baseline Level.



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APPENDIX H

Event Action Plan

Appendix H Event Action Plan**Event and Action Plan for Construction Noise Monitoring**

EVENT	ACTION			
	ET	IEC	ER	Contractor
Exceedance of Action Level	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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

Cumulative Statistics of Complaints, Notification of Summons and Successful Prosecutions

Appendix I**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	0
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

APPENDIX J

Waste Flow Table

SCL Contract 1129 Advance Works For NSL**Monthly Summary C&D Material Flow Table for 2014**

updated to 30 September 2014

Latest Programme for Generation & Import of Materials in each Reporting Period	Quantity for off-site disposal of 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)
	CWPFBP(1)	TKO137FB(2)	TKO137SF(3)	^Other Site	Total (m ³)	Total	Total		Total	Total	Total
2014/01 (Actual)	0	0	0	0	0	0	0	0	0	0	0
2014/02 (Actual)	0	0	0	0	0	0	0	0	0	0	0
2014/03 (Actual)	305	0	0	0	305	0	0	0	0	0	0
2014/04 (Actual)	308	75	0	0	382	0	0	0	0	0	0
2014/05 (Actual)	1,258	7	0	0	1,266	0	0	0	0	5.0	0
2014/06 (Actual)	63	19	0	0	82	4,210	0	0	0	4.9	0
Sub-total	1,934	101	0	0	2,035	4,210	0	0	0	9.9	0
2014/07 (Actual)	663	116	0	0	779	0	0	0	0	4.4	0
2014/08 (Actual)	1,658	63	0	0	1,721	0	0	0	400	9.5	0
2014/09 (Actual)	1,032	182	0	0	1,214	0	0	0	0	11.3	0
2014/10 (Actual)											
2014/11 (Actual)											
2014/12 (Actual)											
Sub-total	3,352	360	0	0	3,713	0	0	0	400	25.2	0
Total					5,747	4,210	0	0	400	35.1	0

Remark: *Assume the density is 2 tonnes per cubic metre

 ^Required to be approved by EPD and MTR

- 1 CWPFBP Chai Wan Public Fill Barging Point
- 2 TKO137FB Fill Bank at Tseung Kwan O Area 137
- 3 TKO137SF Sorting Facilities at Tseung Kwan O Area 137

Appendix B

**Monthly EM&A Report for September 2014 – SCL Works
Contract 1126 Reprovisioning of Harbour Road Sports Centre
and Wan Chai Swimming Pool**

MTR Corporation Limited


**Shatin to Central Link –
Hung Hom to Admiralty Section**

Monthly EM&A Report No.3

[Period from 1 to 30 September 2014]

Works Contract 1126 – Reprovisioning of Harbour
Road Sports Centre and Wan Chai Swimming Pool

(October 2014)

Certified by: 
Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 13th October 2014

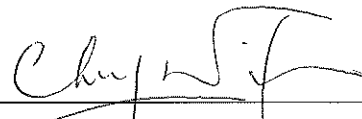
Kaden – Leader Joint Venture

**Shatin to Central Link –
Contract 1126
Reprovisioning of Harbour Road Sports
Centre and Wan Chai Swimming Pool**

**Monthly Environmental
Monitoring and Audit Report
For September 2014**

(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 3rd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1126 –Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool**. This report documents the findings of EM&A Works conducted from 1 to 30 September 2014.

Summary of Construction Works undertaken during Reporting Month

2. The major site activities undertaken in the reporting month include:
 - Construction of Fitness Room and Kiosk;
 - Construction of Male Changing Room with HR Pump Room and Store Room;
 - Construction of Marshall Seats;
 - Construction of Weightlifting Room;
 - Landscaping and external works; and
 - Demolition of part of the existing spectator stand.

Environmental Monitoring and Audit Progress

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

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
Noise Monitoring Station ID
 - NM2⁽¹⁾⁽³⁾ (Harbour Centre) 4 times
- Construction Dust (24-hour TSP) Monitoring
Dust Monitoring Station ID
 - AM2⁽¹⁾⁽²⁾ (Wan Chai Sports Ground) 6 times
 - AM3⁽¹⁾ (Existing Harbour Road Sports Centre) 6 times

Remarks:

- (1) Station ID as identified in approved EM&A Manual for SCL(HUH-ADM).
- (2) 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.
- (3) Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring. Alternative noise monitoring location proposed at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited. Impact noise monitoring was carried out at Harbour Centre from 20 August 2014 onwards.

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 3, 17 and 29 September 2014. 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 3, 10, 17, 24 and 29 September 2014. The representative of the IEC joined the site inspection on 10 September 2014. 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 construction noise monitoring and 24-hour TSP monitoring was recorded during the reporting period.
8. No non-compliance event was recorded during the reporting period.
9. No Project related environmental complaint and notification of summons/successful prosecutions were received in this reporting period.

Reporting Changes

10. N/A

Future Key Issues

11. Major site activities for the coming reporting month will include:
 - Site Cleaning works at the Demolition Area.
12. Key environmental impacts to be considered in the coming month include:
 - Dust impact from demolition works;
 - Wastewater from surface runoff;
 - Waste management;
 - Preservation and protection of retained and transplanted trees; and
 - Noise impact from construction and demolition works.

1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Kaden – Leader Joint Venture (KLJV) 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 1126 – Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool (hereafter referred to as the Project).

Purpose of the Report

- 1.2 This is the 3rd 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 September 2014. The major construction works for Contract 1126 commenced on 9 July 2014.

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. Variations of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/A) was issued by Director of Environmental Protection (DEP) on 30 April 2014.
- 2.3 The construction of the SCL (HUH-ADM) has been divided into a series of civil construction Works Contracts and this Works Contract 1126 comprises of the Permanent Works and the Temporary Works for the re-provisioning of Harbour Road Sports Centre (HRSC) and Wan Chai Swimming Pool (WCSP). The major construction works for Contract 1126 commenced on 9 July 2014.

General Site Description

- 2.4 The major works of this Project that was classified as Designated Project under the EIAO include the demolition of grandstand superstructure and water pump room of WCSG. The alignment and works area for the Works Contract 1126 are shown in **Figure 1**.

Construction Programme and Activities

- 2.5 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**.
- Construction of Fitness Room and Kiosk;
 - Construction of Male Changing Room with HR Pump Room and Store Room;
 - Construction of Marshall Seats;
 - Construction of Weightlifting Room;
 - Landscaping and external works; and
 - Demolition of part of the existing spectator stand.

Project Organisation

- 2.6 The project organizational chart and contact details are shown in **Figure 4**.

Status of Environmental Licences, Notification and Permits

- 2.7 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/A	30/04/2014	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Ref no.: 370563	14/02/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No.7019324	10/02/2014	N/A	Valid
Registration of Chemical Waste Producer			
5213-135-K3101-01	14/05/2014	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00019352-2014	17/06/2014	30/06/2019	Valid
Construction Noise Permit (CNP)			
GW-RS0470-14 ⁽¹⁾	19/05/2014	30/10/2014	Valid
GW-RS0761-14 ⁽²⁾	01/08/2014	31/01/2015	Valid

Note:

(1) For the use of transportation of material for hoarding erection in Wan Chai Sports Ground.

(2) For the use of A&A works in Wan Chai Sports Ground.

Summary of EM&A Requirements

- 2.8 The EM&A programme under Works Contract 1126 require regular dust and noise 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.
- 2.9 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.
- 2.10 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely construction noise & dust monitoring as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

- 3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to the original baseline monitoring location was rejected, alternative location was proposed. The construction noise monitoring locations are listed in **Table 3.1** and shown in **Figure 2**.

Table 3.1 Regular Construction Noise Monitoring Location

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NM2 ⁽¹⁾	Harbour Centre (7/F) ⁽²⁾	Façade

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).
 (2) Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring. Alternative noise monitoring location proposed at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited. Impact noise monitoring was carried out at Harbour Centre from 20 August 2014 onwards.

Monitoring Parameter and Frequency

- 3.2 Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed. The monitoring schedule for this reporting period is shown in **Appendix D**.
- 3.3 The construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). L_{Aeq} (30min) (one set of 30-minute measurement) was used as the monitoring metric for the time period between 0700 – 1900 hours on normal weekdays.

Monitoring Equipment and Methodology

Field Monitoring

- 3.4 The monitoring procedures are as follows:
- The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
 - The battery condition was checked to ensure good functioning of the meter.
 - Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weighting : A
 - time weighting : Fast
 - measurement time : 30 minutes (one set of 30-minute measurement of a $L_{eq,30min}$ reading)

- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- At the end of 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.
- A façade correction of +3dB(A) shall be made to the noise parameter obtained by free field measurement.

Monitoring Equipment

- 3.5 The sound level meters and calibrator used for the noise measurement, as listed in **Table 3.2**, compile with the IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in **Appendix C**.

Table 3.2 Noise Monitoring Equipment

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 955 (Serial no.: 12553) SVAN 957 (Serial no.: 21460 and 23853)
Calibrator	SV30A (Serial no.: 24791, 24780 and 24803)

Maintenance and Calibration

- 3.6 Maintenance and Calibration procedures were as follows:
- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
 - The sound level meter and calibrator were checked and calibrated at yearly intervals. Copies of calibration certificates are attached in **Appendix C**.

Action & Limit Level for Construction Noise Monitoring

- 3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I**.

Compliance Checking for Impact Monitoring

- 3.8 The Baseline noise monitoring was conducted between 1 and 14 September 2014 at Harbour Centre. The Baseline noise monitoring results ($L_{eq}(30min.)$ dB(A)) during the period without construction works on normal weekdays ranged from 67.1dB(A) to 73.0dB(A). Result of the monitoring (i.e. 69.6dB(A)) was used for correcting the measured noise level during the construction stage of the Project for normal weekdays by this formula:

Measured L_{eq} at the Harbour Centre – Baseline Noise Level (69.6 dB)

= Construction Noise Level at the Harbour Centre

Continuous Noise Monitoring

- 3.9 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared submitted under EP Condition 2.8 and Condition 2.7 respectively, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria is anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (HUH-ADM) under Works Contract 1126.

Regular Construction Dust Monitoring

- 3.10 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.3 Dust Monitoring Location

Regular Dust Monitoring Location	Description
AM2 ⁽¹⁾	Wan Chai Sports Ground ⁽²⁾
AM3 ⁽¹⁾	Existing Harbour Road Sports Centre

Note:

(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).

(2) 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.

Monitoring Parameter and Frequency

- 3.11 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**. The TSP monitoring at two monitoring locations was conducted as per the schedule presented in **Appendix D**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring ⁽¹⁾	Throughout the construction period	24-hour TSP	Once per 6 days

Note:

(1) 1- hour TSP shall be conducted when one documented valid complaint is received.

Monitoring Equipment

3.12 **Table 3.5** summarizes the equipment used for the dust monitoring.

Table 3.5 Dust Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 1535, 5280	2
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 0993	1

Instrumentation

3.13 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 Appendix B (Part 50).

HVS Installation

3.14 The following guidelines were adopted during the installation of HVS:

- A horizontal platform with appropriate support to secure the samplers against gusty wind should be provided;
- Two samplers should not be placed less than 2m apart;
- The distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
- A minimum of 2m separation from walls, parapets and penthouses is required for rooftops samplers;
- A minimum of 2m separation from any supporting structure, measures horizontally is required;
- No furnace or incinerator flue is located nearby the samplers;
- Airflow around the sampler is unrestricted;
- The sampler is more than 20m from the dripline;
- Any wire fence and gate to protect the sampler, should not cause any obstruction during monitoring;
- Permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- A secured supply of electricity is needed to operate the samplers.

Filters Preparation

- 3.15 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μm diameter. A HOKLAS accredited laboratory, Wellab Ltd. (HOKLAS Registration No. 083), was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.
- 3.16 All filters, which were prepared by Wellab Ltd., 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 $\pm 5\%$. A convenient working RH was 40%.
- 3.17 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

- 3.18 Operating/analytical procedures for the TSP monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4 $\text{m}^3/\text{min.}$) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
 - The power supply was checked to ensure the sampler worked properly.
 - The filter holding frame and the area surrounding the filter were cleaned.
 - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
 - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
 - The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
 - The shelter lid was closed and secured with the aluminum strip.
 - A new flow rate record chart was set into the flow recorder.
 - The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
 - The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet before and after sampling.
 - The elapsed time and other relevant information was recorded. After sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
 - It was then placed in a clean plastic envelope and sealed and sent to the Wellab Ltd. for weighing.
 - Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be < 50% and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

3.19 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix C**.
- The HVS calibration orifice will be calibrated annually.

Action and Limit Levels for Dust Monitoring

3.20 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix I**.

Landscape and Visual

3.21 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 given in **Appendix J**.

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 and EM&A Manual. 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 (August 2014)	12 September 2014

5 MONITORING RESULTS

Regular Construction Noise Monitoring

- 5.1 A total of 4 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1126. No exceedance of the limit level was recorded at designated monitoring stations.
- 5.2 Based on observation during the on-site monitoring, road traffic nearby is considered as a potential noise source other than construction works of the Project that affects the monitoring results of the reporting month.
- 5.3 The noise monitoring results together with their graphical presentations are presented in **Appendix F** and a summary of the noise monitoring results in this reporting month is given in **Table 5.1**.

Table 5.1 Summary Table of Noise Monitoring Results during the reporting month

Parameter ⁽¹⁾	Location	Range, dB(A), L _{eq} (30 mins) ^{(2) (3)}	Limit Level, dB(A), L _{eq} (30 mins)
Noise (NM2)	Harbour Centre	71.6 – 73.8	75

Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).
- (2) The Range presented in the above table was baseline corrected noise level.
- (3) Since baseline noise monitoring at Harbour Centre was conducted between 1 and 14 September 2014, baseline corrected level was only applied on noise measured after 14 September 2014.
- 5.4 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period.

Regular Dust Monitoring

- 5.5 12 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1126. The monitoring results together with their graphical presentations are presented in **Appendix E** and a summary of the dust monitoring results in this reporting month is given in **Table 5.2**.

Table 5.2 Summary Table of Dust Monitoring Results during the reporting month

Parameter	Minimum µg/m ³	Maximum µg/m ³	Average µg/m ³	Action Level, µg/m ³	Limit Level, µg/m ³
24-hr TSP (AM2 ⁽¹⁾)	74.9	128.6	103.1	160	260
24-hr TSP (AM3 ⁽¹⁾)	40.4	105.5	65.9	169	260

Remarks: (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).

- 5.6 Based on observation during the on-site monitoring, road traffic emission nearby is considered as a potential dust source other than construction works of the Project that affects the monitoring results of the reporting month.
- 5.7 Wind monitoring data were obtained from Star Ferry Meteorological Station of Hong

Kong Observatory and shown on **Appendix E**.

- 5.8 No exceedance of the Action and Limit Levels of the 24-hour TSP was recorded during the reporting period.

Waste Management

- 5.9 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.3**. Details of waste management data is presented in **Appendix K**. 0 m³ of inert C&D material was re-used on-site and by other projects.

Table 5.3 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
September 2014	163 m ³	23 m ³	0kg	0 kg	0kg	24,550kg
Notes: (a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, (b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.						

Landscape and Visual

- 5.10 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 3, 17 and 29 September 2014. 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 3, 10, 17, 24 and 29 September 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 10 September 2014. No site inspection was conducted by EPD during the reporting month. 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
<i>Water Quality</i>	27 Aug 2014	<u>Reminder:</u> The Contractor is reminded to provide more sand bag bunds to prevent untreated water which may discharge out of site at WCSG.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 September 2014.
<i>Noise</i>	--	--	--
<i>Landscape and Visual</i>	--	--	--
<i>Air Quality</i>	3 Sep 2014	<u>Observation:</u> Unpaved area observed dry in WCSG. The Contractor is reminded to provide frequent water spray to unpaved works area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 10 September 2014.
	3 Sep 2014	<u>Reminder:</u> Cement bags observed not covered. The Contractor is reminded to properly cover the stockpile of cement bags.	The observation was observed to be improved/rectified by the Contractor during the audit session on 10 September 2014.
	10 Sep 2014	<u>Reminder:</u> Uncovered stockpile observed in WCSG. The Contractor is reminded to cover the stockpile of dusty material to avoid dust generation.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 September 2014.
	29 Sep 2014	<u>Reminder:</u> Inactive stockpile material is observed to be exposed in WCSG (demolition area). The Contractor is reminded to cover the exposed stockpile material properly.	Follow up action will be reported in next reporting month.

Parameters	Date	Observations and Recommendations	Follow-up
Waste / Chemical Management	13 Aug 2014	<u>Reminder:</u> Properly clear the construction waste, sorting of construction waste should be carried out in WCSG and provide waste skip to construction waste in WCSG.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 September 2014.
	20 Aug 2014	<u>Reminder:</u> Frequently clear the construction waste on site to prevent accumulation in WCSG.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 September 2014.
	27 Aug 2014	<u>Observation:</u> Chemical waste is observed stored with other C&D waste at waste storage area at WCSG. The Contractor is reminded to perform sorting and regularly clear the C&D waste.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 September 2014.
Permits/ Licenses	--	--	--

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 7.1 No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP 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 Project-related 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:
- Site Cleaning works at the Demolition Area.

Key Issues in the Next Month

- 8.2 Key issues to be considered in the coming month include:
- Dust impact from demolition works;
 - Wastewater from surface runoff;
 - Waste management;
 - Preservation and protection of retained and transplanted trees; and
 - Noise impact from construction and demolition works.

Monitoring Schedule in the Next Month

- 8.3 The tentative schedule of regular construction noise monitoring and 24-hour TSP monitoring at all the monitoring locations in the next reporting period is presented in **Appendix D**. The regular construction noise monitoring and 24-hour TSP 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 September 2014 in accordance with EM&A Manual and the requirement under EP.
- 9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.
- 9.3 5 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 3 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.
- 9.4 There was no Project related environmental complaint, successful prosecution or notification of summons 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

- N/A

Landscape and Visual

- N/A

Noise

- N/A

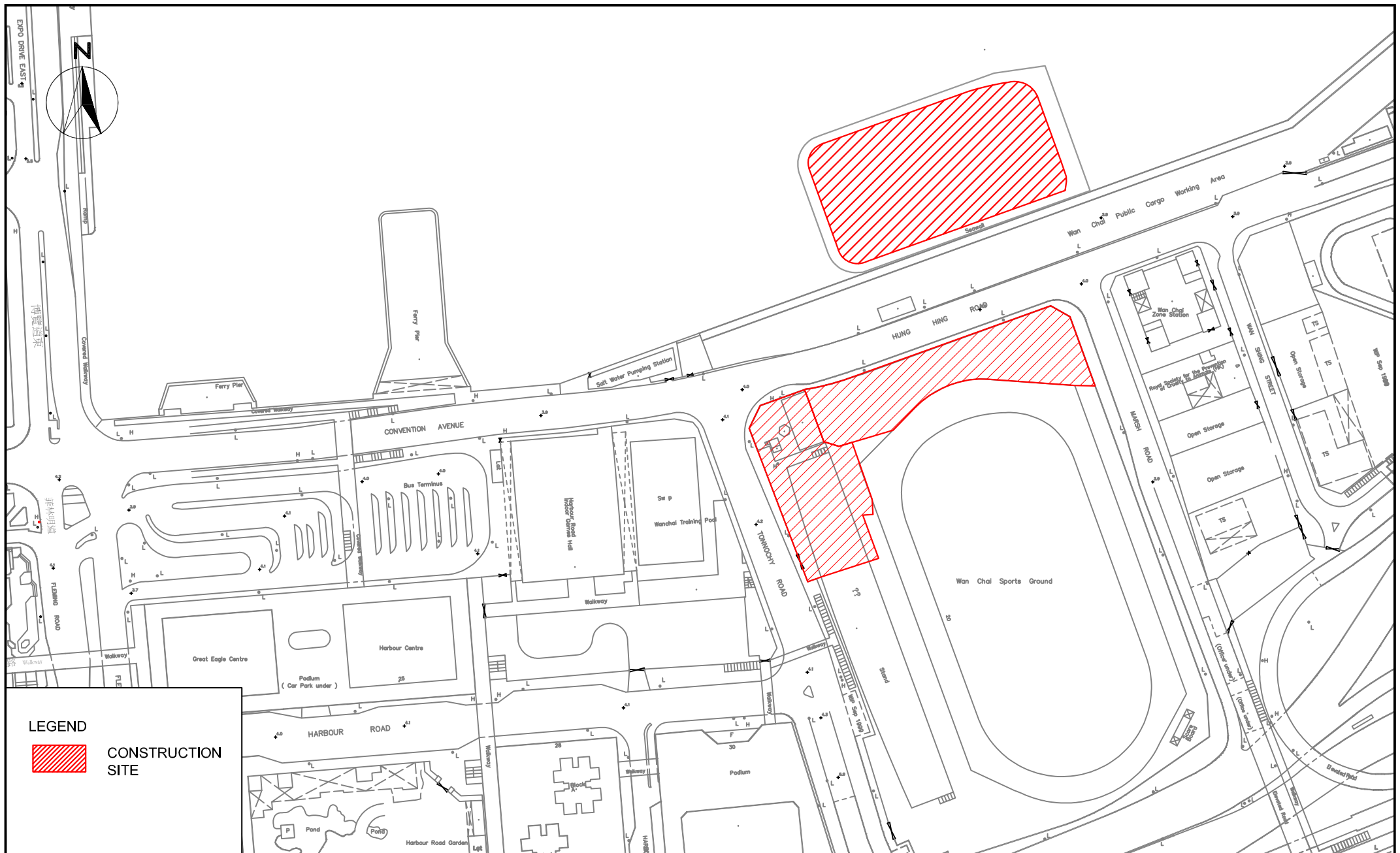
Air Quality

- The Contractor is reminded to provide frequent water spray to unpaved works area.
- The Contractor is reminded to cover the cement bags or stockpile of dusty material to avoid dust generation.

Waste/Chemical Management

- N/A

FIGURES



LEGEND



CONSTRUCTION
SITE

CINOTECH
Cinotech Consultants Limited

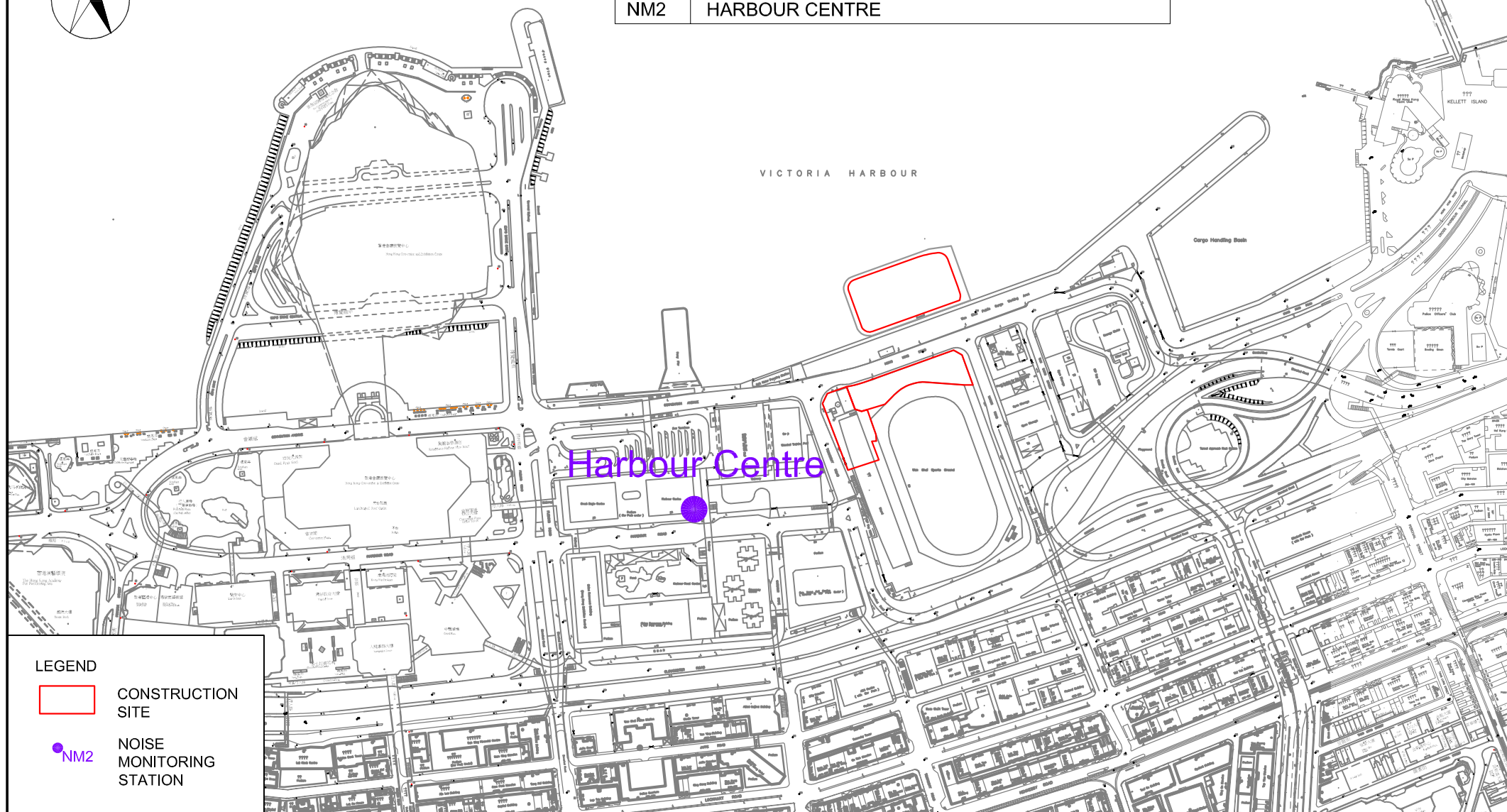
MTR 1126 REPROVISIONING OF HARBOUR ROAD SPORTS CENTRE AND
WAN CHAI SWIMMING POOL

SITE LAYOUT PLAN OF WORKS CONTRACT 1126

SCALE	1:2000 @ A4	DATE	JUN 2014
CHECK	JF	DRAWN	JW
JOB NO.	MA14009	FIGURE NO.	1
		REV	-



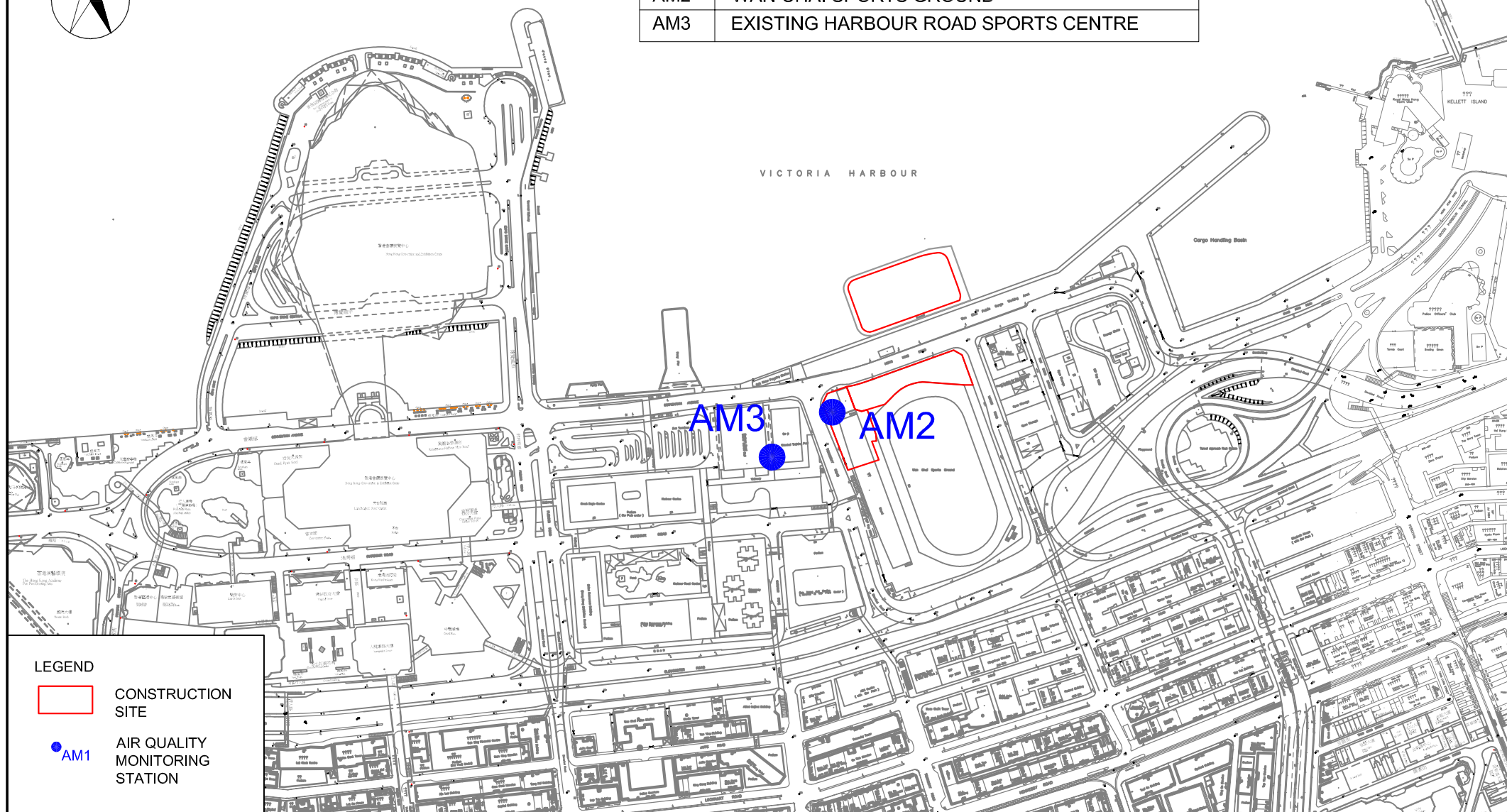
	NOISE MONITORING STATION
NM2	HARBOUR CENTRE



SCALE	1:5000 @ A4	DATE	AUG 2014
CHECK	JF	DRAWN	JW
JOB No.	MA14009	FIGURE NO.	2
		REV	-



	AIR QUALITY MONITORING STATION
AM2	WAN CHAI SPORTS GROUND
AM3	EXISTING HARBOUR ROAD SPORTS CENTRE



LEGEND



CONSTRUCTION SITE



AM1

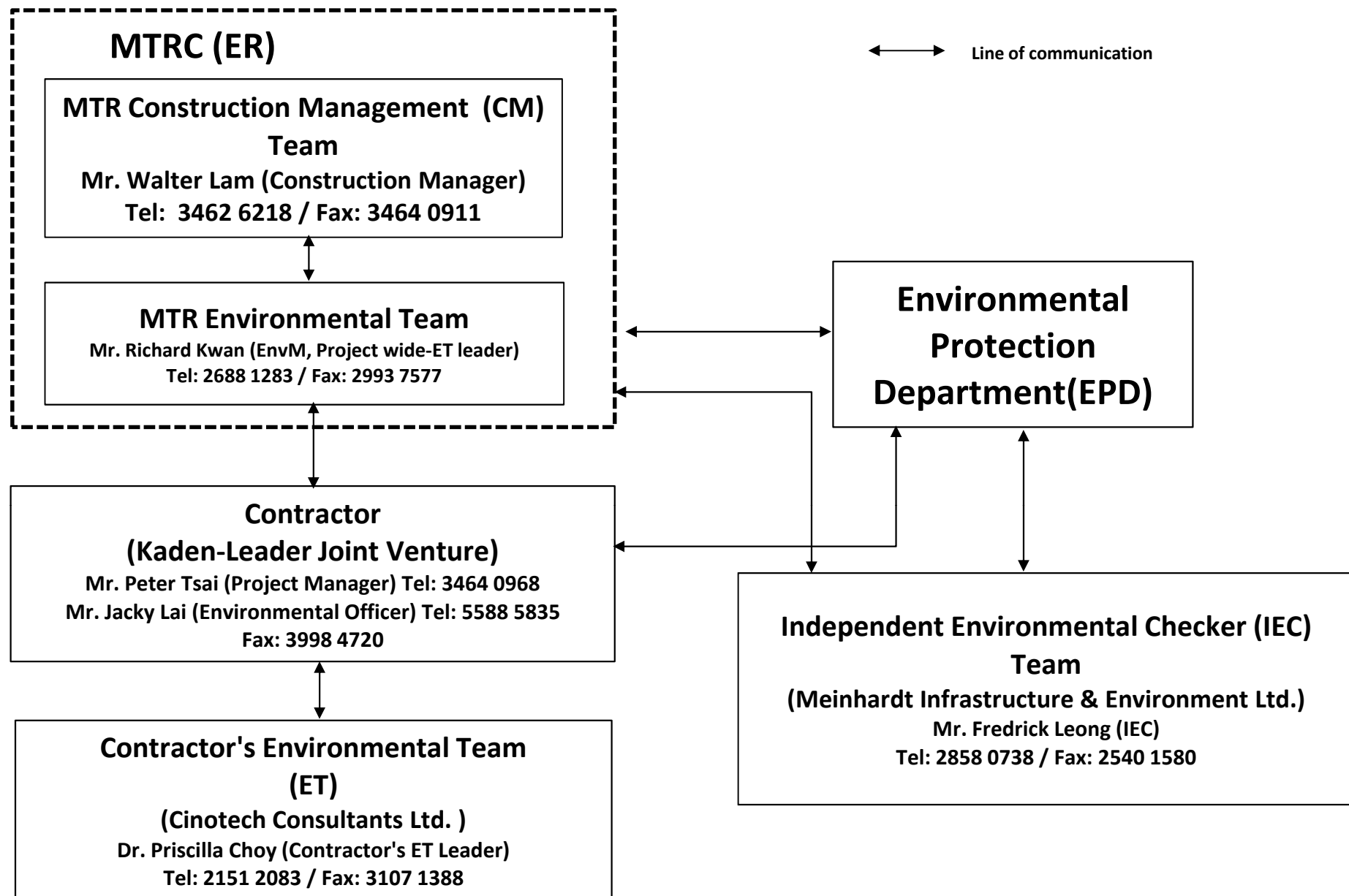
AIR QUALITY MONITORING STATION

CINOTECH
Cinotech Consultants Limited

MTR 1126 REPROVISIONING OF HARBOUR ROAD SPORTS CENTRE AND
WAN CHAI SWIMMING POOL

LOCATION OF AIR QUALITY MONITORING STATIONS

SCALE	1:5000 @ A4	DATE	JUN 2014
CHECK	JF	DRAWN	JW
JOB No.	MA14009	FIGURE NO.	3
		REV	-



Title SCL Contract 1126
The Shatin to Central Link -
Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool
Project Organisation for Environmental Works

Scale	N.T.S	Propose No.	MA14009
Date	Jul-14	Figure	4

CINOTECH

**APPENDIX A
TENTATIVE CONSTRUCTION
PROGRAMME**

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	2014					2015
						Sep	Oct	Nov	Dec	Jan	
SCL1126 - Reprovisioning of HRSC & WCSP (20 Jan 2014) _ Rev											
Cost Centre E - Temporary Reprovisioning Works at WCSG											
Design & Shop Drawing											
Weight Lifting Room											
A5840	Weight Lifting Room - Prepare & Submit - 1st Round	12	28-Apr-14 A	10-May-14 A							
A5850	Weight Lifting Room - Comment & Approval - 1st Round	6	11-May-14 A	22-May-14 A							
A5860	Weight Lifting Room - Prepare & Submit - 2nd Round	5	23-May-14 A	28-May-14 A							
A5870	Weight Lifting Room - Comment & Approval - 2nd Round	6	29-May-14 A	30-Jul-14 A							
A7120	Weight Lifting Room - ICC Submission & Approval	6	31-Jul-14 A	01-Aug-14 A							
Site Preparation											
A3755	Site Proccession	0	03-Jun-14 A	03-Jun-14 A							
A3760	Erection of covered hoarding outside Sports Ground	24	30-Apr-14 A	31-May-14 A							
A3770	Erection of protective barrier inside Sports Ground	3	03-Jun-14 A	05-Jun-14 A							
A3780	Diversion of existing irrigation pipes	7	04-Jun-14 A	12-Jun-14 A							
A3790	Tree felling (32nos), transplation (5nos) and tree protection	10	03-Jun-14 A	13-Jun-14 A							
A3800	Transport and storage the existing fitness / weight lifting equipments	5	03-Jun-14 A	05-Jun-14 A							
Site Works											
Fitness Room and Kiosk											
A3840	Earthworks and excavation for footing construction	7	05-Jun-14 A	07-Jun-14 A							
A3850	Construction of footing	7	09-Jun-14 A	12-Jun-14 A							
A3860	Constrction of column & wall	7	13-Jun-14 A	25-Jun-14 A							
A3870	Construction of Roof slab & beam	6	24-Jun-14 A	27-Jun-14 A							
A3880	Roof finish - Waterproof / thermal insulation / floor finish / surface channel / fall arrest / etc.	25	03-Jul-14 A	30-Aug-14 A							
A3890	Internal finish for wall, floor & ceiling - screed/skirt/tile/paint/rubber sheet with carpet cover/signage/etc.	35	14-Jul-14 A	03-Sep-14 A							
A3900	External finish for wall - plaster / paint / metal works	30	02-Jul-14 A	02-Sep-14 A							
A3920	Building Service - MVAC, electrical, fire service, plumbing & drainage	30	02-Jul-14 A	06-Sep-14 A							
Male Changing Room with HR Pump Room and Store room											
A3930	Earthworks and excavation for footing construction	7	09-Jun-14 A	11-Jun-14 A							
A3940	Construction of footing	7	12-Jun-14 A	14-Jun-14 A							
A3950	Constrction of column & wall	7	16-Jun-14 A	24-Jun-14 A							
A3960	Construction of Roof slab & beam	7	23-Jun-14 A	05-Jul-14 A							
A3970	Roof finish - Waterproof / thermal insulation / floor finish / surface channel / fall arrest / etc.	25	09-Jul-14 A	28-Aug-14 A							
A3980	Internal finish for wall, floor & ceiling - block wall/screed/skirt/tile/paint/minor/locker/toilet cubicle/signa	35	10-Jul-14 A	03-Sep-14 A							
A3990	External finish for wall - plaster / paint / metal works	30	09-Jul-14 A	02-Sep-14 A							
A4010	Building Service - MVAC, electrical, fire service, plumbing & drainage	30	07-Jul-14 A	06-Sep-14 A							
Marshall Seats											
A4020	Earthworks and excavation for footing construction	5	09-Jun-14 A	13-Jun-14 A							
A4030	Construction of footing	7	14-Jun-14 A	21-Jun-14 A							
A4040	Constrction of column / wall / beam / slab	7	23-Jun-14 A	24-Jul-14 A							
A4050	Erection of structural steel roof including cladding & corrugated sheet	18	25-Jul-14 A	11-Aug-14 A							
A4060	Metal Works - zinc gutter / grating / downpipe / balustrade / railing	18	12-Aug-14 A	03-Sep-14 A							
A4070	Furnitures & finish - mass concrete fill / screed / stadium plastic seat	12	13-Aug-14 A	02-Sep-14 A							
A4080	Building Service - electrical, fire service, PA system	18	28-Jul-14 A	06-Sep-14 A							
Weightlifing Room											
A4090	Earthworks and excavation for footing construction	7	16-Jun-14 A	23-Jun-14 A							
A4100	Construction of footing	7	24-Jun-14 A	27-Jun-14 A							
A4110	Constrction of column & wall	7	07-Jul-14 A	18-Jul-14 A							
A4120	Construction of Roof slab & beam	4	19-Jul-14 A	24-Jul-14 A							
A4130	Roof finish - Waterproof / thermal insulation / floor finish / surface channel / fall arrest / etc.	20	28-Jul-14 A	29-Aug-14 A							
A4140	Internal finish for wall, floor & ceiling - screed / skirt / tile / paint / signage / etc.	23	14-Aug-14 A	03-Sep-14 A							
A4150	External finish for wall - plaster / paint / metal works	30	31-Jul-14 A	02-Sep-14 A							
A4170	Building Service - MVAC, electrical, fire service	19	04-Aug-14 A	06-Sep-14 A							
Landscaping & External Work											
A4180	Demolition of existing warn up track for temporary reprovisioning works	7	30-Aug-14 A	04-Sep-14 A							
A4190	Footway / drainage / U-channel / paving / drainage pipe / etc.	42	16-Jun-14 A	06-Sep-14 A							
A4200	Building Service - Lamp pole / floodlight / street hydant / earthing tap / irrigation system / etc.	40	07-Jul-14 A	06-Sep-14 A							
A5570	Extension of warm up track - floor finish	4	05-Sep-14 A	10-Sep-14 A							
Testing & Commisioning											
A4210	Internal - MVAC / Electrical / FS / P&D	5	08-Sep-14 A	11-Sep-14 A							
A4220	External - Irrigation / Lighting / FS / P&D	5	08-Sep-14 A	11-Sep-14 A							
Statutory Inspection and Approval											
A4221	Form WWO46 Part IV Submission to WSD	4	08-Sep-14 A	10-Sep-14 A							
A4222	WSD Inspection	2	11-Sep-14 A	11-Sep-14 A							
A4223	Issue WWO46 Part V Certificate	4	12-Sep-14 A	23-Sep-14 A							

- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆

◆ Milestone
- Summary

SCL1126 - Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool

Programme for Temporary PTI (October 2014 ~ April 2015)

Activity ID		Activity Name	Original Duration	Start	Finish	Total Float	2014				2015
							Sep	Oct	Nov	Dec	Jan
	A4224	Submission of Final Amendment to FSD	2	28-Jul-14 A	28-Jul-14 A						
	A4225	Approval of Final Amendment from FSD	24	29-Jul-14 A	29-Jul-14 A						
	A4230	Submit Forms FS 314 & FS 501	10	29-Aug-14 A	24-Sep-14 A						
	A4240	FS Inspection	1	25-Sep-14 A	25-Sep-14 A						
	A4250	Obtain FS Certificate & OP	2	29-Sep-14 A	30-Sep-14 A						
	A5590	Cleaning and Pre-handover to LCSD	1	10-Sep-14 A	11-Sep-14 A						
	A5600	Site handover to LCSD (New Provisions)	1	12-Sep-14 A	12-Sep-14 A						
Cost Centre F - Demolition Works at WCSG			247	12-May-14 A	30-Sep-14 A						
Demolition Plan			87	12-May-14 A	10-Jul-14 A						
	A9560	Demolition Plan - Prepare & Submit - 1st Round	6	12-May-14 A	16-May-14 A						
	A9570	Demolition Plan - Comment & Approval - 1st Round	6	17-May-14 A	23-May-14 A						
	A9580	Demolition Plan - Prepare & Submit - 2nd Round	6	24-May-14 A	12-Jun-14 A						
	A9590	Demolition Plan - Comment & Approval - 2nd Round	6	13-Jun-14 A	09-Jul-14 A						
	A9600	Demolition Plan - ICC Submission & Approval	10	10-Jul-14 A	10-Jul-14 A						
Demolition Works			235	03-Jun-14 A	30-Sep-14 A						
	A9610	Site Procession	0	03-Jun-14 A	03-Jun-14 A						
	A9620	Erection of covered hoarding and temp. staircase outside Sport Ground	12	03-Jun-14 A	16-Jun-14 A						
	A9630	Erection of covered hoarding and temp. staircase inside Sport Ground	6	16-Jun-14 A	25-Jul-14 A						
	A9640	Temporary works / precaution measures for demolition works	6	14-Jun-14 A	07-Jul-14 A						
	A9650	Joint site inspection and obtain approval by ICC prior to actual demolition	3	08-Jul-14 A	08-Jul-14 A						
	A9660	Demolition works	72	09-Jul-14 A	22-Sep-14 A						
	A9670	Ground formation	26	23-Sep-14 A	26-Sep-14 A						
	A9680	Site cleaning and touch up	26	27-Sep-14 A	29-Sep-14 A						
	A9690	Ready for site handover and Handover	60	30-Sep-14 A	30-Sep-14 A						

Actual Work

 Remaining Work

Critical Remaining Work

Milestone

Summary

SCL1126 - Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool

Programme for Temporary PTI (October 2014 ~ April 2015)

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels**24-Hour TSP**

Regular Dust Monitoring Location	Description	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM2 ⁽¹⁾⁽²⁾	Wan Chai Sports Ground	160	260
AM3 ⁽¹⁾	Existing Harbour Road Sports Centre	169	260

Note:

(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).

(2) 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.

Construction Noise

Regular Construction Noise Monitoring Location⁽¹⁾	Description	Time Period	Action Level	Limit Level
NM2 ⁽¹⁾⁽²⁾	Harbour Centre (7/F)	0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)

Note:

(1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HUH-ADM).

(2) Access to the designated monitoring location NM2 (i.e. Block A, Causeway Centre) was denied before the commencement of impact monitoring. Alternative noise monitoring location proposed at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited. Impact noise monitoring was carried out at Harbour Centre from 20 August 2014 onwards.

**APPENDIX C
CALIBRATION CERTIFICATES FOR
MONITORING EQUIPEMENT**

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14009/53/0002

Station AM2 - Wan Chai Sports Ground Operator: WK
 Date: 4-Aug-14 Next Due Date: 3-Oct-14
 Equipment No.: A-01-53 Serial No. 1535

Ambient Condition			
Temperature, Ta (K)	298.8	Pressure, Pa (mmHg)	753.6

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0588	Intercept, bc	-0.0461
Last Calibration Date:	30-Sep-13	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-Sep-14	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.6	3.39	58.39	6.8	2.59
2	9.1	3.00	51.80	5.4	2.31
3	7.5	2.72	47.10	4.3	2.06
4	4.6	2.13	37.06	2.8	1.66
5	3.0	1.72	30.08	1.8	1.33

By Linear Regression of Y on X

Slope, mw = 0.0442 Intercept, bw = 0.0092

Correlation coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.69

Remarks: _____

Conducted by: Wk Tang Signature: Kwai
 Checked by: He Signature: _____

Date: 4/8/14
 Date: 4 August 2014

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14009/41/0002

Station AM3 - Existing Harbour Road Sports Centre Operator: WK
 Date: 4-Aug-14 Next Due Date: 3-Oct-14
 Equipment No.: A-01-41 Serial No. 5280

Ambient Condition			
Temperature, Ta (K)	298.7	Pressure, Pa (mmHg)	753.4

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0588	Intercept, bc	-0.0461
Last Calibration Date:	30-Sep-13	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-Sep-14	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	10.4	3.21	55.33	6.9	2.61
2	8.6	2.92	50.38	5.6	2.35
3	6.3	2.50	43.24	4.3	2.06
4	4.2	2.04	35.45	2.9	1.69
5	2.1	1.44	25.29	1.8	1.33

By Linear Regression of Y on X

Slope, mw = 0.0426 Intercept, bw = 0.2254
 Correlation coefficient* = 0.9981

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.28

Remarks: _____

Conducted by: Wk Tang
 Checked by: Wk

Signature: Kwami
 Signature: [Signature]

Date: 4/8/14
 Date: 6 August 2014

TEST REPORT

Description Calibration Orifice
Serial No. 0993
Model No. TE-5025A
Date 30 September 2013

Manufacturer TISCH
Temperature, Ta (K) 300.8
Pressure, Pa (mmHg) 759.3
Equipment No.: A-04-04

Plate	Diff.Vol (m ³)	Diff.Time (min)	Diff.Hg (mm)	Diff.H ₂ O (in.)
1	1.00	1.4103	3.4	2.00
2	1.00	0.9980	6.8	4.00
3	1.00	0.8970	8.5	5.00
4	1.00	0.8540	9.4	5.50
5	1.00	0.7060	13.6	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9853	0.6986	1.4069
0.9808	0.9828	1.9897
0.9786	1.0910	2.2245
0.9775	1.1446	2.3331
0.9720	1.3768	2.8138

Y axis= $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$

Qstd Slope (m) = 2.07768

Intercept (b) = -0.04613

Coefficient (r) = 0.99997

Va	(X axis) Qa	(Y axis)
0.9955	0.7059	0.8901
0.9910	0.9930	1.2589
0.9888	1.1023	1.4074
0.9876	1.1565	1.4761
0.9821	1.3911	1.7803

Y axis= $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$

Qa Slope (m) = 1.30101

Intercept (b) = -0.02919

Coefficient (r) = 0.99997

CALCULATIONS

$V_{std} = \text{Diff. Vol}[(\text{Pa} - \text{Diff. Hg})/760](298/\text{Ta})$

$Q_{std} = V_{std}/\text{Time}$

$V_a = \text{Diff. Vol}[(\text{Pa} - \text{Diff. Hg})/\text{Pa}]$

$Q_a = V_a/\text{Time}$

For subsequent flow rate calculations:

$Q_{std} = 1/m\{[\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))]-b\}$

$Q_a = 1/m\{[\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))]-b\}$

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

Patrick Tse

PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.: C/N/130919/1
Date of Issue: 2013-09-21
Date Received: 2013-09-19
Date Tested: 2013-09-21
Date Completed: 2013-09-21
Next Due Date: 2014-09-20

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description : 'SVANTEK' Integrating Sound Level Meter
Manufacturer : SVANTEK
Model No. : SVAN 955
Serial No. : 12553
Microphone No. : 35222
Equipment No. : N-08-02

Test conditions:

Room Temperature : 22 degree Celsius
Relative Humidity : 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/140822/1
Date of Issue:	2014-08-25
Date Received:	2014-08-22
Date Tested:	2014-08-22
Date Completed:	2014-08-25
Next Due Date:	2015-08-24

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 55%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/131129/1
Date of Issue:	2013-11-30
Date Received:	2013-11-29
Date Tested:	2013-11-29
Date Completed:	2013-11-30
Next Due Date:	2014-11-29

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 19 degree Celsius
Relative Humidity	: 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/131004/1
Date of Issue:	2013-10-05
Date Received:	2013-10-04
Date Tested:	2013-10-04
Date Completed:	2013-10-05
Next Due Date:	2014-10-04

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 57%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

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


PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/131004/2
Date of Issue:	2013-10-05
Date Received:	2013-10-04
Date Tested:	2013-10-04
Date Completed:	2013-10-05
Next Due Date:	2014-10-04

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 57%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

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



PATRICK TSE
Laboratory Manager

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/131004/3
Date of Issue:	2013-10-05
Date Received:	2013-10-04
Date Tested:	2013-10-04
Date Completed:	2013-10-05
Next Due Date:	2014-10-04

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 57%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

APPENDIX D
IMPACT MONITORING SCHEDULE

**Shatin to Central Link – Contract 1126 Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool
Environmental Monitoring Schedule for September 2014**

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

Noise Monitoring Station

NM2: Harbour Centre

Air Quality Monitoring Station

AM2: Wan Chai Sports Ground

AM3: Existing Harbour Road Sports Centre

Shatin to Central Link – Contract 1126 Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool
Tentative Environmental Monitoring Schedule for October 2014

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

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

Noise Monitoring Station

NM2: Harbour Centre

Air Quality Monitoring Station

AM2: Wan Chai Sports Ground

AM3: Existing Harbour Road Sports Centre

APPENDIX E
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONIS

Appendix E - 24-hour TSP Monitoring Results

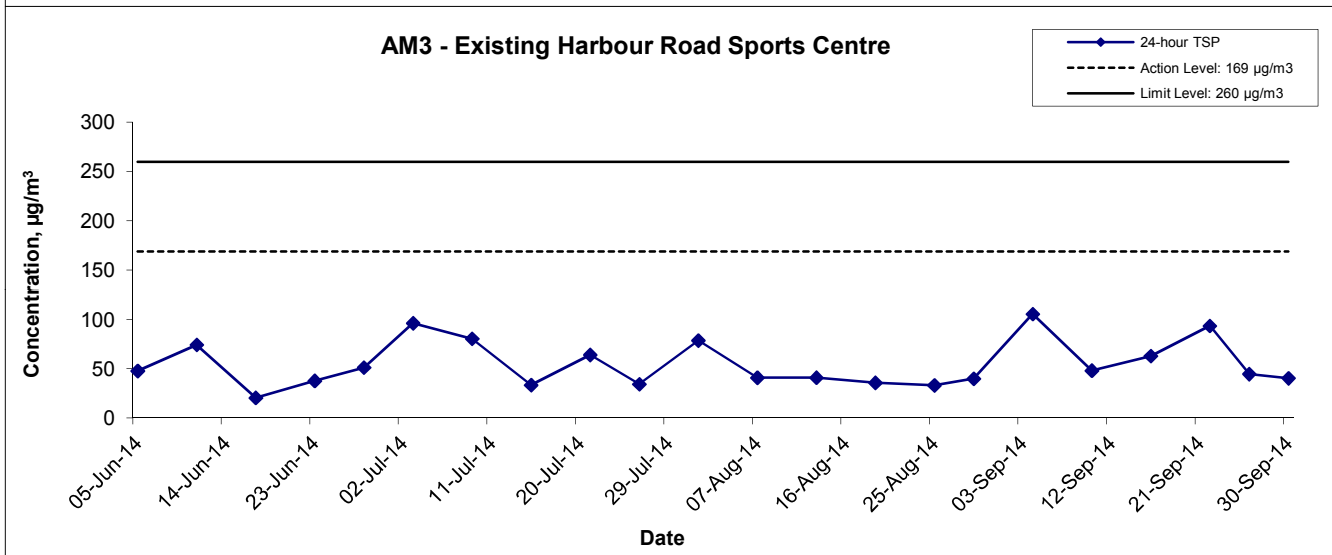
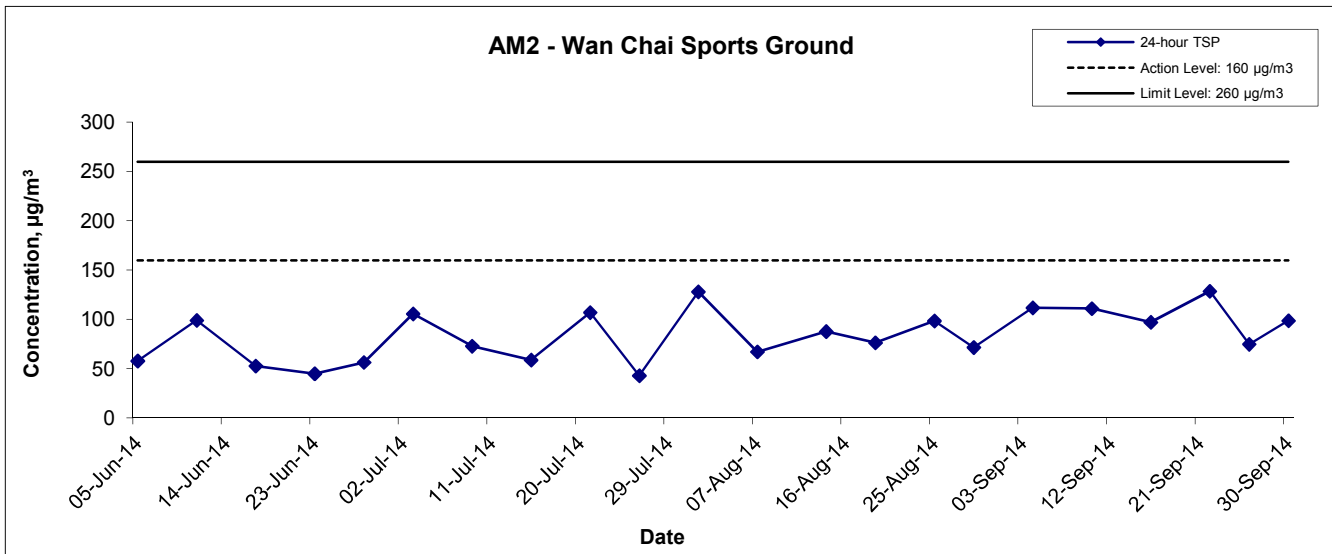
Location AM2 - Wan Chai Sports Ground

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
4-Sep-14	09:00	Sunny	303.3	757.8	3.2567	3.4520	0.1953	5898.4	5922.4	24.0	1.21	1.21	1.21	1746.9	111.8
10-Sep-14	09:00	Sunny	303.6	758.6	3.2373	3.4312	0.1939	5922.4	5946.4	24.0	1.21	1.21	1.21	1746.9	111.0
16-Sep-14	09:00	Rainy	301.5	753.9	3.1850	3.3547	0.1697	5946.4	5970.4	24.0	1.21	1.21	1.21	1747.6	97.1
22-Sep-14	09:00	Sunny	300.6	757.5	3.2107	3.4363	0.2256	5970.4	5994.4	24.0	1.22	1.22	1.22	1754.4	128.6
26-Sep-14	09:00	Sunny	303.5	763.0	3.2065	3.3377	0.1312	5994.4	6018.4	24.0	1.22	1.22	1.22	1752.3	74.9
30-Sep-14	09:00	Sunny	302.8	761.5	3.1878	3.3608	0.1730	6018.4	6042.4	24.0	1.22	1.22	1.22	1752.6	98.7
														Min	74.9
														Max	128.6
														Average	103.7

Location AM3 - Existing Harbour Road Sports Centre

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
4-Sep-14	09:00	Sunny	303.3	757.8	3.2458	3.4302	0.1844	3559.3	3583.3	24.0	1.21	1.21	1.21	1747.8	105.5
10-Sep-14	09:00	Sunny	303.6	758.5	3.2640	3.3481	0.0841	3583.3	3607.3	24.0	1.21	1.21	1.21	1747.9	48.1
16-Sep-14	09:00	Rainy	301.6	753.6	3.1832	3.2932	0.1100	3607.3	3631.3	24.0	1.21	1.21	1.21	1747.9	62.9
22-Sep-14	09:00	Sunny	301.4	757.3	3.1902	3.3541	0.1639	3631.3	3655.3	24.0	1.22	1.22	1.22	1753.3	93.5
26-Sep-14	09:00	Sunny	303.8	762.6	3.2032	3.2815	0.0783	3655.3	3679.3	24.0	1.22	1.22	1.22	1752.4	44.7
30-Sep-14	09:00	Sunny	302.9	761.2	3.1666	3.2375	0.0709	3679.3	3703.3	24.0	1.22	1.22	1.22	1753.4	40.4
														Min	40.4
														Max	105.5
														Average	65.9

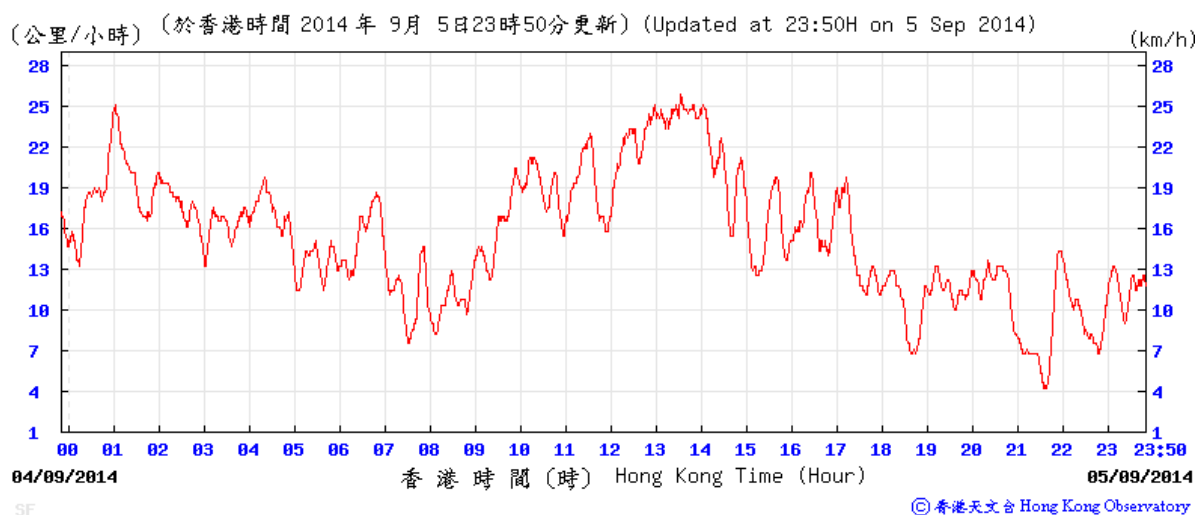
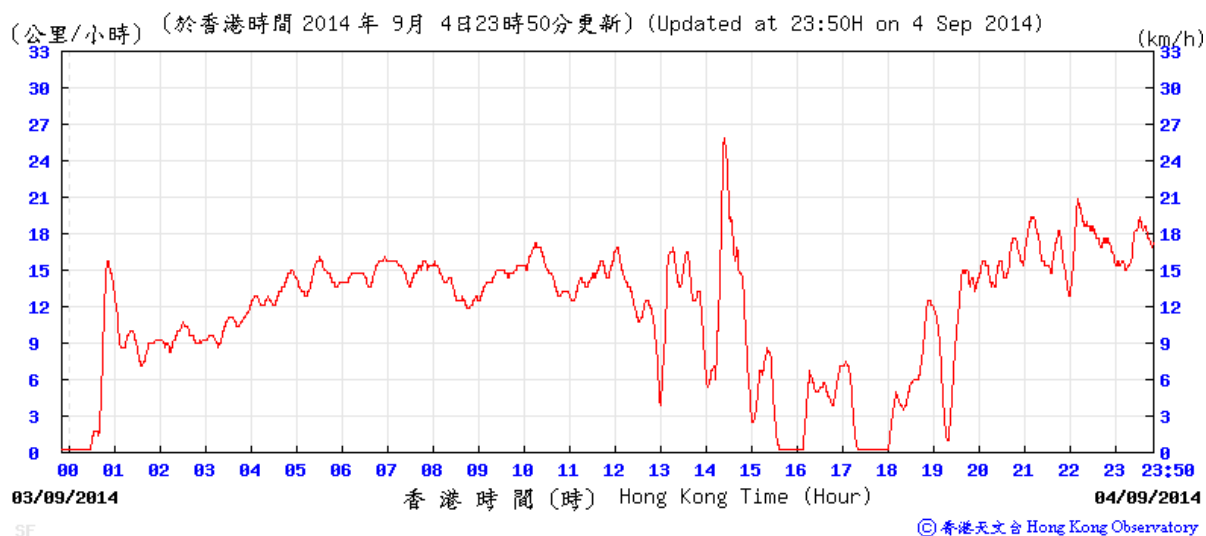
24-hour TSP Concentration Levels



Title Shatin to Central Link – Contract 1126 Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA14009	
	Date Sep 14	Appendix E	

Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

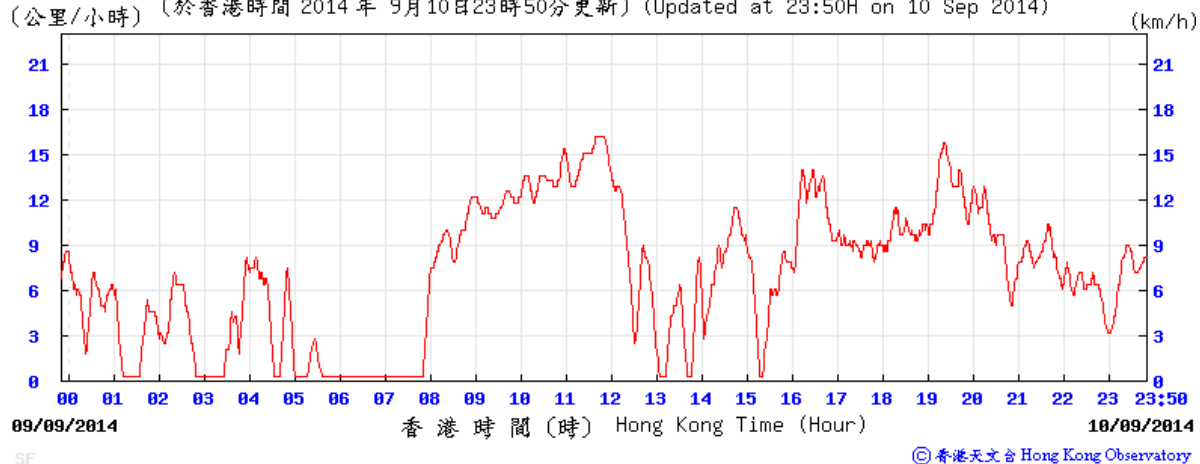
4-5 September 2014



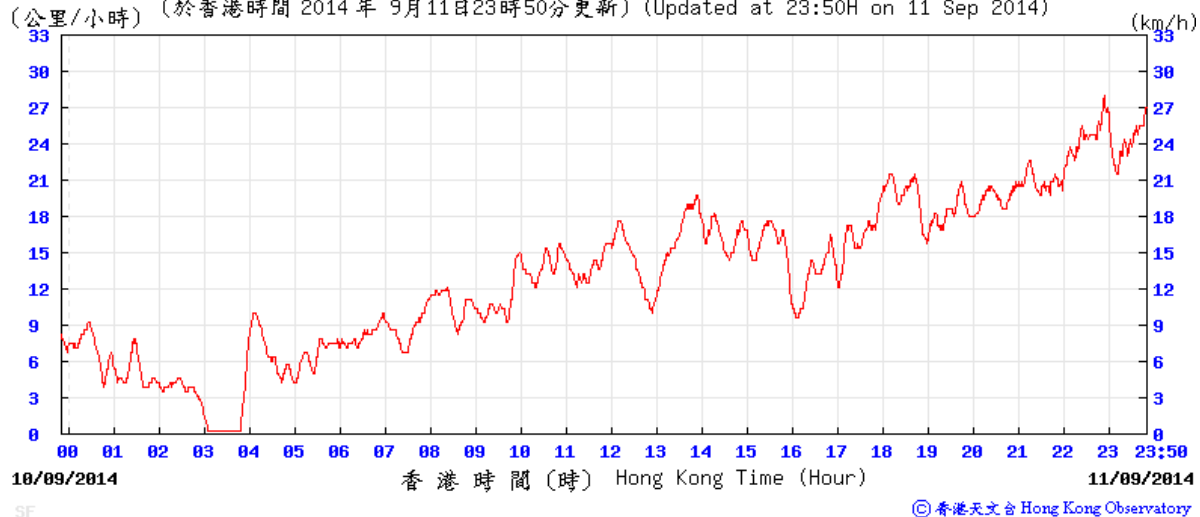
Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

10-11 September 2014

(公里/小時) (於香港時間 2014 年 9月10日23時50分更新) (Updated at 23:50H on 10 Sep 2014)



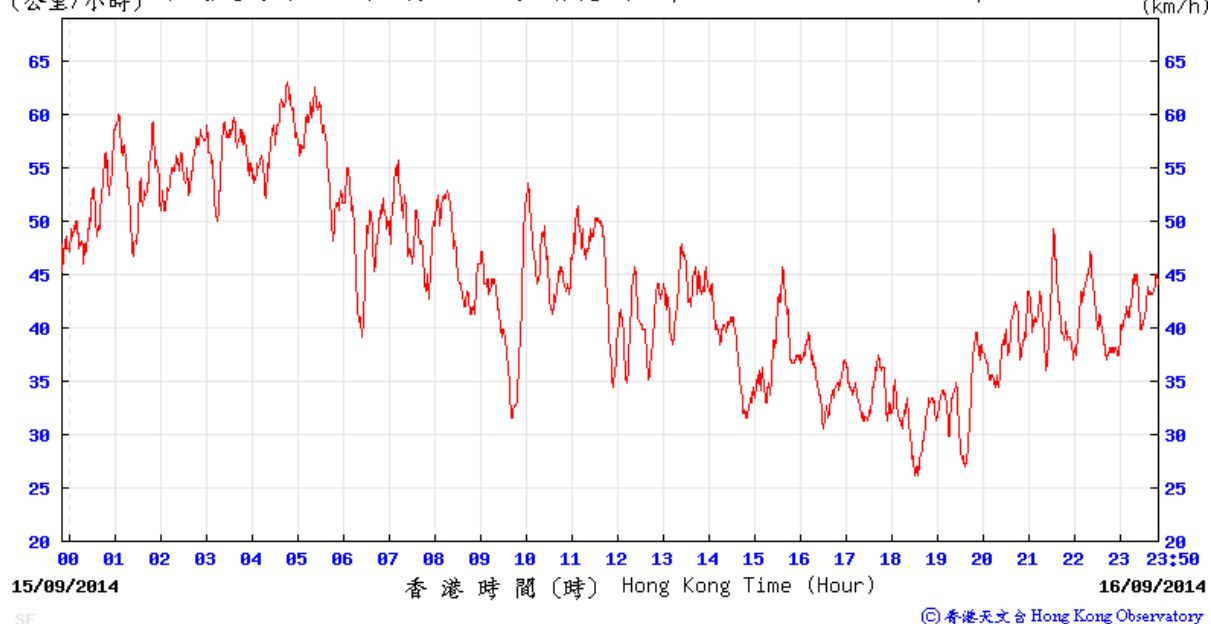
(公里/小時) (於香港時間 2014 年 9月11日23時50分更新) (Updated at 23:50H on 11 Sep 2014)



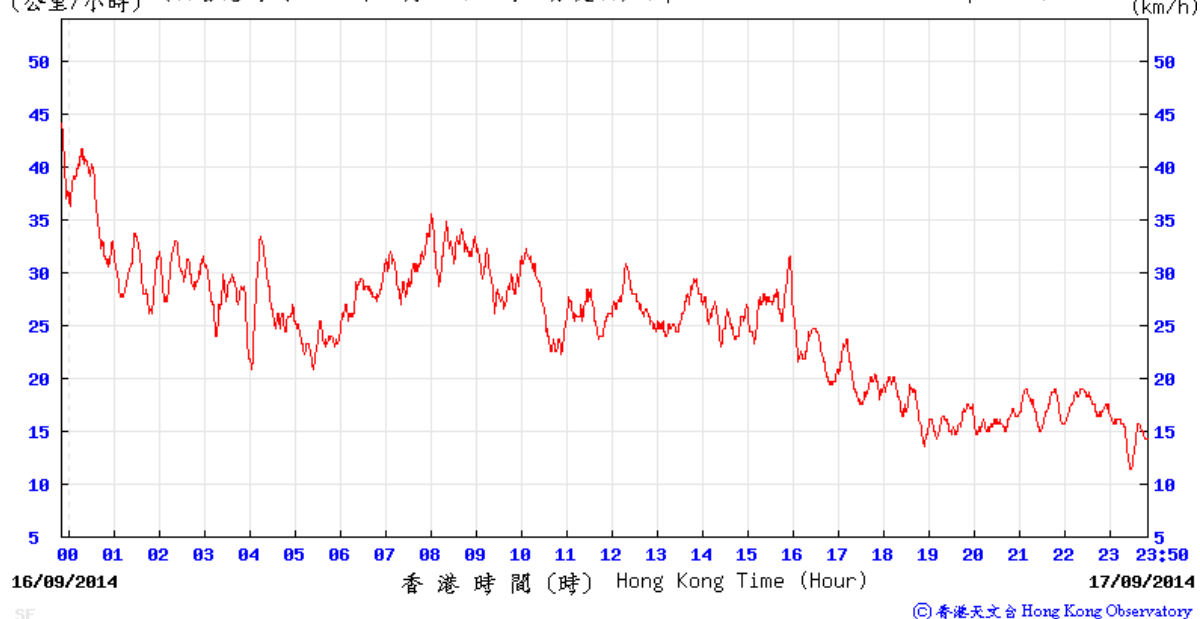
Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

16-17 September 2014

(公里/小時) (於香港時間 2014 年 9月16日23時50分更新) (Updated at 23:50H on 16 Sep 2014)

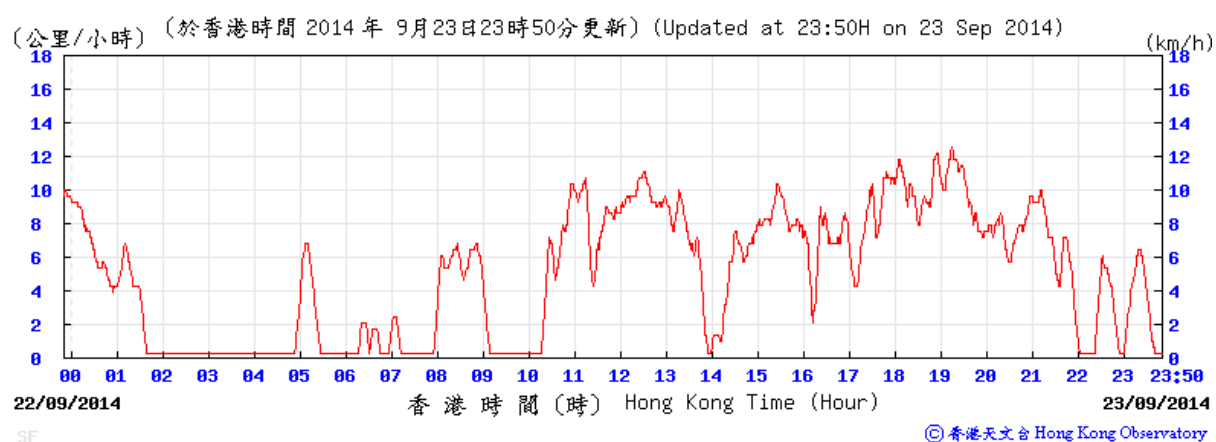
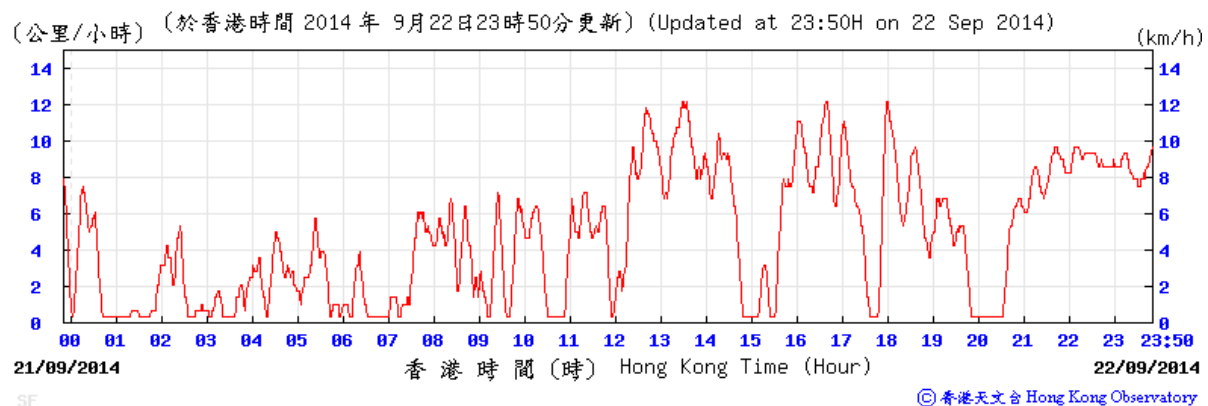


(公里/小時) (於香港時間 2014 年 9月17日23時50分更新) (Updated at 23:50H on 17 Sep 2014)



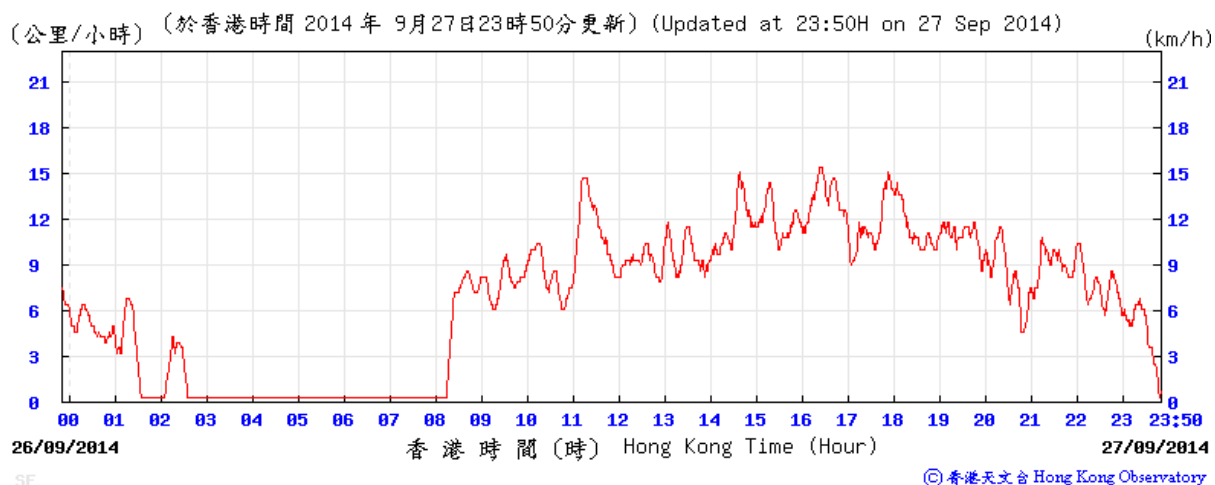
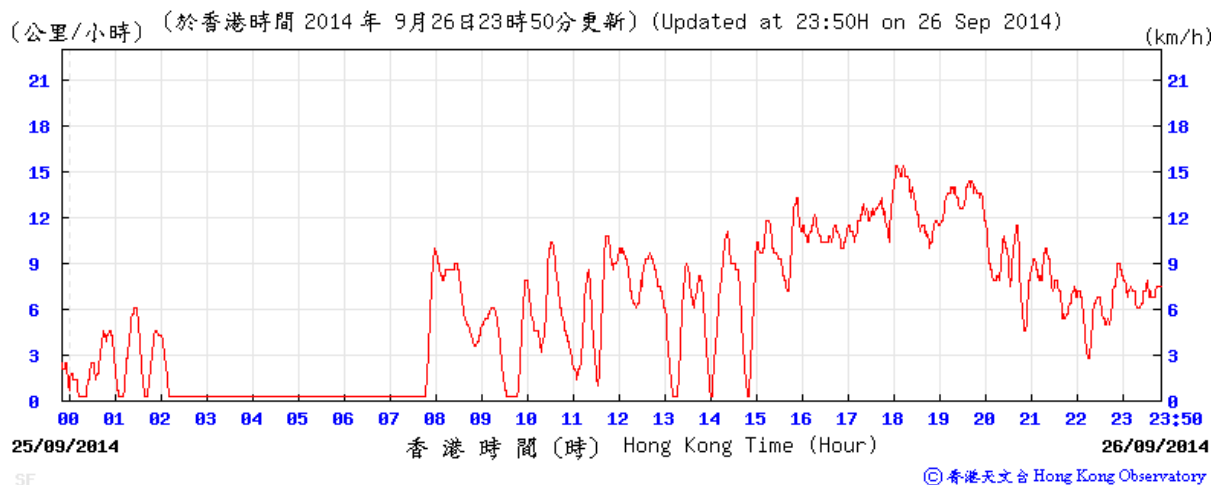
Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

22-23 September 2014



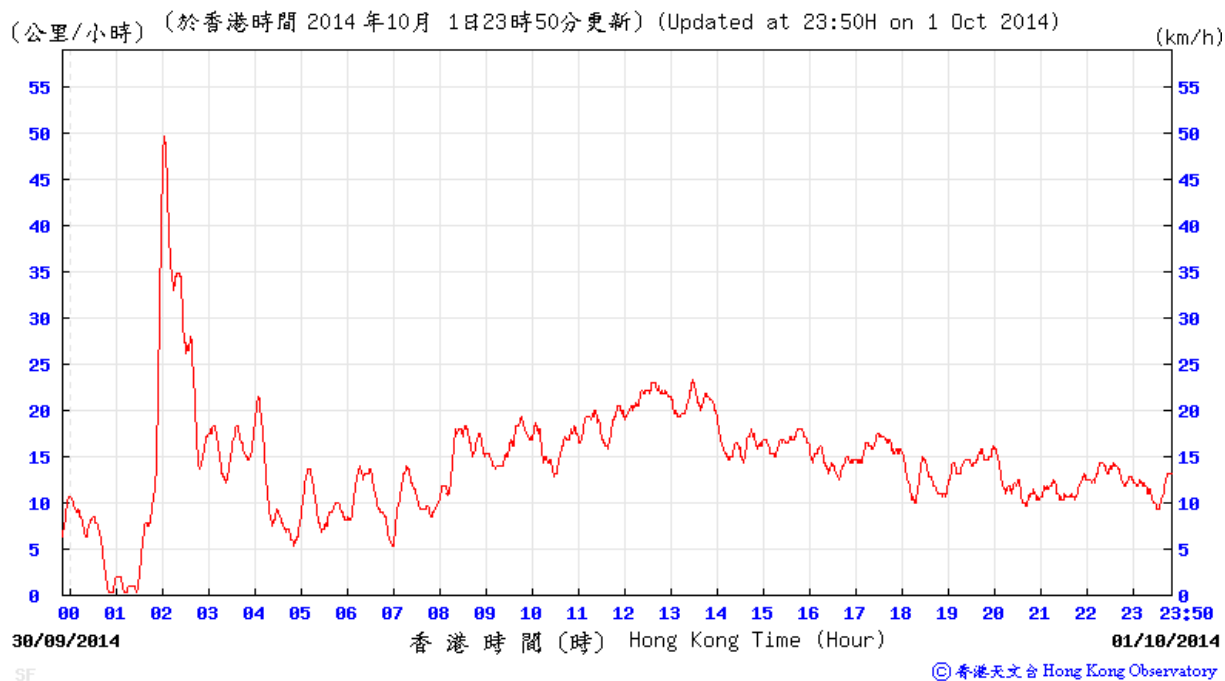
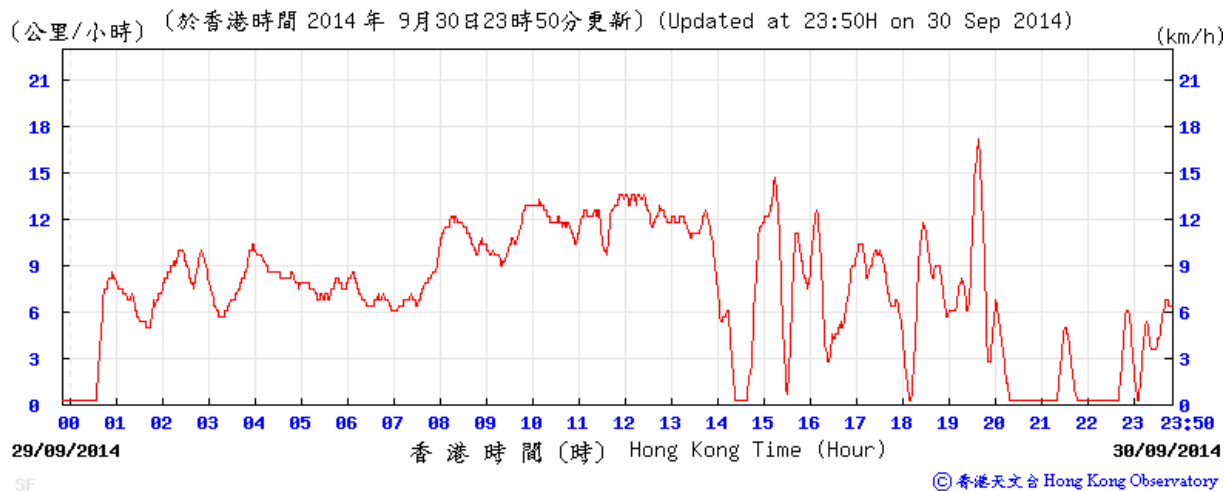
Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

26-27 September 2014



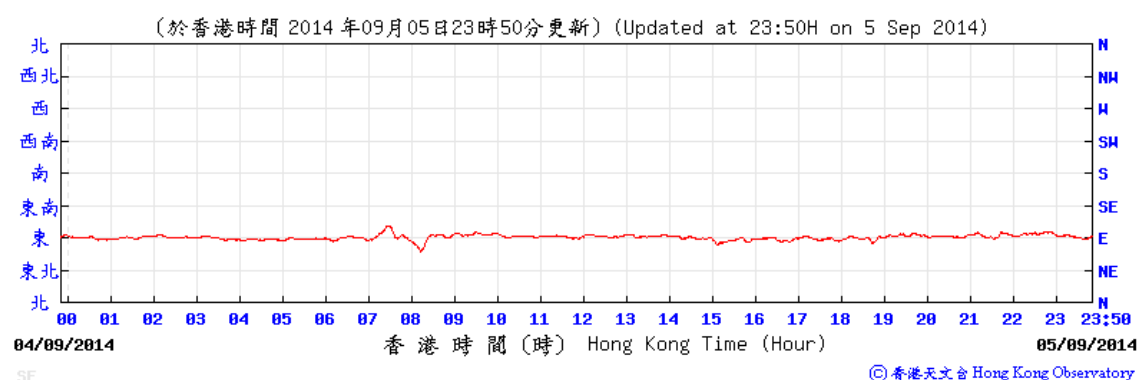
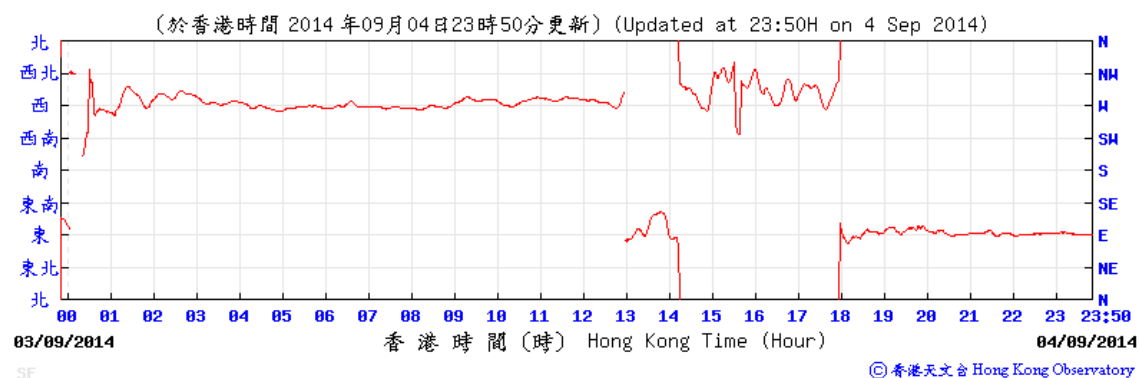
Average wind speed obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

30 September - 1 October 2014



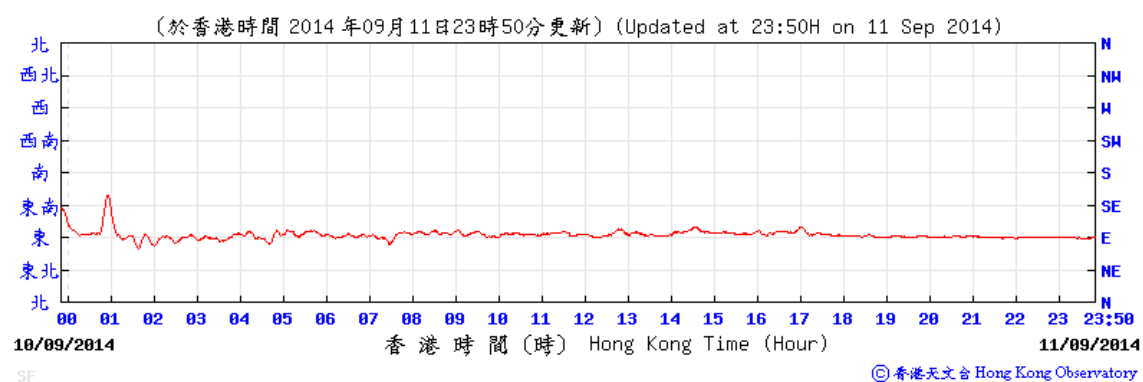
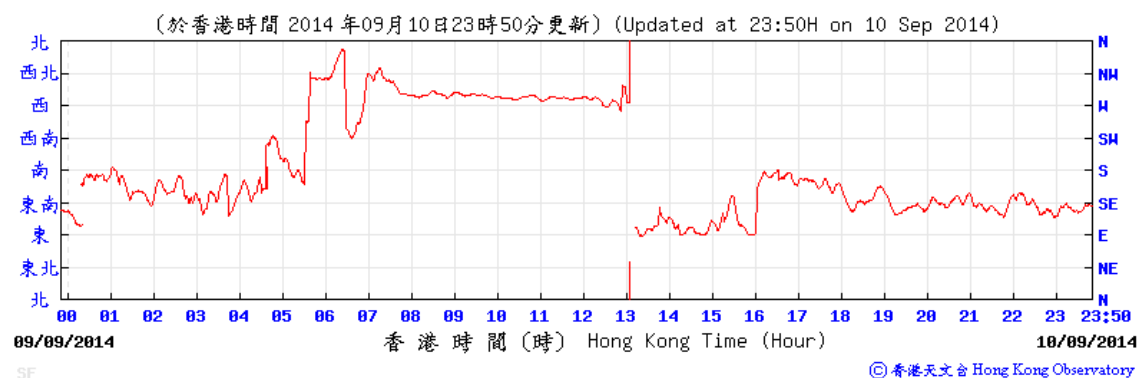
Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

4-5 September 2014



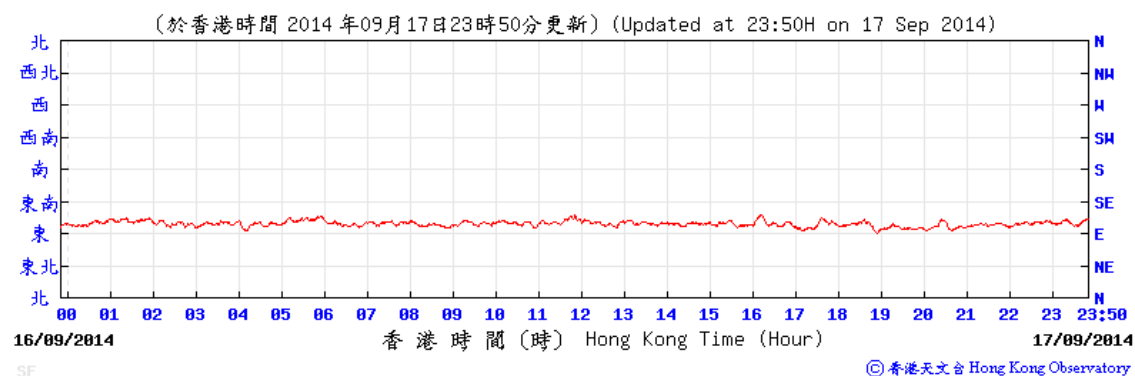
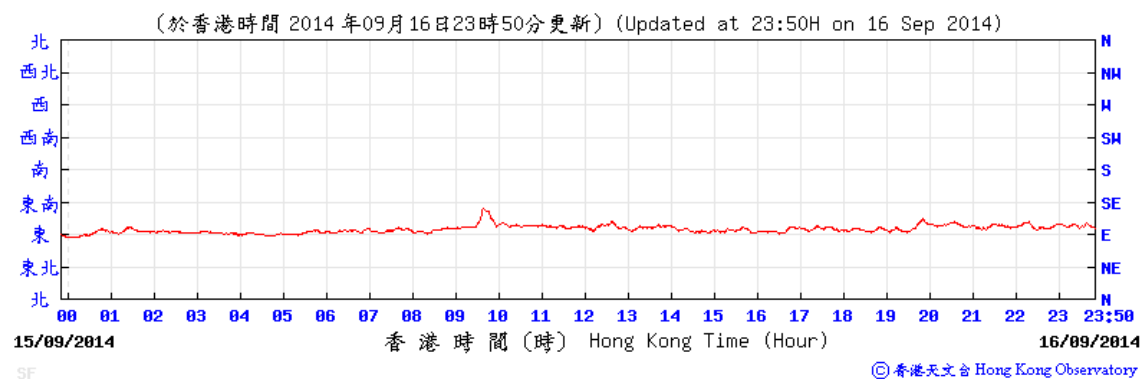
Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

10-11 September 2014



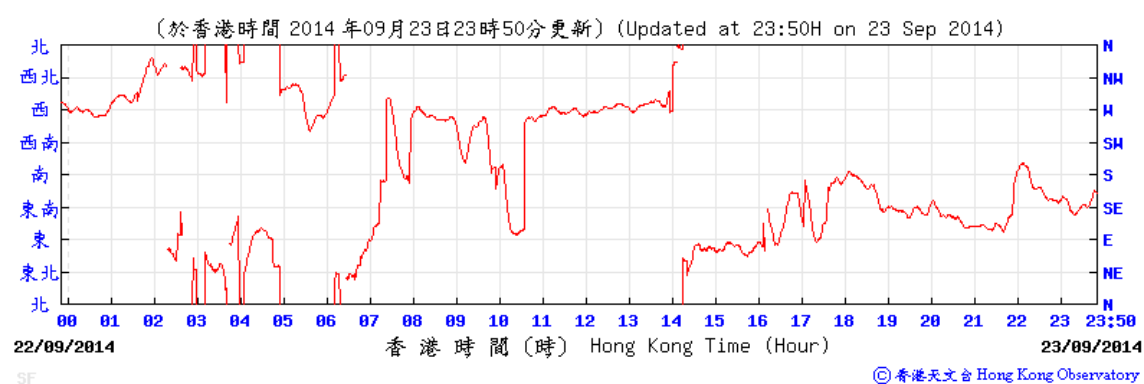
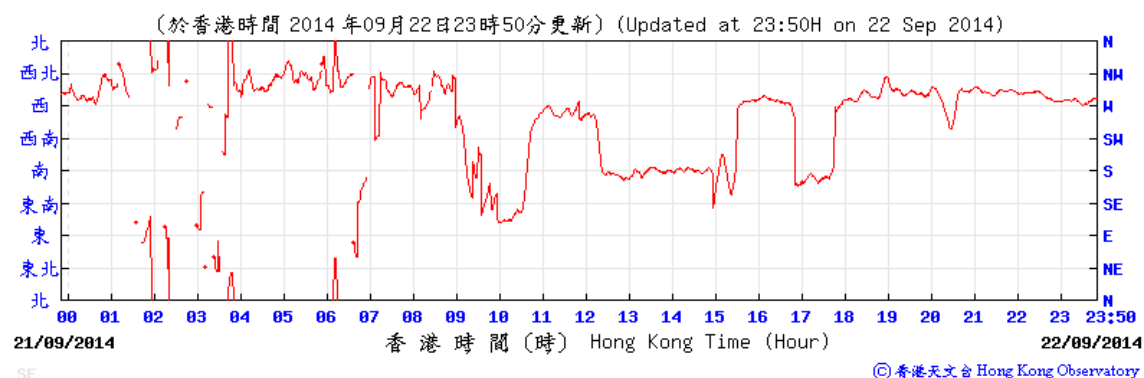
Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

16-17 September 2014



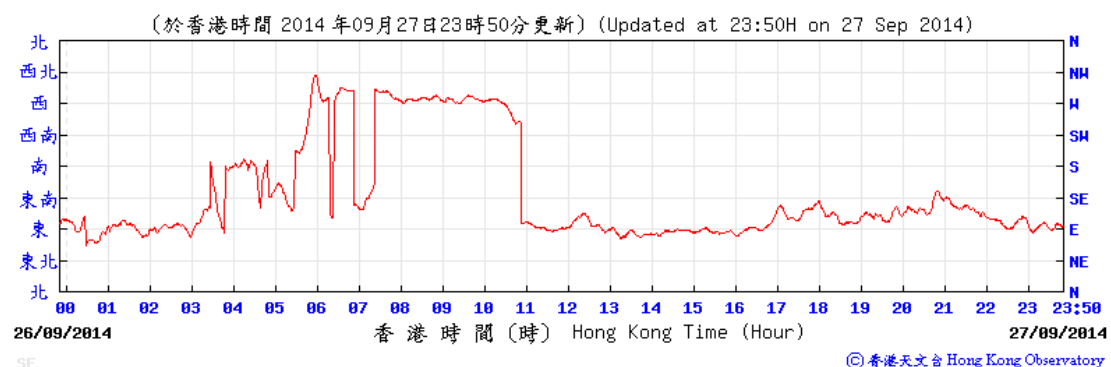
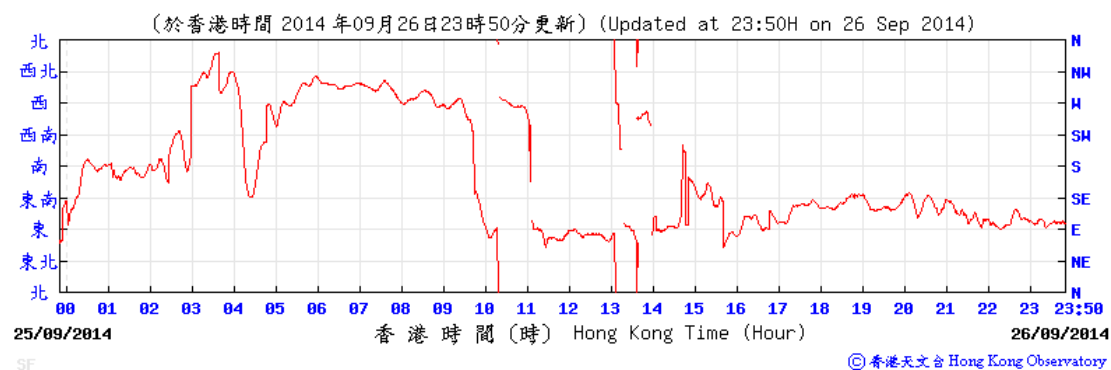
Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

22-23 September 2014



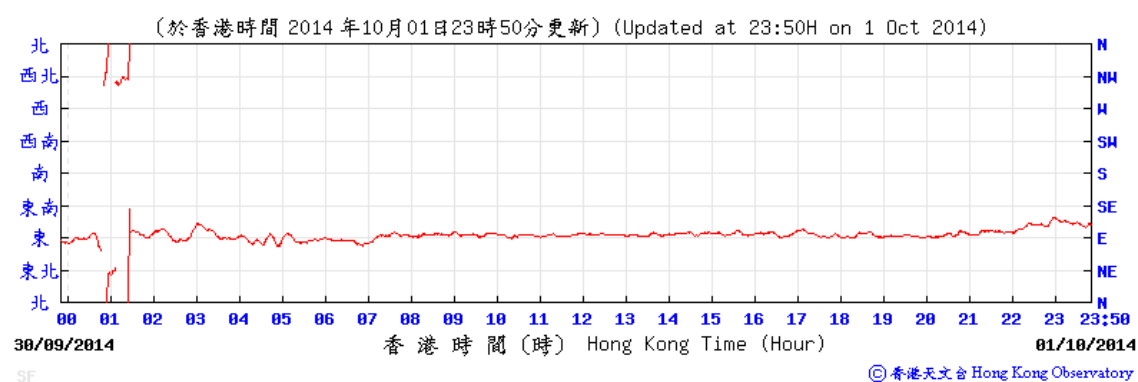
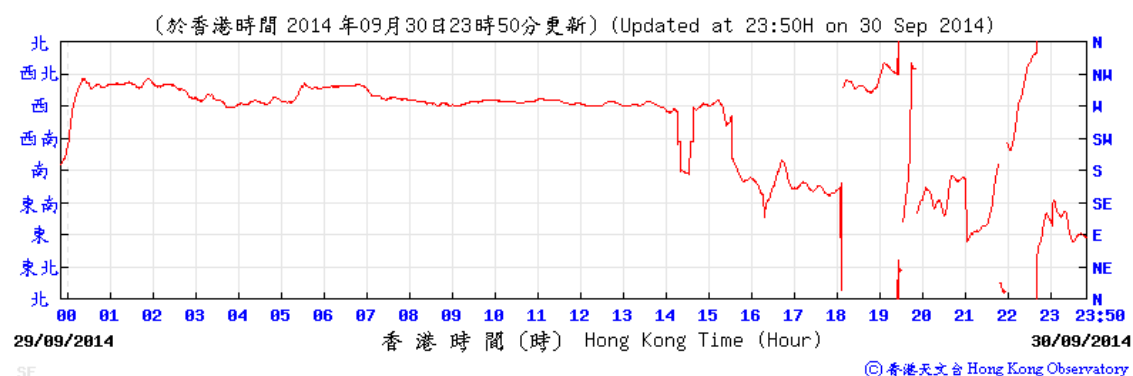
Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

26-27 September 2014



Wind direction obtained from the meteorological station at Star Ferry from the Hong Kong Observatory (HKO)

30 September - 1 October 2014



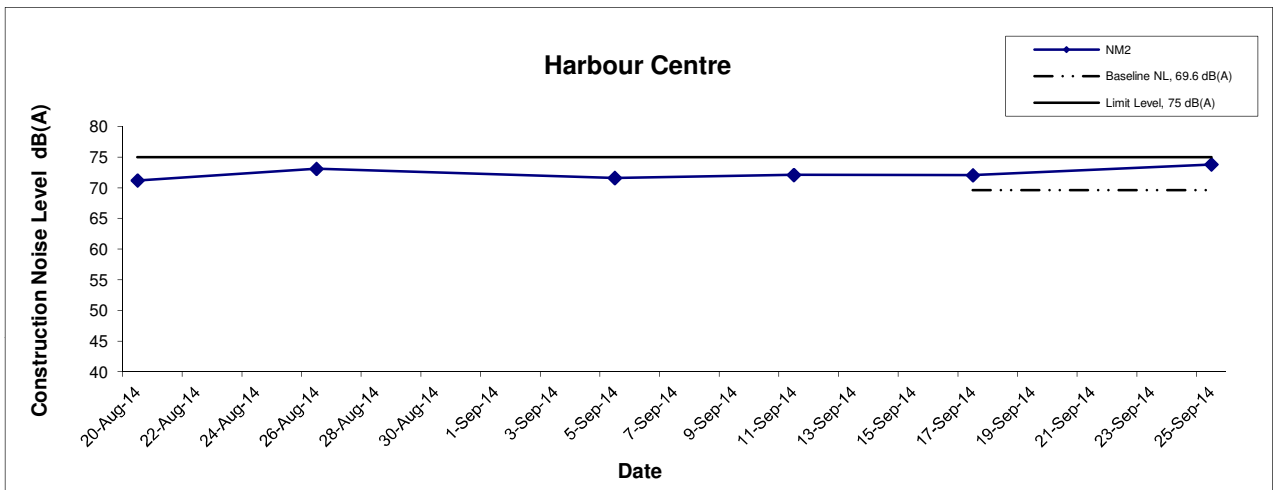
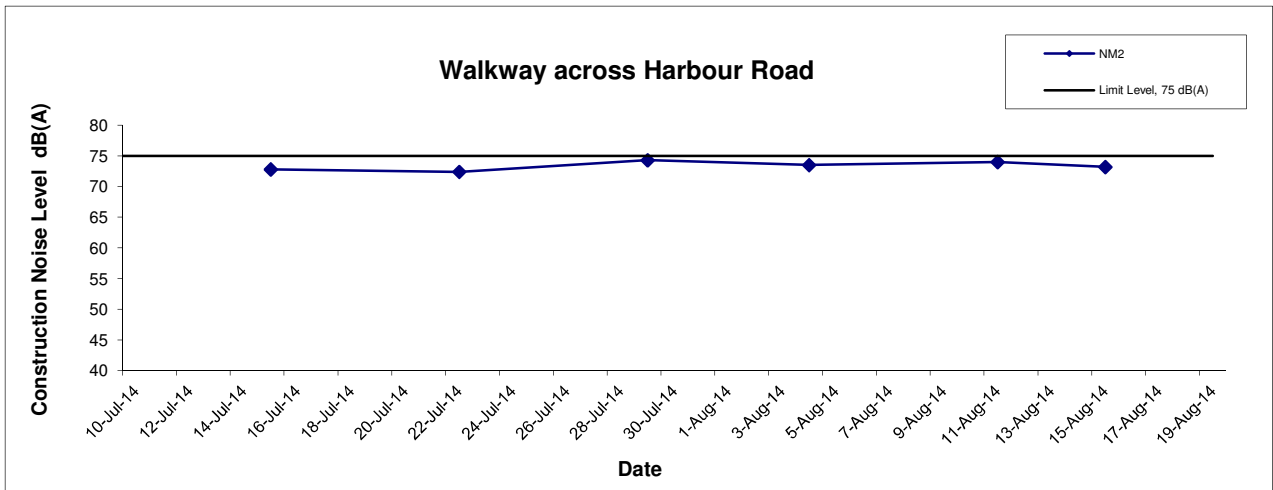
APPENDIX F
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS


App F - Noise Monitoring Results

Location NM2 - Harbour Centre							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
5-Sep-14	11:30	Sunny	71.6	73.7	68.2	N/A	71.6
11-Sep-14	13:00	Sunny	72.1	74.2	69.7		72.1
17-Sep-14	13:15	Cloudy	74.0	75.7	71.1	69.6	72.0
25-Sep-14	13:45	Sunny	75.2	77.1	71.0		73.8

Note: Since baseline noise monitoring at Harbour Centre was conducted between 1 and 14 September 2014, baseline corrected level was only applied on noise measured after 14 September 2014.

Noise Levels



Title Shatin to Central Link - Contract 1126 Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA14009	
	Date Sep 14	Appendix F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: September 2014

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

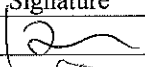

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140903
Date	3 September 2014 (Wednesday)
Time	10:00 – 11:30

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

Ref. No.	Remarks/Observations	Related Item No.
140903-O01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. 	D5
140903-R02	<p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> Unpaved area observed dry in WCSG. The Contractor is reminded to provide frequent water spray to unpaved works area. Cement bags observed not covered. The Contractor is reminded to properly cover the stockpile of cement bags. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140827), all environmental deficiencies were observed improved/rectified by the Contractor. 	D16

	Name	Signature	Date
Recorded by	Johnny Fung		3 September 2014
Checked by	Dr. Priscilla Choy		3 September 2014



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140910
Date	10 September 2014 (Wednesday)
Time	10:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
140910-R02	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> Uncovered stockpile observed in WCSG. The Contractor is reminded to cover the stockpile of dusty material to avoid dust generation. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. 	D6
140910-O01	<p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> Chemical oil observed deposited on wooden planks in WCSP. The Contractor is reminded to clear the chemical waste oil as chemical waste. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140903), all environmental deficiencies were observed improved/rectified by the Contractor. 	F9

	Name	Signature	Date
Recorded by	Johnny Fung		10 September 2014
Checked by	Dr. Priscilla Choy		10 September 2014

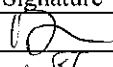

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140917
Date	17 September 2014 (Wednesday)
Time	10:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
140917-R01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> Empty chemical container observed in WCSP without secondary containment. The Contractor is reminded to store it in chemical waste storage area or provide drip tray. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140910), all environmental deficiencies were observed improved/rectified by the Contractor. 	F 2ii, 9

	Name	Signature	Date
Recorded by	Johnny Fung		17 September 2014
Checked by	Dr. Priscilla Choy		17 September 2014

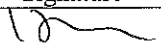

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140924
Date	24 September 2014 (Wednesday)
Time	10:00 – 10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140917), all environmental deficiencies were observed improved/rectified by the Contractor. 	

	Name	Signature	Date
Recorded by	Johnny Fung		24 September 2014
Checked by	Dr. Priscilla Choy		24 September 2014



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140929
Date	29 September 2014 (Monday)
Time	15:30 – 16:00

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

Ref. No.	Remarks/Observations	Related Item No.
140929-R01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> Inactive stockpile material is observed to be exposed in WCSG (demolition area). The Contractor is reminded to cover the exposed stockpile material properly. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140924), no environmental deficiencies were observed improved/rectified by the Contractor. 	D6

	Name	Signature	Date
Recorded by	KC Chung		29 September 2014
Checked by	Dr. Priscilla Choy		29 September 2014

APPENDIX I
EVENT AND ACTION PLANS

Appendix I - Event and Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify the Contractor, IEC and ER 2. Discuss with the ER and Contractor on the remedial measures required; and 3. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by the contractor; 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
Limit Level	<ol style="list-style-type: none"> 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. Review the effectiveness of 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

Appendix I - Event and Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	<p>Contractor's remedial measures and keep IEC, EPD and ER informed of the results; and</p> <p>7. If exceedance stops, cease additional monitoring the results.</p>		<p>exceedance is abated</p>	<p>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated</p>

Appendix I - Event and Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Inform the Contractor, IEC and ER; 2. Discuss with the Contractor on the remedial measures required; 3. Repeat measurement to confirm findings; and 4. Increase monitoring frequency 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate.
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Inform the Contractor, IEC and ER; 2. Discuss with the ER 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; and 6. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.

Appendix I - Event and Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1.Exceedance for one sample	<ol style="list-style-type: none"> 1. Inform the Contractor, IEC, EPD and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; and 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. 	<ol style="list-style-type: none"> 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; and 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; and 3. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.

Appendix I - Event and Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 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; and 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 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; and 4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to 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 J
UPDATED ENVIRONMENTAL
MITIGATION IMPLEMENTATION
SCHEDULE**

SCL Works Contract 1126 - 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
Ecology (Construction Phase)							
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted	Minimise the contamination of wastewater discharge	Contractor	All land based works areas	Construction phase	• EIAO-TM	^
Landscape & Visual (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	All works sites	Construction phase	• EIAO-TM • ETWB TC(W) 3/2006	^
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	All works sites	Construction phase	• EIAO-TM • ETWB TC(W) 3/2006	^
	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	All works sites	Construction phase	• EIAO-TM	^

SCL Works Contract 1126 - 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
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	^
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	^
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	^
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	^

SCL Works Contract 1126 - 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
S7.126	<p>The following good site practice measures shall also be incorporated in the construction phase of the project:</p> <ul style="list-style-type: none"> • Topsoil, where identified, shall be stripped and stored for re-use in the construction of the soft landscape works. • Existing trees to be retained on site shall be carefully protected during construction. 	Minimize landscape and visual impact	Contractor	All works areas	Construction phase	• EIAO-TM	N/A ^
Construction Dust Impact							
S8.89	<p>Watering once every working hour on active works areas, exposed areas and paved haul roads to reduce dust emission by 91.7%.</p> <p>This suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.0 L/m² for Hong Kong side once every working hour.</p> <p>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 1.0 L/m² for Hong Kong side to achieve the removal efficiency.</p> <p>The dust levels would be monitored and managed under an EM&A</p>	Minimize dust impact	Contractor	All works areas	Construction phase	• APCO	*

SCL Works Contract 1126 - 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
	programme as specified in the EM&A Manual.						
S8.90	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:</p> <ul style="list-style-type: none"> • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • 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 	Minimize dust impact	All works areas	Construction phase	<ul style="list-style-type: none"> • APCO • Air Pollution Control (Construction dust) Regulation 	All works areas	<p>*</p> <p>^</p> <p>^</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p>

SCL Works Contract 1126 - 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
	<p>dry seasons/ periods.</p> <ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p> <p>*</p> <p>^</p>
Construction Noise (Airborne)							
S9.55	<p>The following good site practices shall be implemented:</p> <ul style="list-style-type: none"> • 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 	Minimize construction noise impact	Contractor	All works areas	Construction phase	• EIAO-TM	<p>^</p> <p>^</p> <p>^</p>

SCL Works Contract 1126 - 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
	<ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p>
S9.56 & Table 9.16	<p>The following quiet PME shall be used:</p> <ul style="list-style-type: none"> • 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 	To minimize construction noise impact	Contractor	Works areas under this Contract	Construction phase	<ul style="list-style-type: none"> • EIAO-TM 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>

SCL Works Contract 1126 - 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
	<ul style="list-style-type: none"> • Dump truck • Excavator • Truck • Rock drill • Lorry • Wheel loader • Roller vibratory 						N/A N/A N/A 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: <ul style="list-style-type: none"> • Air compressor • Asphalt paver • Backhoe with hydraulic breaker • Bar bender • Bar bender and cutter (electric) • Breaker, excavator mounted • Concrete pump • Concrete pump, stationary/lorry • Excavator • Generator • Grout pump • Hand held breaker • Hydraulic breaker 	Minimize construction noise impact	Contractor	Works areas under this Contract	Construction phase	<ul style="list-style-type: none"> • EIAO-TM 	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

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	<ul style="list-style-type: none"> • Saw, concrete 						N/A
S9.60 & Table 9.17	<p>Noise insulating fabric shall be used for</p> <ul style="list-style-type: none"> • 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) 	Minimize construction noise impact	Contractor	Works areas under this Contract	Construction phase	<ul style="list-style-type: none"> • EIAO-TM 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
Water Quality (Construction Phase)							
S11.216	<p>The following mitigation measures are proposed to minimize the potential water quality impacts from the construction works at or close to the seafront:</p> <ul style="list-style-type: none"> • 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 	<p>minimize release of construction wastes from construction works at or close to the seafront</p>	Contractor	Construction works at or close to the seafront	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	<p>^</p> <p>^</p>

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	<p>and storm drainage.</p> <ul style="list-style-type: none"> 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. 						^
S11.222 to 11.245	<p>The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" shall be followed where practicable.</p> <p><u>Surface Run-off</u></p> <ul style="list-style-type: none"> 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 	<p>minimize water quality impact from construction site runoff and general construction activities</p>	Contractor	All construction sites where practicable	Construction phase	<ul style="list-style-type: none"> EIAO-TM WPCO TM-DSS WDO ProPECC PN 1/94 	<p>^</p> <p>^</p>

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	<p>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.</p> <ul style="list-style-type: none"> 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 						<p>^</p> <p>N/A</p>

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	<p>erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary.</p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	<p><u>Boring and Drilling Water</u></p> <ul style="list-style-type: none"> 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. <p><u>Wheel Washing Water</u></p> <ul style="list-style-type: none"> 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. <p><u>Bentonite Slurries</u></p> <ul style="list-style-type: none"> 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. 						<p>N/A</p> <p>^</p> <p>N/A</p>

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	<ul style="list-style-type: none"> 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. <p><u>Water for Testing & Sterilization of Water Retaining Structures and Water Pipes</u></p> <ul style="list-style-type: none"> 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. <p><u>Wastewater from Building Construction</u></p> <ul style="list-style-type: none"> Before commencing any demolition works, all sewer and drainage connections shall be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains. Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities shall not be discharged into the 						<p>N/A</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p>

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	<p>stormwater drainage system. If the wastewater is to be discharged into foul sewers, it shall undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.</p> <p><u>Acid Cleaning, Etching and Pickling Wastewater</u></p> <ul style="list-style-type: none"> 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. <p><u>Wastewater from Site Facilities</u></p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>^</p>

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	<ul style="list-style-type: none"> 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. 						^
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	<ul style="list-style-type: none"> EIAO-TM WPCO TM-DSS WDO 	^
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	minimize impact from discharge of uncontaminated groundwater	Contractor	All works areas	Construction phase	<ul style="list-style-type: none"> EIAO-TM WPCO TM-DSS 	^

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	discharged into the storm system via silt traps						
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. 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.	minimize water quality impact from effluent discharges from construction sites	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS 	^
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.	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS • WDO 	^
S11.255	Any service shop and maintenance facilities shall be located on hard standings within a bunded area, and sumps and oil interceptors shall	minimize water quality impact from accidental	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	^

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	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.	spillage of chemical				<ul style="list-style-type: none"> • TM-DSS • WDO 	
S11.256	<p>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:</p> <ul style="list-style-type: none"> • 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. 	<p>minimize water quality impact from accidental spillage of chemical</p>	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS • WDO 	<p>^</p> <p>^</p> <p>^</p>
Waste Management (Construction Waste)							
S12.75	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> - 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 	reduce waste management impacts	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance (Cap. 354) • Land (Miscellaneous 	<p>^</p> <p>^</p>

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	<p>management and chemical handling procedures;</p> <ul style="list-style-type: none"> - 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. 					<p>Provisions)</p> <p>Ordinance (Cap. 28)</p> <ul style="list-style-type: none"> • DEVB TCW No. 6/2010 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S12.76	<p><i>Good Site Practices and Waste Reduction Measures (Con't)</i></p> <ul style="list-style-type: none"> - 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 	achieve waste reduction	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance (Cap. 354) • Land (Miscellaneous Provisions) Ordinance (Cap. 28) 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>damage or contamination of construction materials;</p> <ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p>
S12.77	<p><i>Good Site Practices and Waste Reduction Measures (Con't)</i></p> <ul style="list-style-type: none"> - The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWBTCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP shall be submitted to the Engineer for approval. The Contractor shall implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP shall be reviewed regularly and updated by the Contractor, 	achieve waste reduction	Contractor	All works sites	Construction phase	• ETWB TCW No. 19/2005	^

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	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	<p><i>Storage, Collection and Transportation of Waste</i></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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 	minimize potential adverse environmental impacts arising from waste storage	Contractor	All works sites	Construction phase	- ETWB TCW No. 19/2005	^ ^ ^ ^
S12.80	<p><i>Storage, Collection and Transportation of Waste (Con't)</i></p> <p>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:</p>	minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All works sites	Construction phase	- ETWB TCW No. 19/2005	

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	<ul style="list-style-type: none"> - 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 						^ ^ ^ ^ ^ ^
S12.81	<i>Storage, Collection and Transportation of Waste (Con't)</i> <ul style="list-style-type: none"> - 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	<i>Sorting of C&D Materials</i> <ul style="list-style-type: none"> - Sorting to be performed to recover the inert materials, reusable 	minimize potential adverse environmental	Contractor	All works sites	Construction phase	• DEVB TCW No. 6/2010	^

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	<p>and recyclable materials before disposal off-site.</p> <ul style="list-style-type: none"> - 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 	<p>impacts during the handling, transportation and disposal of C&D materials</p>				<ul style="list-style-type: none"> • ETWB TCW No. 33/2002 • ETWB TCW No. 19/2005 	<p>^</p> <p>^</p> <p>^</p>
S12.97	<p>Containers for Storage of Chemical Waste</p> <p>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:</p> <ul style="list-style-type: none"> - Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; - Have a capacity of less than 450 liters unless the specifications 	<p>register with EPD as a Chemical waste producer and store chemical waste in appropriate containers</p>	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes 	<p>^</p> <p>^</p>

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	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						^
S12.98	<i>Chemical Waste Storage Area</i> - 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.	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	^ ^ ^ ^ ^
S12.98	<i>Chemical Waste</i> - 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	clearly label the chemical waste at works areas	Contractor	All works sites	Construction phase	• Code of Practice on the Packaging, Labelling and	^

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	individual containers which are fully labelled in English and Chinese and stored in a designated secure place.					Storage of Chemical Wastes	
S12.100	<p><i>Collection and Disposal of Chemical Waste</i></p> <p>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</p>	To monitor the generation, reuse and disposal of chemical waste	Contractor	All works sites	Construction phase	• Waste Disposal (Chemical Waste) (General) Regulation	^
S12.101	<p><i>General Refuse</i></p> <p>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.</p>	properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	All works sites	Construction phase	- Public Health and Municipal Services Ordinance (Cap. 132)	^
S12.102	<p><i>General Refuse (Con't)</i></p> <p>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</p>	facilitate recycling of recyclable portions of refuse	Contractor	All works sites	Construction phase	- Public Health and Municipal Services Ordinance (Cap.	^

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	recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.					132)	
S12.102	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	- Public Health and Municipal Services Ordinance (Cap. 132)	^

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.

N/A Not Applicable

**APPENDIX K
WASTE GENERATION IN THE
REPORTING MONTH**

Contract No: MTR SCL 1126 - Reprovisioning of Harbour Road Sports Centre and Wan Chai Swimming Pool
Date of Report: September, 2014

Monthly Summary Waste Flow Table for 2014 at Wan Chai Sports Ground

Monthly	Actual Quantities of C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Remarks
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)	
	(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)	
Jul	0.267	0.000	0.000	0.000	0.267	0.000	3.780	0.000	0.000	0.000	0.020	
Aug	0.260	0.010	0.000	0.000	0.250	0.000	11.090	0.000	0.000	0.000	0.031	
Sept	0.163	0.009	0.000	0.000	0.154	0.000	24.550	0.000	0.000	0.000	0.023	
Oct												
Nov												
Dec												
Total	0.690	0.019	0.000	0.000	0.671	0.000	39.420	0.000	0.000	0.000	0.074	

Notes:

- 1) The waste flow table shall also include C&D materials that are specified in the contract to be imported for use at the site.
- 2) Plastic refer to plastic bottle/ containers, plastic sheets/ foam from packaging material.
- 3) The general refuse with non-recyclable materials were disposed to Landfill.
Assume the densities of Rock, Soil, Mix Rock and Soil, are Regular Spoil to be 2.0 tonnes/m³. Assumption the densities of general refuse is 1.0 tonnes/m³

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

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

Cumulative Complaint Log

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

Cumulative Log for Notifications of Summons

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

Cumulative Log for Successful Prosecutions

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

Appendix C

**Monthly EM&A Report for September 2014 – SCL Works
Contract 11227 Advance Works for NSL Cross Harbour
Tunnels**

MTR Corporation Limited


**Shatin to Central Link –
Hung Hom to Admiralty Section**

Monthly EM&A Report No.2

[Period from 1 to 30 September 2014]

Works Contract 11227 – Advance Works for NSL
Cross Harbour Tunnels

(October 2014)

Certified by: 
Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 13th October 2014

Concentric – Hong Kong River Joint Venture

Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels

Monthly Environmental Monitoring and Audit Report For September 2014

(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 2nd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 11227 – Advance Works for NSL Cross Harbour Tunnels**. This report documents the findings of EM&A Works conducted from 1 to 30 September 2014.

Summary of Construction Works undertaken during Reporting Month

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

Shek O Casting Basin

- Seabed leveling works at channel exit; and
- Rock filling works in Casting Basin.

Victoria Harbour

- Deployment of silt curtain at the dredging area in Victoria Harbour;
- Dredging of trial trench in Victoria Harbour.

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) 13 times
- Water Quality Monitoring at each monitoring station (Victoria Harbour) ⁽¹⁾ 8 times

Remarks:

(1) Construction activities in Victoria Harbour under this Project commenced on 11 September 2014.

Waste Management

4. Wastes generated from this Project include marine sediments. 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 3 and 17 September 2014. 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 3, 10, 17 and 24 September 2014. The representative of the IEC joined the site inspection on 24 September 2014. 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 Project related environmental complaint and notification of summons/successful prosecutions were received in this reporting period.

Reporting Changes

10. There was no reporting change in the reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:
 - Seabed levelling works at channel exit;
 - Rock filling works in Casting Basin; and
 - Dredging of trial trench in Victoria Harbour.
12. Key environmental impacts to be considered in the coming month include:
 - Water quality impact in the vicinity of the marine construction activities.

1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Concentric – Hong Kong River Joint Venture (CCL-HKRJV) 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 11227 – Advance Works for NSL Cross Harbour Tunnels (hereafter referred to as the Project).

Purpose of the Report

- 1.2 This is the 2nd 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 September 2014. The major construction works for Contract 11227 commenced on 1 August 2014 for Shek O Casting Basin. The major construction works in Victoria Harbour for Contract 11227 commenced on 11 September 2014

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 An “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. Variations of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/A) was issued by Director of Environmental Protection (DEP) on 30 April 2014.
- 2.4 The construction of the SCL (HUH-ADM) has been divided into a series of civil construction Works Contracts and this Works Contract 11227 comprises of the seabed levelling and rock filling works in Shek O, and dredging of trial trench in Victoria Harbour. The major construction works for Contract 11227 commenced on 1 August and 11 September 2014 for Shek O Casting Basin and Victoria Harbour respectively.

General Site Description

- 2.5 The alignment and works area for the Works Contract 11227 are shown in **Figure 1a-1c**.

Construction Programme and Activities

- 2.6 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 Casting Basin

- Seabed levelling works at channel exit; and
- Rock filling works in Casting Basin.

Victoria Harbour

- Deployment of silt curtain at the dredging area in Victoria Harbour;
- Dredging of trial trench in Victoria Harbour.

Project Organisation

- 2.7 The project organizational chart and contact details are shown in **Figure 4**.

Status of Environmental Licences, Notification and Permits

2.8 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/A	30/04/2014	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
EPD Ref no.: 375940	20/06/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
N/A			
Registration of Chemical Waste Producer			
Application in Progress			
Effluent Discharge License under Water Pollution Control Ordinance			
N/A			
Construction Noise Permit (CNP)			
GW-RS0737-14	28/07/2014	27/01/2015	Valid
Marine Dumping Permit			
EP/MD/15-057	25/08/2014	24/02/2015	Valid
EP/MD/15-058	25/08/2014	24/09/2014	Valid
EP/MD/15-123	27/09/2014	26/10/2014	Valid

Summary of EM&A Requirements

2.9 The EM&A programme under Works Contract 11227 require regular 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.

2.10 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.

2.11 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 Water Quality Monitoring

- 3.1 In accordance with the EM&A Manual and the ERR, marine water quality monitoring should be carried out during the period of seabed levelling work in Shek O Casting Basin and trenching work in Victoria Harbour. The water quality monitoring stations and control stations of Project are shown in **Figure 2** and **Figure 3**. The co-ordinates of the proposed monitoring stations are listed in **Table 3.1**. As shown in **Table 3.1**, the proposed locations are classified as Impact Station and Control Station according to their functions.
- 3.2 According to the Water Quality Monitoring Plan for Trial Trenching Works (WQMP) and the Baseline Water Quality Monitoring Report for Trial Trenching Works, water quality monitoring in Victoria Harbour will be carried out in two impact monitoring stations (namely A and WSD9) in dry season and four impact monitoring stations (namely A, WSD9, 14 and WSD17) in wet season.
- 3.3 Water quality monitoring in Victoria Harbour commenced on 12 September 2014 as the construction activities in Victoria Harbour commenced on 11 September 2014.

Table 3.1 Water Quality Monitoring Stations

Station	Description	East	North	Parameters to be measured
Shek O Casting Basin				
GB3	Turtle Cove Beach	841120	810280	DO, Turbidity, SS
C3	Control Station for ebb tide	841200	806210	DO, Turbidity, SS
C4	Control Station for flood tide	843330	807320	DO, Turbidity, SS
Victoria Harbour (Wet Season) ⁽³⁾				
A	Wan Chai WSD Flushing Water Intake (Reprovisioned)	836268 ⁽¹⁾	816045 ⁽¹⁾	DO, Turbidity, SS
WSD9	Tai Wan WSD Flushing Water Intake	837930 ⁽²⁾	818357 ⁽²⁾	DO, Turbidity, SS
14	Flushing Water Intake for Kowloon Station	834477	817891	DO, Turbidity, SS
WSD17	Quarry Bay WSD Flushing Water Intake	839863	817077	DO, Turbidity, SS
C1	Control Station 1	833977	817442	DO, Turbidity, SS
C2	Control Station 2	841088	817223	DO, Turbidity, SS

Note:

- (1) According to the Baseline Water Quality Monitoring Report for Trial Trenching Works, the original coordinates of monitoring location A (Easting: 836286, Northing: 816024) is the exact location taken from the design of re-provisioned 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 Trial Trenching Works, the original coordinates of monitoring location WSD9 (Easting: 838133, Northing: 817790) as proposed in WQMP were minor moved closer to sensitive receiver according to the actual site condition.
- (3) According to the Water Quality Monitoring Plan for Trial Trenching Works (WQMP) and the Baseline Water Quality Monitoring Report for Trial Trenching Works, water quality monitoring in Victoria Harbour will be carried out in two impact monitoring stations (namely A and WSD9) in dry season and four impact monitoring stations (namely A, WSD9, 14 and WSD17) in wet season.

Monitoring Parameter, Frequency and Programme

- 3.4 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	During seabed levelling work in Shek O Casting Basin and trenching work in Victoria Harbour
Monitoring Frequency	3 Days in a Week, at mid-flood and mid-ebb tides
Monitoring Locations	GB3, C3, C4, A, WSD9, 14, WSD17, C1, C2
Monitoring Parameters	DO, temperature, turbidity, pH, salinity and SS
Intervals between 2 Sets of Monitoring	Not less than 36 hours
Tide Range	Individual flood and ebb tides not less than 0.5m

Monitoring Equipment and Methodology***pH Measurement Instrument***

- 3.5 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

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

- a DO level in the range of 0 - 20 mg·L⁻¹ and 0 - 200% saturation; and
- a temperature of 0 - 45 degree Celsius (°C).

- 3.7 It should have a membrane electrode with automatic temperature compensation complete with a cable.

- 3.8 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

- 3.9 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

- 3.10 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

- 3.11 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

- 3.12 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

- 3.13 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

- 3.14 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

- 3.15 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.
- 3.16 **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	3
Multi-parameter Water Quality System	YSI 6820-C-M	2
	YSI 6920-M	1
Monitoring Position Equipment	“Magellan” Handheld GPS Model GPS-320	2
Water Depth Detector	Fishfinder 140	2

Laboratory Measurement / Analysis for Marine Water

- 3.17 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.
- 3.18 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 3.3 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

- 3.19 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

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

Event and Action Plan

- 3.21 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

- 3.22 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 (August 2014)	12 September 2014

5 MONITORING RESULTS

Water Quality Monitoring

- 5.1 A total of 13 and 8 sets of water quality monitoring were carried out at the designated monitoring stations in Shek O Casting Basin and Victoria Harbour respectively 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 Water quality monitoring in Victoria Harbour commenced on 12 September 2014 as the construction activities in Victoria Harbour commenced on 11 September 2014.
- 5.3 The monitoring results together with graphical presentations are shown in **Appendix D**.
- 5.4 Action and Limit Levels for water quality monitoring in Shek O Casting Basin and in Victoria Harbour have been established in the baseline water quality monitoring conducted. Action and Limit Levels for water quality is summarised in **Appendix B**.
- 5.5 Water quality monitoring on 15 September 2014 for mid-ebb tide was cancelled as Strong Wind Signal No.3 was in force.
- 5.6 No exceedance of Action and Limit Levels of water quality was recorded during the reporting period.

Waste Management

- 5.7 Waste generated from this Project includes mainly marine sediments. Details of waste management data is presented in **Appendix K**.
- 5.8 With reference to relevant handling records of this Project, 5,468 m³ (in total bulk volume) of materials - Type 1 (Category L) sediments were generated from construction activities during this reporting period. Such materials would be collected and disposed at Capping of the exhausted Confined Marine Disposal Facility at South of The Brothers (or East of Sha Chau). 1,488 m³ (in total bulk volume) of contaminated materials - Type 1 (dedicated sites) and no Type 2 - Confined Marine Disposal (Category M) sediments were generated from construction activities during this reporting period. Such materials would be collected and disposed at Mud Pits CMP1 or CMP2 of the exhausted Confined Marine Disposal Facility at South of The Brothers (or East of Sha Chau).

Landscape and Visual

- 5.9 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 3 and 17 September 2014. 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 3, 10, 17 and 24 September 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 24 September 2014. No site inspection was conducted by EPD during the reporting month. 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
<i>Water Quality</i>	27 Aug 2014	<u>Reminder</u> : Silt curtain at the Southern Gate should be well-maintained to close the gap near the site entrance.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Sep 2014.
	3 Sep 2014	<u>Observation</u> : Some gaps are observed from the silt curtain at the Northern Gate. The Contractor is reminded to properly repair the silt curtain.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
	3 Sep 2014	<u>Reminder</u> : To remove the dusty material from near the side of target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
	10 Sep 2014	<u>Observation</u> : Some gaps are observed in the silt curtain in Northern Gate. The Contractor is reminded to repair the silt curtain properly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
	10 Sep 2014	<u>Reminder</u> : To remove the dusty material near the side of target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
	17 Sep 2014	<u>Reminder</u> : No marine works is currently carried out on site. The Contractor is reminded to close the marine access at silt curtain at Northern Gate before resume of marine works.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.

Parameters	Date	Observations and Recommendations	Follow-up
	24 Sep 2014	<u>Observation:</u> Some gaps are observed near the end of the silt curtain at the Northern Gate. The Contractor is reminded to repair the silt curtain properly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
	24 Sep 2014	<u>Observation:</u> Plume of silty water observed in the seawater near the end of the barge. The Contractor is reminded to locate the source of silty water and repair any equipments if necessary.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
	24 Sep 2014	<u>Observation:</u> Gaps at the end of silt screen at Tai Wan are observed. The Contractor is reminded to repair the silt screen properly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
	24 Sep 2014	<u>Observation:</u> General refuse deposited near the silt screen at Tai Wan should be removed from the area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 3 Oct 2014.
<i>Noise</i>	--	--	--
<i>Landscape and Visual</i>	--	--	--
<i>Air Quality</i>	--	--	--
<i>Waste / Chemical Management</i>	3 Sep 2014	<u>Reminder:</u> To repair the hole observed in the drip tray of generator-set on the target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
	3 Sep 2014	<u>Reminder:</u> Provide drip tray to chemical containers on the target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
	10 Sep 2014	<u>Reminder:</u> To repair the hole observed in the drip tray of generator-set on the target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
	10 Sep 2014	<u>Reminder:</u> Provide drip tray to chemical containers on the target barge.	The observation was observed to be improved/rectified by the Contractor during the audit session on 17 Sep 2014.
<i>Permits/ Licenses</i>	--	--	--

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 Project-related 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:
- Seabed levelling works at channel exit;
 - Rock filling works in Casting Basin; and
 - Dredging of trial trench in Victoria Harbour.

Key Issues in the Next Month

- 8.2 Key issues to be considered in the coming month include:
- Water quality impact in the vicinity of the marine construction activities.

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 September 2014 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 There was no Project related environmental complaint, successful prosecution or notification of summons 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

- The contractor is reminded to properly repair the silt curtain at Northern Gate at the Shek O Casting Basin.
- The Contractor is reminded to remove the dusty material near the side of target barge.
- The Contractor is reminded to locate the source of silty water in Victoria Harbour and repair any equipments if necessary.
- The Contractor is reminded to repair the silt screen properly at Tai Wan.
- The Contractor is reminded to remove the general refuse deposited near the silt screen at Tai Wan.

Landscape and Visual

- N/A

Noise

- N/A

Air Quality

- N/A

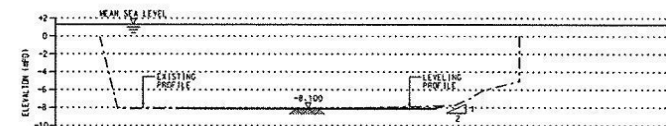
Waste/Chemical Management

- To provide drip tray to chemical container.
- To repair the hole observed in the drip tray of generator-set on the target barge.

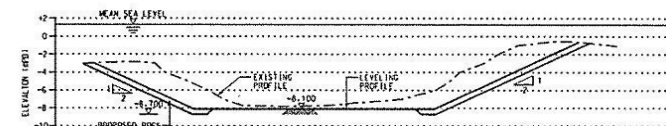
Permits/Licenses

- N/A

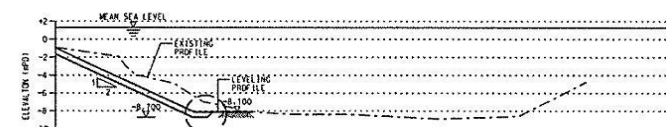
FIGURES



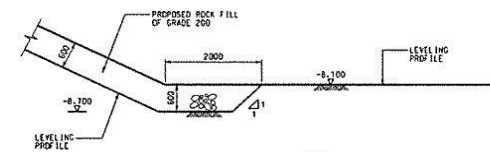
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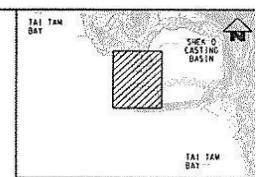
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SCALE 1:250



SECTION C
SCALE 1:250



DETAIL 1
SCALE 1:50



KEY PLAN

NOTES:

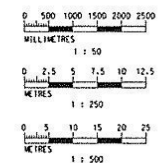
1. UNLESS NOTED OTHERWISE, LEVELS ARE SHOWN IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (HPD).
2. TOPOGRAPHIC INFORMATION AND HYDROGRAPHIC SURVEY RESULTS SHOWN ON THE DRAWING ARE INDICATIVE ONLY.
3. BASED ON THE AVAILABLE C.I. INFORMATION SITUATION ON SEABED IS ANTICIPATED. HYDROGRAPHIC SURVEY RESULTS SHOWN ON THE DRAWING FOR INFORMATION.

LEGEND:

- WORKS BOUNDARY
- HYDROGRAPHIC SURVEY RECORD
- TOPOGRAPHICAL SURVEY RECORD
- LEVELING SIDE SLOPE
- FINISH LEVEL
- SETTING OUT POINT

SETTING OUT POINT

SETTING OUT POINT	EASTING	NORTHING
SOP201	842495.934	809064.474
SOP202	842585.299	809064.190
SOP203	842472.124	809035.647
SOP204	842581.026	809039.030



Title

Contract 11227
Advance Works for NSL Cross Harbour Tunnels
The Alignment and Works Area for Works Contract 11227

Scale

N.T.S

Project

No. MA14028

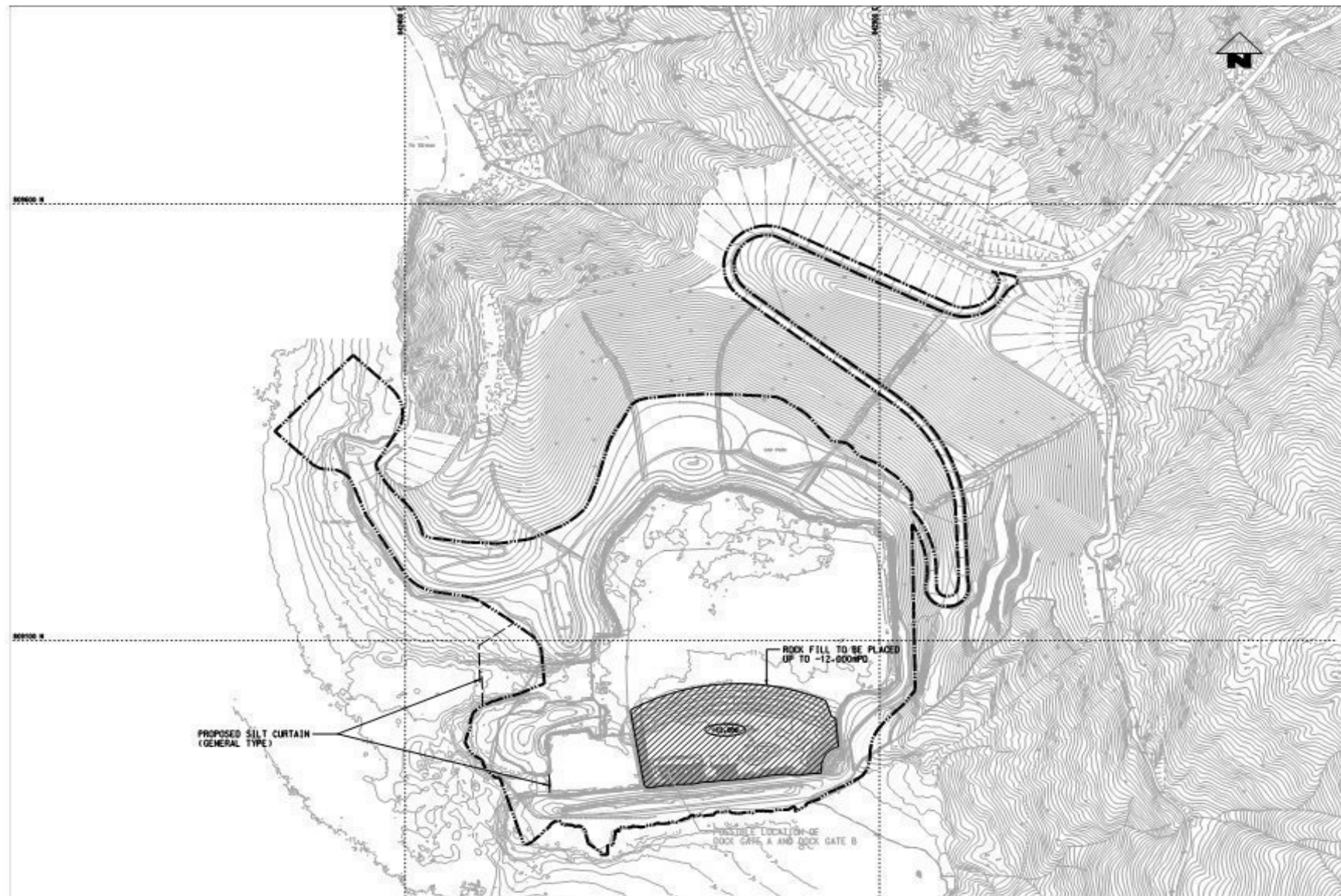
Date

Aug-14

Figure

1a

CINOTECH



Title

Contract 11227

Advance Works for NSL Cross Harbour Tunnels

The Alignment and Works Area for Works Contract 11227

Scale

N.T.S

Project

No. MA14028

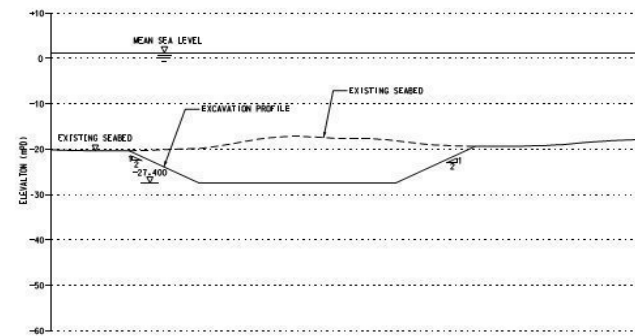
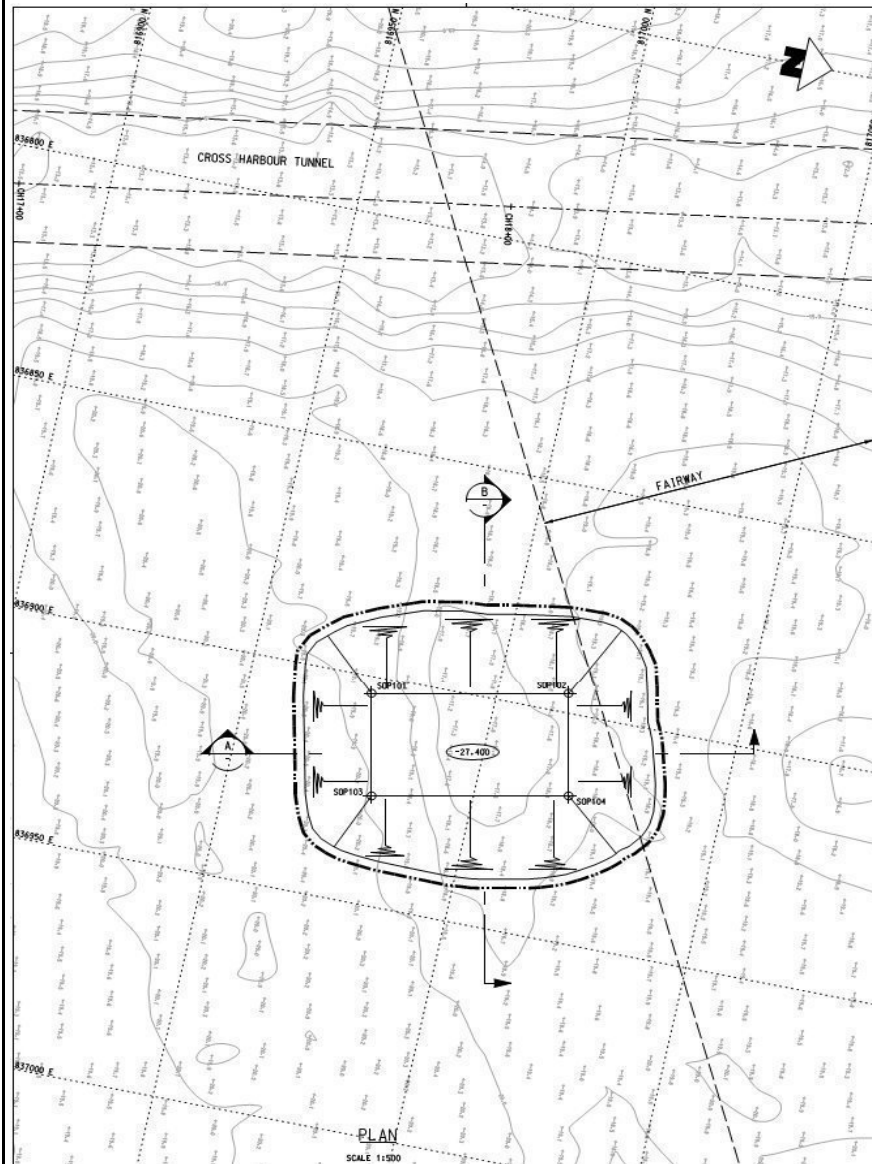
Date

Aug-14

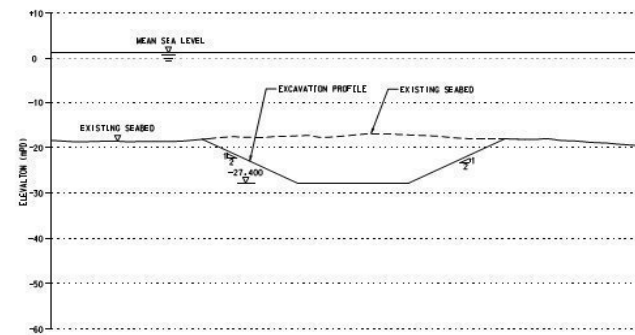
Figure

1b

CINOTECH



SECTION A
SCALE 1:500



SECTION B
SCALE 1:500



KEY PLAN

NOTES:

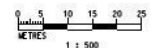
1. UNLESS NOTED OTHERWISE, LEVELS ARE SHOWN IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (HKPD).
2. HYDROGRAPHIC SURVEY RESULTS SHOWN ON THE DRAWING ARE INDICATIVE ONLY.

LEGEND:

- WORKS BOUNDARY
- CH10+00 CROSS HARBOUR TUNNEL CHAINAGE
- TRIAL TRENCHING SIDE SLOPE
- EXCAVATION LEVEL
- SETTING OUT POINT
- HYDROGRAPHIC SURVEY RECORD (HKPD)

SETTING OUT POINT

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
SOP101	836903.922	816975.082
SOP102	836905.469	817014.231
SOP103	836926.072	816979.763
SOP104	836917.819	817018.902



Title

Contract 11227
Advance Works for NSL Cross Harbour Tunnels
The Alignment and Works Area for Works Contract 11227

Scale

N.T.S

Date

Aug-14

Project

No. MA14028

Appendix

1c

CINOTECH

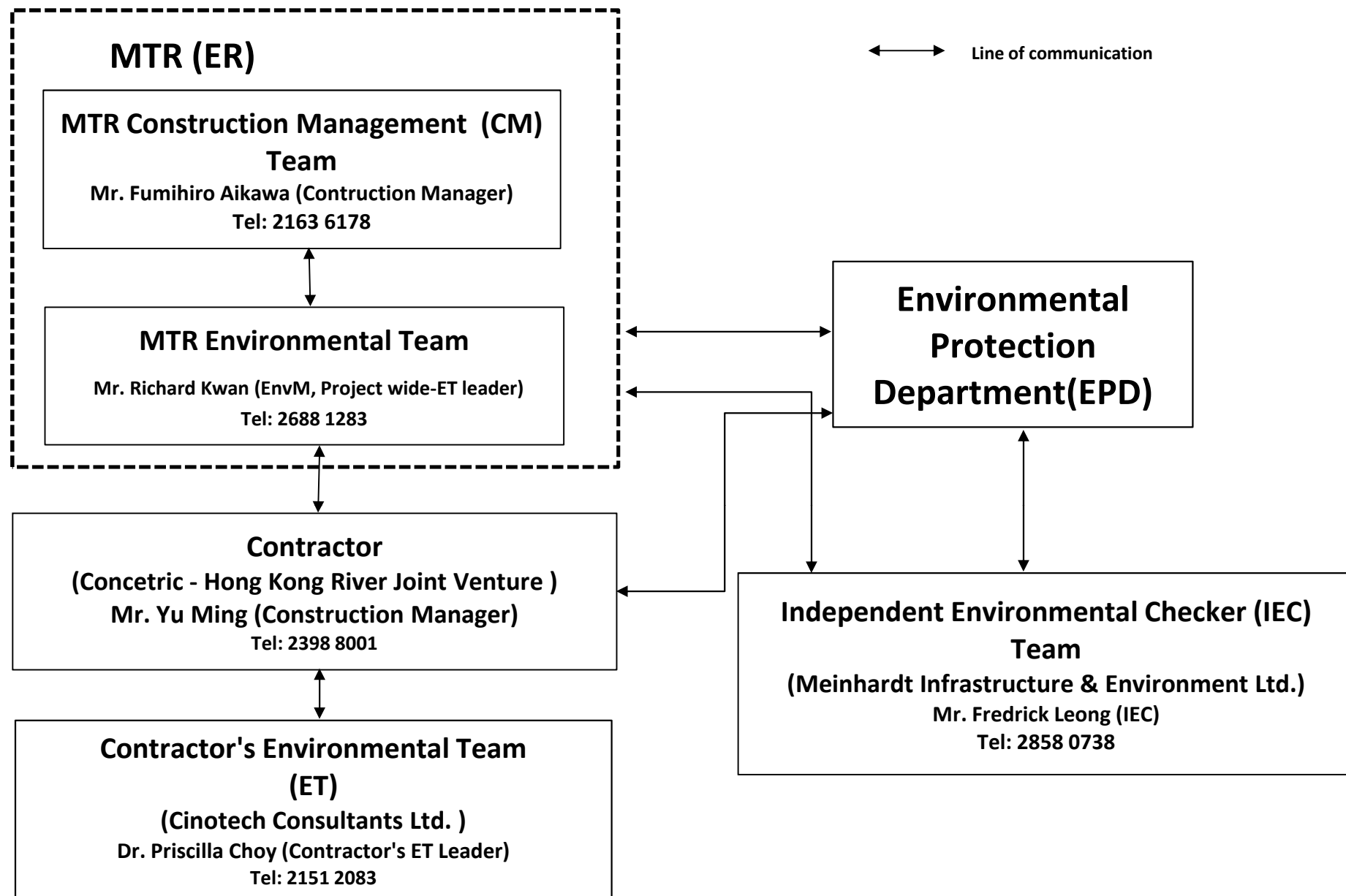




COORDINATE	EASTING	NORTHING
A	836268	816045
14	834477	817891
WSD9	837930	818357
WSD17	839863	817077
C1	833977	817442
C2	841088	817223

LEGEND

● Water Quality Monitoring Station



Title

SCL Contract 11227
The Shatin to Central Link -
Advance Works for NSL Cross Harbour Tunnels
Project Organisation for Environmental Works

Scale

N.T.S

Date

Aug-14

Project

No. MA14028

Figure

4









CINOTECH

**APPENDIX A
TENTATIVE CONSTRUCTION
PROGRAMME**

Shatin to Central Link (SCL)

Works Contract 11227 - Advance Works for NSL Cross Harbour Tunnels

Programme of Marine Works (Shek O)

Item	Activity	Year 2014					
		Jul	Aug	Sep	Oct	Nov	Dec
1	Mobilization of vessels and equipment						
2	Deployment of silt curtain for seabed levelling (northern gate)						
3	Seabed levelling works at channel exit						
2	Deployment of silt curtain for rock filling (southern gate)						
4	Rock filling works in Casting Basin						
5	Completion of marine works						
6	Decommissioning of silt curtains						
7	Demobilization of vessels and equipment						

Shatin to Central Link (SCL)

Works Contract 11227 - Advance Works for NSL Cross Harbour Tunnels

Programme of Marine Works (Victoria Harbour)

Item	Activity	Year 2014				
		Aug	Sep	Oct	Nov	Dec
1	Mobilization of vessels and equipment		■			
2	Deployment of silt curtain		■			
3	Dredging of trial trench		■■■■■			
4	Completion of marine works				◆	
5	Decommissioning of silt curtain				■	
6	Demobilization of vessels and equipment				■	

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels**Derived Action and Limit Levels for Water Quality at Intakes A and WSD9 (Dry Season)**

Parameters	Action Level	Limit Level
DO in mg/L	<2.1	<2
SS in mg/L	5.0	5.5
Turbidity in NTU	5.3	5.6

Derived Action and Limit Levels for Water Quality at Intakes A, WSD9, 14 and WSD17 (Wet Season)

Parameters	Action Level	Limit Level
DO in mg/L	<2.1	<2
SS in mg/L	4.4	4.8
Turbidity in NTU	5.3	5.6

Derived Action and Limit Levels for Water Quality at GB3 (Dry Season)

Parameters	Action Level	Limit Level
DO in mg/L	6.8	6.5
SS in mg/L	9.3	9.3
Turbidity in NTU	5.0	5.6

Derived Action and Limit Levels for Water Quality at GB3 (Wet Season)

Parameters	Action Level	Limit Level
DO in mg/L	5.5	5.3
SS in mg/L	4.5	4.5
Turbidity in NTU	2.1	2.4

APPENDIX C
WATER QUALITY MONITORING
SCHEDULE

Shatin to Central Link - Contract No. 11227
Advance Works for NSL Cross Harbour Tunnels
Water Quality Monitoring Schedule (September 2014) (Shek O)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep
	Mid-Flood 10:42 Mid-Ebb 16:29			Mid-Ebb 07:50 Mid-Flood 15:27		Mid-Ebb 09:47 Mid-Flood 16:58
7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep
	Mid-Ebb 11:28 Mid-Flood 18:12		Mid-Ebb 13:00 Mid-Flood 19:24		Mid-Flood 08:19 Mid-Ebb 14:24	
14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep
	Mid-Flood 11:17 *Mid-Ebb cancelled #		Mid-Ebb 07:18 Mid-Flood 19:52		Mid-Ebb 09:19 Mid-Flood 16:37	
21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep
	Mid-Ebb 11:19 Mid-Flood 17:46		Mid-Ebb 12:25 Mid-Flood 18:30		Mid-Ebb 13:30 Mid-Flood 19:24	
28-Sep	29-Sep	30-Sep				
	Mid-Flood 09:38 *Mid-Ebb 15:22					

- Water quality monitoring on 15 September 2014 for mid-ebb tide was cancelled as Strong Wind Signal No.3 was in force.

Water Quality Monitoring Stations

C3, C4, GB3

* 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 (Tai Miu Wan Station)

2) The reasons for choosing the monitoring day (i.e. 15 and 29 September 2014) in which the tidal ranges are less than 0.5m include:

a) The tidal range of less than 0.5m occurs for 2 or more consecutive days

b) In compliance with the requirement of (i) three days per week at mid-ebb and mid-flood tide and (ii) the interval between two sets of monitoring not less than 36 hours

Shatin to Central Link - Contract No. 11227
Advance Works for NSL Cross Harbour Tunnels
Water Quality Monitoring Schedule (September 2014) (Victoria Harbour)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep
7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep
					Mid-Flood 08:23 Mid-Ebb 14:28	
14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep
	Mid-Flood 11:25 *Mid-Ebb cancelled #		Mid-Ebb 07:18 Mid-Flood 19:55		Mid-Ebb 09:25 Mid-Flood 16:43	
21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep
	Mid-Ebb 11:24 Mid-Flood 17:51		Mid-Ebb 12:29 Mid-Flood 18:33		Mid-Ebb 13:35 Mid-Flood 19:29	
28-Sep	29-Sep	30-Sep				
	Mid-Flood 09:42 *Mid-Ebb 15:28					

- Water quality monitoring on 15 September 2014 for mid-ebb tide was cancelled as Strong Wind Signal No.3 was in force.

Water Quality Monitoring Stations

14, A, C1, C2, 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)

2) The commencement date of the water quality monitoring works is subject to the construction programme

3) The reasons for choosing the monitoring day (i.e. 15 and 29 September 2014) in which the tidal ranges are less than 0.5m include:

a) The tidal range of less than 0.5m occurs for 2 or more consecutive days

b) In compliance with the requirement of (i) three days per week at mid-ebb and mid-flood tide and (ii) the interval between two sets of monitoring not less than 36 hours

Shatin to Central Link - Contract No. 11227
Advance Works for NSL Cross Harbour Tunnels
Tentative Water Quality Monitoring Schedule (October 2014) (Shek O)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Oct	2-Oct	3-Oct	4-Oct
			Mid-Flood 11:56 *Mid-Ebb 17:14			Mid-Ebb 07:17 Mid-Flood 14:48
5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct
	Mid-Ebb 10:19 Mid-Flood 16:59		Mid-Ebb 11:56 Mid-Flood 18:10		Mid-Flood 07:24 Mid-Ebb 13:22	
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
	Mid-Flood 09:56 *Mid-Ebb 15:21			Mid-Ebb 06:06 *Mid-Flood 18:44		Mid-Ebb 08:26 Mid-Flood 15:43
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
	Mid-Ebb 10:05 Mid-Flood 16:34		Mid-Ebb 11:20 Mid-Flood 17:17		Mid-Ebb 12:30 Mid-Flood 18:11	
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
	Mid-Flood 08:44 *Mid-Ebb 14:22		Mid-Flood 10:37 *Mid-Ebb 15:59		Mid-Flood 13:02 *Mid-Ebb 18:28	

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

Water Quality Monitoring Stations

C3, C4, GB3

* 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 (Tai Miu Wan Station)

2) The reasons for choosing the monitoring day (i.e. 1, 13, 16, 27, 29 and 31 October 2014) in which the tidal ranges are less than 0.5m include:

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

Shatin to Central Link - Contract No. 11227
Advance Works for NSL Cross Harbour Tunnels
Tentative Water Quality Monitoring Schedule (October 2014) (Victoria Harbour)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Oct	2-Oct	3-Oct	4-Oct
			Mid-Flood 12:02 *Mid-Ebb 17:25		Mid-Ebb 07:17 Mid-Flood 14:58	
5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct
	Mid-Ebb 10:24 Mid-Flood 17:04		Mid-Ebb 11:59 Mid-Flood 18:13		Mid-Flood 07:27 Mid-Ebb 13:26	
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
	Mid-Flood 10:01 *Mid-Ebb 15:32			Mid-Ebb 06:06 *Mid-Flood 18:44		Mid-Ebb 08:26 Mid-Flood 15:49
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
	Mid-Ebb 10:11 Mid-Flood 16:41		Mid-Ebb 11:25 Mid-Flood 17:22		Mid-Ebb 12:36 Mid-Flood 18:17	
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
	Mid-Flood 08:47 *Mid-Ebb 14:27		Mid-Flood 10:42 *Mid-Ebb 16:11		Mid-Flood 13:08 *Mid-Ebb 18:36	

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

Water Quality Monitoring Stations

14, A, C1, C2, 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)

2) The commencement date of the water quality monitoring works is subject to the construction programme

3) The reasons for choosing the monitoring day (i.e. 1, 13, 16, 27, 29 and 31 October 2014) in which the tidal ranges are less than 0.5m include:

a) The tidal range of less than 0.5m occurs for 2 or more consecutive days

b) In compliance with the requirement of (i) three days per week at mid-ebb and mid-flood tide and (ii) the interval between two sets of monitoring not less than 36 hours

APPENDIX D
WATER QUALITY MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS

Water Quality Monitoring Results at C3 - 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*
1-Sep-14	Sunny	Moderate	16:36	Surface	1	25.7 25.4	25.6	8.0 8.0	8.0	25.9 26.2	26.1	100.9 103.5	102.2	7.1 7.3	7.2	7.0	1.1 1.0	1.1	2.0	3 3	3.0	4.3
				Middle	11	23.9 23.8	23.9	7.8 7.8	7.8	27.8 27.8	27.8	92.9 93.7	93.3	6.7 6.8	6.8		3.0 3.1	3.1		4 4	4.0	
				Bottom	21	22.9 22.8	22.9	7.2 7.1	7.2	29.0 29.1	29.1	78.5 76.8	77.7	5.7 5.6	5.7	2.1 1.7	1.9	6 6		6.0		
4-Sep-14	Cloudy	Moderate	08:00	Surface	1	29.1 29.0	29.1	7.9 7.9	7.9	28.7 28.8	28.8	95.1 93.3	94.2	7.0 6.9	7.0	6.4	1.6 1.6	1.6	1.7	7 7	7.0	4.3
				Middle	11.5	25.8 25.6	25.7	7.8 7.8	7.8	32.8 32.9	32.9	73.8 72.9	73.4	5.8 5.7	5.8		0.9 0.9	0.9		3 3	3.0	
				Bottom	22	24.6 24.4	24.5	7.7 7.7	7.7	33.5 33.6	33.6	70.3 69.5	69.9	5.6 5.6	5.6	2.7 2.7	2.7	3 3		3.0		
6-Sep-14	Sunny	Calm	09:59	Surface	1	25.8 25.8	25.8	8.0 8.1	8.1	33.2 33.1	33.2	119.1 101.5	110.3	8.0 6.9	7.5	7.6	1.7 1.7	1.7	2.0	4 4	4.0	4.3
				Middle	11.5	25.3 25.6	25.5	8.0 8.0	8.0	33.5 33.3	33.4	111.4 112.1	111.8	7.6 7.6	7.6		1.9 1.9	1.9		4 4	4.0	
				Bottom	22	25.1 25.3	25.2	8.0 8.0	8.0	33.6 33.5	33.6	95.8 109.4	102.6	6.5 7.4	7.0	2.5 2.5	2.5	5 5		5.0		
8-Sep-14	Cloudy	Calm	10:13	Surface	1	30.4 30.3	30.4	7.5 7.6	7.6	26.3 26.4	26.4	110.3 108.3	109.3	7.2 7.1	7.2	6.6	1.3 1.3	1.3	1.4	3 4	3.5	3.7
				Middle	11.5	27.1 26.9	27.0	7.4 7.4	7.4	30.5 30.6	30.6	89.9 88.9	89.4	6.0 6.0	6.0		0.6 0.6	0.6		3 3	3.0	
				Bottom	22	25.9 25.7	25.8	7.4 7.5	7.5	31.1 31.3	31.2	84.8 84.0	84.4	5.8 5.7	5.8	2.4 2.4	2.4	4 5		4.5		
10-Sep-14	Cloudy	Moderate	13:11	Surface	1	30.4 30.3	30.4	6.6 6.6	6.6	28.1 28.2	28.2	110.5 108.5	109.5	7.1 7.0	7.1	6.6	1.2 1.3	1.3	1.8	4 4	4.0	3.7
				Middle	11.5	27.1 26.9	27.0	6.5 6.5	6.5	32.3 32.4	32.4	89.9 88.9	89.4	6.0 5.9	6.0		1.9 1.9	1.9		3 3	3.0	
				Bottom	22	25.9 25.7	25.8	6.4 6.4	6.4	32.9 33.0	33.0	84.7 83.9	84.3	5.7 5.7	5.7	2.1 2.1	2.1	4 4		4.0		
12-Sep-14	Rainy	Moderate	14:22	Surface	1	30.3 30.3	30.3	7.5 7.5	7.5	27.2 27.2	27.2	131.3 131.0	131.2	8.5 8.5	8.5	7.3	3.1 3.2	3.2	2.0	4 4	4.0	4.0
				Middle	9.5	29.3 29.3	29.3	7.4 7.5	7.5	27.6 27.6	27.6	91.9 92.7	92.3	6.0 6.1	6.1		1.0 1.0	1.0		3 3	3.0	
				Bottom	18	28.7 28.7	28.7	7.3 7.3	7.3	28.5 28.4	28.5	84.9 86.1	85.5	5.6 5.7	5.7	1.7 1.9	1.8	5 5		5.0		
17-Sep-14	Sunny	Moderate	08:14	Surface	1	27.9 27.9	27.9	7.9 7.9	7.9	32.3 32.3	32.3	102.7 101.4	102.1	6.7 6.7	6.7	6.6	1.3 1.3	1.3	1.9	5 5	5.0	4.3
				Middle	11.5	27.9 27.9	27.9	7.9 7.9	7.9	32.3 32.3	32.3	99.6 99.6	99.6	6.5 6.5	6.5		2.3 2.1	2.2		4 4	4.0	
				Bottom	22	28.0 28.0	28.0	7.9 7.9	7.9	32.5 32.4	32.5	99.4 99.5	99.5	6.5 6.5	6.5	2.2 1.9	2.1	4 4		4.0		
19-Sep-14	Sunny	Moderate	10:41	Surface	1	24.7 24.6	24.7	7.9 7.9	7.9	30.6 30.7	30.7	86.7 84.8	85.8	6.1 5.9	6.0	6.1	0.5 0.6	0.6	1.9	3 3	3.0	4.3
				Middle	11.5	21.4 21.2	21.3	7.8 7.8	7.8	34.7 34.8	34.8	84.6 83.6	84.1	6.1 6.1	6.1		2.0 1.9	2.0		5 5	5.0	
				Bottom	22	20.2 20.0	20.1	7.7 7.7	7.7	35.4 35.5	35.5	77.0 76.2	76.6	5.7 5.6	5.7	3.1 3.1	3.1	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 C3 - 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*
22-Sep-14	Sunny	Moderate	10:38	Surface	1	29.0 29.0	29.0	8.0 8.0	8.0	32.1 32.1	32.1	101.9 101.9	101.9	6.6 6.6	6.6	6.6	1.8 2.0 2.0	1.9	2.0	4 4 3	4.0	4.0
				Middle	11.5	28.6 28.6	28.6	8.1 8.1	8.1	32.1 32.1	32.1	99.5 99.4	99.5	6.5 6.5	6.5		2.0 1.9	2.0		3 3	3.0	
				Bottom	22	28.5 28.5	28.5	8.1 8.1	8.1	32.1 32.1	32.1	96.9 96.4	96.7	6.3 6.3	6.3		2.1 2.1	2.1		5 5	5.0	
24-Sep-14	Sunny	Moderate	12:16	Surface	1	29.1 28.6	28.9	6.5 7.6	7.1	25.9 25.6	25.8	111.8 106.8	109.3	7.4 7.2	7.3	6.8	1.8 1.7	1.8	1.7	7 7	7.0	4.3
				Middle	11.5	25.8 25.2	25.5	7.2 5.5	6.4	31.3 29.8	30.6	90.0 91.1	90.6	6.1 6.3	6.2		0.8 0.8	0.8		3 3	3.0	
				Bottom	22	24.6 24.0	24.3	7.4 7.5	7.5	31.9 31.2	31.6	82.8 82.6	82.7	5.8 5.8	5.8		2.6 2.6	2.6		3 3	3.0	
26-Sep-14	Rainy	Moderate	13:11	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	27.1 27.1	27.1	127.3 127.0	127.2	8.5 8.5	8.5	7.1	1.8 1.9	1.9	1.7	4 4	4.0	3.8
				Middle	11	25.5 25.3	25.4	7.0 7.0	7.0	31.8 32.0	31.9	83.9 81.7	82.8	5.7 5.6	5.7		1.6 1.5	1.6		4 4	4.0	
				Bottom	21	24.7 24.7	24.7	6.5 6.5	6.5	32.8 32.8	32.8	81.4 81.1	81.3	5.6 5.6	5.6		1.6 1.6	1.6		3 4	3.5	
29-Sep-14	Sunny	Moderate	15:16	Surface	1	29.9 29.8	29.9	8.1 8.1	8.1	32.1 31.4	31.8	93.9 92.8	93.4	6.0 5.9	6.0	6.0	1.8 1.8	1.8	1.9	4 4	4.0	3.7
				Middle	11.5	29.9 29.8	29.9	8.1 8.2	8.2	32.0 31.2	31.6	93.2 94.1	93.7	5.9 6.0	6.0		1.4 1.4	1.4		4 4	4.0	
				Bottom	22	29.9 29.8	29.9	8.2 8.2	8.2	31.9 31.2	31.6	93.3 93.9	93.6	5.9 6.0	6.0		2.4 2.4	2.4		3 3	3.0	

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C3 - 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*
1-Sep-14	Sunny	Moderate	10:56	Surface	1	25.6 25.5	25.6	8.2 8.2	8.2	24.6 24.7	24.7	85.1 83.3	84.2	6.1 5.9	6.0	6.1	0.5 0.6 1.6	0.6	2.0	7 7 3	7.0	4.3
				Middle	11.5	22.3 22.1	22.2	8.1 8.1	8.1	28.7 28.8	28.8	83.0 82.1	82.6	6.1 6.1	6.1		1.6 1.6			3 3	3.0	
				Bottom	22	21.1 20.9	21.0	8.0 8.0	8.0	29.4 29.5	29.5	79.5 78.8	79.2	6.0 5.9	6.0		3.7 3.8			3 3	3.0	
4-Sep-14	Cloudy	Moderate	14:06	Surface	1	29.6 29.3	29.5	7.9 7.9	7.9	27.9 28.2	28.1	96.3 98.7	97.5	7.0 7.2	7.1	7.1	1.6 1.6 1.4	1.6	1.9	5 5 4	5.0	4.0
				Middle	11.5	27.8 27.7	27.8	7.7 7.7	7.7	29.8 29.9	29.9	91.6 92.3	92.0	6.9 7.0	7.0		1.4 1.4			4 4	4.0	
				Bottom	22	26.8 26.7	26.8	7.5 7.5	7.5	31.0 31.1	31.1	74.6 72.9	73.8	5.7 5.6	5.7		2.8 2.8			3 3	3.0	
6-Sep-14	Sunny	Calm	15:46	Surface	1	25.5 25.0	25.3	7.1 7.0	7.1	33.5 33.8	33.7	134.0 115.4	124.7	9.1 7.9	8.5	8.7	1.6 1.6	1.6	1.7	4 4	4.0	4.3
				Middle	11.5	25.0 25.0	25.0	7.0 6.8	6.9	33.8 33.8	33.8	135.1 125.4	130.3	9.2 8.6	8.9		1.8 1.7			5 5	5.0	
				Bottom	22	24.4 24.3	24.4	7.0 7.0	7.0	34.3 34.3	34.3	122.5 118.2	120.4	8.4 8.1	8.3		1.6 1.5			4 4	4.0	
8-Sep-14	Cloudy	Calm	16:58	Surface	1	31.0 30.7	30.9	7.6 7.7	7.7	26.6 26.9	26.8	110.3 113.2	111.8	7.1 7.3	7.2	6.6	1.1 1.1	1.1	1.6	5 5	5.0	4.3
				Middle	11.5	29.2 29.1	29.2	7.5 7.4	7.5	28.5 28.5	28.5	91.0 91.9	91.5	6.0 6.0	6.0		0.9 0.9			4 4	4.0	
				Bottom	22	28.2 28.1	28.2	7.2 7.2	7.2	29.7 29.8	29.8	86.0 84.1	85.1	5.7 5.6	5.7		2.7 2.7			4 4	4.0	
10-Sep-14	Cloudy	Moderate	18:08	Surface	1	28.2 27.9	28.1	6.3 6.3	6.3	29.5 29.7	29.6	107.8 110.6	109.2	7.1 7.4	7.3	7.2	1.1 1.1	1.1	1.6	5 5	5.0	3.8
				Middle	11.5	26.4 26.3	26.4	6.1 6.1	6.1	31.3 31.4	31.4	103.8 104.7	104.3	7.0 7.1	7.1		0.9 0.9			3 4	3.5	
				Bottom	22	25.4 25.3	25.4	5.5 5.5	5.5	32.5 32.6	32.6	82.7 82.3	82.5	5.6 5.6	5.6		2.7 2.7			3 3	3.0	
12-Sep-14	Rainy	Moderate	08:16	Surface	1	28.4 27.4	27.9	7.5 7.5	7.5	30.6 30.5	30.6	139.9 138.0	139.0	9.2 9.2	9.2	9.2	1.2 1.2	1.2	1.6	3 3	3.0	4.3
				Middle	12	26.6 26.7	26.7	7.4 7.4	7.4	32.9 32.4	32.7	137.2 138.2	137.7	9.2 9.2	9.2		1.2 1.1			4 4	4.0	
				Bottom	23	24.1 23.8	24.0	7.2 7.3	7.3	32.2 32.7	32.5	103.9 104.4	104.2	7.3 7.3	7.3		2.3 2.3			6 6	6.0	
15-Sep-14	Fine	Moderate	11:09	Surface	1	28.1 28.0	28.1	7.9 7.9	7.9	26.9 27.0	27.0	97.1 95.4	96.3	6.9 6.7	6.8	6.5	0.6 0.6	0.6	1.5	4 4	4.0	4.0
				Middle	11.5	24.8 24.6	24.7	7.8 7.8	7.8	31.1 31.1	31.1	76.7 76.0	76.4	6.2 6.2	6.2		2.1 2.1			4 4	4.0	
				Bottom	22	23.6 23.4	23.5	7.7 7.7	7.7	31.8 31.8	31.8	60.4 59.8	60.1	5.8 5.7	5.8		1.7 1.7			4 4	4.0	
17-Sep-14	Fine	Moderate	18:47	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	33.9 33.9	33.9	105.2 104.6	104.9	6.8 6.8	6.8	6.7	1.3 1.3	1.3	1.9	3 3	3.0	3.3
				Middle	11	28.2 28.3	28.3	7.8 7.8	7.8	34.2 34.2	34.2	102.2 101.6	101.9	6.6 6.6	6.6		1.6 1.7			3 3	3.0	
				Bottom	21	28.3 28.3	28.3	7.8 7.8	7.8	34.3 34.3	34.3	100.0 99.7	99.9	6.4 6.4	6.4		2.6 2.7			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 C3 - 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*
19-Sep-14	Sunny	Moderate	16:36	Surface	1	24.8 24.5	24.7	7.7 7.7	7.7	31.9 32.2	32.1	102.8 105.4	104.1	7.1 7.3	7.2	7.0	1.5 1.5	1.5	1.9	3 3	3.0	4.0
				Middle	11	23.0 22.9	23.0	7.5 7.5	7.5	33.8 33.8	33.8	94.6 95.5	95.1	6.7 6.8	6.8		1.7 1.7	1.7		4 4	4.0	
				Bottom	21	22.0 21.9	22.0	6.9 6.8	6.9	35.0 35.1	35.1	82.8 81.1	82.0	5.9 5.8	5.9		2.6 2.4	2.5		5 5	5.0	
22-Sep-14	Sunny	Moderate	16:50	Surface	1	28.7 28.8	28.8	8.1 8.1	8.1	32.1 32.1	32.1	104.7 105.0	104.9	6.8 6.8	6.8	6.8	1.8 1.9	1.9	1.6	4 4	4.0	4.0
				Middle	11.5	28.7 28.7	28.7	8.1 8.1	8.1	32.1 32.1	32.1	103.2 102.9	103.1	6.7 6.7	6.7		1.1 1.2	1.2		4 4	4.0	
				Bottom	22	28.7 28.7	28.7	8.1 8.1	8.1	32.1 32.1	32.1	101.3 101.3	101.3	6.6 6.6	6.6		1.6 1.6	1.6		4 4	4.0	
24-Sep-14	Fine	Moderate	17:03	Surface	1	28.9 28.6	28.8	7.5 6.9	7.2	26.0 26.5	26.3	116.0 115.3	115.7	7.7 7.7	7.7	6.9	1.6 1.5	1.6	2.0	5 5	5.0	4.2
				Middle	11.5	27.1 27.0	27.1	8.0 6.8	7.4	29.3 28.8	29.1	88.4 87.1	87.8	6.0 5.9	6.0		1.3 1.3	1.3		3 4	3.5	
				Bottom	22	26.1 26.0	26.1	8.1 7.1	7.6	29.6 29.1	29.4	85.9 86.7	86.3	5.9 6.0	6.0		3.2 3.1	3.2		4 4	4.0	
26-Sep-14	Fine	Moderate	18:29	Surface	1	27.8 26.8	27.3	8.3 8.3	8.3	28.6 28.5	28.6	137.0 135.1	136.1	9.2 9.2	9.2	9.2	1.3 1.6	1.5	1.9	5 5	5.0	4.0
				Middle	11.5	26.0 26.1	26.1	8.1 8.2	8.2	30.9 30.4	30.7	134.2 135.3	134.8	9.2 9.2	9.2		2.1 2.1	2.1		4 4	4.0	
				Bottom	22	23.5 23.2	23.4	8.0 8.0	8.0	33.2 32.7	33.0	103.4 103.3	103.4	7.3 7.3	7.3		2.2 2.0	2.1		3 3	3.0	
29-Sep-14	Sunny	Moderate	08:50	Surface	1	29.7 29.7	29.7	8.1 8.1	8.1	31.2 28.1	29.7	94.5 92.9	93.7	6.1 6.1	6.1	6.1	1.3 1.3	1.3	1.7	3 3	3.0	4.0
				Middle	11.5	29.8 29.8	29.8	8.1 8.2	8.2	31.1 28.1	29.6	93.8 93.7	93.8	6.0 6.1	6.1		1.4 1.4	1.4		3 3	3.0	
				Bottom	22	29.8 29.8	29.8	8.2 8.2	8.2	31.0 28.2	29.6	91.8 92.5	92.2	5.9 6.0	6.0		2.5 2.5	2.5		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 C4 - 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*
1-Sep-14	Sunny	Moderate	16:14	Surface	1	26.2 26.2	26.2	7.8 7.8	7.8	22.7 22.7	22.7	119.6 119.4	119.5	8.5 8.5	8.5	7.3	1.3 1.4	1.4	1.2	3 4	3.5	3.5
				Middle	9.5	23.3 23.1	23.2	7.0 7.0	7.0	27.4 27.6	27.5	82.9 80.8	81.9	6.0 5.9	6.0		1.1 1.0	1.1		3 3	3.0	
				Bottom	18	22.5 22.5	22.5	6.5 6.5	6.5	28.4 28.4	28.4	81.8 81.5	81.7	6.0 6.0	6.0	1.1 1.1	1.1	4 4		4.0		
4-Sep-14	Cloudy	Moderate	08:33	Surface	1	29.3 28.3	28.8	8.0 8.0	8.0	28.6 28.5	28.6	100.5 99.2	99.9	7.4 7.4	7.4	7.4	1.5 1.5	1.5	1.9	6 6	6.0	4.3
				Middle	9	27.5 27.6	27.6	7.8 7.9	7.9	30.9 30.4	30.7	97.0 98.2	97.6	7.3 7.4	7.4		1.5 1.4	1.5		4 5	4.5	
				Bottom	17	25.0 24.7	24.9	7.7 7.7	7.7	33.2 32.7	33.0	71.3 71.6	71.5	5.6 5.7	5.7	2.6 2.6	2.6	<2.5 <2.5		<2.5		
6-Sep-14	Sunny	Calm	10:12	Surface	1	25.7 25.8	25.8	8.2 8.2	8.2	33.2 33.2	33.2	124.2 120.1	122.2	8.4 8.1	8.3	8.4	2.0 2.2	2.1	2.0	4 3	3.5	3.5
				Middle	9	25.6 25.5	25.6	8.2 8.2	8.2	33.2 33.2	33.2	124.2 122.6	123.4	8.4 8.3	8.4		2.2 2.2	2.2		3 3	3.0	
				Bottom	17	24.9 25.0	25.0	8.2 8.2	8.2	33.4 33.3	33.4	116.7 122.4	119.6	8.0 8.4	8.2	1.7 1.9	1.8	4 4		4.0		
8-Sep-14	Cloudy	Calm	10:47	Surface	1	30.2 29.2	29.7	7.9 7.9	7.9	26.1 26.0	26.1	111.7 110.3	111.0	7.3 7.3	7.3	7.3	1.2 1.2	1.2	1.6	5 5	5.0	3.8
				Middle	9	28.4 28.5	28.5	7.7 7.8	7.8	28.4 28.0	28.2	109.4 110.5	110.0	7.3 7.3	7.3		1.2 1.1	1.2		3 3	3.0	
				Bottom	17	25.9 25.6	25.8	7.5 7.6	7.6	30.7 30.2	30.5	96.1 96.1	96.1	6.6 6.6	6.6	2.3 2.3	2.3	4 3		3.5		
10-Sep-14	Cloudy	Moderate	13:41	Surface	1	30.7 29.7	30.2	6.7 6.7	6.7	27.7 27.6	27.7	114.5 113.1	113.8	7.4 7.4	7.4	7.4	0.9 0.9	0.9	1.8	5 5	5.0	4.2
				Middle	9	28.9 29.0	29.0	6.6 6.6	6.6	30.0 29.6	29.8	112.2 113.3	112.8	7.3 7.4	7.4		1.7 1.7	1.7		4 4	4.0	
				Bottom	17	26.4 26.1	26.3	6.4 6.5	6.5	32.4 31.9	32.2	98.7 98.7	98.7	6.6 6.7	6.7	2.8 2.8	2.8	3 4		3.5		
12-Sep-14	Rainy	Moderate	13:59	Surface	1	28.4 28.4	28.4	7.3 7.3	7.3	29.1 29.1	29.1	107.5 110.7	109.1	7.1 7.3	7.2	6.8	1.4 1.4	1.4	2.0	5 5	5.0	3.7
				Middle	11	25.5 25.3	25.4	6.6 6.5	6.6	30.8 31.0	30.9	89.8 90.7	90.3	6.2 6.3	6.3		1.6 1.6	1.6		3 3	3.0	
				Bottom	21	24.7 24.7	24.7	6.1 6.1	6.1	31.7 31.7	31.7	82.3 82.0	82.2	5.7 5.7	5.7	2.9 3.0	3.0	3 3		3.0		
17-Sep-14	Sunny	Moderate	08:37	Surface	1	28.1 28.1	28.1	7.9 7.9	7.9	33.2 33.2	33.2	101.0 100.7	100.9	6.6 6.5	6.6	6.5	1.5 1.5	1.5	1.6	5 5	5.0	4.2
				Middle	9	28.1 28.1	28.1	7.9 7.9	7.9	33.2 33.2	33.2	98.9 98.5	98.7	6.4 6.4	6.4		1.5 1.5	1.5		4 4	4.0	
				Bottom	17	28.1 28.1	28.1	7.9 7.9	7.9	33.3 33.3	33.3	97.6 97.2	97.4	6.3 6.3	6.3	1.8 1.7	1.8	4 3		3.5		
19-Sep-14	Sunny	Moderate	10:21	Surface	1	24.7 23.7	24.2	8.0 8.0	8.0	30.2 30.1	30.2	131.2 129.3	130.3	9.2 9.2	9.2	9.2	1.5 1.6	1.6	1.6	6 6	6.0	4.0
				Middle	9	22.9 23.0	23.0	7.8 7.9	7.9	32.5 32.0	32.3	128.4 129.4	128.9	9.2 9.2	9.2		1.2 1.2	1.2		3 3	3.0	
				Bottom	17	20.4 20.1	20.3	7.7 7.7	7.7	34.8 34.3	34.6	98.8 98.6	98.7	7.3 7.3	7.3	2.2 2.0	2.1	3 3		3.0		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C4 - 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*
22-Sep-14	Sunny	Moderate	11:02	Surface	1	29.0 29.0	29.0	8.1 8.1	8.1	32.0 32.0	32.0	115.1 115.1	115.1	7.4 7.4	7.4	7.2	1.3 1.5	1.4	1.9	3 3	3.0	3.7
				Middle	8.5	28.6 28.6	28.6	8.1 8.1	8.1	32.1 32.1	32.1	105.6 105.1	105.4	6.9 6.8	6.9		1.5 1.4	1.5		4 4	4.0	
				Bottom	16	28.6 28.6	28.6	8.0 8.1	8.1	32.1 32.1	32.1	99.6 98.8	99.2	6.5 6.4	6.5		2.9 2.9	2.9		4 4	4.0	
24-Sep-14	Sunny	Moderate	12:51	Surface	1	28.5 27.7	28.1	9.8 8.1	9.0	26.9 27.0	27.0	112.8 112.0	112.4	7.5 7.6	7.6	7.7	1.6 1.7	1.7	1.9	4 4	4.0	3.7
				Middle	9	26.7 27.0	26.9	7.4 8.4	7.9	27.7 28.0	27.9	109.9 114.9	112.4	7.5 7.8	7.7		1.5 1.5	1.5		3 3	3.0	
				Bottom	17	24.2 24.1	24.2	6.8 8.6	7.7	30.5 30.0	30.3	86.0 93.1	89.6	6.1 6.6	6.4		2.4 2.4	2.4		4 4	4.0	
26-Sep-14	Rainy	Moderate	13:29	Surface	1	30.3 30.3	30.3	8.0 8.0	8.0	25.2 25.2	25.2	115.0 115.0	115.0	7.5 7.5	7.5	6.7	0.4 0.5	0.5	1.2	3 4	3.5	4.3
				Middle	9	29.3 29.3	29.3	7.9 8.0	8.0	25.6 25.6	25.6	85.8 88.1	87.0	5.7 5.9	5.8		1.6 1.6	1.6		4 5	4.5	
				Bottom	17	28.7 28.7	28.7	7.8 7.8	7.8	26.5 26.5	26.5	85.7 85.4	85.6	5.7 5.7	5.7		1.4 1.4	1.4		5 5	5.0	
29-Sep-14	Sunny	Moderate	15:07	Surface	1	29.3 29.8	29.6	8.2 8.1	8.2	29.9 29.7	29.8	110.8 91.6	101.2	7.2 5.9	6.6	6.5	1.2 1.2	1.2	1.5	3 3	3.0	3.3
				Middle	9	29.7 30.0	29.9	8.2 8.1	8.2	29.8 29.7	29.8	102.6 91.1	96.9	6.6 5.9	6.3		1.2 1.2	1.2		4 4	4.0	
				Bottom	17	29.8 30.0	29.9	8.1 8.1	8.1	29.6 29.7	29.7	91.7 88.9	90.3	5.9 5.7	5.8		2.3 2.1	2.2		3 3	3.0	

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 C4 - 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*
1-Sep-14	Sunny	Moderate	10:36	Surface	1	25.6 24.6	25.1	8.3 8.3	8.3	24.2 24.1	24.2	128.8 126.9	127.9	9.2 9.2	9.2	9.2	1.0 1.1	1.1	1.9	5 6	5.5	4.2
				Middle	9	23.8 23.9	23.9	8.1 8.2	8.2	26.5 26.0	26.3	126.0 127.0	126.5	9.2 9.2	9.2		3.1 2.7	2.9		3 3	3.0	
				Bottom	17	21.3 21.0	21.2	8.0 8.0	8.0	28.8 28.3	28.6	96.9 96.8	96.9	7.3 7.3	7.3	1.7 1.5	1.6	4 4		4.0		
4-Sep-14	Cloudy	Moderate	14:28	Surface	1	30.2 30.2	30.2	7.8 7.8	7.8	28.7 28.7	28.7	100.6 100.3	100.5	7.3 7.2	7.3	6.7	1.9 1.9	1.9	2.0	6 6	6.0	4.3
				Middle	9	27.3 27.1	27.2	7.1 7.4	7.3	33.3 33.6	33.5	79.9 78.0	79.0	6.1 6.0	6.1		1.7 1.7	1.7		3 3	3.0	
				Bottom	17	26.5 26.5	26.5	7.0 6.9	7.0	34.3 34.3	34.3	73.2 72.9	73.1	5.7 5.6	5.7	2.5 2.5	2.5	4 4		4.0		
6-Sep-14	Sunny	Calm	15:55	Surface	1	25.8 25.5	25.7	7.8 7.8	7.8	33.6 33.7	33.7	120.7 117.2	119.0	8.1 7.9	8.0	8.1	2.0 1.8	1.9	1.9	4 5	4.5	4.3
				Middle	10.5	25.2 25.1	25.2	7.8 7.8	7.8	33.8 33.9	33.9	123.0 118.1	120.6	8.4 8.0	8.2		1.9 1.9	1.9		5 4	4.5	
				Bottom	20	25.0 25.0	25.0	7.8 7.8	7.8	33.9 33.9	33.9	119.5 116.9	118.2	8.1 8.0	8.1	1.7 1.8	1.8	4 4		4.0		
8-Sep-14	Cloudy	Calm	17:28	Surface	1	31.5 31.5	31.5	7.6 7.6	7.6	27.3 27.2	27.3	110.7 110.3	110.5	7.0 7.0	7.0	6.7	1.1 1.1	1.1	1.8	5 5	5.0	4.3
				Middle	9	28.6 28.4	28.5	6.9 7.2	7.1	31.9 32.1	32.0	98.0 97.3	97.7	6.4 6.3	6.4		1.7 1.7	1.7		5 5	5.0	
				Bottom	17	27.8 27.8	27.8	6.8 6.6	6.7	32.9 32.9	32.9	87.5 91.9	89.7	5.7 6.0	5.9	2.6 2.7	2.7	3 3		3.0		
10-Sep-14	Cloudy	Moderate	18:27	Surface	1	28.6 28.6	28.6	6.5 6.5	6.5	26.2 26.2	26.2	111.1 110.7	110.9	7.4 7.4	7.4	6.7	1.5 1.5	1.5	1.8	6 6	6.0	4.3
				Middle	9.5	25.7 25.5	25.6	5.8 5.7	5.8	30.8 31.1	31.0	86.8 84.6	85.7	6.0 5.8	5.9		2.0 2.0	2.0		4 4	4.0	
				Bottom	18	24.9 24.9	24.9	5.3 5.3	5.3	31.8 31.8	31.8	83.1 82.8	83.0	5.7 5.7	5.7	1.9 1.9	1.9	3 3		3.0		
12-Sep-14	Rainy	Moderate	08:49	Surface	1	30.4 30.2	30.3	7.5 7.5	7.5	27.8 27.9	27.9	119.9 120.8	120.4	7.7 7.8	7.8	6.8	1.5 1.4	1.5	2.0	4 4	4.0	4.0
				Middle	9	28.4 28.3	28.4	7.4 7.4	7.4	29.7 29.9	29.8	87.3 85.2	86.3	5.8 5.6	5.7		1.6 1.6	1.6		4 4	4.0	
				Bottom	17	26.7 26.7	26.7	7.3 7.3	7.3	31.9 31.6	31.8	90.9 90.3	90.6	6.1 6.1	6.1	2.8 2.8	2.8	4 4		4.0		
15-Sep-14	Fine	Moderate	12:06	Surface	1	28.4 27.4	27.9	7.9 8.0	8.0	26.5 26.5	26.5	98.1 98.5	98.3	6.9 7.0	7.0	7.0	1.6 1.6	1.6	2.0	3 3	3.0	3.7
				Middle	9	26.6 26.7	26.7	7.8 7.9	7.9	28.9 28.3	28.6	97.6 98.8	98.2	6.9 7.0	7.0		1.6 1.5	1.6		4 4	4.0	
				Bottom	17	24.1 23.8	24.0	7.6 7.7	7.7	31.2 30.6	30.9	70.9 71.6	71.3	6.5 6.6	6.6	2.7 2.7	2.7	4 4		4.0		
17-Sep-14	Fine	Moderate	19:05	Surface	1	28.3 28.3	28.3	7.9 7.9	7.9	34.4 34.4	34.4	97.4 96.5	97.0	6.3 6.2	6.3	6.3	1.5 1.5	1.5	2.0	5 5	5.0	3.7
				Middle	9	28.3 28.3	28.3	7.9 7.9	7.9	34.4 34.4	34.4	95.7 95.6	95.7	6.2 6.1	6.2		1.8 1.8	1.8		3 3	3.0	
				Bottom	17	28.4 28.4	28.4	7.9 7.9	7.9	34.4 34.4	34.4	95.0 94.5	94.8	6.1 6.1	6.1	2.6 2.6	2.6	3 3		3.0		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at C4 - 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*
19-Sep-14	Sunny	Moderate	16:14	Surface	1	25.3 25.3	25.3	7.5 7.5	7.5	28.7 28.7	28.7	121.9 121.6	121.8	8.5 8.5	8.5	7.4	1.8 1.9	1.9	1.7	3 3	3.0	3.8
				Middle	9.5	22.4 22.2	22.3	6.7 6.7	6.7	33.4 33.6	33.5	87.3 85.1	86.2	6.2 6.1	6.2		1.6 1.6	1.6		3 4	3.5	
				Bottom	18	21.6 21.6	21.6	6.2 6.2	6.2	34.4 34.4	34.4	79.2 78.9	79.1	5.7 5.7	5.7	1.6 1.6	1.6	5 5		5.0		
22-Sep-14	Sunny	Moderate	17:09	Surface	1	28.7 28.7	28.7	8.1 8.1	8.1	32.1 32.1	32.1	102.7 103.0	102.9	6.7 6.7	6.7	6.4	0.8 0.8	0.8	1.6	4 4	4.0	4.2
				Middle	8.5	28.4 28.4	28.4	8.1 8.1	8.1	32.3 32.3	32.3	93.0 92.4	92.7	6.0 6.0	6.0		1.1 1.1	1.1		4 4	4.0	
				Bottom	16	28.4 28.4	28.4	8.1 8.1	8.1	32.3 32.3	32.3	90.9 90.5	90.7	5.9 5.9	5.9	3.1 2.5	2.8	5 4		4.5		
24-Sep-14	Fine	Moderate	17:33	Surface	1	28.9 28.9	28.9	6.8 7.2	7.0	27.3 26.3	26.8	110.7 112.3	111.5	7.3 7.5	7.4	6.9	0.6 0.7	0.7	2.0	4 4	4.0	4.0
				Middle	9	26.0 25.8	25.9	6.4 7.5	7.0	31.5 32.0	31.8	91.0 92.0	91.5	6.2 6.3	6.3		2.1 2.3	2.2		5 5	5.0	
				Bottom	17	25.2 25.2	25.2	7.1 6.2	6.7	33.6 33.7	33.7	85.8 85.4	85.6	5.8 5.8	5.8	3.0 3.1	3.1	3 3		3.0		
26-Sep-14	Fine	Moderate	18:45	Surface	1	30.0 29.8	29.9	8.4 8.4	8.4	25.7 25.8	25.8	92.2 90.1	91.2	6.1 5.9	6.0	6.2	1.9 2.0	2.0	1.9	3 3	3.0	4.0
				Middle	9	28.0 27.9	28.0	8.2 8.2	8.2	27.7 27.8	27.8	94.0 93.2	93.6	6.3 6.3	6.3		1.2 1.2	1.2		4 4	4.0	
				Bottom	17	26.3 26.3	26.3	8.1 8.2	8.2	29.8 29.6	29.7	81.5 83.7	82.6	5.6 5.7	5.7	2.5 2.5	2.5	5 5		5.0		
29-Sep-14	Sunny	Moderate	08:41	Surface	1	29.8 29.8	29.8	8.1 8.1	8.1	29.7 30.2	30.0	89.2 89.6	89.4	5.8 5.8	5.8	5.8	1.7 1.7	1.7	1.8	4 4	4.0	3.7
				Middle	9	29.9 30.0	30.0	8.1 8.1	8.1	29.8 30.1	30.0	89.3 87.7	88.5	5.7 5.6	5.7		1.2 1.2	1.2		4 4	4.0	
				Bottom	17	29.9 30.0	30.0	8.1 8.1	8.1	29.8 30.1	30.0	87.3 88.0	87.7	5.6 5.6	5.6	2.5 2.2	2.4	3 3		3.0		

Remarks: *DA: Depth-Averaged

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

Water Quality Monitoring Results at GB3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		DA*	Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average		Value	Average	DA*	Value	Average	DA*
1-Sep-14	Sunny	Moderate	15:56	Surface	1	28.1 28.1	28.1	8.0 8.0	8.0	20.8 20.8	20.8	108.2 108.2	108.2	7.5 7.5	7.5	6.9	0.5 0.5	0.5	1.3	4 4	4.0	4.3
				Middle	3	27.1 27.1	27.1	7.9 8.0	8.0	21.2 21.2	21.2	87.8 85.6	86.7	6.2 6.1	6.2		1.3 1.2	1.3		3 3	3.0	
				Bottom	5	26.5 26.5	26.5	7.8 7.8	7.8	22.1 22.1	22.1	80.5 80.3	80.4	5.7 5.7	5.7		2.0 2.1	2.1		6 6	6.0	
4-Sep-14	Cloudy	Moderate	09:02	Surface	1	30.8 30.6	30.7	7.9 7.9	7.9	27.1 27.2	27.2	103.5 104.3	103.9	7.4 7.5	7.5	6.7	1.4 1.3	1.4	1.8	4 5	4.5	4.2
				Middle	3	28.8 28.7	28.8	7.8 7.8	7.8	29.1 29.2	29.2	79.9 78.0	79.0	5.9 5.8	5.9		1.1 1.1	1.1		<2.5 <2.5	<2.5	
				Bottom	5	27.1 27.1	27.1	7.7 7.7	7.7	31.2 31.0	31.1	75.5 75.1	75.3	5.8 5.7	5.8		2.9 3.0	3.0		5 6	5.5	
6-Sep-14	Sunny	Calm	10:25	Surface	1	25.6 25.5	25.6	8.2 8.2	8.2	33.3 33.3	33.3	116.9 111.1	114.0	7.9 7.5	7.7	7.8	2.2 2.0	2.1	2.0	3 3	3.0	3.3
				Middle	3.5	25.4 25.3	25.4	8.2 8.2	8.2	33.3 33.4	33.4	117.0 114.9	116.0	7.9 7.8	7.9		2.1 1.9	2.0		3 3	3.0	
				Bottom	6	24.8 24.4	24.6	8.2 8.1	8.2	33.5 33.8	33.7	114.9 110.2	112.6	7.9 7.6	7.8		1.8 1.9	1.9		4 4	4.0	
8-Sep-14	Cloudy	Calm	11:13	Surface	1	31.7 31.5	31.6	7.5 7.5	7.5	26.2 26.3	26.3	115.4 116.4	115.9	7.4 7.4	7.4	7.0	1.2 1.2	1.2	1.7	5 5	5.0	4.0
				Middle	3.5	29.7 29.6	29.7	7.4 7.4	7.4	28.2 28.4	28.3	101.0 98.9	100.0	6.6 6.4	6.5		1.4 1.4	1.4		4 4	4.0	
				Bottom	6	28.0 28.0	28.0	7.3 7.3	7.3	30.3 30.1	30.2	89.4 88.8	89.1	5.9 5.9	5.9		2.5 2.5	2.5		3 3	3.0	
10-Sep-14	Cloudy	Moderate	14:14	Surface	1	31.7 31.5	31.6	6.7 6.7	6.7	24.8 24.9	24.9	117.2 118.1	117.7	7.5 7.6	7.6	6.8	1.2 1.2	1.2	1.9	3 3	3.0	3.7
				Middle	3.5	29.7 29.6	29.7	6.5 6.5	6.5	26.8 26.9	26.9	92.1 90.0	91.1	6.0 5.9	6.0		1.3 1.3	1.3		5 5	5.0	
				Bottom	6	28.0 28.0	28.0	6.4 6.5	6.5	28.9 28.7	28.8	86.7 86.2	86.5	5.8 5.8	5.8		3.1 3.3	3.2		3 3	3.0	
12-Sep-14	Rainy	Moderate	13:40	Surface	1	27.9 27.6	27.8	7.1 7.1	7.1	32.4 32.6	32.5	115.0 114.6	114.8	7.5 7.5	7.5	6.7	1.2 1.2	1.2	1.7	4 4	4.0	3.7
				Middle	3	26.1 26.0	26.1	6.9 6.9	6.9	32.2 32.3	32.3	85.4 85.0	85.2	5.8 5.8	5.8		1.0 1.0	1.0		4 4	4.0	
				Bottom	5	25.1 25.0	25.1	6.3 6.3	6.3	32.4 32.5	32.5	83.4 83.0	83.2	5.7 5.7	5.7		2.8 2.8	2.8		3 3	3.0	
17-Sep-14	Sunny	Moderate	07:55	Surface	1	27.7 27.7	27.7	7.7 7.8	7.8	31.1 31.2	31.2	107.1 106.8	107.0	7.1 7.1	7.1	7.1	1.4 1.4	1.4	1.6	4 4	4.0	3.7
				Middle	3	27.7 27.7	27.7	7.8 7.8	7.8	31.3 31.3	31.3	106.4 106.3	106.4	7.0 7.0	7.0		1.6 1.6	1.6		3 3	3.0	
				Bottom	5	27.9 27.9	27.9	7.8 7.8	7.8	31.7 31.7	31.7	91.4 91.0	91.2	6.0 6.0	6.0		1.8 1.7	1.8		4 4	4.0	
19-Sep-14	Sunny	Moderate	09:51	Surface	1	26.9 26.7	26.8	8.1 8.1	8.1	27.3 27.4	27.4	112.9 113.7	113.3	7.7 7.8	7.8	7.1	0.9 1.0	1.0	1.4	4 4	4.0	4.0
				Middle	3	24.9 24.8	24.9	7.9 7.9	7.9	29.3 29.4	29.4	92.0 90.1	91.1	6.5 6.3	6.4		1.3 1.3	1.3		3 3	3.0	
				Bottom	5	23.2 23.2	23.2	7.8 7.9	7.9	31.4 31.2	31.3	81.2 80.7	81.0	5.8 5.8	5.8		2.0 2.0	2.0		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 GB3 - 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*
22-Sep-14	Sunny	Moderate	10:09	Surface	1	29.0 29.0	29.0	8.1 8.1	8.1	32.0 32.0	32.0	117.8 118.2	118.0	7.6 7.6	7.6	7.6	1.4 1.7	1.6	1.9	3 3	3.0	3.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.8	28.4 28.4	28.4	8.0 8.0	8.0	31.9 31.9	31.9	90.9 90.3	90.6	5.9 5.9	5.9		2.0 2.1	2.1		3 3	3.0	
24-Sep-14	Sunny	Moderate	13:16	Surface	1	30.2 30.0	30.1	7.4 7.7	7.6	25.4 25.7	25.6	107.6 113.2	110.4	7.1 7.4	7.3	6.7	1.5 1.5	1.5	1.9	3 3	3.0	4.2
				Middle	3	28.2 28.1	28.2	7.9 7.6	7.8	27.3 28.0	27.7	88.6 89.6	89.1	5.9 6.0	6.0		1.6 1.6	1.6		6 6	6.0	
				Bottom	5	26.5 26.5	26.5	6.2 7.3	6.8	30.5 30.3	30.4	85.3 83.0	84.2	5.8 5.6	5.7		2.5 2.5	2.5		3 4	3.5	
26-Sep-14	Rainy	Moderate	12:56	Surface	1	27.9 27.6	27.8	8.0 8.0	8.0	30.3 30.6	30.5	107.3 110.1	108.7	7.1 7.3	7.2	6.6	1.6 1.5	1.6	1.6	3 3	3.0	4.2
				Middle	3	26.1 26.0	26.1	7.8 7.8	7.8	32.2 32.2	32.2	87.0 88.0	87.5	5.9 6.0	6.0		1.5 1.5	1.5		4 5	4.5	
				Bottom	5	25.1 25.0	25.1	7.2 7.1	7.2	33.4 33.5	33.5	85.1 83.3	84.2	5.8 5.7	5.8		1.6 1.6	1.6		5 5	5.0	
29-Sep-14	Sunny	Moderate	14:55	Surface	1	31.7 31.0	31.4	8.2 8.2	8.2	30.0 29.1	29.6	110.7 103.6	107.2	6.9 6.6	6.8	6.8	1.4 1.3	1.4	1.5	3 3	3.0	3.8
				Middle	3.5	31.6 31.1	31.4	8.2 8.2	8.2	29.0 29.3	29.2	109.8 106.1	108.0	6.9 6.7	6.8		1.1 1.1	1.1		5 5	5.0	
				Bottom	6	31.5 31.2	31.4	8.2 8.2	8.2	29.0 29.3	29.2	107.1 103.0	105.1	6.7 6.5	6.6		2.2 2.0	2.1		3 4	3.5	

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 GB3 - 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*
1-Sep-14	Sunny	Moderate	10:06	Surface	1	27.8 27.6	27.7	8.4 8.4	8.4	21.3 21.4	21.4	110.8 111.6	111.2	7.7 7.8	7.8	7.0	0.9 0.9	0.9	1.8	5 5	5.0	4.0
				Middle	3	25.8 25.7	25.8	8.2 8.2	8.2	23.3 23.4	23.4	87.5 85.6	86.6	6.3 6.1	6.2		2.5 2.6	2.6		4 3	3.5	
				Bottom	5	24.1 24.1	24.1	8.1 8.2	8.2	25.4 25.2	25.3	76.9 76.4	76.7	5.6 5.6	5.6	2.1 1.9	2.0	3 4		3.5		
4-Sep-14	Cloudy	Moderate	14:56	Surface	1	31.9 31.9	31.9	7.9 7.9	7.9	27.0 27.0	27.0	99.9 97.7	98.8	7.0 6.9	7.0	7.0	1.0 0.9	1.0	1.9	3 3	3.0	3.8
				Middle	3.5	30.9 30.9	30.9	7.9 7.9	7.9	27.4 27.4	27.4	97.0 95.0	96.0	6.9 6.8	6.9		1.7 1.7	1.7		5 5	5.0	
				Bottom	6	30.3 30.3	30.3	7.8 7.7	7.8	28.3 28.3	28.3	83.8 83.5	83.7	6.0 6.0	6.0	3.0 2.9	3.0	4 3		3.5		
6-Sep-14	Sunny	Calm	16:09	Surface	1	26.8 26.7	26.8	8.7 8.7	8.7	33.5 33.5	33.5	119.4 111.2	115.3	7.9 7.4	7.7	7.8	1.2 1.2	1.2	1.4	4 5	4.5	4.2
				Middle	3	26.6 26.4	26.5	8.7 8.8	8.8	33.5 33.5	33.5	115.3 117.1	116.2	7.7 7.8	7.8		2.0 2.0	2.0		4 4	4.0	
				Bottom	5	26.4 26.2	26.3	8.7 8.7	8.7	33.6 33.7	33.7	117.4 119.1	118.3	7.8 8.0	7.9	1.0 1.0	1.0	4 4		4.0		
8-Sep-14	Cloudy	Calm	17:54	Surface	1	32.7 32.7	32.7	7.7 7.7	7.7	26.3 26.3	26.3	112.1 109.7	110.9	7.0 6.9	7.0	6.5	1.2 1.3	1.3	1.7	6 5	5.5	3.8
				Middle	3.5	31.7 31.7	31.7	7.6 7.6	7.6	26.7 26.7	26.7	93.5 91.1	92.3	5.9 5.8	5.9		1.5 1.5	1.5		3 3	3.0	
				Bottom	6	31.1 31.1	31.1	7.5 7.5	7.5	27.6 27.5	27.6	91.8 91.5	91.7	5.9 5.8	5.9	2.3 2.4	2.4	3 3		3.0		
10-Sep-14	Cloudy	Moderate	18:50	Surface	1	29.3 29.3	29.3	6.7 6.7	6.7	28.7 28.7	28.7	114.2 115.0	114.6	7.5 7.5	7.5	6.9	0.9 1.0	1.0	1.9	3 3	3.0	4.0
				Middle	3.5	28.3 28.3	28.3	6.6 6.6	6.6	29.1 29.1	29.1	96.3 94.0	95.2	6.4 6.2	6.3		2.2 2.2	2.2		4 4	4.0	
				Bottom	6	27.7 27.7	27.7	6.5 6.5	6.5	29.9 29.9	29.9	94.6 94.3	94.5	6.3 6.3	6.3	2.5 2.6	2.6	5 5		5.0		
12-Sep-14	Rainy	Moderate	07:46	Surface	1	28.4 28.3	28.4	7.4 7.4	7.4	31.0 31.1	31.1	100.1 99.7	99.9	6.6 6.5	6.6	6.1	1.3 1.3	1.3	1.4	3 3	3.0	4.3
				Middle	3.5	25.1 24.9	25.0	7.3 7.3	7.3	31.1 31.2	31.2	81.2 80.2	80.7	5.6 5.6	5.6		0.6 0.6	0.6		5 6	5.5	
				Bottom	6	23.9 23.7	23.8	7.3 7.2	7.3	32.8 32.9	32.9	80.7 80.2	80.5	5.6 5.6	5.6	2.4 2.4	2.4	5 4		4.5		
15-Sep-14	Fine	Moderate	12:39	Surface	1	29.1 28.9	29.0	7.8 7.8	7.8	23.6 23.7	23.7	94.4 95.5	95.0	6.7 6.7	6.7	6.5	1.7 1.6	1.7	1.6	5 5	5.0	3.7
				Middle	3.5	27.1 27.0	27.1	7.7 7.7	7.7	25.5 25.8	25.7	76.2 74.4	75.3	6.2 6.1	6.2		1.4 1.4	1.4		3 3	3.0	
				Bottom	6	25.4 25.4	25.4	7.6 7.6	7.6	27.7 27.5	27.6	66.9 66.5	66.7	5.9 6.0	6.0	1.8 1.8	1.8	3 3		3.0		
17-Sep-14	Fine	Moderate	18:28	Surface	1	28.3 28.3	28.3	7.8 7.8	7.8	33.4 33.4	33.4	115.3 115.5	115.4	7.5 7.5	7.5	7.2	1.9 1.6	1.8	1.6	3 3	3.0	3.7
				Middle	3	27.9 27.9	27.9	7.8 7.8	7.8	33.6 33.6	33.6	105.9 105.5	105.7	6.9 6.9	6.9		1.7 1.6	1.7		4 4	4.0	
				Bottom	5	27.9 27.9	27.9	7.8 7.7	7.8	33.7 33.7	33.7	100.3 99.9	100.1	6.5 6.5	6.5	1.2 1.2	1.2	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 GB3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		DA*	Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average		Value	Average	DA*	Value	Average	DA*
19-Sep-14	Sunny	Moderate	15:56	Surface	1	27.2 27.2	27.2	7.7 7.7	7.7	26.8 26.8	26.8	110.2 110.2	110.2	7.5 7.5	7.5	6.8	0.4 0.5	0.5	1.7	3 3	3.0	4.3
				Middle	3	26.2 26.2	26.2	7.6 7.7	7.7	27.2 27.2	27.2	88.0 85.8	86.9	6.1 6.0	6.1		1.3 1.2	1.3		6 6	6.0	
				Bottom	5	25.6 25.6	25.6	7.5 7.5	7.5	28.1 28.1	28.1	80.6 80.3	80.5	5.6 5.6	5.6		3.4 3.3	3.4		4 4	4.0	
22-Sep-14	Sunny	Moderate	16:27	Surface	1	29.3 29.3	29.3	8.0 8.0	8.0	31.9 31.9	31.9	129.8 130.2	130.0	8.3 8.4	8.4	8.4	1.6 1.6	1.6	1.6	4 4	4.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.8	28.5 28.5	28.5	8.1 8.1	8.1	32.0 32.0	32.0	117.2 117.0	117.1	7.6 7.6	7.6		1.5 1.4	1.5		4 4	4.0	
24-Sep-14	Fine	Moderate	17:59	Surface	1	30.1 29.8	30.0	7.6 7.6	7.6	25.8 25.4	25.6	103.7 108.2	106.0	6.8 7.1	7.0	6.7	1.2 1.2	1.2	1.8	3 4	3.5	3.8
				Middle	3.5	29.1 28.8	29.0	7.9 6.4	7.2	27.5 25.8	26.7	97.7 94.5	96.1	6.4 6.3	6.4		2.1 2.1	2.1		5 5	5.0	
				Bottom	6	28.2 28.2	28.2	8.1 7.0	7.6	27.3 27.0	27.2	94.3 94.5	94.4	6.3 6.3	6.3		2.1 2.1	2.1		3 3	3.0	
26-Sep-14	Fine	Moderate	18:15	Surface	1	27.8 27.7	27.8	8.2 8.2	8.2	29.0 29.1	29.1	115.6 116.7	116.2	7.7 7.8	7.8	6.9	0.5 0.6	0.6	1.7	4 4	4.0	3.7
				Middle	3	24.5 24.3	24.4	8.1 8.1	8.1	33.1 33.2	33.2	86.2 84.0	85.1	6.0 5.8	5.9		1.5 1.5	1.5		3 3	3.0	
				Bottom	5	23.3 23.1	23.2	8.0 8.0	8.0	33.8 33.9	33.9	82.4 81.8	82.1	5.8 5.8	5.8		2.9 2.8	2.9		4 4	4.0	
29-Sep-14	Sunny	Moderate	08:29	Surface	1	30.9 30.8	30.9	8.2 8.2	8.2	26.5 26.5	26.5	101.9 101.9	101.9	6.6 6.6	6.6	6.7	1.2 1.3	1.3	1.4	3 3	3.0	4.2
				Middle	3.5	31.0 30.9	31.0	8.2 8.2	8.2	26.8 26.8	26.8	105.3 105.0	105.2	6.8 6.8	6.8		1.0 1.0	1.0		5 5	5.0	
				Bottom	6	31.1 31.1	31.1	8.1 8.1	8.1	29.4 26.8	28.1	95.2 98.3	96.8	6.0 6.3	6.2		1.8 2.2	2.0		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 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*
12-Sep-14	Rainy	Moderate	14:28	Surface	1	29.1 29.1	29.1	7.8 7.8	7.8	29.9 31.2	30.6	75.0 73.8	74.4	4.9 4.8	4.9	4.6	3.2 3.1	3.2	3.2	3 5	4.0	4.0
				Middle	8	29.1 29.2	29.2	7.8 7.8	7.8	31.9 31.8	31.9	63.5 65.5	64.5	4.1 4.2	4.2		2.9 3.1	3.0		4 4	4.0	
				Bottom	15	29.1 29.0	29.1	7.8 7.8	7.8	32.0 32.1	32.1	52.5 50.3	51.4	3.4 3.2	3.3		3.2 3.3	3.3		4 4	4.0	
17-Sep-14	Sunny	Moderate	07:34	Surface	1	28.7 28.8	28.8	8.0 8.0	8.0	33.2 33.2	33.2	103.3 103.0	103.2	6.6 6.6	6.6	6.6	0.7 0.8	0.8	1.0	3 3	3.0	3.8
				Middle	8	28.8 28.8	28.8	8.0 8.0	8.0	33.2 33.2	33.2	102.4 102.4	102.4	6.6 6.6	6.6		0.9 1.0	1.0		4 4	4.0	
				Bottom	15	28.8 28.8	28.8	8.0 8.0	8.0	33.3 33.3	33.3	101.2 101.0	101.1	6.5 6.5	6.5		1.4 1.2	1.3		4 5	4.5	
19-Sep-14	Sunny	Moderate	15:21	Surface	1	24.9 24.9	24.9	8.3 8.3	8.3	31.6 31.6	31.6	70.3 70.9	70.6	4.9 4.9	4.9	5.1	0.6 0.5	0.6	1.8	3 3	3.0	3.0
				Middle	8	24.9 24.9	24.9	8.4 8.4	8.4	31.6 31.7	31.7	74.1 75.2	74.7	5.1 5.2	5.2		1.2 1.4	1.3		3 3	3.0	
				Bottom	15	24.9 24.9	24.9	8.4 8.4	8.4	31.8 31.8	31.8	78.1 78.0	78.1	5.4 5.4	5.4		3.5 3.4	3.5		3 3	3.0	
22-Sep-14	Sunny	Moderate	11:12	Surface	1	29.1 29.0	29.1	8.1 8.1	8.1	32.6 32.7	32.7	71.2 70.7	71.0	4.6 4.5	4.6	4.6	2.7 2.6	2.7	3.2	3 3	3.0	3.3
				Middle	8	29.0 29.0	29.0	8.1 8.1	8.1	32.7 32.7	32.7	70.3 70.4	70.4	4.5 4.5	4.5		3.0 3.0	3.0		3 3	3.0	
				Bottom	15	28.9 28.9	28.9	8.1 8.1	8.1	33.0 32.9	33.0	69.8 69.4	69.6	4.5 4.5	4.5		3.7 3.9	3.8		4 4	4.0	
24-Sep-14	Sunny	Moderate	11:06	Surface	1	29.3 29.3	29.3	7.9 7.9	7.9	30.1 30.1	30.1	96.4 96.1	96.3	6.3 6.2	6.3	6.2	2.5 2.5	2.5	2.8	3 3	3.0	3.3
				Middle	8	29.3 29.3	29.3	7.9 7.9	7.9	30.7 30.7	30.7	92.7 92.7	92.7	6.0 6.0	6.0		2.8 2.7	2.8		3 3	3.0	
				Bottom	15	29.3 29.3	29.3	7.9 7.9	7.9	30.8 30.8	30.8	82.7 84.9	83.8	5.3 5.5	5.4		2.9 3.0	3.0		4 4	4.0	
26-Sep-14	Rainy	Moderate	12:20	Surface	1	29.4 29.4	29.4	7.9 7.9	7.9	31.8 31.7	31.8	63.5 63.9	63.7	4.1 4.1	4.1	4.1	2.1 2.0	2.1	2.3	4 3	3.5	3.5
				Middle	8	29.3 29.2	29.3	7.9 7.9	7.9	31.6 31.7	31.7	61.8 61.4	61.6	4.0 4.0	4.0		2.2 2.2	2.2		3 3	3.0	
				Bottom	15	29.2 29.2	29.2	8.0 8.0	8.0	31.6 31.6	31.6	57.6 56.7	57.2	3.7 3.7	3.7		2.5 2.4	2.5		4 4	4.0	
29-Sep-14	Sunny	Moderate	14:42	Surface	1	30.3 30.3	30.3	8.2 8.3	8.3	29.7 30.0	29.9	68.5 66.1	67.3	4.4 4.2	4.3	4.2	3.8 4.1	4.0	4.1	4 4	4.0	4.2
				Middle	7.5	30.1 30.1	30.1	8.3 8.3	8.3	29.8 30.0	29.9	62.7 62.0	62.4	4.0 4.0	4.0		4.0 3.9	4.0		5 5	5.0	
				Bottom	14	30.0 30.0	30.0	8.3 8.3	8.3	30.3 30.4	30.4	60.5 59.9	60.2	3.9 3.8	3.9		4.3 4.0	4.2		3 4	3.5	

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*
12-Sep-14	Rainy	Moderate	08:12	Surface	1	28.9 28.7	28.8	7.8 7.8	7.8	32.1 32.1	32.1	58.3 57.9	58.1	3.8 3.8	3.8	3.7	2.6 2.5	2.6	2.9	4 4	4.0	4.2
				Middle	8	28.5 28.8	28.7	7.8 7.8	7.8	32.2 32.2	32.2	52.5 53.9	53.2	3.4 3.5	3.5		2.8 2.9	2.9		3 3	3.0	
				Bottom	15	28.7 28.5	28.6	7.8 7.8	7.8	32.4 32.6	32.5	44.7 43.7	44.2	2.9 2.8	2.9		3.1 3.2	3.2		5 6	5.5	
15-Sep-14	Fine	Moderate	11:33	Surface	1	29.1 29.1	29.1	7.8 7.8	7.8	26.8 27.9	27.4	55.7 55.0	55.4	3.7 3.6	3.7	3.5	2.0 1.9	2.0	2.1	3 3	3.0	4.0
				Middle	8	28.9 28.9	28.9	7.8 7.8	7.8	29.5 29.5	29.5	50.7 51.0	50.9	3.3 3.3	3.3		2.1 2.0	2.1		3 3	3.0	
				Bottom	15	28.9 28.9	28.9	7.8 7.8	7.8	29.6 29.6	29.6	50.1 49.7	49.9	3.3 3.3	3.3		2.1 2.4	2.3		6 6	6.0	
17-Sep-14	Fine	Moderate	19:47	Surface	1	29.0 29.0	29.0	8.0 8.0	8.0	33.6 33.6	33.6	104.6 104.5	104.6	6.7 6.7	6.7	6.7	0.7 0.7	0.7	0.7	3 3	3.0	3.7
				Middle	6.5	29.0 29.0	29.0	8.0 8.0	8.0	33.6 33.5	33.6	104.1 104.4	104.3	6.7 6.7	6.7		0.6 0.6	0.6		5 5	5.0	
				Bottom	12	29.0 29.0	29.0	8.0 8.0	8.0	33.6 33.6	33.6	104.8 104.8	104.8	6.7 6.7	6.7		0.9 0.8	0.9		3 3	3.0	
19-Sep-14	Sunny	Moderate	09:53	Surface	1	24.8 24.8	24.8	8.5 8.5	8.5	31.5 31.5	31.5	45.6 44.9	45.3	3.2 3.1	3.2	3.6	1.5 1.5	1.5	2.6	3 3	3.0	4.0
				Middle	8	24.7 24.7	24.7	8.6 8.6	8.6	31.7 31.7	31.7	55.7 54.8	55.3	3.9 3.8	3.9		1.4 1.5	1.5		5 5	5.0	
				Bottom	15	24.5 24.5	24.5	8.6 8.6	8.6	32.9 32.9	32.9	60.4 58.4	59.4	4.2 4.0	4.1		4.7 4.8	4.8		4 4	4.0	
22-Sep-14	Sunny	Moderate	17:18	Surface	1	28.8 28.9	28.9	6.8 7.0	6.9	32.7 32.6	32.7	80.7 79.0	79.9	5.2 5.1	5.2	5.1	2.8 2.9	2.9	3.3	3 3	3.0	3.7
				Middle	8	29.0 29.0	29.0	7.0 6.9	7.0	31.6 31.7	31.7	76.3 76.9	76.6	4.9 5.0	5.0		2.9 2.9	2.9		4 4	4.0	
				Bottom	15	29.0 29.0	29.0	7.0 7.0	7.0	31.8 31.9	31.9	72.2 70.7	71.5	4.7 4.6	4.7		4.2 4.2	4.2		4 4	4.0	
24-Sep-14	Fine	Moderate	18:01	Surface	1	27.9 27.9	27.9	7.6 7.6	7.6	31.9 32.6	32.3	77.2 74.5	75.9	5.1 4.9	5.0	4.8	3.9 3.9	3.9	3.9	5 5	5.0	4.0
				Middle	8	27.9 27.9	27.9	7.6 7.6	7.6	33.0 33.0	33.0	68.5 68.0	68.3	4.5 4.4	4.5		3.8 3.6	3.7		4 4	4.0	
				Bottom	15	27.9 27.9	27.9	7.6 7.6	7.6	33.0 33.0	33.0	61.4 61.4	61.4	4.0 4.0	4.0		4.1 4.3	4.2		3 3	3.0	
26-Sep-14	Fine	Moderate	19:28	Surface	1	28.1 28.3	28.2	7.4 7.5	7.5	30.9 32.2	31.6	68.2 67.0	67.6	4.5 4.4	4.5	4.2	2.2 2.1	2.2	2.3	5 4	4.5	4.0
				Middle	8	28.5 28.7	28.6	7.6 7.6	7.6	33.6 33.6	33.6	59.6 58.3	59.0	3.8 3.7	3.8		2.3 2.3	2.3		4 5	4.5	
				Bottom	15	28.8 28.9	28.9	7.7 7.7	7.7	33.6 33.5	33.6	61.5 61.1	61.3	3.9 3.9	3.9		2.5 2.4	2.5		3 3	3.0	
29-Sep-14	Sunny	Moderate	09:31	Surface	1	30.0 29.9	30.0	7.5 7.5	7.5	30.6 30.7	30.7	58.2 58.8	58.5	3.7 3.8	3.8	3.7	3.5 3.8	3.7	3.8	4 4	4.0	4.2
				Middle	8	29.8 29.8	29.8	7.0 7.0	7.0	31.1 31.1	31.1	56.6 56.2	56.4	3.6 3.6	3.6		4.0 3.4	3.7		4 4	4.0	
				Bottom	15	29.6 29.6	29.6	8.1 8.1	8.1	31.5 31.6	31.6	51.4 51.3	51.4	3.3 3.3	3.3		3.7 4.1	3.9		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 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*
12-Sep-14	Rainy	Moderate	13:19	Surface	1	28.9 28.7	28.8	7.8 7.8	7.8	33.7 33.8	33.8	67.1 66.7	66.9	4.3 4.3	4.3	4.1	3.1 3.0	3.1	3.3	3 3	3.0	3.0
				Middle	9.5	28.6 28.9	28.8	7.8 7.8	7.8	33.9 33.8	33.9	59.3 61.4	60.4	3.8 3.9	3.9		3.2 3.3	3.3		3 3	3.0	
				Bottom	18	28.7 28.6	28.7	7.8 7.8	7.8	33.9 33.9	33.9	48.8 46.9	47.9	3.1 3.0	3.1		3.4 3.5	3.5		3 3	3.0	
17-Sep-14	Sunny	Moderate	08:45	Surface	1	28.7 28.7	28.7	8.7 8.6	8.7	33.6 33.6	33.6	107.8 107.6	107.7	6.9 6.9	6.9	6.9	3.4 2.9	3.2	3.4	5 5	5.0	4.2
				Middle	9	28.7 28.7	28.7	8.6 8.6	8.6	33.7 33.6	33.7	106.3 106.0	106.2	6.8 6.8	6.8		3.5 3.5	3.5		3 3	3.0	
				Bottom	17	28.7 28.7	28.7	8.6 8.6	8.6	33.7 33.6	33.7	106.3 106.0	106.2	6.8 6.8	6.8		3.3 3.8	3.6		5 4	4.5	
19-Sep-14	Sunny	Moderate	16:22	Surface	1	25.0 25.0	25.0	8.8 8.8	8.8	33.2 33.2	33.2	63.1 61.1	62.1	4.3 4.2	4.3	4.5	1.1 1.1	1.1	4.2	4 4	4.0	3.8
				Middle	9	24.5 24.5	24.5	8.8 8.8	8.8	33.9 33.8	33.9	68.7 68.1	68.4	4.7 4.7	4.7		5.9 5.6	5.8		3 3	3.0	
				Bottom	17	24.5 24.5	24.5	8.8 8.8	8.8	34.0 34.0	34.0	74.1 73.6	73.9	5.1 5.1	5.1		5.5 5.6	5.6		5 4	4.5	
22-Sep-14	Sunny	Moderate	12:04	Surface	1	28.9 29.0	29.0	8.1 8.1	8.1	33.6 33.6	33.6	82.8 82.0	82.4	5.3 5.2	5.3	5.2	2.8 2.8	2.8	4.0	4 4	4.0	3.3
				Middle	9	29.0 29.0	29.0	8.2 8.2	8.2	33.3 33.3	33.3	80.4 80.4	80.4	5.1 5.1	5.1		4.7 4.4	4.6		3 3	3.0	
				Bottom	17	28.9 28.9	28.9	8.2 8.2	8.2	33.4 33.4	33.4	80.3 79.9	80.1	5.1 5.1	5.1		4.5 4.7	4.6		3 3	3.0	
24-Sep-14	Sunny	Moderate	12:10	Surface	1	29.2 29.2	29.2	7.9 7.9	7.9	32.2 32.2	32.2	78.2 78.1	78.2	5.0 5.0	5.0	5.0	2.7 2.8	2.8	3.3	3 3	3.0	4.2
				Middle	9	29.2 29.2	29.2	7.9 7.9	7.9	32.3 32.3	32.3	75.6 75.6	75.6	4.9 4.9	4.9		3.3 3.4	3.4		4 4	4.0	
				Bottom	17	29.2 29.2	29.2	7.9 7.9	7.9	32.5 32.5	32.5	70.1 70.0	70.1	4.5 4.5	4.5		3.6 3.8	3.7		5 6	5.5	
26-Sep-14	Rainy	Moderate	13:31	Surface	1	28.8 28.9	28.9	7.2 7.1	7.2	29.0 28.2	28.6	73.6 69.8	71.7	4.8 4.6	4.7	4.5	2.1 2.2	2.2	2.6	3 3	3.0	3.7
				Middle	9	29.0 29.0	29.0	7.0 7.0	7.0	28.7 29.6	29.2	66.3 64.8	65.6	4.4 4.2	4.3		2.6 2.6	2.6		4 4	4.0	
				Bottom	17	29.1 29.1	29.1	6.7 6.7	6.7	30.1 30.3	30.2	58.3 57.7	58.0	3.8 3.8	3.8		2.8 3.0	2.9		4 4	4.0	
29-Sep-14	Sunny	Moderate	14:02	Surface	1	30.3 30.2	30.3	8.0 8.0	8.0	30.4 30.5	30.5	66.3 66.2	66.3	4.2 4.2	4.2	4.2	3.8 3.7	3.8	4.0	4 4	4.0	3.7
				Middle	9	30.0 29.9	30.0	7.9 8.0	8.0	30.7 30.8	30.8	64.2 63.8	64.0	4.1 4.1	4.1		4.2 3.7	4.0		3 3	3.0	
				Bottom	17	29.6 29.6	29.6	8.3 8.2	8.3	31.7 31.7	31.7	60.8 60.7	60.8	3.9 3.9	3.9		3.9 4.4	4.2		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 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*
12-Sep-14	Rainy	Moderate	09:23	Surface	1	29.2 28.8	29.0	7.8 7.8	7.8	29.6 30.1	29.9	76.1 72.6	74.4	5.0 4.7	4.9	4.3	2.9 2.8	2.9	3.1	4 3	3.5	3.8
				Middle	9	28.5 29.1	28.8	7.8 7.8	7.8	33.1 32.9	33.0	55.1 58.6	56.9	3.6 3.8	3.7		3.0 2.8	2.9		4 4	4.0	
				Bottom	17	28.9 28.5	28.7	7.8 7.8	7.8	33.5 33.7	33.6	43.9 41.6	42.8	2.8 2.7	2.8		3.3 3.5	3.4		4 4	4.0	
15-Sep-14	Fine	Moderate	12:42	Surface	1	28.8 28.8	28.8	8.0 8.0	8.0	31.2 31.2	31.2	76.8 75.9	76.4	5.0 4.9	5.0	5.1	2.1 2.1	2.1	2.3	5 4	4.5	3.8
				Middle	9	28.8 28.8	28.8	8.0 8.0	8.0	31.9 31.8	31.9	79.0 78.6	78.8	5.1 5.1	5.1		2.3 2.2	2.3		3 3	3.0	
				Bottom	17	28.7 28.7	28.7	8.0 8.0	8.0	32.2 32.3	32.3	81.9 81.3	81.6	5.3 5.3	5.3		2.4 2.5	2.5		4 4	4.0	
17-Sep-14	Fine	Moderate	18:39	Surface	1	28.7 28.7	28.7	8.5 8.5	8.5	33.6 33.6	33.6	107.8 107.6	107.7	6.9 6.9	6.9	6.9	3.8 3.6	3.7	4.3	4 3	3.5	4.2
				Middle	5.5	28.7 28.7	28.7	8.5 8.4	8.5	33.7 33.6	33.7	106.3 106.0	106.2	6.8 6.8	6.8		4.5 4.5	4.5		5 5	5.0	
				Bottom	10	28.7 28.7	28.7	8.4 8.4	8.4	33.7 33.6	33.7	106.3 106.0	106.2	6.8 6.8	6.8		4.9 4.7	4.8		4 4	4.0	
19-Sep-14	Sunny	Moderate	08:46	Surface	1	24.7 24.7	24.7	8.3 8.3	8.3	31.5 31.5	31.5	76.4 75.3	75.9	5.3 5.2	5.3	5.2	1.1 1.2	1.2	3.9	3 3	3.0	3.7
				Middle	9	24.6 24.6	24.6	8.3 8.3	8.3	32.0 32.1	32.1	74.7 72.6	73.7	5.2 5.0	5.1		3.2 3.3	3.3		3 3	3.0	
				Bottom	17	24.6 24.6	24.6	8.4 8.4	8.4	33.2 33.2	33.2	78.3 76.3	77.3	5.4 5.3	5.4		6.7 7.4	7.1		5 5	5.0	
22-Sep-14	Sunny	Moderate	16:36	Surface	1	29.5 29.4	29.5	8.1 8.1	8.1	32.7 33.0	32.9	73.0 72.2	72.6	4.7 4.6	4.7	4.6	2.8 3.0	2.9	4.0	3 3	3.0	3.7
				Middle	9	29.0 29.1	29.1	8.2 8.2	8.2	33.6 33.5	33.6	71.1 71.0	71.1	4.5 4.5	4.5		3.8 3.5	3.7		4 4	4.0	
				Bottom	17	28.9 28.9	28.9	8.2 8.2	8.2	33.5 33.4	33.5	71.2 71.4	71.3	4.6 4.6	4.6		5.1 5.4	5.3		4 4	4.0	
24-Sep-14	Fine	Moderate	17:08	Surface	1	27.9 27.9	27.9	7.6 7.6	7.6	31.4 31.4	31.4	72.4 72.1	72.3	4.8 4.8	4.8	4.7	4.0 3.9	4.0	4.2	5 5	5.0	4.2
				Middle	9.5	27.9 27.9	27.9	7.3 7.6	7.5	25.5 28.9	27.2	67.2 68.7	68.0	4.6 4.6	4.6		4.2 4.1	4.2		4 5	4.5	
				Bottom	18	27.9 27.9	27.9	7.6 7.6	7.6	29.9 30.2	30.1	62.5 62.6	62.6	4.2 4.2	4.2		4.4 4.5	4.5		3 3	3.0	
26-Sep-14	Fine	Moderate	18:27	Surface	1	29.8 29.7	29.8	7.8 7.4	7.6	33.5 33.9	33.7	70.2 66.4	68.3	4.4 4.2	4.3	4.0	2.3 2.3	2.3	2.4	4 4	4.0	4.2
				Middle	9.5	29.7 29.7	29.7	7.2 7.2	7.2	35.1 34.8	35.0	58.3 56.7	57.5	3.7 3.6	3.7		2.4 2.4	2.4		4 5	4.5	
				Bottom	18	29.7 29.7	29.7	6.9 6.8	6.9	33.8 33.3	33.6	59.9 59.0	59.5	3.8 3.7	3.8		2.5 2.6	2.6		4 4	4.0	
29-Sep-14	Sunny	Moderate	10:20	Surface	1	29.7 29.7	29.7	8.0 8.1	8.1	33.7 34.0	33.9	65.4 64.7	65.1	4.1 4.1	4.1	4.1	3.8 3.9	3.9	4.6	3 3	3.0	3.7
				Middle	8	29.7 29.7	29.7	8.0 7.9	8.0	33.5 33.5	33.5	62.5 62.5	62.5	4.0 4.0	4.0		4.5 4.6	4.6		4 4	4.0	
				Bottom	15	29.6 29.5	29.6	7.4 7.4	7.4	33.5 33.6	33.6	62.4 62.3	62.4	4.0 4.0	4.0		5.1 5.2	5.2		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 14 - 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*
12-Sep-14	Rainy	Moderate	14:20	Surface	1	28.9 28.7	28.8	7.8 7.8	7.8	30.8 31.0	30.9	81.5 80.0	80.8	5.3 5.2	5.3	5.0	2.8 2.7	2.8	3.0	5 5	5.0	4.2
				Middle	4	28.6 28.9	28.8	7.8 7.8	7.8	31.2 31.1	31.2	71.2 71.8	71.5	4.6 4.7	4.7		3.1 3.1	3.1		4 4	4.0	
				Bottom	7	28.7 28.6	28.7	7.8 7.8	7.8	31.4 31.4	31.4	57.9 57.6	57.8	3.8 3.8	3.8		3.1 3.2	3.2		3 4	3.5	
17-Sep-14	Sunny	Moderate	07:52	Surface	1	28.7 28.7	28.7	8.1 8.1	8.1	33.2 33.2	33.2	94.2 93.6	93.9	6.1 6.0	6.1	6.1	1.7 1.8	1.8	2.1	4 4	4.0	4.0
				Middle	3.5	28.7 28.7	28.7	8.1 8.1	8.1	33.2 33.2	33.2	93.7 93.6	93.7	6.0 6.0	6.0		1.9 1.8	1.9		4 4	4.0	
				Bottom	6	28.7 28.7	28.7	8.1 8.1	8.1	33.2 33.2	33.2	95.6 95.3	95.5	6.2 6.1	6.2		2.6 2.6	2.6		4 4	4.0	
19-Sep-14	Sunny	Moderate	15:31	Surface	1	24.9 24.9	24.9	8.5 8.5	8.5	31.6 31.6	31.6	70.2 68.8	69.5	4.9 4.8	4.9	4.7	1.4 1.2	1.3	3.3	3 3	3.0	3.7
				Middle	4	24.8 24.8	24.8	8.5 8.5	8.5	32.3 32.2	32.3	64.4 62.6	63.5	4.5 4.3	4.4		4.1 3.9	4.0		3 3	3.0	
				Bottom	7	24.7 24.7	24.7	8.5 8.5	8.5	32.5 32.5	32.5	64.1 63.4	63.8	4.4 4.4	4.4		4.5 4.5	4.5		5 5	5.0	
22-Sep-14	Sunny	Moderate	11:23	Surface	1	29.0 29.0	29.0	8.1 8.1	8.1	32.1 32.3	32.2	73.4 72.6	73.0	4.7 4.7	4.7	4.7	2.7 2.7	2.7	3.6	4 4	4.0	3.7
				Middle	3.5	29.0 29.0	29.0	8.1 8.1	8.1	32.5 32.5	32.5	71.4 71.7	71.6	4.6 4.6	4.6		4.0 3.7	3.9		4 4	4.0	
				Bottom	6	29.0 29.0	29.0	8.3 8.4	8.4	32.6 32.7	32.7	70.9 70.4	70.7	4.6 4.5	4.6		4.0 4.2	4.1		3 3	3.0	
24-Sep-14	Sunny	Moderate	11:16	Surface	1	29.4 29.4	29.4	7.9 7.9	7.9	31.5 31.4	31.5	83.3 83.3	83.3	5.4 5.4	5.4	5.3	3.1 3.0	3.1	3.3	3 3	3.0	3.7
				Middle	4	29.4 29.4	29.4	7.9 7.9	7.9	31.5 31.6	31.6	79.8 79.8	79.8	5.1 5.1	5.1		3.1 3.1	3.1		5 5	5.0	
				Bottom	7	29.3 29.3	29.3	7.9 7.9	7.9	32.2 32.3	32.3	73.0 73.1	73.1	4.7 4.7	4.7		3.4 3.7	3.6		3 3	3.0	
26-Sep-14	Rainy	Moderate	12:31	Surface	1	30.3 30.2	30.3	7.3 7.4	7.4	28.5 28.8	28.7	80.2 71.7	76.0	5.2 4.6	4.9	4.6	2.3 2.3	2.3	2.5	3 3	3.0	3.7
				Middle	4	29.9 29.8	29.9	7.9 7.9	7.9	30.3 31.2	30.8	64.9 63.9	64.4	4.2 4.1	4.2		2.5 2.5	2.5		3 3	3.0	
				Bottom	7	29.6 29.4	29.5	8.0 8.0	8.0	31.1 30.8	31.0	57.9 57.7	57.8	3.7 3.7	3.7		2.7 2.9	2.8		5 5	5.0	
29-Sep-14	Sunny	Moderate	14:35	Surface	1	29.7 29.7	29.7	7.9 7.9	7.9	28.8 28.8	28.8	52.0 51.7	51.9	3.4 3.4	3.4	3.4	3.8 4.4	4.1	4.2	4 4	4.0	4.0
				Middle	4	29.7 29.7	29.7	8.0 8.0	8.0	28.7 28.7	28.7	50.6 50.4	50.5	3.3 3.3	3.3		4.4 3.8	4.1		4 4	4.0	
				Bottom	7	29.7 29.7	29.7	7.7 7.0	7.4	29.4 29.5	29.5	50.1 50.0	50.1	3.2 3.2	3.2		4.4 4.3	4.4		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 14 - 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*
12-Sep-14	Rainy	Moderate	08:23	Surface	1	29.1 28.7	28.9	7.7 7.8	7.8	35.3 39.2	37.3	79.1 72.6	75.9	5.0 4.5	4.8	4.4	3.1 3.0	3.1	3.5	3 3	3.0	4.0
				Middle	4	28.6 29.0	28.8	7.7 7.7	7.7	41.1 41.3	41.2	62.4 63.7	63.1	3.9 3.9	3.9		3.4 3.4	3.4		3 3	3.0	
				Bottom	7	28.7 28.6	28.7	7.7 7.7	7.7	40.9 40.9	40.9	49.6 49.1	49.4	3.1 3.0	3.1		3.8 4.2	4.0		6 6	6.0	
15-Sep-14	Fine	Moderate	11:46	Surface	1	28.8 28.8	28.8	7.8 7.8	7.8	30.1 30.2	30.2	54.3 52.2	53.3	3.6 3.4	3.5	3.2	2.0 2.0	2.0	2.2	4 5	4.5	4.2
				Middle	4	28.8 28.8	28.8	7.8 7.8	7.8	30.7 30.7	30.7	43.2 43.5	43.4	2.8 2.8	2.8		2.2 2.1	2.2		4 4	4.0	
				Bottom	7	28.8 28.8	28.8	7.8 7.8	7.8	30.9 31.0	31.0	42.0 41.8	41.9	2.7 2.7	2.7		2.3 2.5	2.4		4 4	4.0	
17-Sep-14	Fine	Moderate	19:26	Surface	1	29.0 29.0	29.0	8.1 8.2	8.2	33.6 33.5	33.6	95.0 94.8	94.9	6.1 6.1	6.1	6.1	2.2 2.1	2.2	2.5	3 3	3.0	3.7
				Middle	4	29.0 29.0	29.0	8.2 8.2	8.2	33.6 33.6	33.6	95.5 95.5	95.5	6.1 6.1	6.1		2.4 2.3	2.4		3 3	3.0	
				Bottom	7	29.0 29.0	29.0	8.2 8.2	8.2	33.6 33.6	33.6	95.8 95.6	95.7	6.1 6.1	6.1		3.0 2.9	3.0		5 5	5.0	
19-Sep-14	Sunny	Moderate	09:43	Surface	1	24.9 24.9	24.9	8.3 8.3	8.3	31.6 31.6	31.6	48.4 48.3	48.4	3.4 3.3	3.4	3.5	0.2 0.2	0.2	1.8	3 3	3.0	4.0
				Middle	4	24.6 24.6	24.6	8.4 8.3	8.4	31.8 31.8	31.8	50.1 51.0	50.6	3.5 3.5	3.5		1.7 1.6	1.7		3 3	3.0	
				Bottom	7	24.6 24.6	24.6	8.3 8.3	8.3	32.0 32.0	32.0	53.5 53.3	53.4	3.7 3.7	3.7		3.6 3.6	3.6		6 6	6.0	
22-Sep-14	Sunny	Moderate	17:13	Surface	1	28.4 28.5	28.5	7.3 7.3	7.3	33.3 33.5	33.4	72.4 71.1	71.8	4.7 4.6	4.7	4.5	2.5 2.5	2.5	3.3	3 3	3.0	3.3
				Middle	4	28.9 28.9	28.9	6.9 6.9	6.9	33.2 33.3	33.3	67.5 67.7	67.6	4.3 4.3	4.3		3.3 3.1	3.2		3 3	3.0	
				Bottom	7	29.0 29.0	29.0	7.3 7.2	7.3	32.2 32.2	32.2	66.0 65.7	65.9	4.3 4.2	4.3		4.0 4.3	4.2		4 4	4.0	
24-Sep-14	Fine	Moderate	17:52	Surface	1	27.8 27.8	27.8	7.6 7.6	7.6	31.6 32.7	32.2	82.1 79.9	81.0	5.4 5.2	5.3	5.0	3.7 3.6	3.7	3.9	4 4	4.0	3.7
				Middle	4	28.0 28.0	28.0	7.6 7.6	7.6	32.9 32.9	32.9	70.7 70.4	70.6	4.6 4.6	4.6		3.9 4.0	4.0		3 3	3.0	
				Bottom	7	28.0 28.0	28.0	7.6 7.6	7.6	32.9 33.0	33.0	64.1 63.7	63.9	4.2 4.2	4.2		4.1 4.1	4.1		4 4	4.0	
26-Sep-14	Fine	Moderate	19:13	Surface	1	29.0 29.0	29.0	7.7 7.7	7.7	34.3 34.2	34.3	61.3 61.1	61.2	3.9 3.9	3.9	3.8	2.2 2.3	2.3	2.3	4 4	4.0	4.2
				Middle	4	29.1 29.2	29.2	7.9 7.9	7.9	33.6 33.3	33.5	55.8 55.2	55.5	3.6 3.5	3.6		2.5 2.5	2.5		3 4	3.5	
				Bottom	7	29.2 29.3	29.3	7.9 7.9	7.9	33.0 32.8	32.9	59.3 58.6	59.0	3.8 3.7	3.8		2.3 2.1	2.2		5 5	5.0	
29-Sep-14	Sunny	Moderate	09:40	Surface	1	30.2 30.1	30.2	7.9 7.9	7.9	29.7 30.7	30.2	62.3 60.8	61.6	4.0 3.9	4.0	3.8	4.0 4.3	4.2	4.4	3 3	3.0	4.0
				Middle	4	29.8 29.8	29.8	8.0 8.0	8.0	31.5 31.4	31.5	54.1 53.6	53.9	3.5 3.4	3.5		4.7 3.9	4.3		4 4	4.0	
				Bottom	7	29.7 29.7	29.7	8.1 8.1	8.1	31.1 31.1	31.1	50.6 50.6	50.6	3.2 3.2	3.2		4.3 5.1	4.7		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*
12-Sep-14	Rainy	Moderate	14:05	Surface	1	29.2 29.0	29.1	7.8 7.8	7.8	29.6 29.9	29.8	75.7 72.4	74.1	4.9 4.7	4.8	4.3	2.9 3.0	3.0	3.1	4 4	4.0	4.0
				Middle	6	28.9 29.2	29.1	7.8 7.8	7.8	31.8 31.7	31.8	56.2 59.2	57.7	3.6 3.8	3.7		3.4 3.2	3.3		3 3	3.0	
				Bottom	11	29.0 28.9	29.0	7.8 7.8	7.8	31.9 31.9	31.9	46.1 44.3	45.2	3.0 2.9	3.0		3.1 3.1	3.1		5 5	5.0	
17-Sep-14	Sunny	Moderate	08:11	Surface	1	28.9 28.9	28.9	8.7 8.7	8.7	33.5 33.5	33.5	93.0 92.6	92.8	6.0 5.9	6.0	5.9	0.8 0.7	0.8	1.6	3 3	3.0	3.0
				Middle	5.5	28.9 28.9	28.9	8.6 8.6	8.6	33.5 33.6	33.6	89.6 90.7	90.2	5.7 5.8	5.8		1.3 1.3	1.3		3 3	3.0	
				Bottom	10	28.9 28.9	28.9	8.6 8.6	8.6	33.8 33.8	33.8	90.7 91.8	91.3	5.8 5.9	5.9		2.4 2.9	2.7		3 3	3.0	
19-Sep-14	Sunny	Moderate	15:49	Surface	1	24.8 24.8	24.8	8.7 8.7	8.7	31.6 31.6	31.6	57.7 57.6	57.7	4.0 4.0	4.0	4.1	1.5 1.6	1.6	3.6	3 3	3.0	4.0
				Middle	5.5	24.7 24.7	24.7	8.7 8.7	8.7	31.9 31.9	31.9	59.0 61.0	60.0	4.1 4.2	4.2		3.7 3.7	3.7		3 3	3.0	
				Bottom	10	24.6 24.6	24.6	8.7 8.7	8.7	32.1 32.1	32.1	60.8 61.6	61.2	4.2 4.3	4.3		5.4 5.4	5.4		6 6	6.0	
22-Sep-14	Sunny	Moderate	11:36	Surface	1	29.2 29.2	29.2	8.0 8.0	8.0	32.8 32.8	32.8	68.3 68.0	68.2	4.4 4.4	4.4	4.4	3.0 3.2	3.1	3.9	3 3	3.0	3.0
				Middle	5.5	29.1 29.1	29.1	8.1 8.1	8.1	32.8 32.9	32.9	67.9 67.8	67.9	4.4 4.3	4.4		4.2 3.8	4.0		3 3	3.0	
				Bottom	10	28.9 28.9	28.9	8.4 8.4	8.4	33.0 33.1	33.1	67.5 67.2	67.4	4.3 4.3	4.3		4.5 4.8	4.7		3 3	3.0	
24-Sep-14	Sunny	Moderate	11:28	Surface	1	29.5 29.5	29.5	7.9 7.9	7.9	29.8 29.9	29.9	81.9 81.0	81.5	5.3 5.2	5.3	5.2	2.9 3.0	3.0	3.0	4 4	4.0	3.7
				Middle	5.5	29.5 29.5	29.5	7.9 7.9	7.9	30.5 30.5	30.5	77.2 77.1	77.2	5.0 5.0	5.0		2.6 2.7	2.7		3 3	3.0	
				Bottom	10	29.5 29.5	29.5	7.9 7.9	7.9	30.9 30.9	30.9	71.8 71.9	71.9	4.6 4.6	4.6		3.2 3.2	3.2		4 4	4.0	
26-Sep-14	Rainy	Moderate	12:44	Surface	1	29.7 29.6	29.7	7.8 7.8	7.8	29.8 29.9	29.9	67.1 63.0	65.1	4.3 4.1	4.2	3.8	2.2 2.3	2.3	2.3	5 4	4.5	4.2
				Middle	5.5	29.6 29.5	29.6	7.9 7.9	7.9	29.6 29.8	29.7	51.5 50.5	51.0	3.3 3.3	3.3		2.1 2.1	2.1		4 4	4.0	
				Bottom	10	29.5 29.5	29.5	7.9 7.9	7.9	30.0 30.0	30.0	45.3 45.0	45.2	2.9 2.9	2.9		2.5 2.6	2.6		4 4	4.0	
29-Sep-14	Sunny	Moderate	14:25	Surface	1	30.2 30.3	30.3	6.9 6.9	6.9	28.9 27.9	28.4	76.5 73.9	75.2	4.9 4.8	4.9	4.4	3.9 4.1	4.0	3.9	4 4	4.0	4.0
				Middle	5.5	30.2 30.2	30.2	6.7 6.7	6.7	29.9 31.2	30.6	61.0 59.2	60.1	3.9 3.8	3.9		3.9 3.7	3.8		4 4	4.0	
				Bottom	10	30.2 30.1	30.2	6.2 6.2	6.2	31.8 31.8	31.8	54.5 54.1	54.3	3.5 3.4	3.5		4.0 3.9	4.0		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 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*
12-Sep-14	Rainy	Moderate	08:36	Surface	1	29.0 28.6	28.8	7.8 7.8	7.8	29.2 30.0	29.6	73.6 70.4	72.0	4.8 4.6	4.7	4.3	2.9 3.0	3.0	3.1	3 3	3.0	3.7
				Middle	5.5	28.5 28.9	28.7	7.8 7.8	7.8	32.5 32.2	32.4	57.7 60.8	59.3	3.7 3.9	3.8		2.8 2.7	2.8		3 3	3.0	
				Bottom	10	28.7 28.5	28.6	7.7 7.7	7.7	33.0 33.1	33.1	46.9 45.1	46.0	3.0 2.9	3.0		3.4 3.5	3.5		5 5	5.0	
15-Sep-14	Fine	Moderate	12:01	Surface	1	28.9 28.9	28.9	7.8 7.8	7.8	29.4 29.5	29.5	52.8 50.9	51.9	3.5 3.3	3.4	3.2	2.1 2.2	2.2	2.3	3 3	3.0	3.3
				Middle	5	29.0 29.0	29.0	7.8 7.8	7.8	30.2 30.1	30.2	44.4 45.2	44.8	2.9 2.9	2.9		2.2 2.1	2.2		3 3	3.0	
				Bottom	9	28.9 28.9	28.9	7.8 7.8	7.8	30.6 30.6	30.6	43.0 42.9	43.0	2.8 2.8	2.8		2.3 2.5	2.4		4 4	4.0	
17-Sep-14	Fine	Moderate	19:07	Surface	1	28.9 28.9	28.9	8.6 8.5	8.6	33.5 33.5	33.5	93.0 92.6	92.8	6.0 5.9	6.0	5.9	1.0 0.9	1.0	1.9	3 3	3.0	3.5
				Middle	5.5	28.9 28.9	28.9	8.5 8.5	8.5	33.5 33.6	33.6	89.6 90.7	90.2	5.7 5.8	5.8		1.6 1.6	1.6		3 4	3.5	
				Bottom	10	28.9 28.9	28.9	8.5 8.5	8.5	33.8 33.8	33.8	90.7 91.8	91.3	5.8 5.9	5.9		2.9 3.5	3.2		4 4	4.0	
19-Sep-14	Sunny	Moderate	09:27	Surface	1	24.8 24.8	24.8	7.9 7.9	7.9	31.3 31.3	31.3	54.0 52.4	53.2	3.8 3.6	3.7	4.0	0.7 0.7	0.7	2.3	4 4	4.0	4.2
				Middle	5.5	24.6 24.6	24.6	7.8 7.8	7.8	31.4 31.4	31.4	60.0 60.6	60.3	4.2 4.2	4.2		3.0 2.6	2.8		3 3	3.0	
				Bottom	10	24.6 24.6	24.6	7.9 7.9	7.9	31.5 31.5	31.5	64.2 63.2	63.7	4.5 4.4	4.5		3.6 3.4	3.5		6 5	5.5	
22-Sep-14	Sunny	Moderate	17:02	Surface	1	28.6 28.7	28.7	8.0 8.0	8.0	33.4 33.4	33.4	70.7 70.2	70.5	4.6 4.5	4.6	4.5	2.7 2.8	2.8	3.4	3 3	3.0	3.5
				Middle	5.5	29.0 28.9	29.0	8.0 8.1	8.1	33.4 33.5	33.5	67.7 68.1	67.9	4.3 4.4	4.4		3.6 3.3	3.5		3 3	3.0	
				Bottom	10	29.0 29.0	29.0	8.1 8.1	8.1	33.4 33.4	33.4	66.8 66.4	66.6	4.3 4.3	4.3		3.9 4.0	4.0		4 5	4.5	
24-Sep-14	Fine	Moderate	17:37	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	32.6 32.6	32.6	79.8 79.8	79.8	5.2 5.2	5.2	5.2	3.7 3.8	3.8	3.9	3 3	3.0	4.0
				Middle	6	28.1 28.1	28.1	7.5 7.5	7.5	32.7 32.9	32.8	78.0 78.7	78.4	5.1 5.1	5.1		3.9 4.0	4.0		5 5	5.0	
				Bottom	11	28.1 28.1	28.1	7.5 7.5	7.5	31.9 31.6	31.8	71.2 70.5	70.9	4.7 4.6	4.7		4.0 4.0	4.0		4 4	4.0	
26-Sep-14	Fine	Moderate	18:55	Surface	1	28.7 28.8	28.8	7.6 7.7	7.7	33.9 33.7	33.8	67.9 67.0	67.5	4.4 4.3	4.4	4.2	2.2 2.2	2.2	2.5	4 4	4.0	3.7
				Middle	5.5	29.0 29.1	29.1	7.5 7.4	7.5	33.0 32.6	32.8	60.2 59.6	59.9	3.9 3.8	3.9		2.6 2.6	2.6		4 4	4.0	
				Bottom	10	29.3 29.3	29.3	7.3 7.2	7.3	31.9 31.7	31.8	64.1 63.7	63.9	4.1 4.1	4.1		2.6 2.5	2.6		3 3	3.0	
29-Sep-14	Sunny	Moderate	09:52	Surface	1	30.1 30.0	30.1	7.7 7.7	7.7	32.3 32.3	32.3	51.9 51.3	51.6	3.3 3.3	3.3	3.2	3.8 3.6	3.7	4.0	4 4	4.0	4.2
				Middle	6.5	29.8 29.7	29.8	7.0 7.1	7.1	31.5 31.6	31.6	48.4 48.5	48.5	3.1 3.1	3.1		4.3 3.9	4.1		4 4	4.0	
				Bottom	12	29.6 29.6	29.6	7.0 7.1	7.1	30.2 30.2	30.2	46.7 46.5	46.6	3.0 3.0	3.0		3.7 4.4	4.1		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*
12-Sep-14	Rainy	Moderate	13:27	Surface	1	29.1 29.1	29.1	7.8 7.8	7.8	31.9 32.2	32.1	76.0 74.7	75.4	4.9 4.8	4.9	4.5	3.0 2.8	2.9	3.0	3 3	3.0	3.0
				Middle	6	29.1 29.2	29.2	7.8 7.8	7.8	32.6 32.4	32.5	62.8 64.3	63.6	4.0 4.1	4.1		3.1 3.2	3.2		3 3	3.0	
				Bottom	11	29.1 29.0	29.1	7.8 7.8	7.8	32.7 32.8	32.8	48.4 47.5	48.0	3.1 3.1	3.1		3.0 3.0	3.0		3 3	3.0	
17-Sep-14	Sunny	Moderate	08:32	Surface	1	28.1 28.1	28.1	8.3 8.3	8.3	32.2 32.3	32.3	90.1 89.7	89.9	5.9 5.9	5.9	5.9	4.2 4.2	4.2	3.9	3 3	3.0	3.0
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	2.6	28.1 28.1	28.1	8.3 8.3	8.3	32.3 32.3	32.3	88.5 88.0	88.3	5.8 5.8	5.8		3.6 3.4	3.5		3 3	3.0	
19-Sep-14	Sunny	Moderate	15:26	Surface	1	23.3 23.3	23.3	9.3 9.3	9.3	30.7 30.8	30.8	99.5 102.5	101.0	7.1 7.3	7.2	7.2	1.9 2.0	2.0	2.9	3 3	3.0	4.3
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	3	23.3 23.2	23.3	9.3 9.3	9.3	32.7 32.8	32.8	73.3 74.2	73.8	5.2 5.3	5.3		4.0 3.6	3.8		6 5	5.5	
22-Sep-14	Sunny	Moderate	11:56	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	33.2 33.2	33.2	77.8 77.5	77.7	5.0 5.0	5.0	5.0	4.6 4.8	4.7	5.2	3 3	3.0	3.0
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	2.7	28.5 28.4	28.5	7.9 7.9	7.9	33.1 33.2	33.2	75.5 75.5	75.5	4.9 4.9	4.9		5.7 5.4	5.6		3 3	3.0	
24-Sep-14	Sunny	Moderate	12:30	Surface	1	29.2 29.2	29.2	7.9 7.9	7.9	32.3 32.3	32.3	82.3 82.2	82.3	5.3 5.3	5.3	5.3	2.8 2.7	2.8	3.0	5 4	4.5	4.0
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	3.1	29.1 29.1	29.1	7.9 7.9	7.9	32.5 32.6	32.6	73.1 73.1	73.1	4.7 4.7	4.7		3.1 3.3	3.2		3 4	3.5	
26-Sep-14	Rainy	Moderate	12:34	Surface	1	28.7 28.6	28.7	7.6 7.6	7.6	32.1 29.5	30.8	68.6 68.3	68.5	4.4 4.5	4.5	4.5	4.3 4.4	4.4	3.9	3 3	3.0	4.0
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	2.3	28.7 28.5	28.6	7.7 7.7	7.7	32.1 32.2	32.2	76.0 76.1	76.1	4.9 4.9	4.9		3.4 3.2	3.3		5 5	5.0	
29-Sep-14	Sunny	Moderate	14:01	Surface	1	32.1 29.6	30.9	7.9 7.9	7.9	31.1 33.9	32.5	67.7 63.5	65.6	4.2 4.0	4.1	4.1	2.3 2.3	2.3	2.3	4 4	4.0	4.0
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
				Bottom	3.4	29.6 29.6	29.6	8.0 8.0	8.0	31.0 33.3	32.2	62.0 62.0	62.0	4.0 3.9	4.0		2.3 2.3	2.3		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 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*
12-Sep-14	Rainy	Moderate	09:11	Surface	1	28.6 28.6	28.6	7.8 7.8	7.8	30.5 30.9	30.7	66.8 64.0	65.4	4.4 4.2	4.3	4.0	2.9 2.9	2.9	3.5	4 4	4.0	4.2
				Middle	5.5	28.5 28.6	28.6	7.8 7.8	7.8	33.1 33.0	33.1	54.5 55.2	54.9	3.5 3.6	3.6		3.6 3.5	3.6		3 4	3.5	
				Bottom	10	28.6 28.4	28.5	7.8 7.8	7.8	33.8 33.9	33.9	43.9 43.3	43.6	2.8 2.8	2.8		3.9 4.3	4.1		5 5	5.0	
15-Sep-14	Fine	Moderate	12:32	Surface	1	28.8 28.8	28.8	7.9 7.9	7.9	30.4 30.6	30.5	66.2 64.9	65.6	4.3 4.2	4.3	4.1	2.0 2.1	2.1	2.4	3 3	3.0	3.8
				Middle	5.5	28.9 28.9	28.9	7.9 7.9	7.9	31.2 31.2	31.2	58.6 58.8	58.7	3.8 3.8	3.8		2.5 2.2	2.4		5 4	4.5	
				Bottom	10	28.8 28.8	28.8	8.0 8.0	8.0	31.7 31.8	31.8	57.9 57.9	57.9	3.8 3.8	3.8		2.5 2.7	2.6		4 4	4.0	
17-Sep-14	Fine	Moderate	19:14	Surface	1	28.1 28.1	28.1	8.3 8.3	8.3	33.2 33.2	33.2	79.4 79.1	79.3	5.2 5.1	5.2	5.2	4.1 4.1	4.1	4.8	4 4	4.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.6	28.1 28.1	28.1	8.3 8.3	8.3	33.3 33.3	33.3	78.4 78.1	78.3	5.1 5.1	5.1		5.3 5.4	5.4		4 4	4.0	
19-Sep-14	Sunny	Moderate	08:46	Surface	1	24.1 24.1	24.1	8.6 8.6	8.6	30.7 30.8	30.8	109.7 110.9	110.3	7.7 7.8	7.8	7.8	3.1 3.2	3.2	3.8	3 3	3.0	3.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	24.2 24.2	24.2	8.4 8.4	8.4	32.8 32.8	32.8	53.9 52.1	53.0	3.8 3.6	3.7		4.3 4.2	4.3		5 4	4.5	
22-Sep-14	Sunny	Moderate	18:01	Surface	1	28.5 28.5	28.5	8.0 8.0	8.0	33.1 33.1	33.1	76.0 75.8	75.9	4.9 4.9	4.9	4.9	3.7 3.9	3.8	4.7	3 4	3.5	4.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.9	28.5 28.5	28.5	8.0 8.0	8.0	33.1 33.1	33.1	75.4 75.4	75.4	4.9 4.9	4.9		5.5 5.4	5.5		5 5	5.0	
24-Sep-14	Fine	Moderate	17:00	Surface	1	27.9 27.9	27.9	7.6 7.6	7.6	34.0 33.8	33.9	78.7 80.1	79.4	5.1 5.2	5.2	5.2	3.7 4.1	3.9	4.9	4 3	3.5	3.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.5	27.9 27.9	27.9	7.6 7.6	7.6	34.0 34.0	34.0	79.8 78.3	79.1	5.2 5.1	5.2		5.5 6.2	5.9		4 4	4.0	
26-Sep-14	Fine	Moderate	19:51	Surface	1	28.7 28.7	28.7	7.7 7.7	7.7	31.3 28.7	30.0	74.4 73.2	73.8	4.8 4.8	4.8	4.8	4.6 4.2	4.4	3.8	4 4	4.0	3.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	2.5	28.8 28.7	28.8	7.7 7.7	7.7	31.2 31.3	31.3	67.0 66.9	67.0	4.4 4.4	4.4		3.2 3.1	3.2		3 3	3.0	
29-Sep-14	Sunny	Moderate	10:13	Surface	1	29.5 29.5	29.5	7.9 7.9	7.9	30.6 31.9	31.3	60.9 60.0	60.5	3.9 3.8	3.9	3.9	4.5 4.2	4.4	4.0	4 4	4.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.5	29.6 29.5	29.6	7.9 7.9	7.9	31.3 32.6	32.0	59.9 59.6	59.8	3.8 3.8	3.8		3.6 3.3	3.5		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 WSD19 - 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*
12-Sep-14	Rainy	Moderate	13:47	Surface	1	28.6 28.6	28.6	7.8 7.8	7.8	32.5 32.8	32.7	77.6 77.0	77.3	5.0 5.0	5.0	4.7	2.9 2.9	2.9	3.3	5 5	5.0	3.7
				Middle	4	28.6 28.6	28.6	7.8 7.8	7.8	33.0 33.0	33.0	65.7 68.1	66.9	4.2 4.4	4.3		3.5 3.5	3.5		3 3	3.0	
				Bottom	7	28.6 28.6	28.6	7.8 7.8	7.8	33.1 33.1	33.1	51.2 49.5	50.4	3.3 3.2	3.3		3.5 3.4	3.5		3 3	3.0	
17-Sep-14	Sunny	Moderate	08:28	Surface	1	28.8 28.5	28.7	8.4 8.4	8.4	33.6 33.2	33.4	107.2 105.0	106.1	6.9 6.8	6.9	6.9	1.2 1.2	1.2	2.2	3 3	3.0	4.2
				Middle	4	28.8 28.7	28.8	8.4 8.4	8.4	33.6 33.2	33.4	108.2 106.3	107.3	6.9 6.8	6.9		2.3 2.5	2.4		7 6	6.5	
				Bottom	7	28.8 28.5	28.7	8.3 8.4	8.4	33.6 33.2	33.4	110.8 108.6	109.7	7.1 7.0	7.1		3.1 3.1	3.1		3 3	3.0	
19-Sep-14	Sunny	Moderate	16:05	Surface	1	24.9 24.9	24.9	8.6 8.6	8.6	31.7 31.7	31.7	56.1 56.7	56.4	3.9 3.9	3.9	4.1	1.4 1.4	1.4	2.2	3 3	3.0	3.2
				Middle	4	24.9 24.9	24.9	8.7 8.7	8.7	31.8 31.8	31.8	59.5 60.2	59.9	4.1 4.2	4.2		2.1 2.5	2.3		3 4	3.5	
				Bottom	7	24.9 24.9	24.9	8.7 8.8	8.8	31.9 31.9	31.9	61.5 61.4	61.5	4.3 4.2	4.3		2.7 2.8	2.8		3 3	3.0	
22-Sep-14	Sunny	Moderate	11:49	Surface	1	29.1 29.1	29.1	8.1 8.1	8.1	33.0 33.1	33.1	72.1 72.1	72.1	4.6 4.6	4.6	4.8	2.9 3.1	3.0	3.5	3 3	3.0	3.3
				Middle	4	28.9 29.0	29.0	8.2 8.2	8.2	33.3 33.3	33.3	76.6 75.9	76.3	4.9 4.9	4.9		3.7 3.5	3.6		4 4	4.0	
				Bottom	7	28.9 28.9	28.9	8.2 8.2	8.2	33.2 33.2	33.2	76.7 76.2	76.5	4.9 4.9	4.9		3.8 4.0	3.9		3 3	3.0	
24-Sep-14	Sunny	Moderate	11:44	Surface	1	29.6 29.6	29.6	8.0 8.0	8.0	31.9 31.9	31.9	104.5 104.1	104.3	6.7 6.7	6.7	6.6	2.9 2.8	2.9	3.0	4 4	4.0	3.7
				Middle	4	29.6 29.6	29.6	8.0 8.0	8.0	32.1 32.1	32.1	100.6 100.6	100.6	6.4 6.4	6.4		3.0 3.0	3.0		4 4	4.0	
				Bottom	7	29.6 29.6	29.6	8.0 8.0	8.0	32.1 32.2	32.2	92.7 92.8	92.8	5.9 5.9	5.9		3.1 3.2	3.2		3 3	3.0	
26-Sep-14	Rainy	Moderate	13:02	Surface	1	28.5 28.6	28.6	7.9 7.9	7.9	26.7 27.3	27.0	70.7 69.1	69.9	4.7 4.6	4.7	4.4	2.2 2.1	2.2	2.3	3 3	3.0	4.2
				Middle	4	28.8 28.9	28.9	7.9 7.9	7.9	29.9 29.9	29.9	62.4 61.3	61.9	4.1 4.0	4.1		2.3 2.3	2.3		5 5	5.0	
				Bottom	7	29.0 29.0	29.0	7.9 7.9	7.9	30.1 30.3	30.2	53.9 53.2	53.6	3.5 3.5	3.5		2.4 2.4	2.4		5 4	4.5	
29-Sep-14	Sunny	Moderate	14:12	Surface	1	30.0 30.0	30.0	6.8 6.9	6.9	25.3 29.5	27.4	66.7 66.1	66.4	4.4 4.3	4.4	4.3	4.0 4.2	4.1	4.2	3 3	3.0	4.0
				Middle	4	29.8 29.8	29.8	6.5 6.5	6.5	32.4 32.4	32.4	63.8 62.7	63.3	4.1 4.0	4.1		4.3 3.9	4.1		6 6	6.0	
				Bottom	7	29.7 29.7	29.7	6.4 6.4	6.4	32.2 32.2	32.2	60.7 60.8	60.8	3.9 3.9	3.9		4.1 4.4	4.3		3 3	3.0	

Remarks: *DA: Depth-Averaged

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

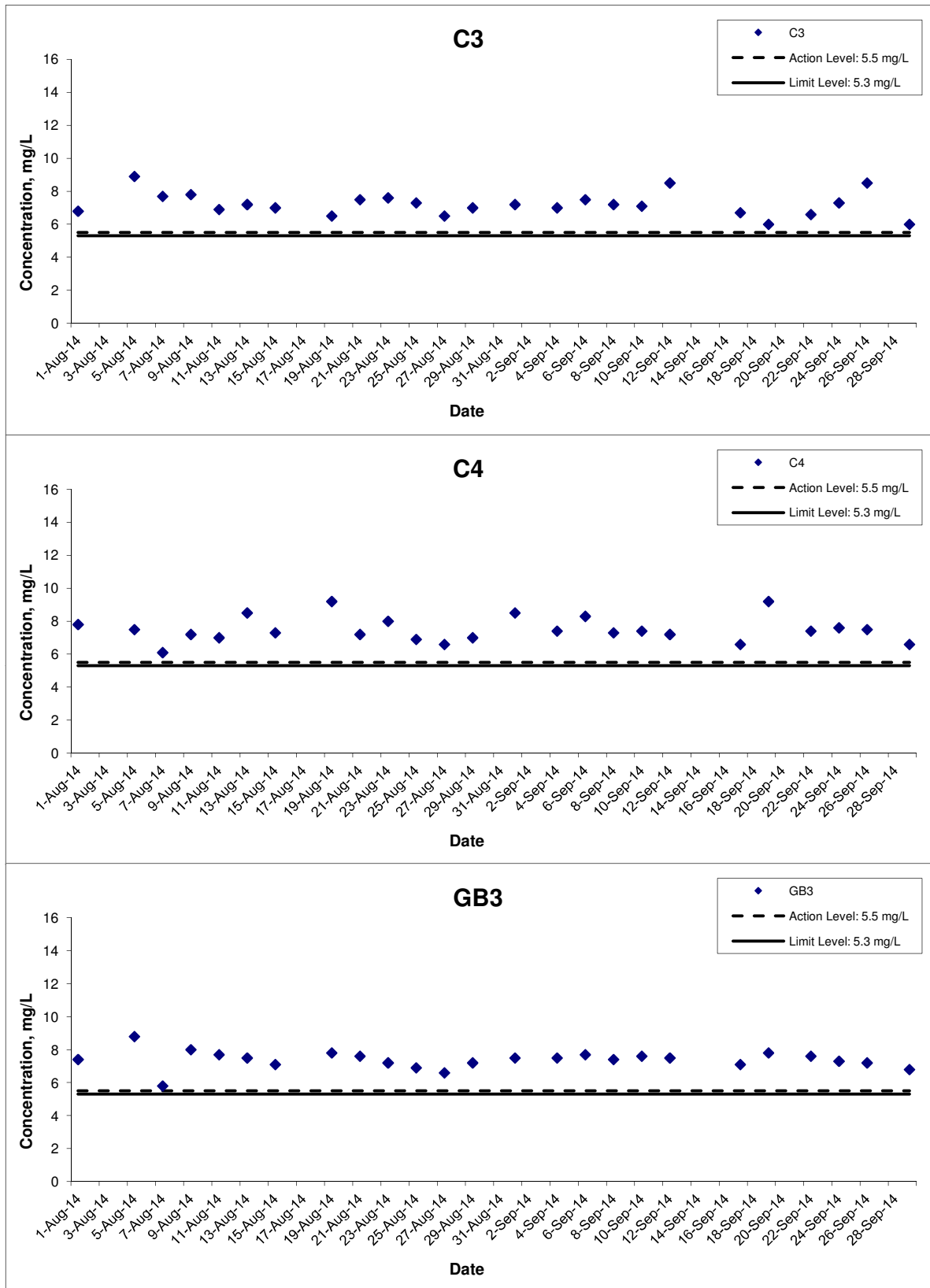
Water Quality Monitoring Results at WSD19 - Mid-Flood Tide

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*
12-Sep-14	Rainy	Moderate	08:54	Surface	1	28.7 28.5	28.6	7.8 7.8	7.8	28.7 29.3	29.0	79.5 76.9	78.2	5.2 5.1	5.2	4.7	2.8 2.7	2.8	3.0	3 3	3.0	3.0
				Middle	4	28.4 28.6	28.5	7.8 7.8	7.8	33.0 32.6	32.8	63.1 65.4	64.3	4.1 4.2	4.2		3.0 3.0	3.0		3 3	3.0	
				Bottom	7	28.6 28.4	28.5	7.8 7.8	7.8	34.4 34.5	34.5	51.1 49.7	50.4	3.3 3.2	3.3		3.2 3.3	3.3		3 3	3.0	
15-Sep-14	Fine	Moderate	12:20	Surface	1	29.0 29.0	29.0	7.8 7.8	7.8	29.7 29.8	29.8	62.8 59.9	61.4	4.1 3.9	4.0	3.6	2.1 2.2	2.2	2.3	3 3	3.0	3.3
				Middle	4	28.9 29.0	29.0	7.8 7.8	7.8	30.2 30.2	30.2	48.2 49.0	48.6	3.1 3.2	3.2		2.2 2.4	2.3		3 3	3.0	
				Bottom	7	28.9 28.9	28.9	7.8 7.8	7.8	30.4 30.6	30.5	47.0 46.6	46.8	3.1 3.0	3.1		2.6 2.3	2.5		4 4	4.0	
17-Sep-14	Fine	Moderate	18:52	Surface	1	28.6 28.3	28.5	8.5 8.5	8.5	33.3 32.9	33.1	105.5 103.4	104.5	6.8 6.7	6.8	6.9	2.3 2.0	2.2	2.5	4 4	4.0	4.0
				Middle	4	28.6 28.4	28.5	8.4 8.4	8.4	33.3 32.9	33.1	106.5 104.6	105.6	6.9 6.8	6.9		2.5 2.4	2.5		5 5	5.0	
				Bottom	7	28.6 28.3	28.5	8.4 8.4	8.4	33.3 32.9	33.1	109.1 106.9	108.0	7.0 6.9	7.0		2.7 2.9	2.8		3 3	3.0	
19-Sep-14	Sunny	Moderate	09:10	Surface	1	24.9 24.9	24.9	7.4 7.4	7.4	32.1 32.1	32.1	58.7 60.1	59.4	4.1 4.1	4.1	4.4	1.2 1.3	1.3	1.6	3 3	3.0	3.0
				Middle	4	24.7 24.7	24.7	7.5 7.5	7.5	32.3 32.3	32.3	66.4 66.3	66.4	4.6 4.6	4.6		1.3 1.3	1.3		3 3	3.0	
				Bottom	7	24.7 24.7	24.7	7.3 7.4	7.4	32.3 32.3	32.3	67.8 66.9	67.4	4.7 4.6	4.7		2.1 2.0	2.1		3 3	3.0	
22-Sep-14	Sunny	Moderate	16:50	Surface	1	28.9 28.9	28.9	8.4 8.4	8.4	33.7 33.7	33.7	72.6 72.7	72.7	4.6 4.7	4.7	4.7	2.8 2.9	2.9	3.1	3 3	3.0	3.3
				Middle	4	28.9 28.9	28.9	8.4 8.4	8.4	33.7 33.7	33.7	71.3 71.3	71.3	4.6 4.6	4.6		2.9 2.9	2.9		4 4	4.0	
				Bottom	7	28.9 28.9	28.9	8.4 8.4	8.4	33.7 33.7	33.7	70.2 70.1	70.2	4.5 4.5	4.5		3.4 3.3	3.4		3 3	3.0	
24-Sep-14	Fine	Moderate	17:23	Surface	1	28.2 28.2	28.2	7.6 7.6	7.6	33.5 33.5	33.5	80.2 80.2	80.2	5.2 5.2	5.2	5.2	3.9 4.0	4.0	4.2	3 4	3.5	3.5
				Middle	4	28.2 28.2	28.2	7.6 7.6	7.6	33.8 33.8	33.8	79.2 79.1	79.2	5.1 5.1	5.1		4.3 4.2	4.3		3 3	3.0	
				Bottom	7	28.2 28.2	28.2	7.6 7.6	7.6	33.8 33.9	33.9	69.6 69.3	69.5	4.5 4.5	4.5		4.4 4.3	4.4		4 4	4.0	
26-Sep-14	Fine	Moderate	18:35	Surface	1	28.4 28.6	28.5	7.6 7.5	7.6	29.9 29.1	29.5	84.4 76.7	80.6	5.6 5.1	5.4	4.7	2.3 2.2	2.3	2.4	3 3	3.0	3.0
				Middle	4	28.9 29.0	29.0	7.5 7.5	7.5	31.7 31.5	31.6	60.8 59.7	60.3	3.9 3.9	3.9		2.4 2.3	2.4		3 3	3.0	
				Bottom	7	29.1 29.1	29.1	7.5 7.6	7.6	31.3 31.1	31.2	64.1 63.4	63.8	4.1 4.1	4.1		2.4 2.4	2.4		3 3	3.0	
29-Sep-14	Sunny	Moderate	10:08	Surface	1	29.8 29.7	29.8	7.4 7.5	7.5	33.6 33.5	33.6	60.4 59.8	60.1	3.8 3.8	3.8	3.8	3.7 3.9	3.8	3.9	3 3	3.0	3.3
				Middle	4	29.7 29.6	29.7	7.7 7.7	7.7	32.7 32.6	32.7	58.3 58.6	58.5	3.7 3.7	3.7		4.1 3.6	3.9		4 4	4.0	
				Bottom	7	29.5 29.5	29.5	7.6 7.8	7.7	32.8 33.0	32.9	59.9 59.9	59.9	3.8 3.8	3.8		3.9 4.2	4.1		3 3	3.0	

Remarks: *DA: Depth-Averaged

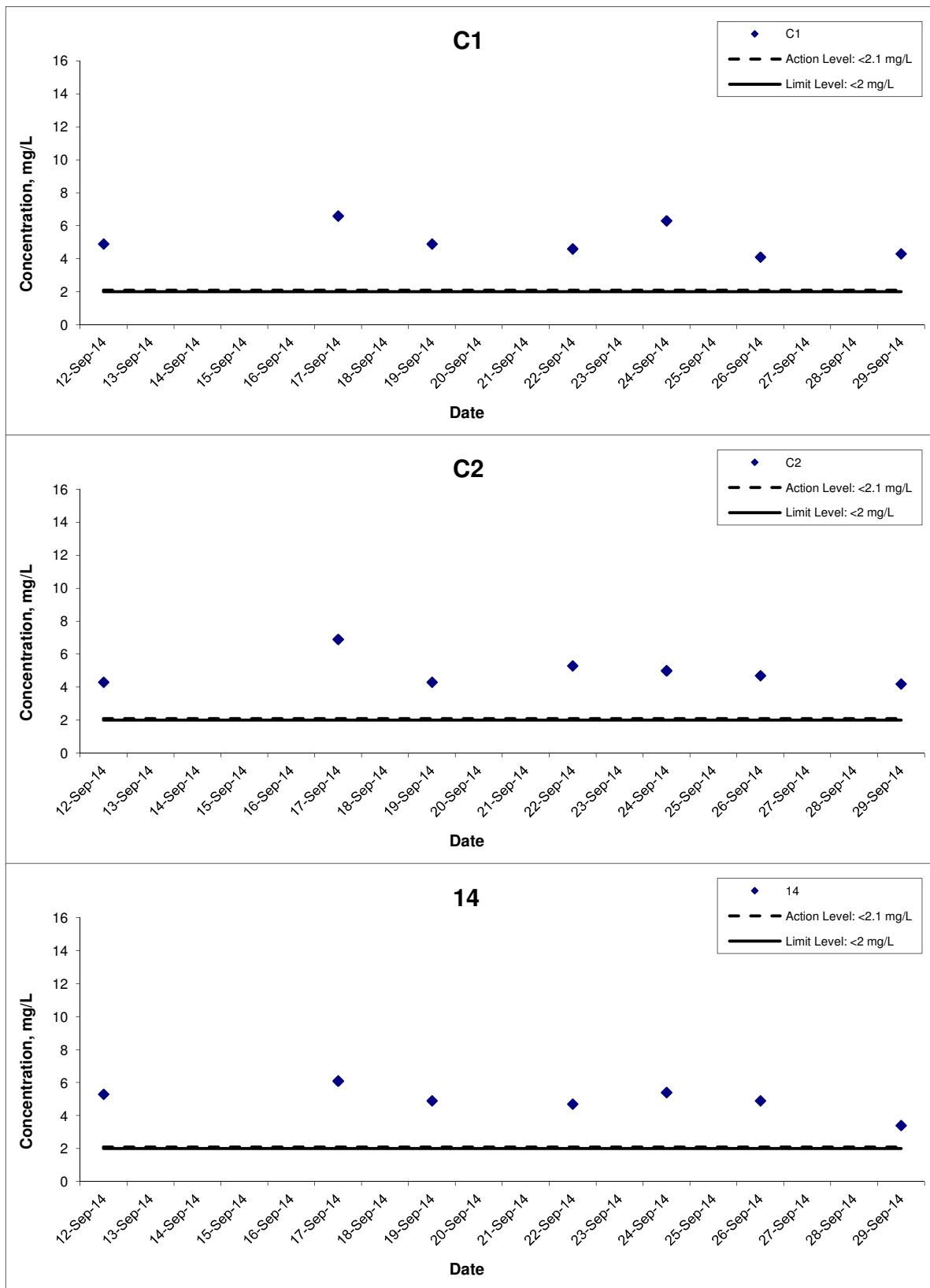
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen (Surface) at Mid-Ebb Tide



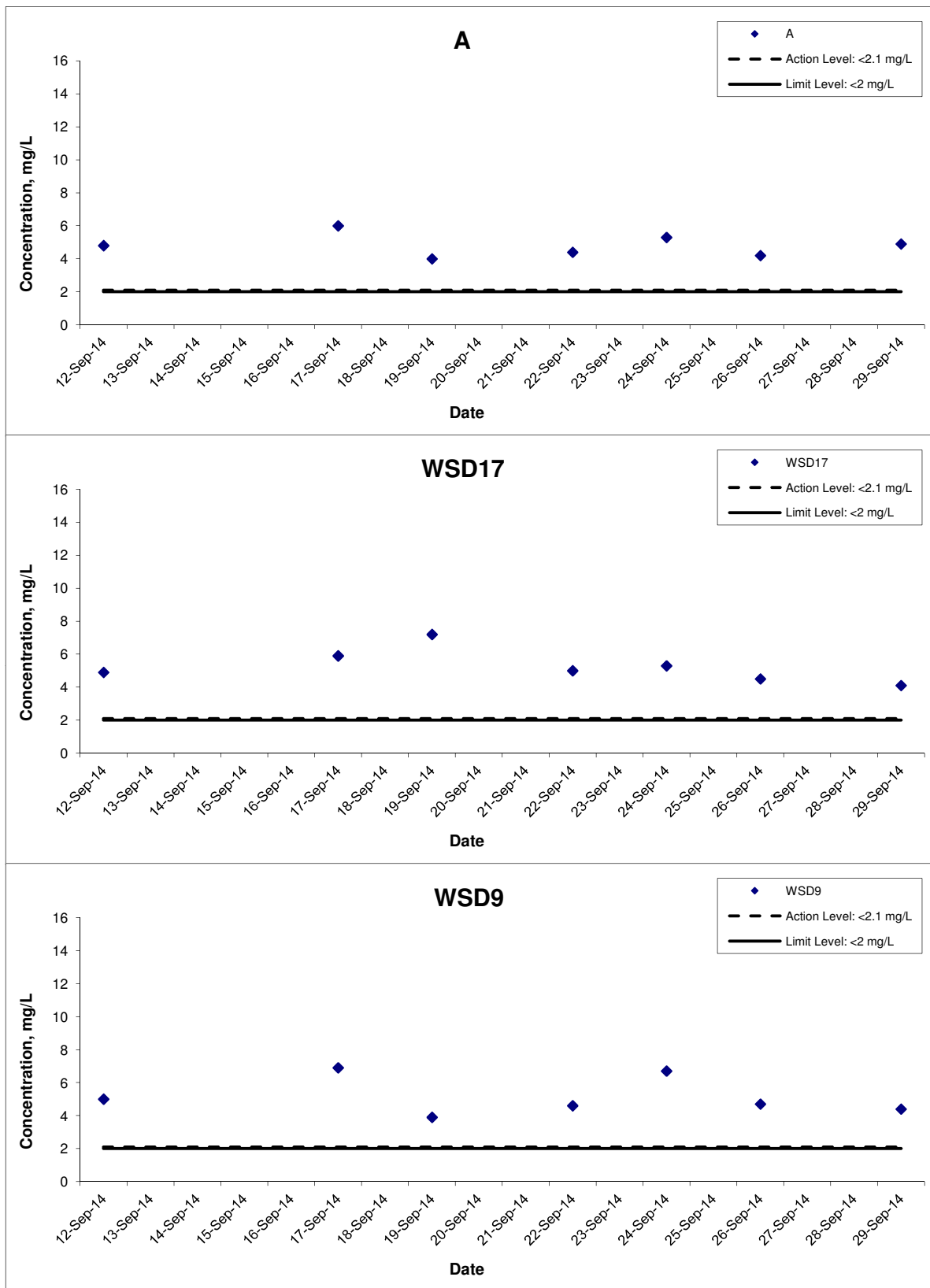
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	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Surface) at Mid-Ebb Tide



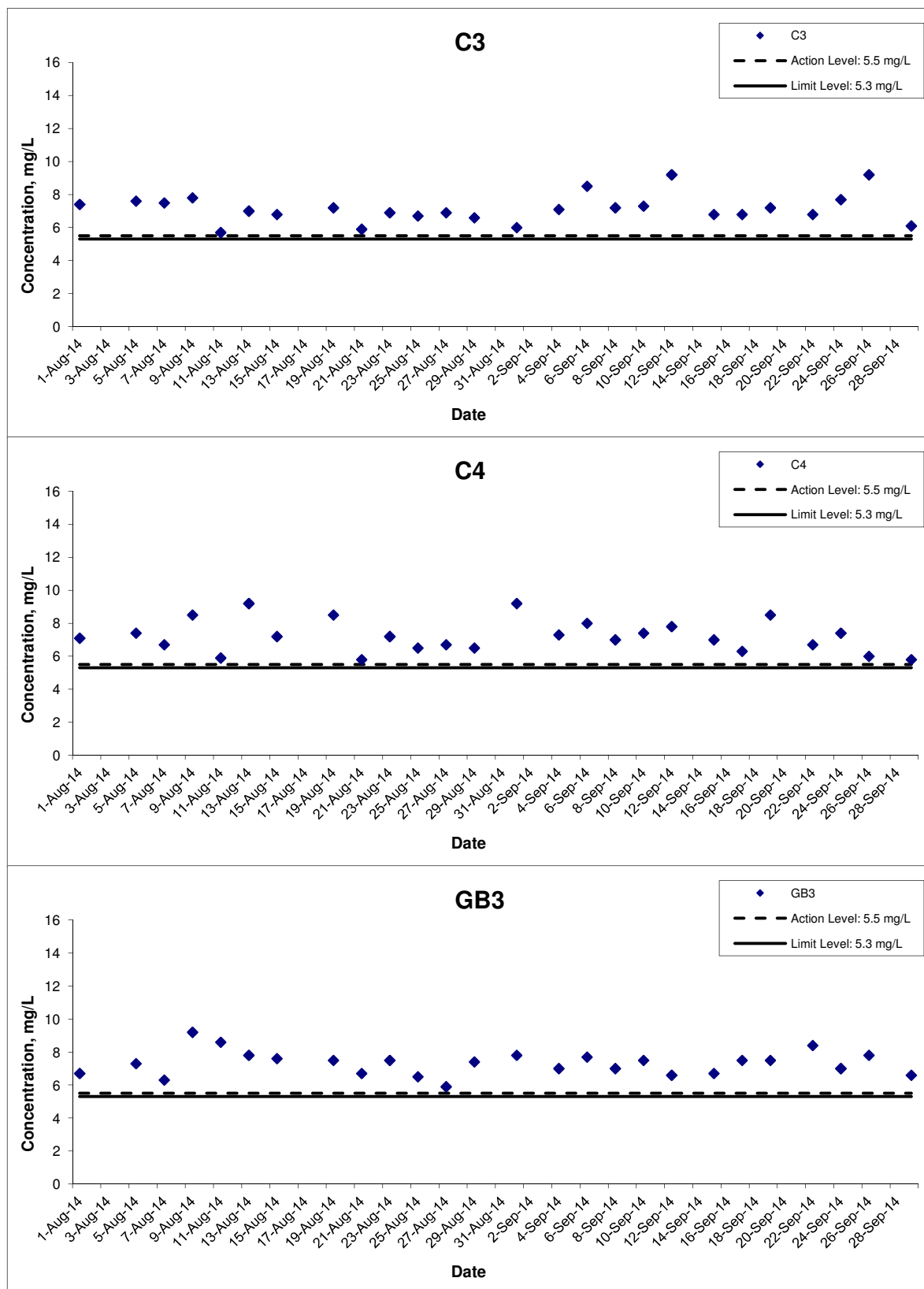
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	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Surface) at Mid-Ebb Tide



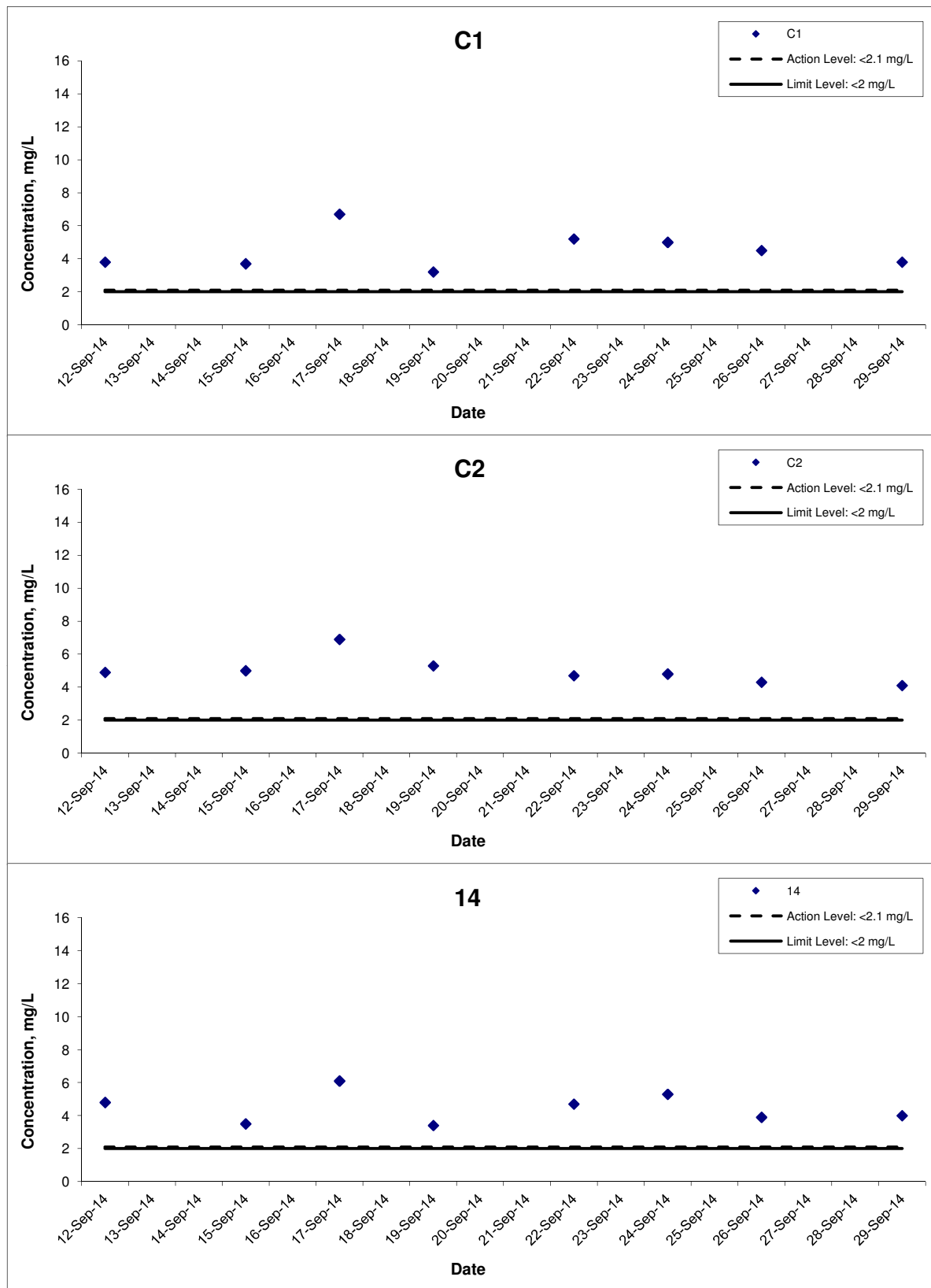
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	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



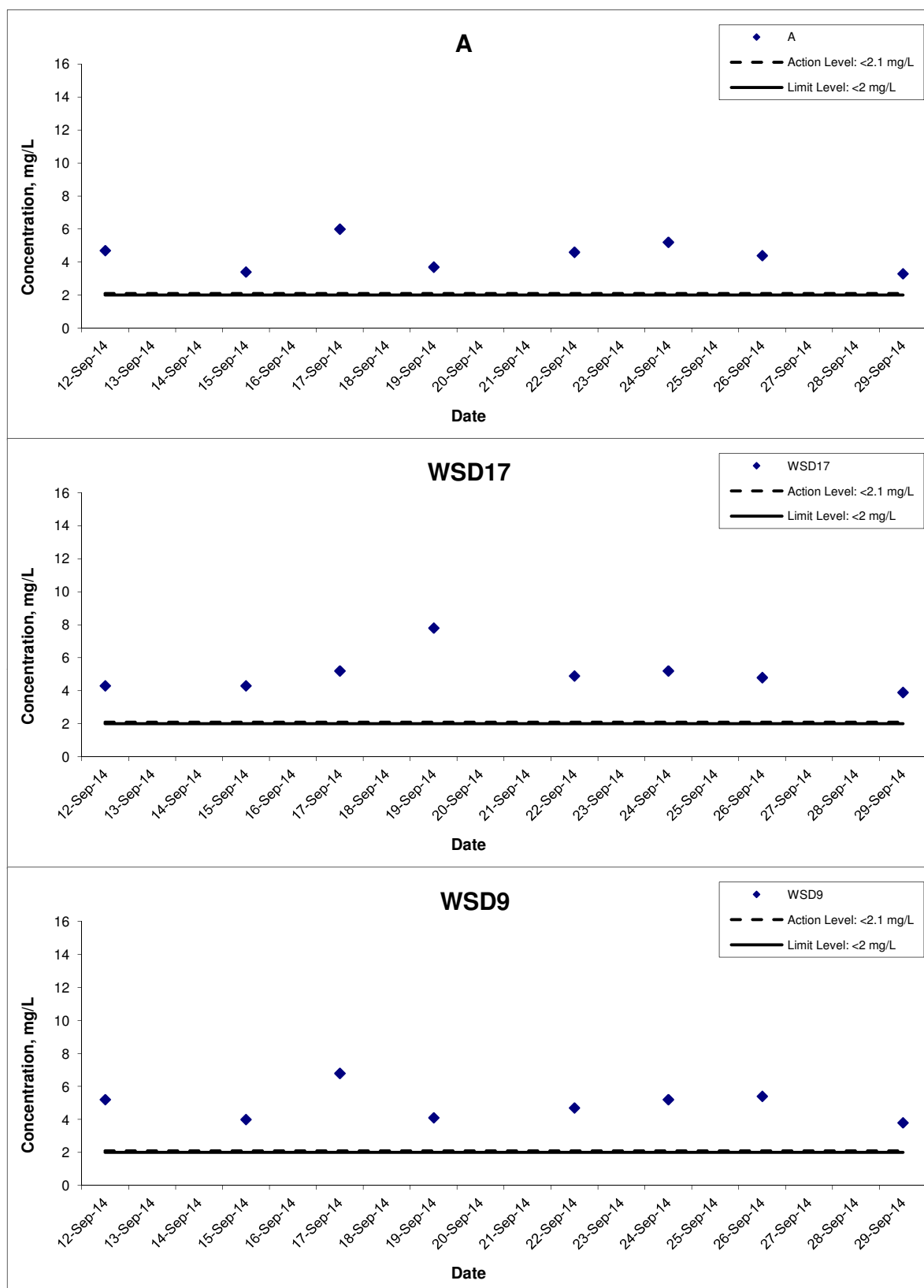
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	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



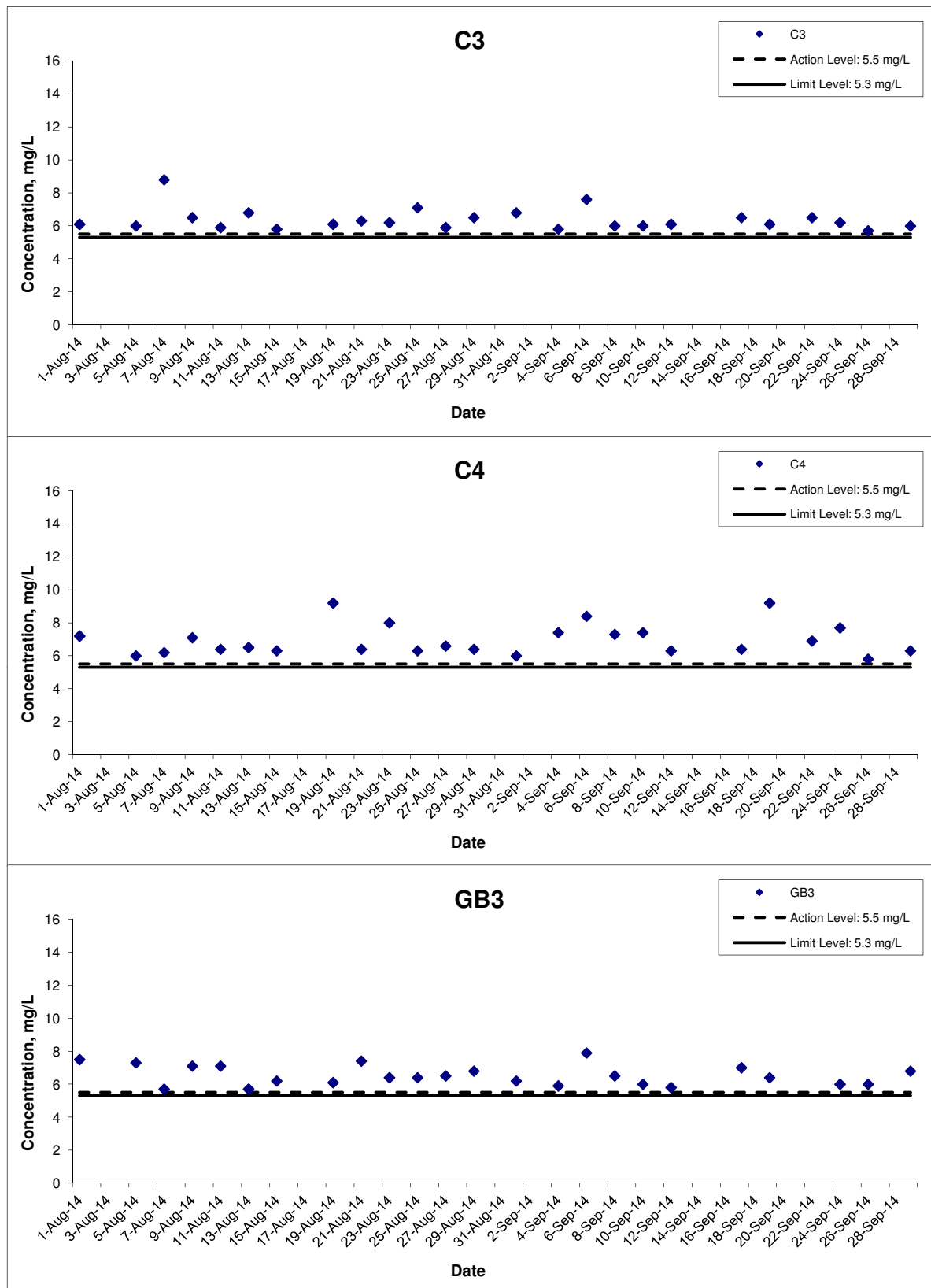
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date	Sep 14	Appendix	D	

Dissolved Oxygen (Surface) at Mid-Flood Tide



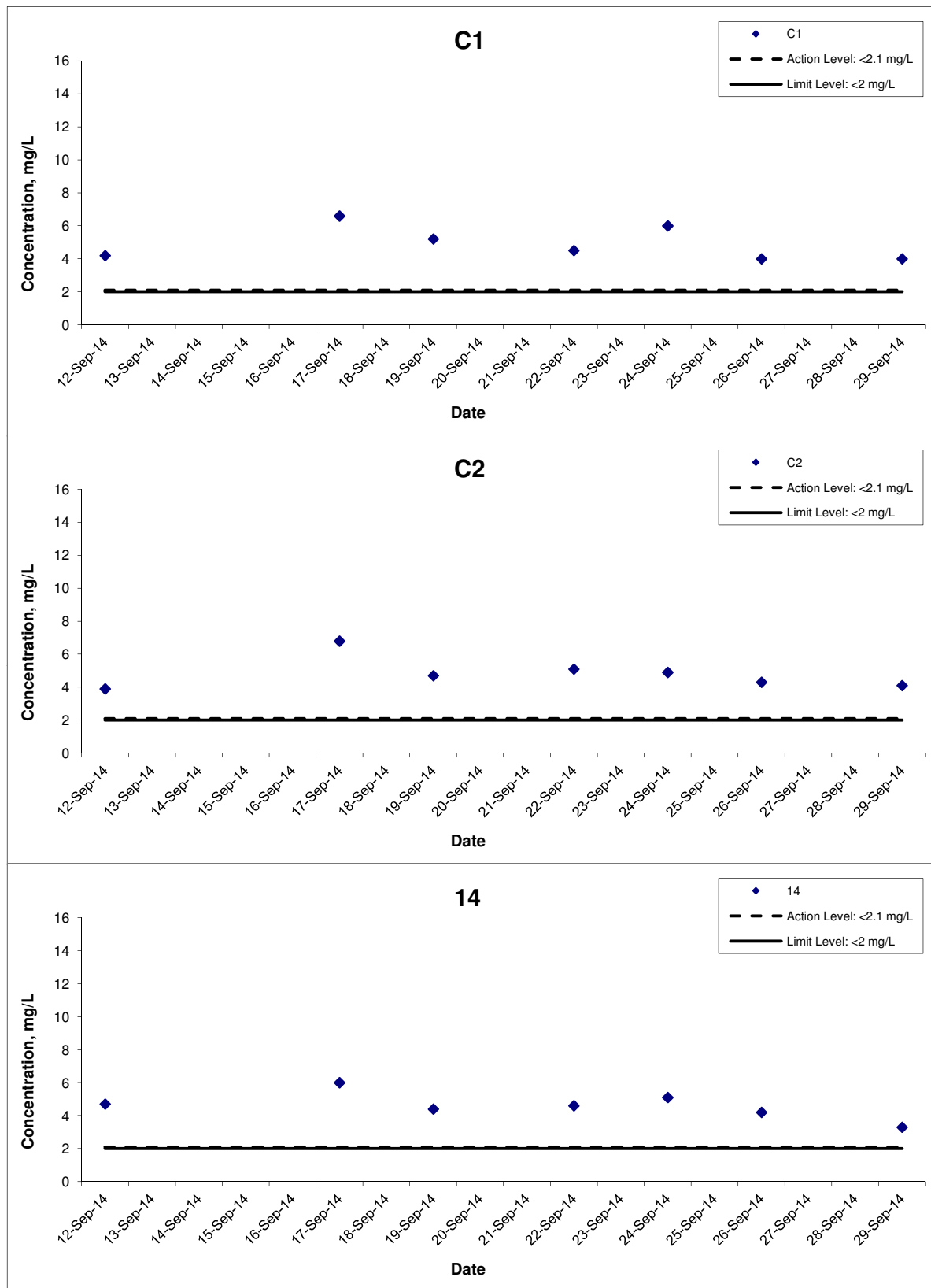
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



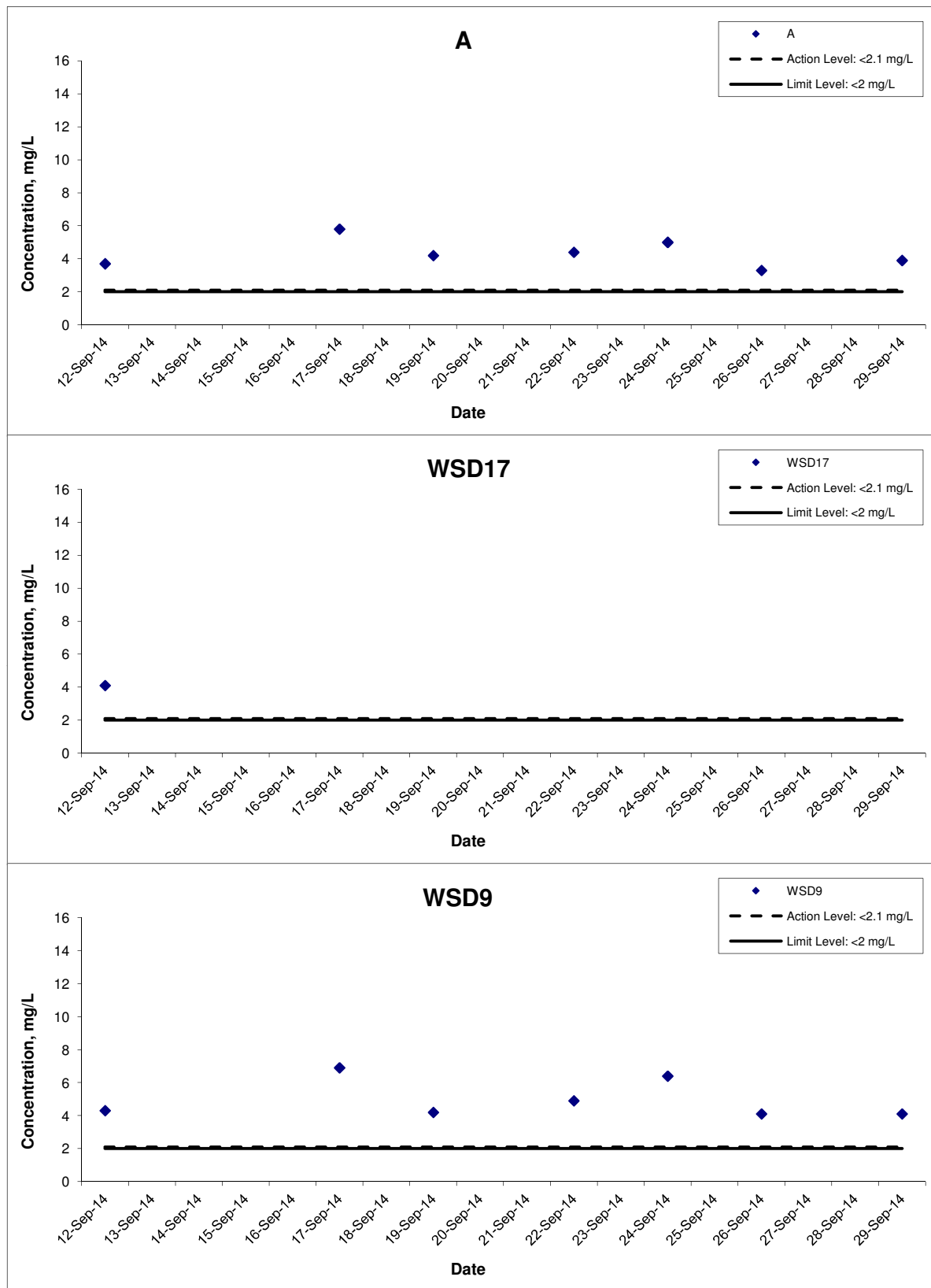
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



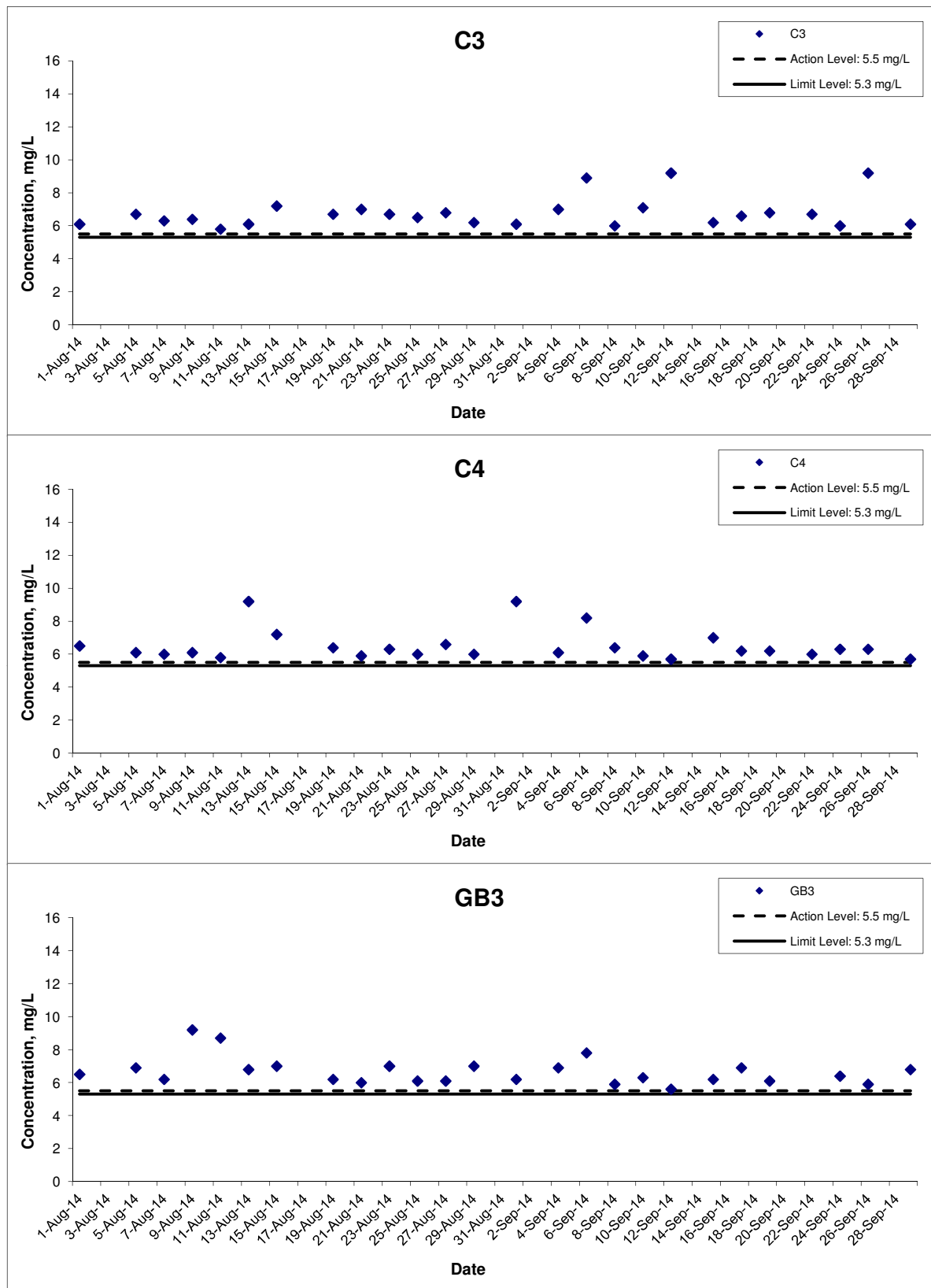
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Middle) at Mid-Ebb Tide



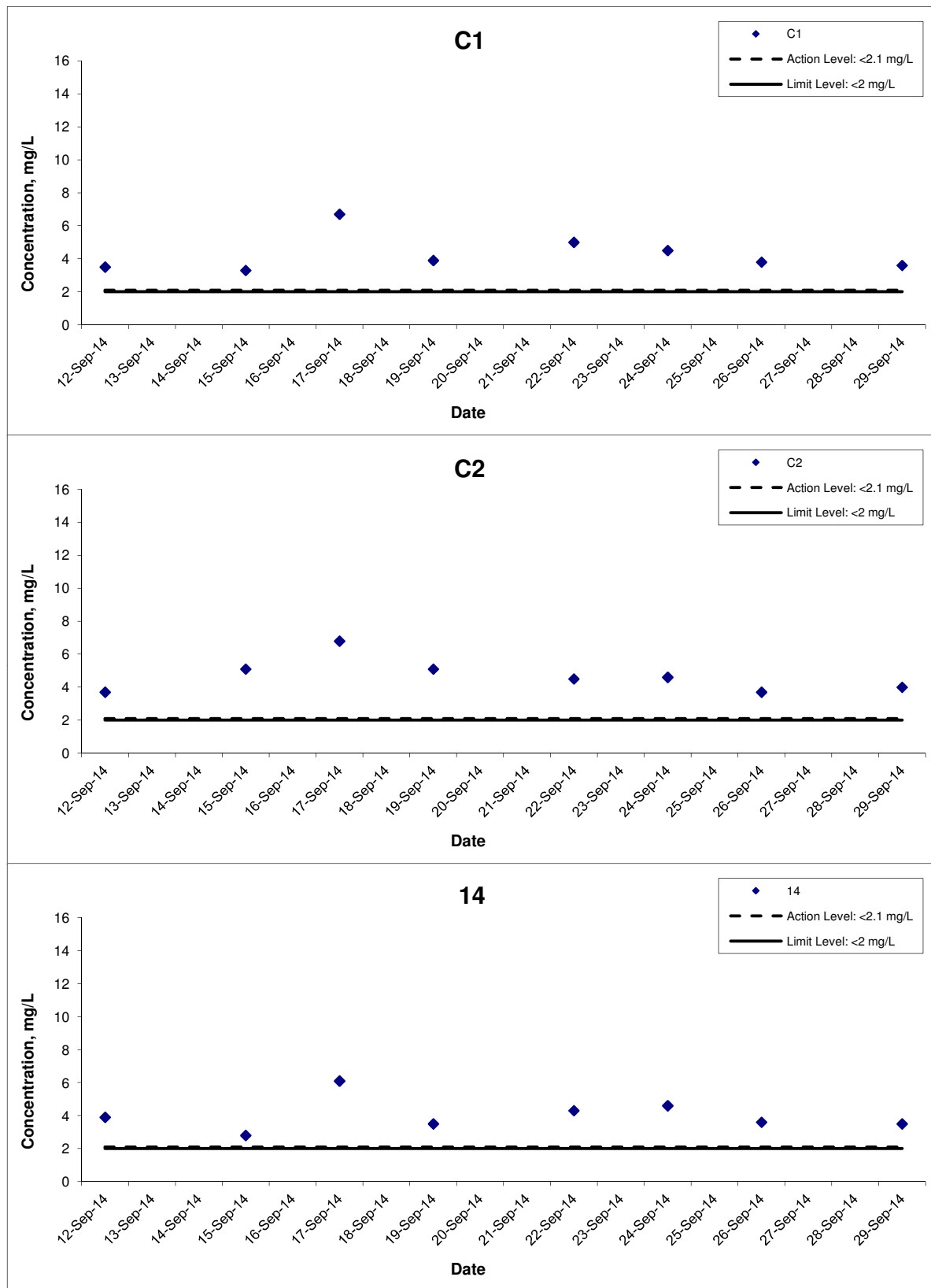
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date	Sep 14	Appendix	D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



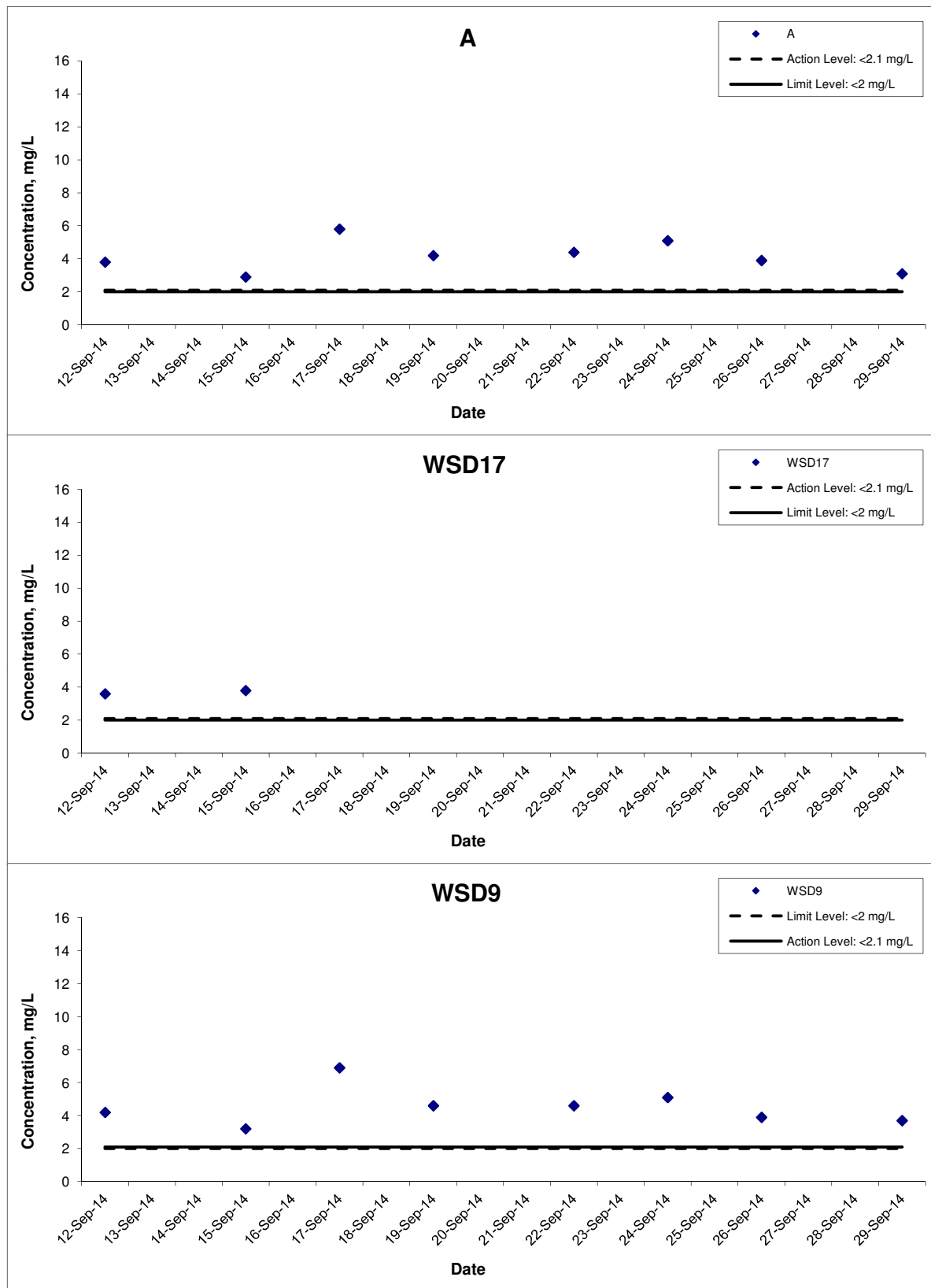
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale N.T.S	Project No. MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)	Date Sep 14	Appendix D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



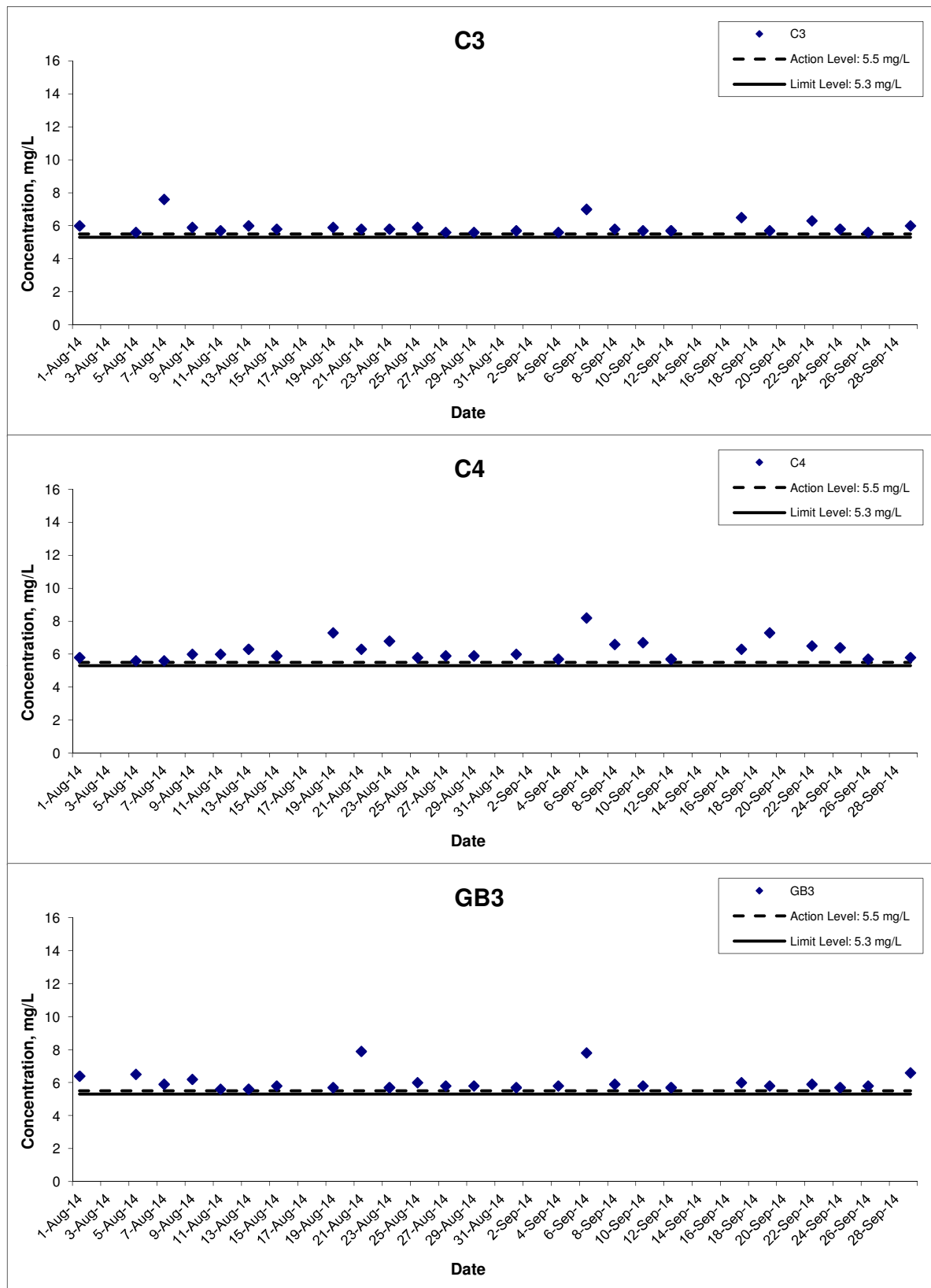
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Middle) at Mid-Flood Tide



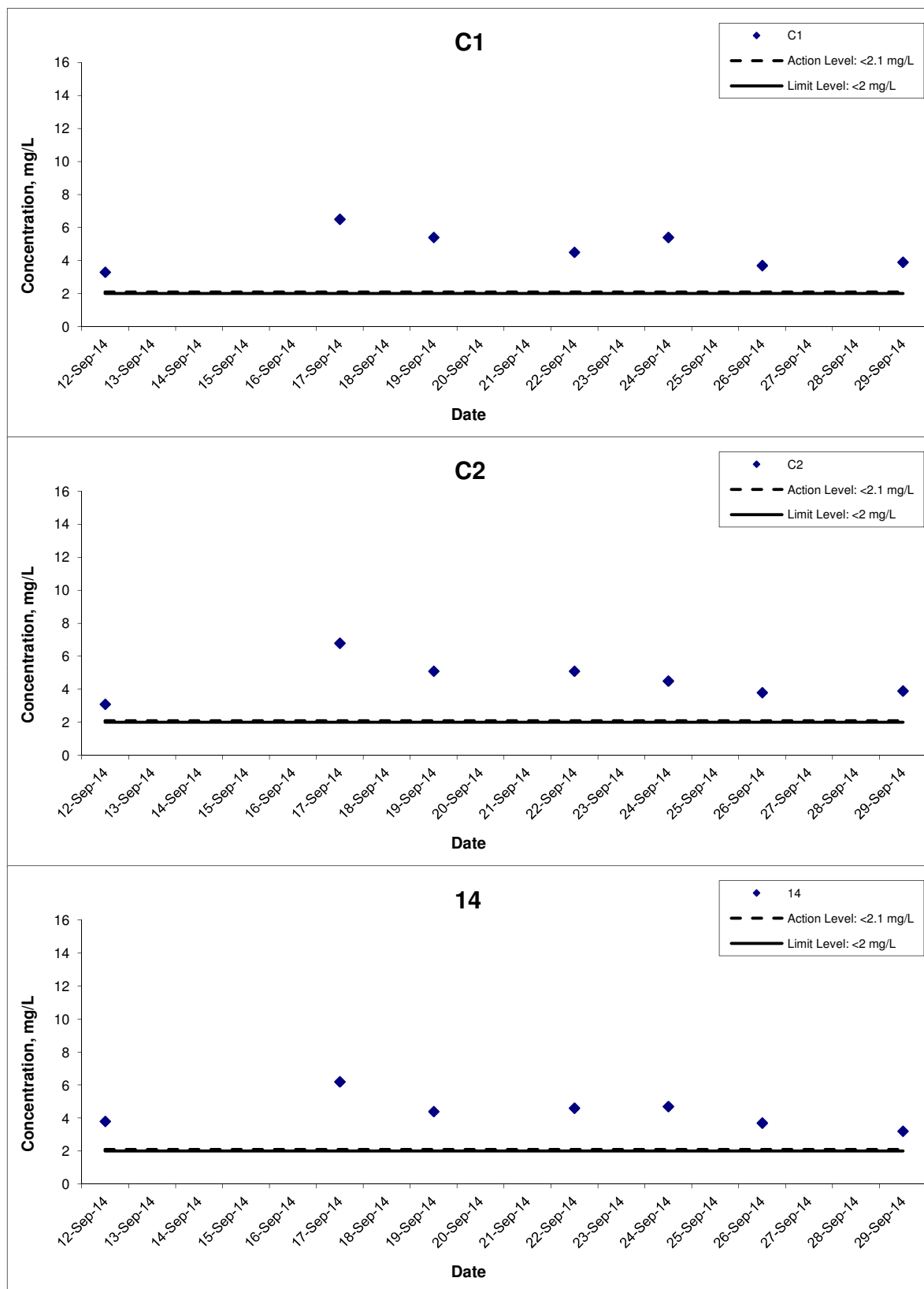
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



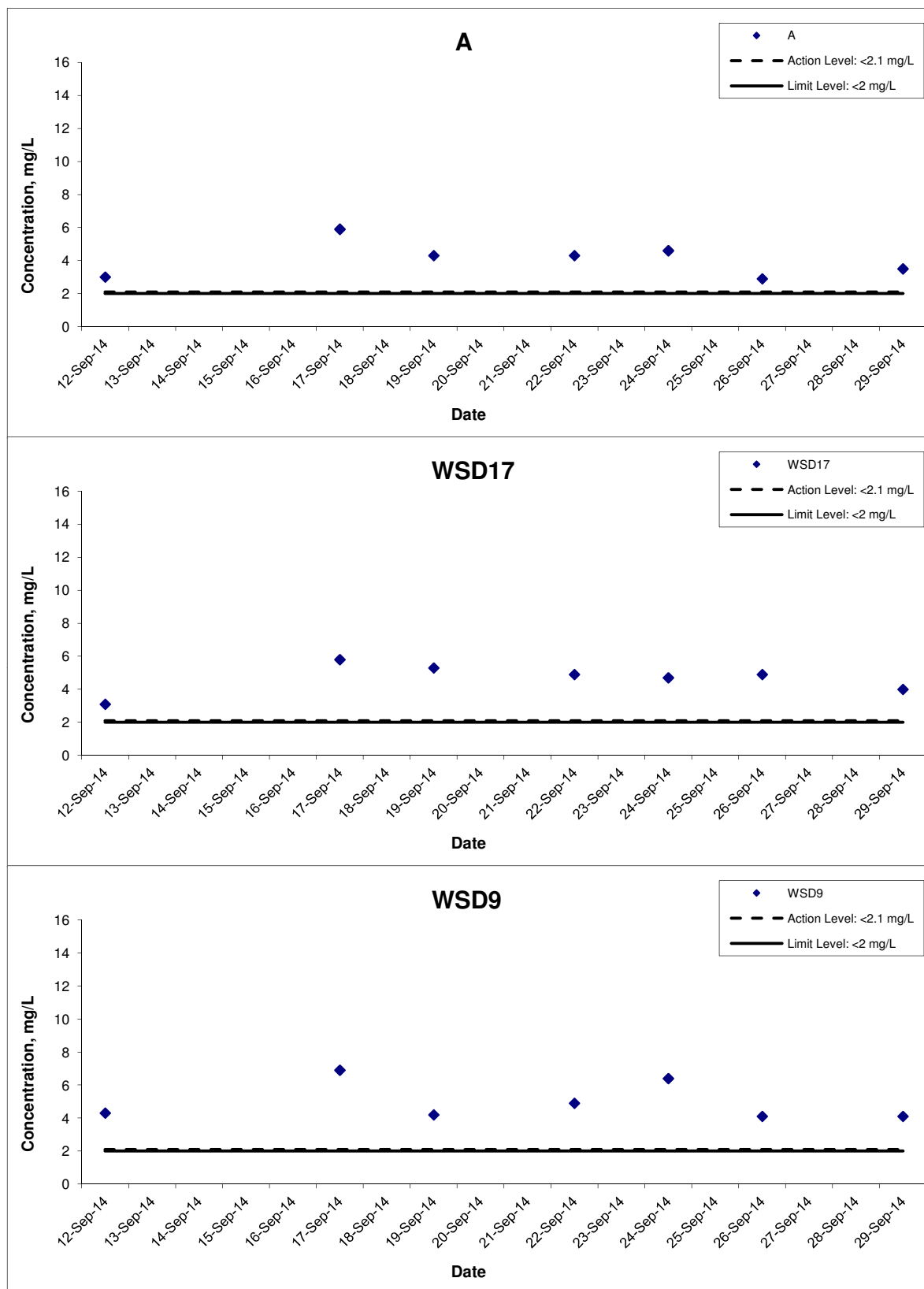
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



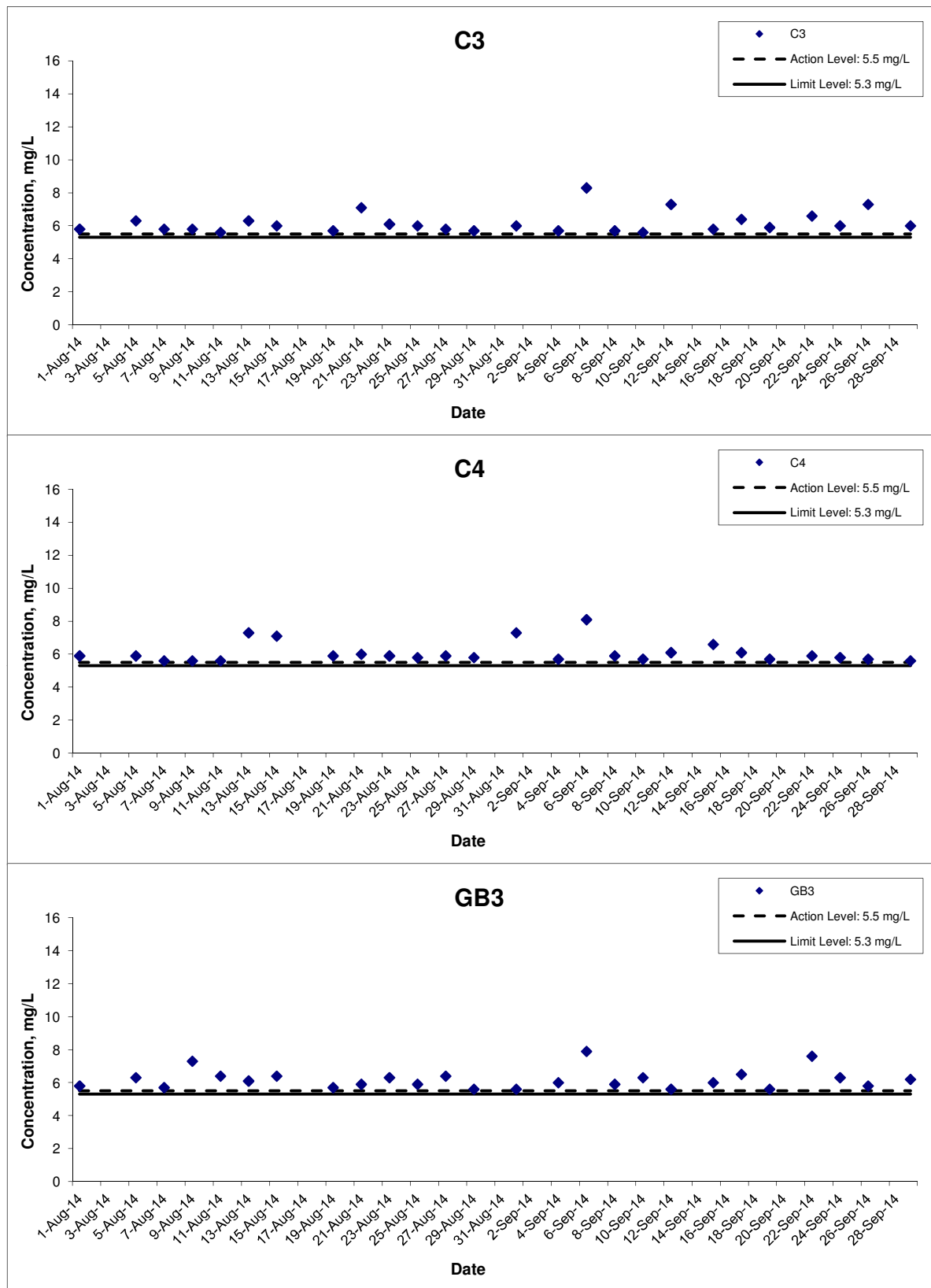
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



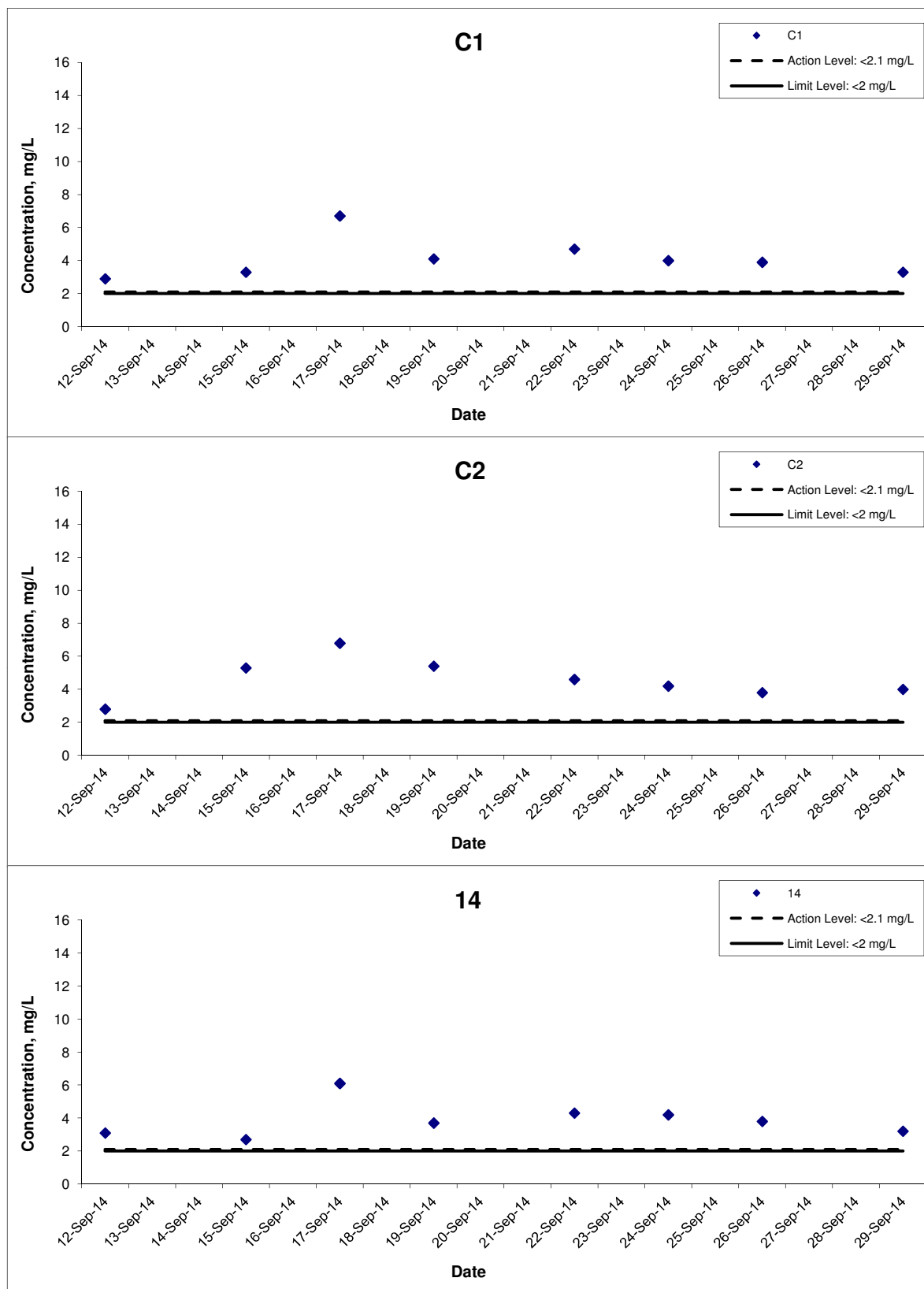
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



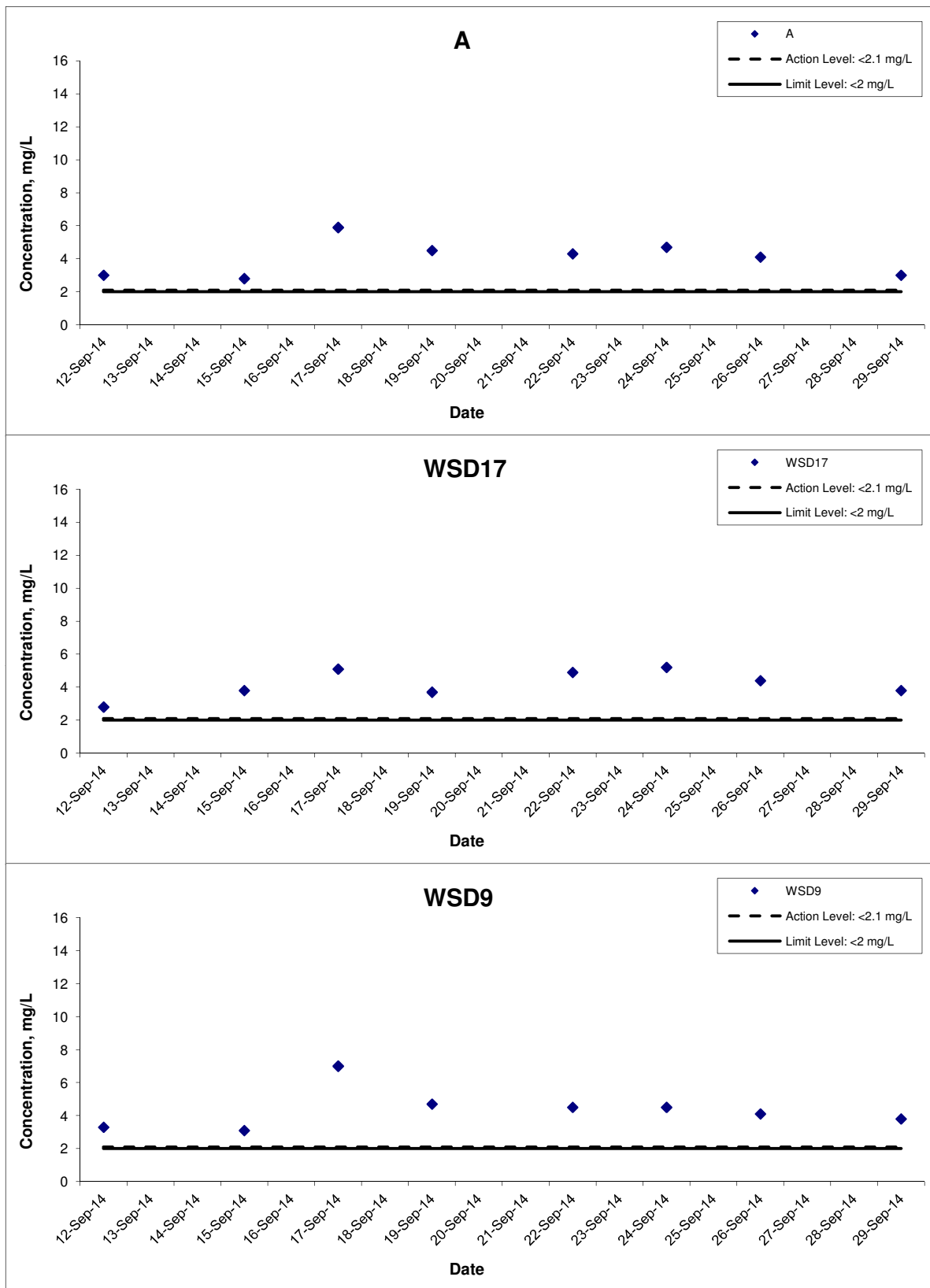
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



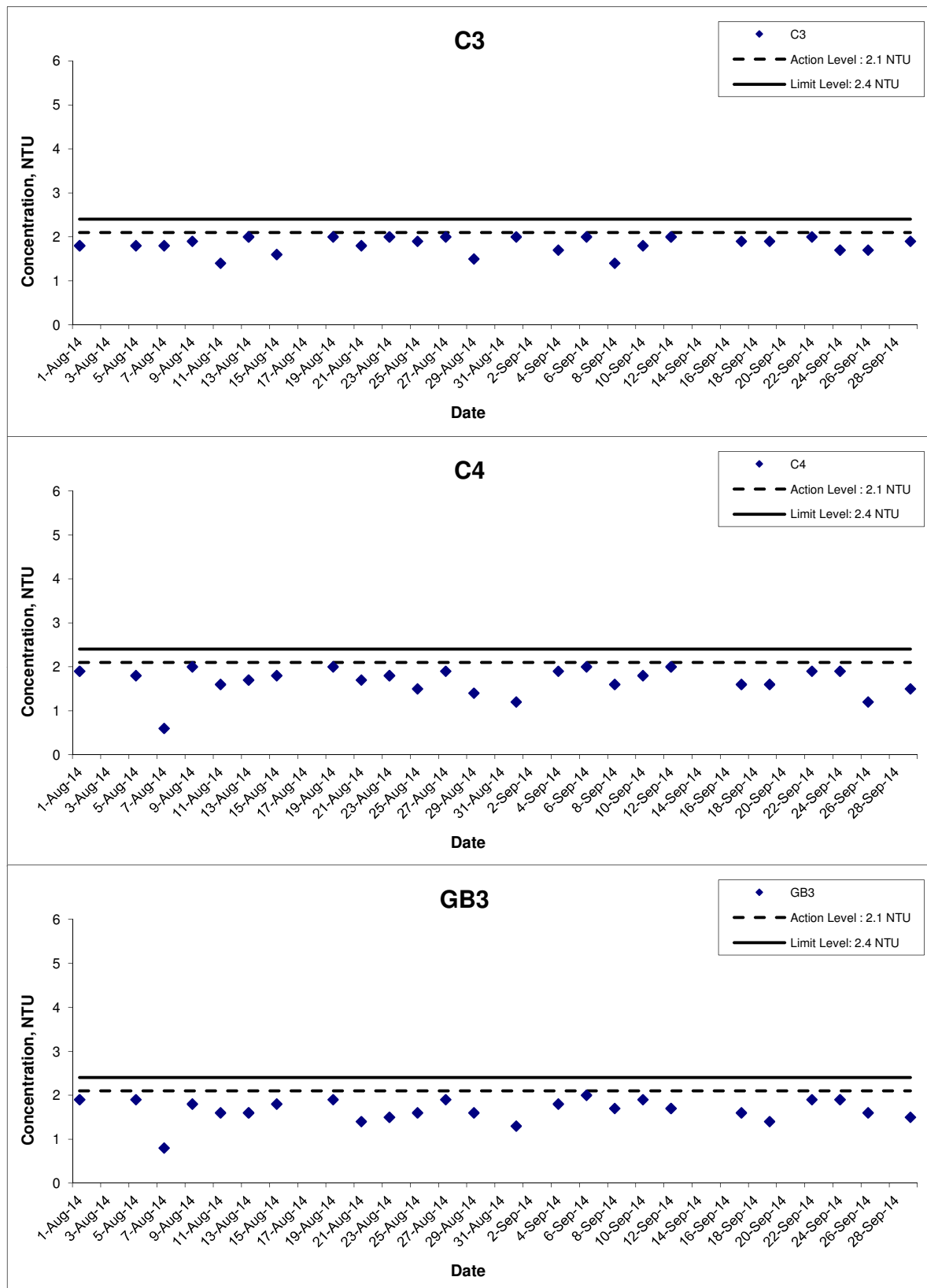
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



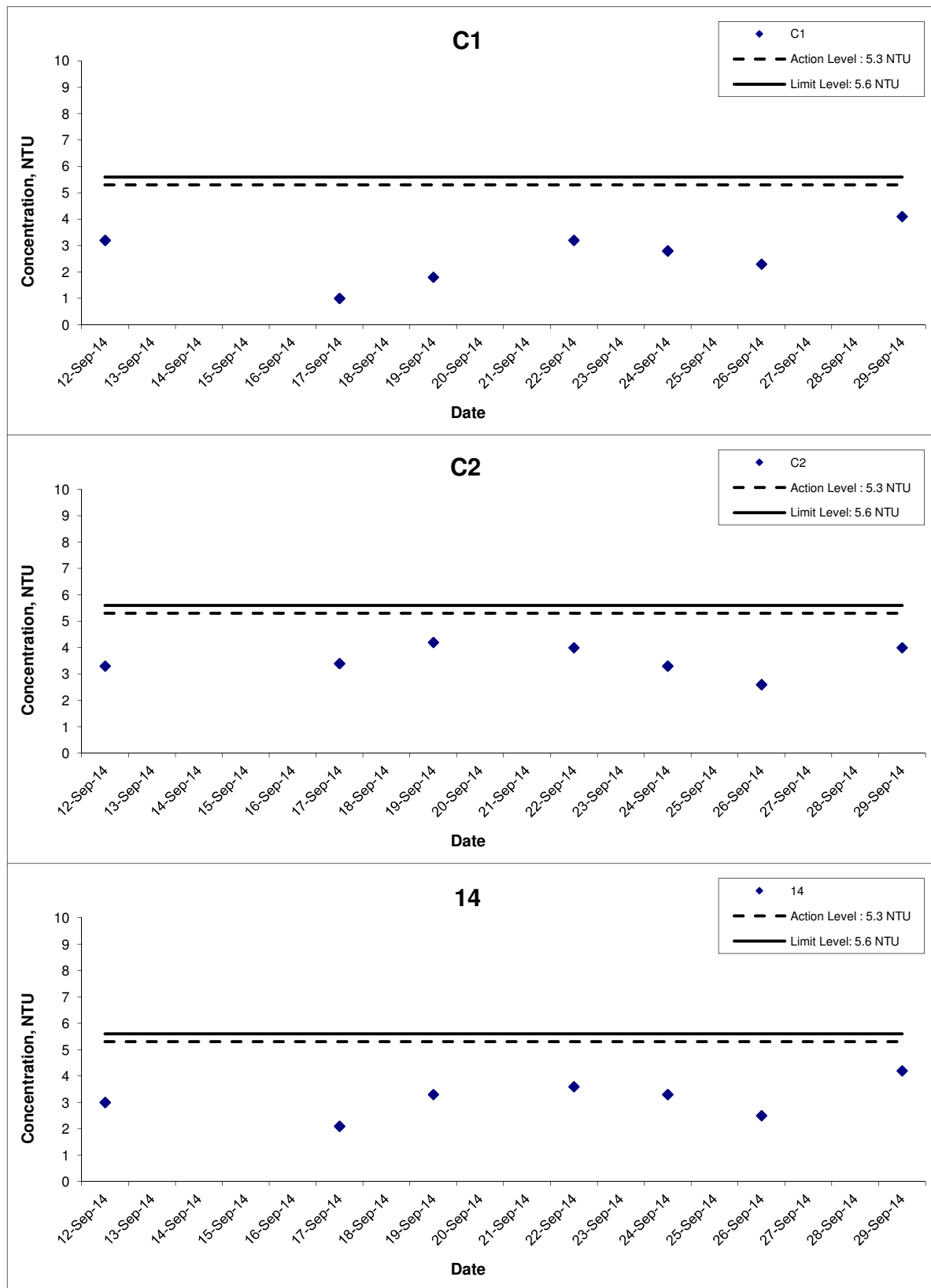
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



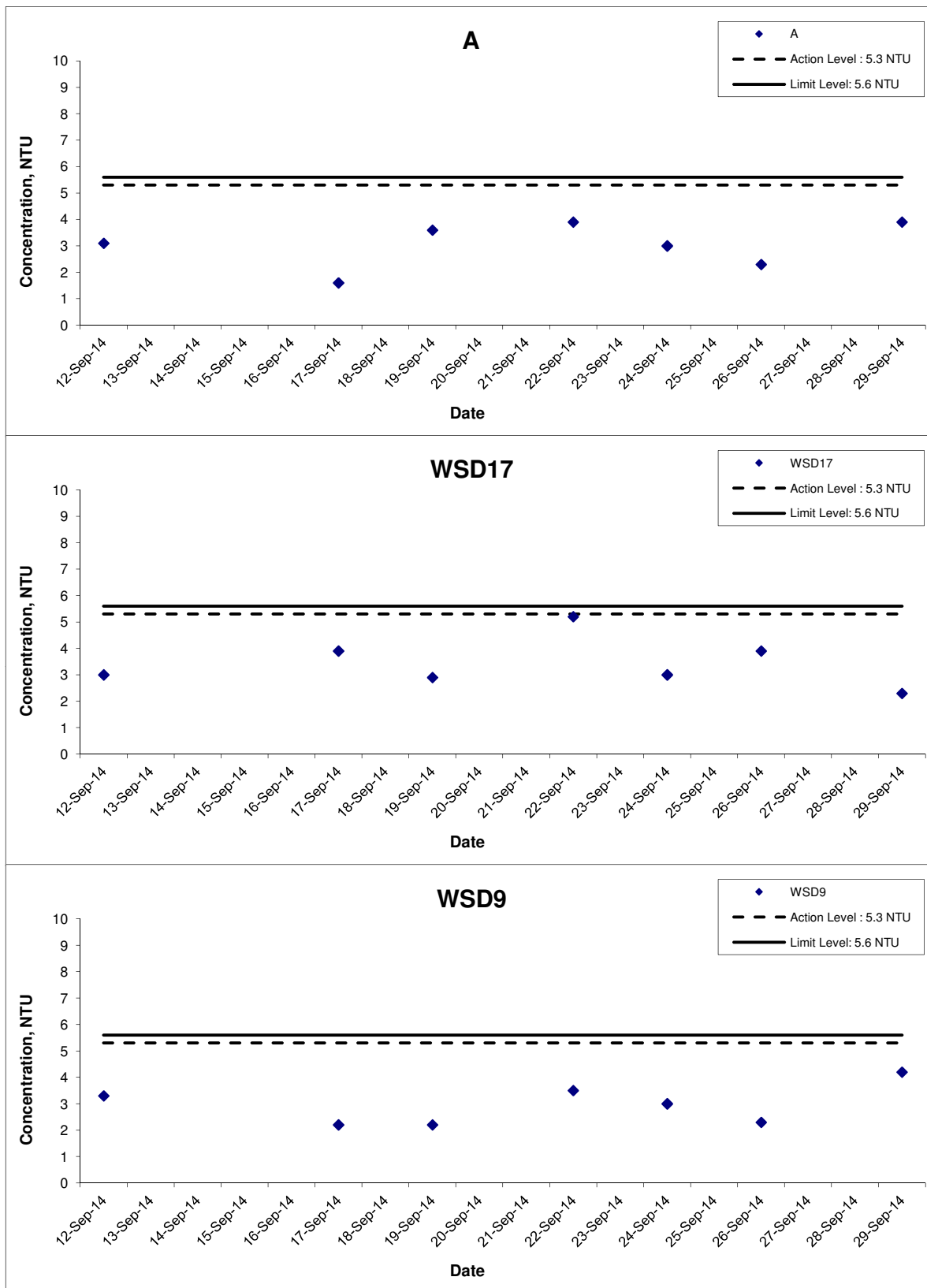
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



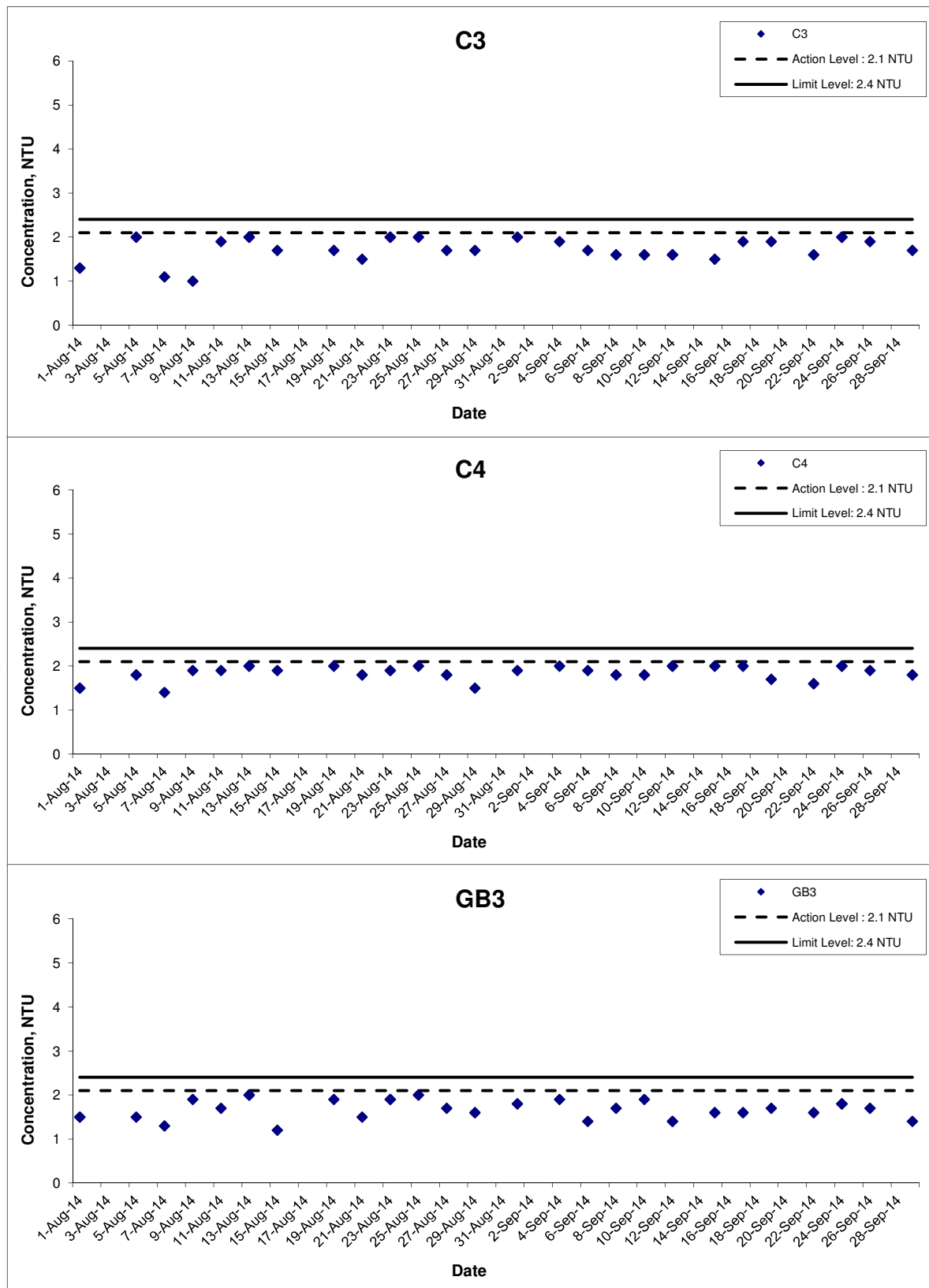
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale N.T.S	Project No. MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date Sep 14	Appendix D	

Turbidity (Depth-averaged) at Mid-Ebb Tide



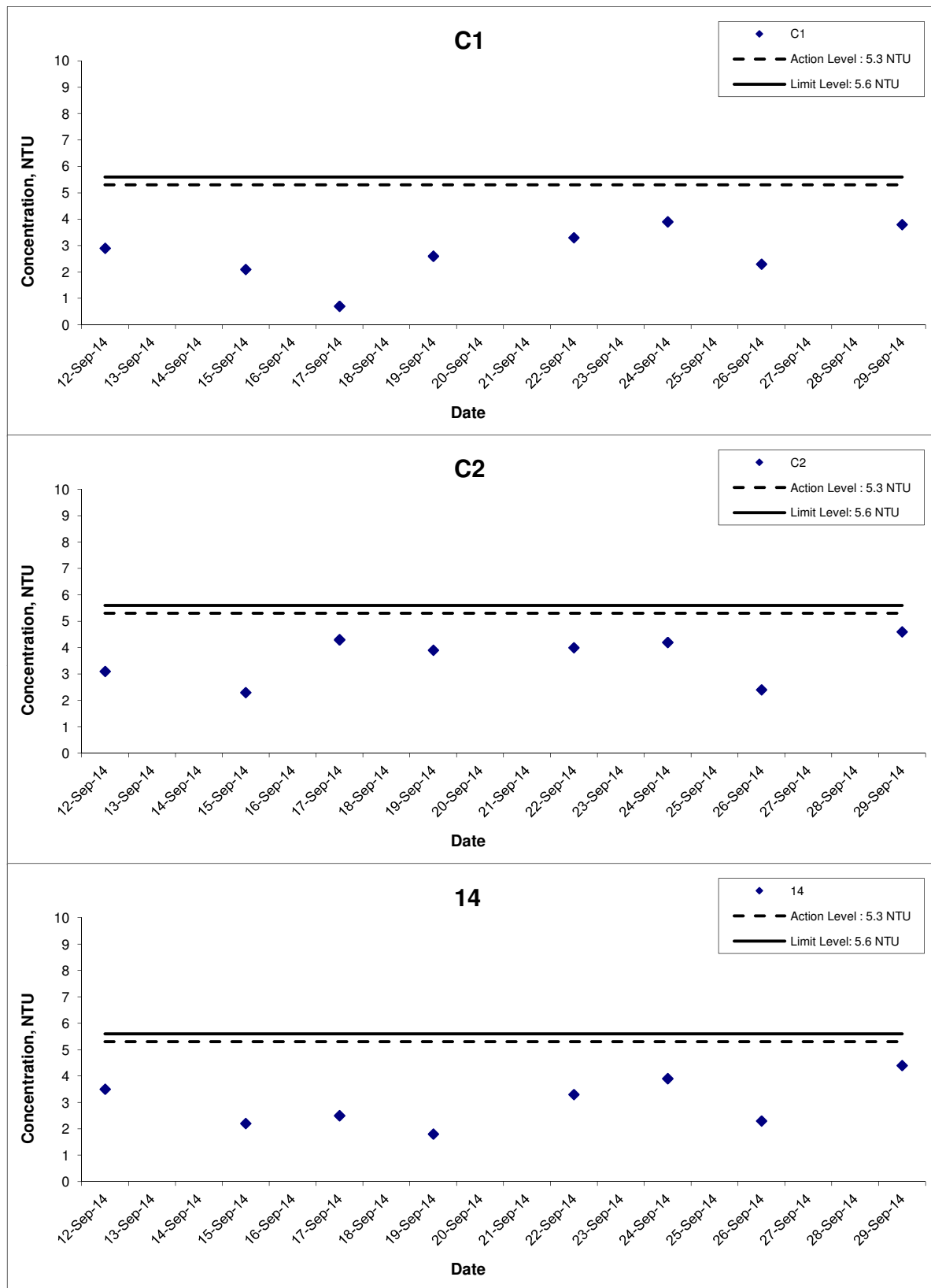
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale N.T.S	Project No. MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date Sep 14	Appendix D	

Turbidity (Depth-averaged) at Mid-Flood Tide



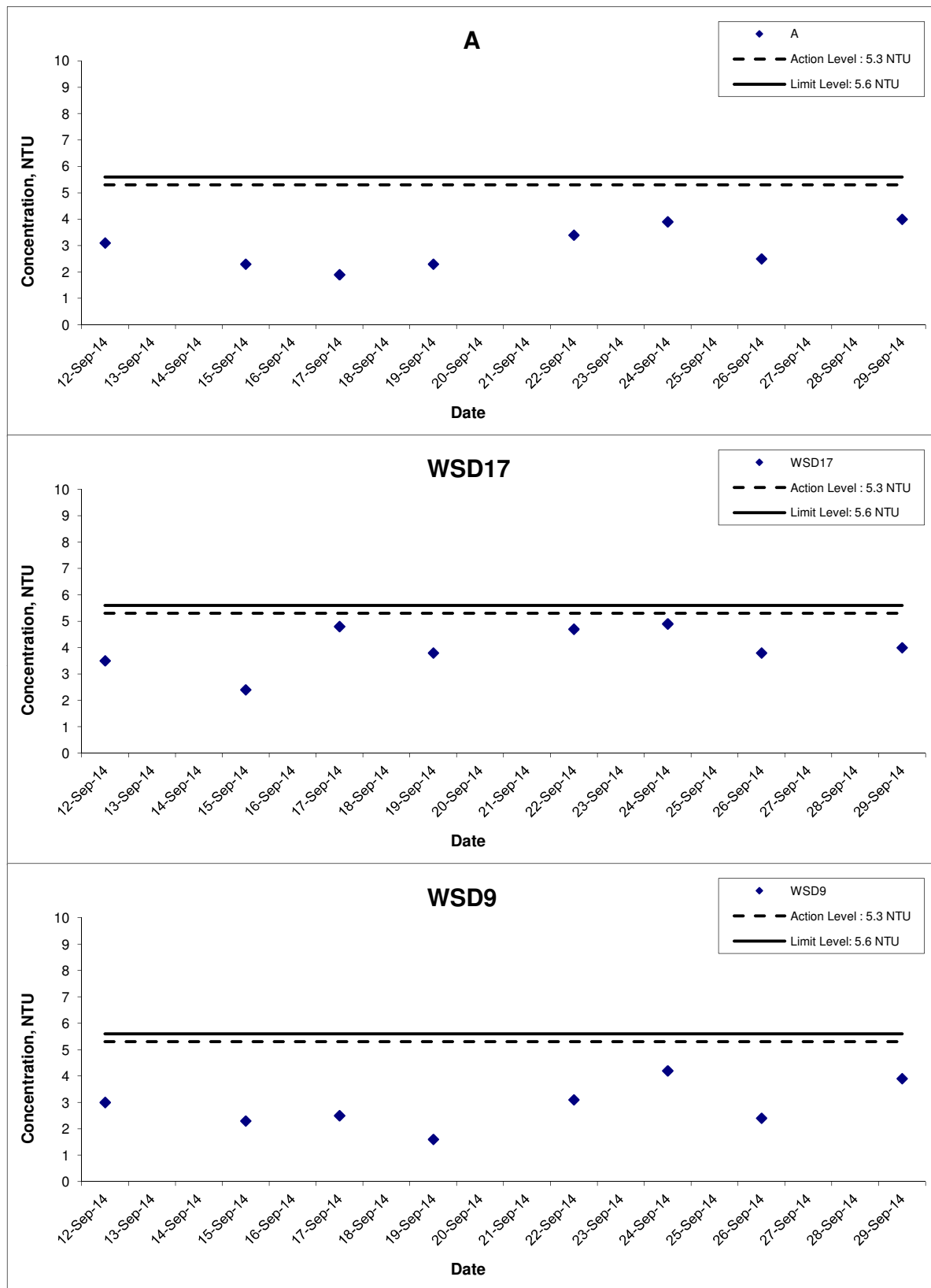
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

Turbidity (Depth-averaged) at Mid-Flood Tide



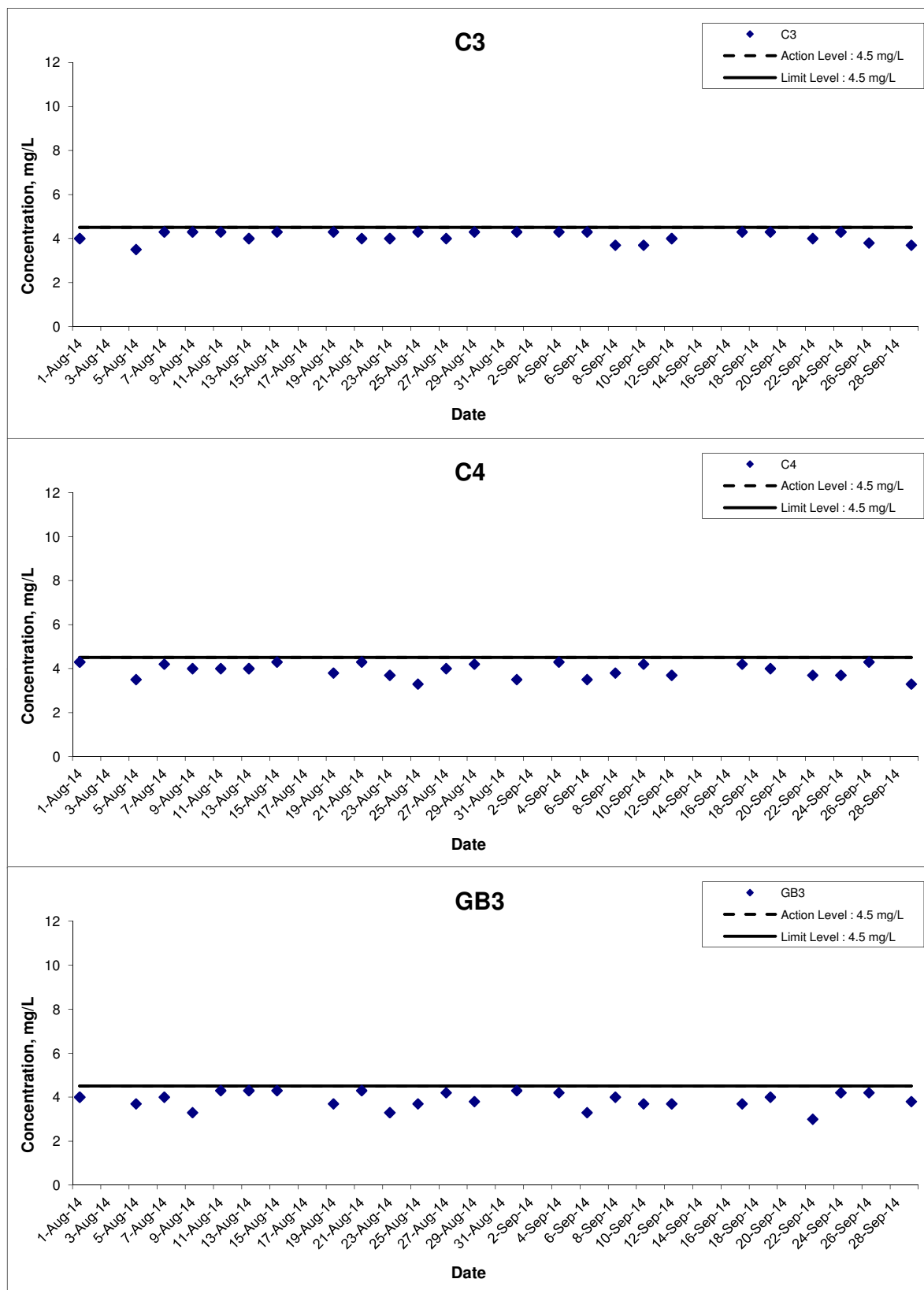
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale N.T.S	Project No. MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date Sep 14	Appendix D	

Turbidity (Depth-averaged) at Mid-Flood Tide



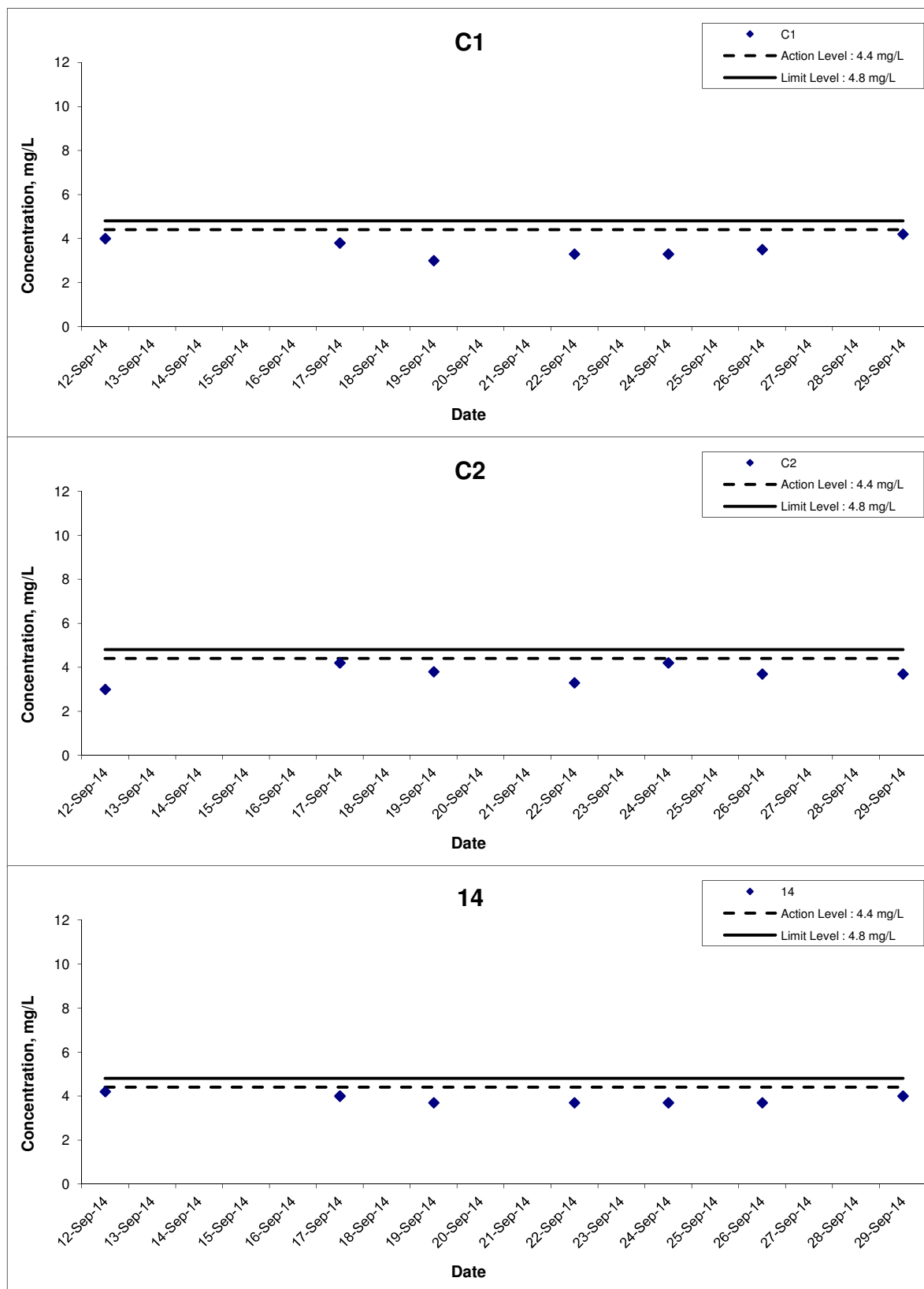
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels	Scale N.T.S	Project No. MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)	Date Sep 14	Appendix D	

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



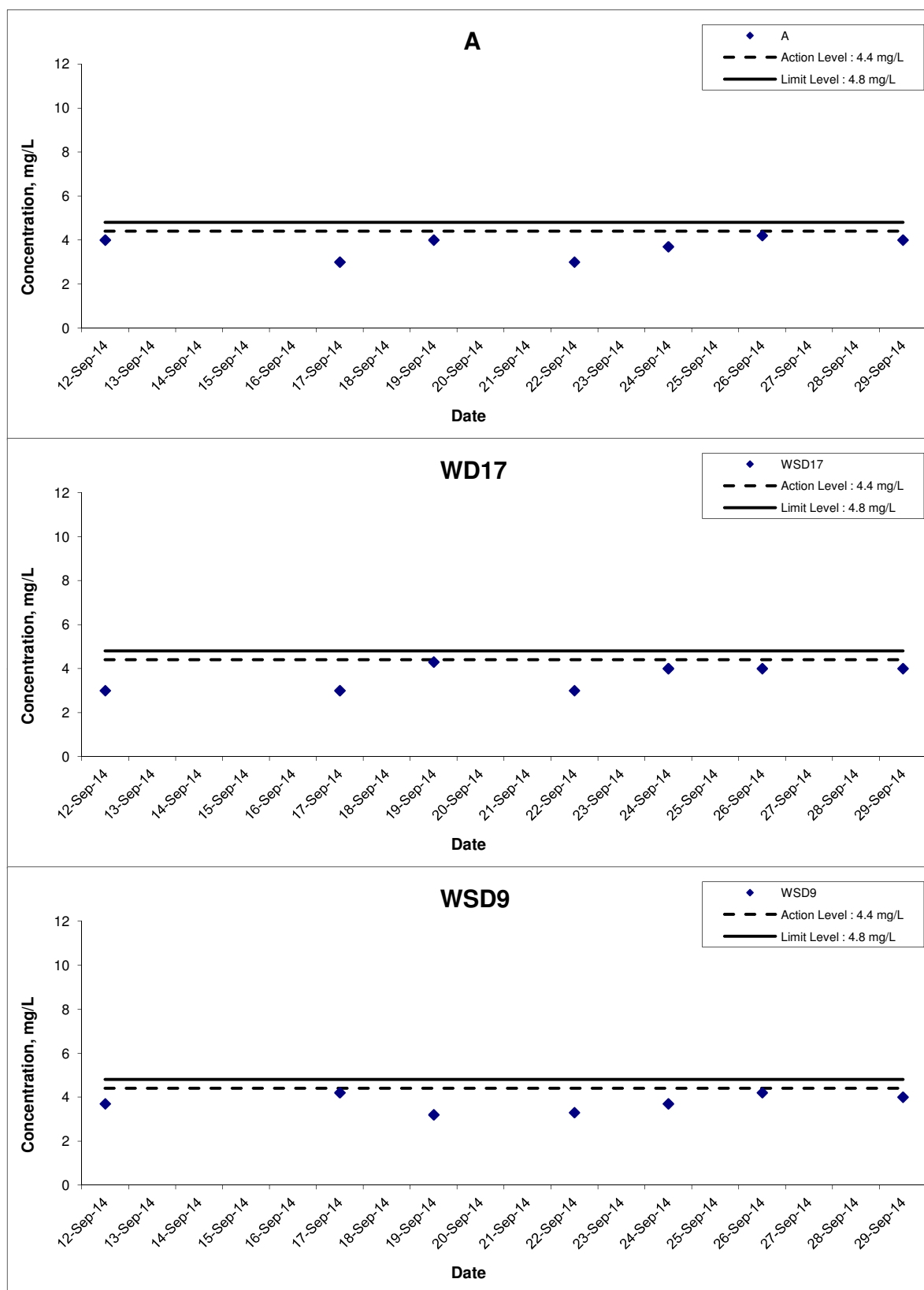
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

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



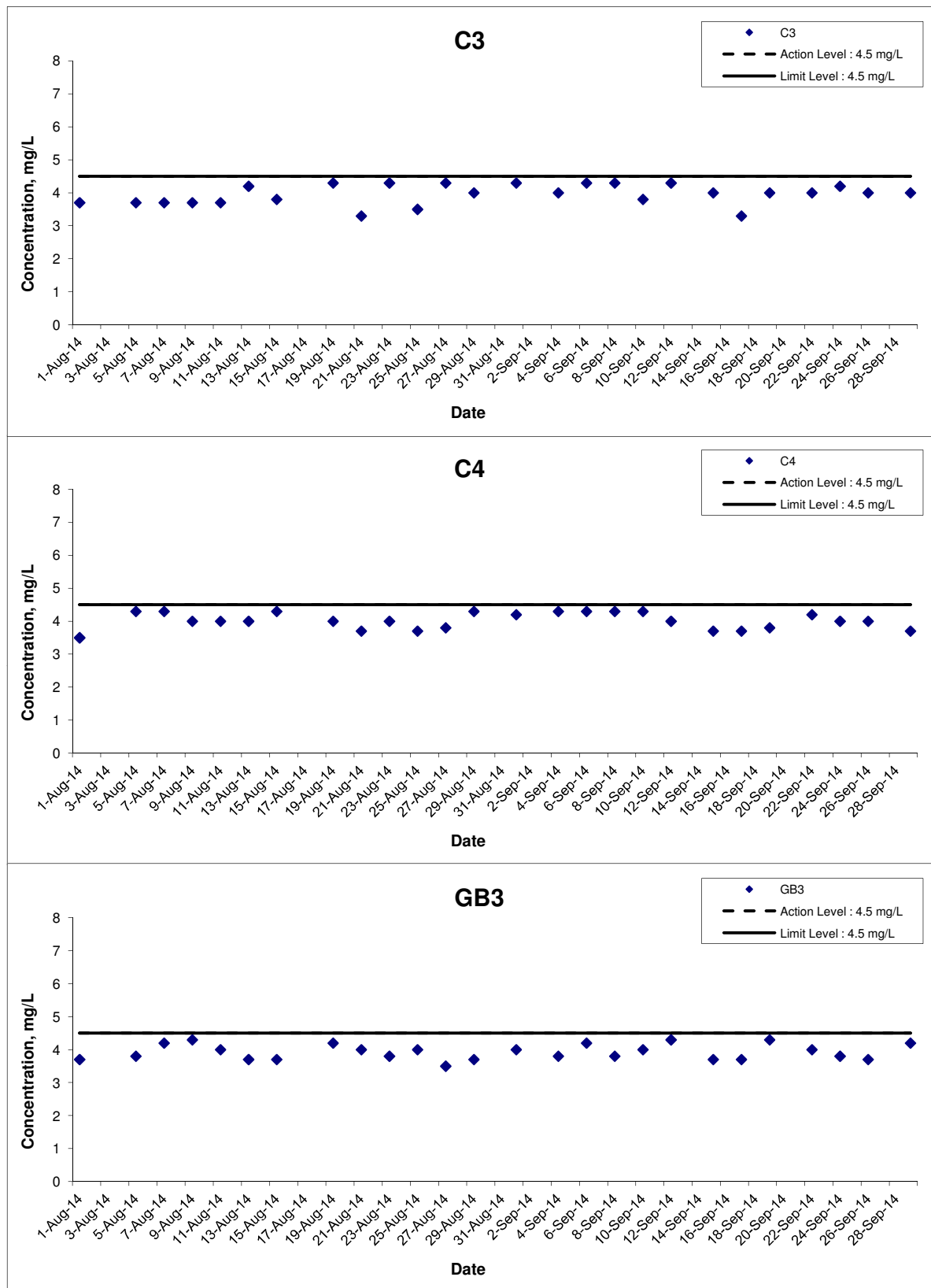
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

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



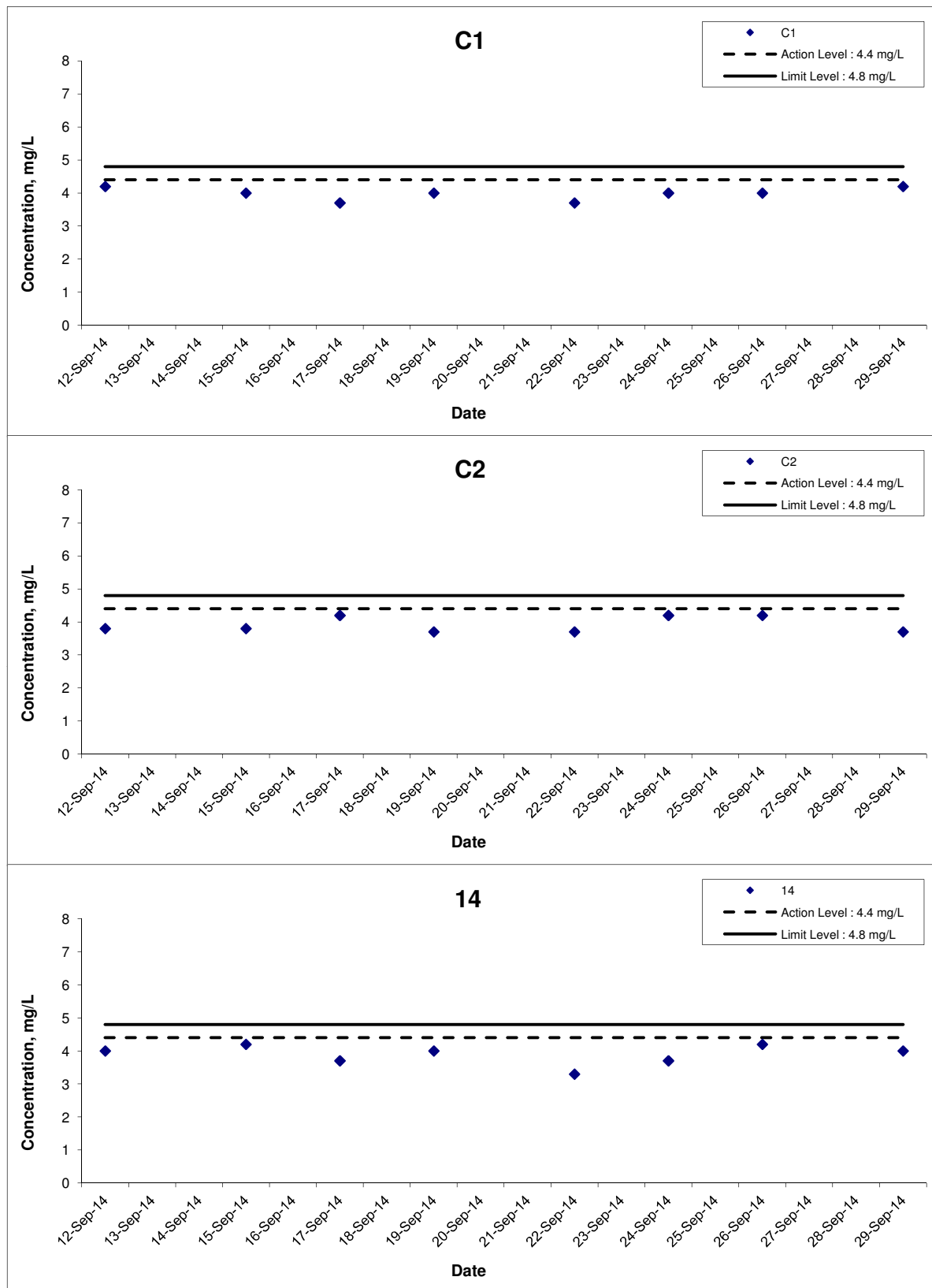
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

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



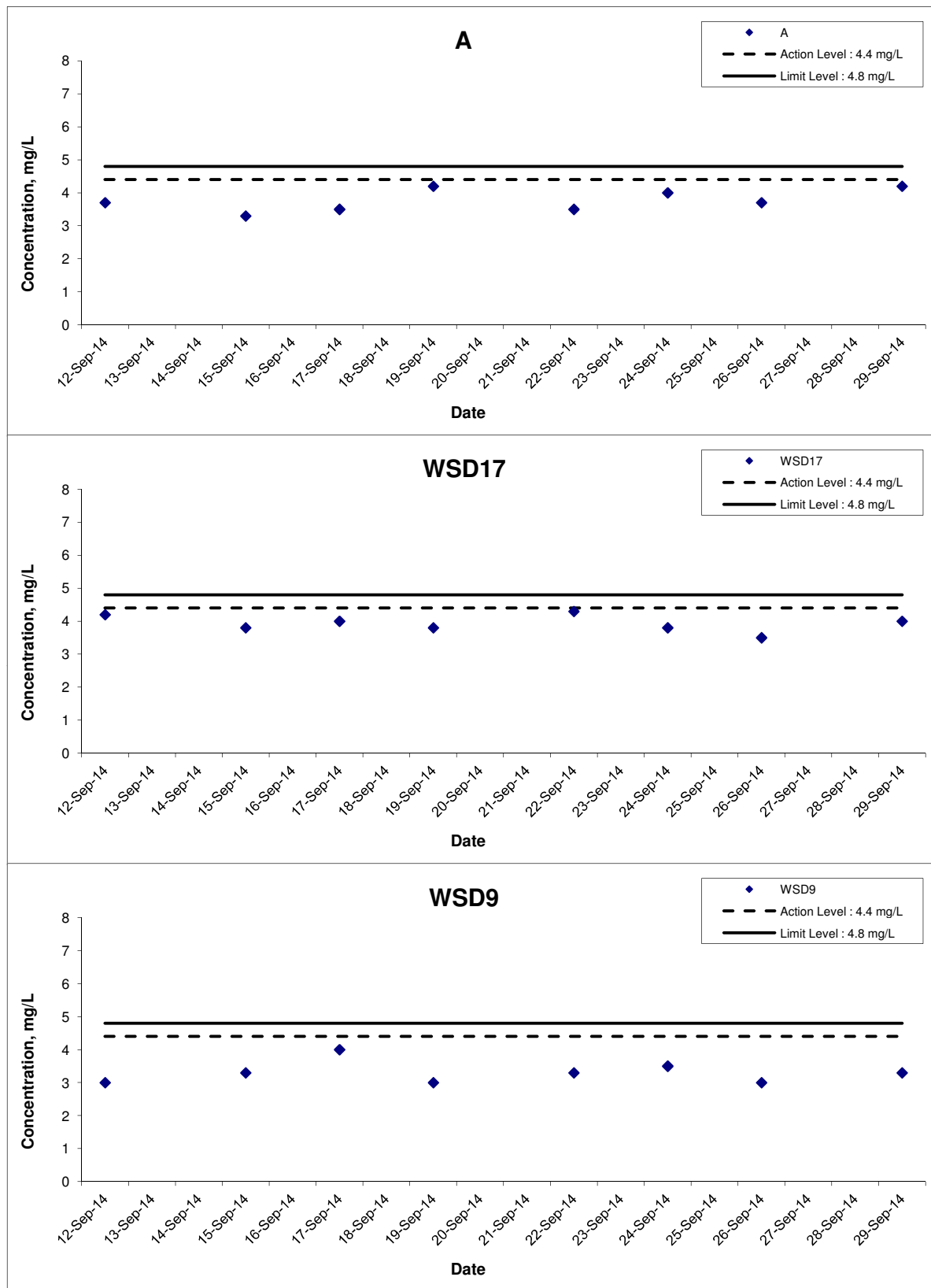
Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Shek O)		Date	Sep 14	Appendix	D	

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



Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

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



Title	Shatin to Central Link – Contract 11227 Advance Works for NSL Cross Harbour Tunnels		Scale	N.T.S	Project No.	MA14028	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results (Victoria Harbour)		Date	Sep 14	Appendix	D	

APPENDIX E
COPIES OF CALIBRATION CERTIFICATES

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/W/140802-2
Date of Issue:	2014-08-02
Date Received:	2014-08-02
Date Tested:	2014-08-02
Date Completed:	2014-08-02
Next Due Date:	2014-11-01

ATTN: Mr. W.K. Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6920-M
Serial No.	: 03H1764AA
Equipment No.	: W.03.03

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 03H1461
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution
Dissolved Oxygen Sensor, Model: 6562, L/N: 08C100610
1. Performance check against Winkler titration
Turbidity Sensor, Model: 6136, S/N: 09M100672
1. Calibration check with Formazin standard solution
pH Meter, Model: 6561, L/N: 07E
1. Calibration check with standard pH buffer
Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. YSI 6-Series Sonde Environmental Monitoring System Instruction 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 (APHA 19th 4500-H+ B)

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


PATRICK TSE
Laboratory Manager

TEST REPORT

Test Report No.:	C/W/140802-2
Date of Issue:	2014-08-02
Date Received:	2014-08-02
Date Tested:	2014-08-02
Date Completed:	2014-08-02
Next Due Date:	2014-11-01

Page: 2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
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_l , 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. 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*****

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/W/140808-2
Date of Issue:	2014-08-08
Date Received:	2014-08-08
Date Tested:	2014-08-08
Date Completed:	2014-08-08
Next Due Date:	2014-11-07

ATTN: Mr. W.K. Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6820-C-M
Serial No.	: 11J101089
Equipment No.	: W.03.10

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 11J100023

1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, L/N: 11J100272

1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 11J100474

1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, L/N: 11H

1. Calibration check with standard pH buffer

Depth Meter

1. Calibration check at 1m water level depth

Methodologies:

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual
2. In-house method with reference to APHA and ISO standards

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager

TEST REPORT

Test Report No.:	C/W/140808-2
Date of Issue:	2014-08-08
Date Received:	2014-08-08
Date Tested:	2014-08-08
Date Completed:	2014-08-08
Next Due Date:	2014-11-07

Page: 2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
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_l , 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. 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*****

TEST REPORT

APPLICANT: Cinotech Consultants Limited
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/W/140808-3
Date of Issue:	2014-08-08
Date Received:	2014-08-08
Date Tested:	2014-08-08
Date Completed:	2014-08-08
Next Due Date:	2014-11-07

ATTN: Mr. W.K. Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6820-C-M
Serial No.	: 11J101088
Equipment No.	: W.03.11

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 11J100023

1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, L/N: 11J100272

1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 11J100474

1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, L/N: 11H

1. Calibration check with standard pH buffer

Depth Meter

1. Calibration check at 1m water level depth

Methodologies:

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual
2. In-house method with reference to APHA and ISO standards

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

Test Report No.:	C/W/140808-3
Date of Issue:	2014-08-08
Date Received:	2014-08-08
Date Tested:	2014-08-08
Date Completed:	2014-08-08
Next Due Date:	2014-11-07

Page: 2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
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. 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

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	20950
Date of Issue:	2014/09/02
Date Received:	2014/09/01
Date Tested:	2014/09/01
Date Completed:	2014/09/02

ATTN: Ms. Mei Ling Tang

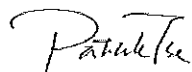
Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/01
Number of Sample: 36
Custody No.: MA14028/140901

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	7	7	2	99

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	20976
Date of Issue:	2014/09/05
Date Received:	2014/09/04
Date Tested:	2014/09/04
Date Completed:	2014/09/05

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/04
Number of Sample: 36
Custody No.: MA14028/140904

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	5	5	3	100

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	20991
Date of Issue:	2014/09/08
Date Received:	2014/09/06
Date Tested:	2014/09/06
Date Completed:	2014/09/08

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/06
Number of Sample: 36
Custody No.: MA14028/140906

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	4	3	9	101

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	20992
Date of Issue:	2014/09/10
Date Received:	2014/09/08
Date Tested:	2014/09/08
Date Completed:	2014/09/10

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/08
Number of Sample: 108
Custody No.: MA14028/140908

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	5	5	2	103

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited

RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21007
Date of Issue:	2014/09/11
Date Received:	2014/09/10
Date Tested:	2014/09/10
Date Completed:	2014/09/11

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels

Sampling Date: 2014/09/10

Number of Sample: 108

Custody No.: MA14028/140910

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	5	5	0	104

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21020
Date of Issue:	2014/09/15
Date Received:	2014/09/12
Date Tested:	2014/09/12
Date Completed:	2014/09/15

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/12
Number of Sample: 108
Custody No.: MA14028/140912

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3bf	6	6	3	100

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21033
Date of Issue:	2014/09/16
Date Received:	2014/09/15
Date Tested:	2014/09/15
Date Completed:	2014/09/16

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/15
Number of Sample: 54
Custody No.: MA14028/140915

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
14sf	4	5	7	98

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21050
Date of Issue:	2014/09/18
Date Received:	2014/09/17
Date Tested:	2014/09/17
Date Completed:	2014/09/18

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/17
Number of Sample: 104
Custody No.: MA14028/140917

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	3	3	6	101

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21067
Date of Issue:	2014/09/22
Date Received:	2014/09/19
Date Tested:	2014/09/19
Date Completed:	2014/09/22

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels

Sampling Date: 2014/09/19

Number of Sample: 104

Custody No.: MA14028/140919

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
GB3mf	6	6	1	108

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21077
Date of Issue:	2014/09/23
Date Received:	2014/09/22
Date Tested:	2014/09/22
Date Completed:	2014/09/23

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels

Sampling Date: 2014/09/22

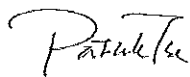
Number of Sample: 100

Custody No.: MA14028/140922

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	4	4	4	102

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21088
Date of Issue:	2014/09/25
Date Received:	2014/09/24
Date Tested:	2014/09/24
Date Completed:	2014/09/25

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels

Sampling Date: 2014/09/24

Number of Sample: 104

Custody No.: MA14028/140924

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	5	5	7	99

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited

RM 1710, Technology Park,

18 On Lai Street,

Shatin, N.T., Hong Kong

Laboratory No.:	21114
Date of Issue:	2014/09/29
Date Received:	2014/09/26
Date Tested:	2014/09/26
Date Completed:	2014/09/29

Page: 1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels

Sampling Date: 2014/09/26

Number of Sample: 104

Custody No.: MA14028/140926

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3sf	5	5	4	99

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

APPLICANT: Cinotech Consultants Limited

RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Laboratory No.:	21123
Date of Issue:	2014/09/30
Date Received:	2014/09/29
Date Tested:	2014/09/29
Date Completed:	2014/09/30

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Shatin to Central Link - Contract No.11227
Advance Works for NSL Cross Harbour Tunnels
Sampling Date: 2014/09/29
Number of Sample: 104
Custody No.: MA14028/140929

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C3bf	6	6	3	98

*****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

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: September 2014

a) Exceedance Report for Water Quality Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

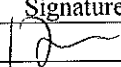

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140903
Date	3 September 2014 (Wednesday)
Time	15:30 – 16:30

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

Ref. No.	Remarks/Observations	Related Item No.
140903-001 140903-R04	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> Some gaps are observed from the silt curtain at the Northern Gate. The Contractor is reminded to properly repair the silt curtain. To remove the dusty material from near the side of target barge. 	B8 B4
140903-R02 140903-R03	<p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> To repair the hole observed in the drip tray of generator-set on the target barge. Provide drip tray to chemical containers on the target barge. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140827), all environmental deficiencies were observed improved/rectified by the Contractor. 	F9 F3i, 9

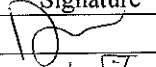

	Name	Signature	Date
Recorded by	Johnny Fung		3 September 2014
Checked by	Dr. Priscilla Choy		3 September 2014

Shatin to Central Link -**Contract 11227 Advance Works for NSL Cross Harbour Tunnels****Record Summary of Environmental Site Inspection****Inspection Information**

Checklist Reference Number	140910
Date	10 September 2014 (Wednesday)
Time	15:30 – 16:45

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

Ref. No.	Remarks/Observations	Related Item No.
140910-O01 140910-R04	Part B – Water Quality <ul style="list-style-type: none">Some gaps are observed in the silt curtain in Northern Gate. The Contractor is reminded to repair the silt curtain properly.To remove the dusty material near the side of target barge.	B8 B4
140910-R02 140910-R03	Part C – Landscape & Visual <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. Part D – Air Quality <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. Part E – Construction Noise Impact <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. Part F – Waste/Chemical Management <ul style="list-style-type: none">To repair the hole observed in the drip tray of generator-set on the target barge.Provide drip tray to chemical containers on the target barge. Part G – Permits/Licenses <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. Part H – Others <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:140903), follow up actions are needed to be reviewed for environmental deficiencies observed during previous site inspection.	F9 F3i, 9

	Name	Signature	Date
Recorded by	Johnny Fung		10 September 2014
Checked by	Dr. Priscilla Choy		10 September 2014

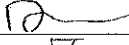

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140917
Date	17 September 2014 (Wednesday)
Time	15:30 – 16:30

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

Ref. No.	Remarks/Observations	Related Item No.
140917-R01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No marine works is currently carried out on site. The Contractor is reminded to close the marine access at silt curtain at Northern Gate before resume of marine works. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:140910), follow up actions are needed to be reviewed for item no. 140910-O01. 	B8

	Name	Signature	Date
Recorded by	Johnny Fung		17 September 2014
Checked by	Dr. Priscilla Choy		17 September 2014

Shatin to Central Link -

Contract 11227 Advance Works for NSL Cross Harbour Tunnels

(Shek O Casting Basin)



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140924
Date	24 September 2014 (Wednesday)
Time	13:30 – 14:30

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

Ref. No.	Remarks/Observations	Related Item No.
140924-O01	<p>Part B – Water Quality</p> <ul style="list-style-type: none">Some gaps are observed near the end of the Silt Curtain at the Northern Gate. The Contractor is reminded to repair the Silt Curtain properly. <p>Part C – Landscape & Visual</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part D – Air Quality</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part E – Construction Noise Impact</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part F – Waste/Chemical Management</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part G – Permits/Licenses</p> <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection. <p>Part H – Others</p> <ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.:140917), follow up actions are needed to be reviewed for item no. 140917-R01.	B8

	Name	Signature	Date
Recorded by	Johnny Fung		24 September 2014
Checked by	Dr. Priscilla Choy		24 September 2014

Shatin to Central Link -

Contract 11227 Advance Works for NSL Cross Harbour Tunnels

(Victoria Harbour)

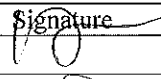

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140924
Date	24 September 2014 (Wednesday)
Time	15:30 – 17:00

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

Ref. No.	Remarks/Observations	Related Item No.
140924-001	Part B – Water Quality <ul style="list-style-type: none">Plume of silty water observed in the seawater near the end of the barge. The Contractor is reminded to locate the source of silty water and repair any equipments if necessary.	B6
140924-002	<ul style="list-style-type: none">Gaps at the end of silt screen at Tai Wan are observed. The Contractor is reminded to repair the silt screen properly.	B7
140924-003	<ul style="list-style-type: none">General refuse deposited near the silt screen at Tai Wan should be removed from the area.	B5
	Part C – Landscape & Visual <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	
	Part E – Construction Noise Impact <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	
	Part G – Permits/Licenses <ul style="list-style-type: none">No environmental deficiency was identified during the site inspection.	
	Part H – Others <ul style="list-style-type: none">N/A	

	Name	Signature	Date
Recorded by	Johnny Fung		24 September 2014
Checked by	Dr. Priscilla Choy		24 September 2014

APPENDIX I
EVENT AND ACTION PLANS

Appendix I - Event and Action Plan for Marine Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Inform the Contractor, IEC and ER; 3. Check monitoring data, all plant, equipment and 	<ol style="list-style-type: none"> 1. Discuss with the ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by the 	<ol style="list-style-type: none"> 1. Discuss with the ET, IEC and Contractor on the implemented mitigation measures; 2. Make agreement on the remedial measures to be implemented; and 	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable

Appendix I - Event and Action Plan for Marine Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	<p>the Contractor's working methods;</p> <p>4. Discuss remedial measures with the IEC and Contractor; and</p> <p>5. Ensure remedial measures are implemented.</p>	<p>Contractor and advise the ER accordingly; and</p> <p>3. Review and advise the ET and ER the effectiveness of the implemented remedial measures.</p>	<p>3. Discuss with the ET and IEC on the effectiveness of the implemented remedial measures.</p>	<p>practice;</p> <p>4. Check all plant and equipment;</p> <p>5. Consider changes of working methods;</p> <p>6. Discuss with the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification; and</p> <p>7. Implement the agreed remedial measures.</p>

Appendix I - Event and Action Plan for Marine Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
Limit level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Inform the Contractor, IEC, EPD and ER; 2. Check monitoring data, all plant, equipment and the Contractor's working methods; 	<ol style="list-style-type: none"> 1. Discuss with the ET, ER and Contractor on the implemented measures; 2. Review proposals on remedial measures submitted by the 	<ol style="list-style-type: none"> 1. Discuss with the ET, IEC and Contractor on the implemented mitigation measures; 2. Request the Contractor to critically review the 	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable

Appendix I - Event and Action Plan for Marine Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	<p>3. Discuss remedial measures with the the IEC, EPD, ER and Contractor;</p> <p>4. Ensure remedial measures are implemented; and</p> <p>5. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p>	<p>Contractor and advise the ER accordingly; and</p> <p>3. Review and advise the ET and ER the effectiveness of the implemented remedial measures.</p>	<p>working methods;</p> <p>3. Make agreement on the remedial measures to be implemented;</p> <p>4. Discuss with the the ET, IEC and Contractor on the effectiveness of the implemented remedial measures; and</p> <p>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.</p>	<p>practice;</p> <p>4. Check all plant and equipment;</p> <p>5. Consider changes of working methods;</p> <p>6. Discuss with the ET, IEC and ER and propose remedial measures to IEC and ER within 3 working days of notification;</p> <p>7. Implement the agreed remedial measures; and</p> <p>8. As directed by the ER, to slow down or to stop all or part of the marine works or construction activities.</p>

**APPENDIX J
UPDATED ENVIRONMENTAL
MITIGATION IMPLEMENTATION
SCHEDULE**

SCL Works Contract 11227 - 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
Ecology (Construction Phase)							
S5.134	Accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as removing the pollutants before discharge into storm drain and paving the section of construction road between the wheel washing bay and the public road as suggested in Sections 11.216 and 11.219 to 11.256 of the EIA Report shall be adopted	Minimise the contamination of wastewater discharge	Contractor	All land based works areas	Construction phase	• EIAO-TM	N/A
ERR S3.6.3	Installation of floating type silt curtains around the area of site levelling works and 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	*
Fisheries Impact							
S6.57	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	^
S6.57	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	^

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<i>Landscape & Visual (Construction Phase)</i>							
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	^
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	^
<i>Construction Dust Impact</i>							
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	^
<i>Construction Noise (Airborne)</i>							
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	Minimize construction noise impact	Contractor	All works areas	Construction phase	• EIAO-TM	^ ^

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	<p>construction program</p> <ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
Water Quality (Construction Phase)							
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	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	^
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	To protect the beneficial use of flushing water intakes in Victoria Harbour from dredging / filling	Contractor	Flushing water intake points in Victoria Harbour	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	N/A

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	temporary reclamation at SCL2 or for IMT construction	activities					
S11.210 - S11.211 & Table 11.24	<p>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) shall not exceed 2,500 m³ per day at any time throughout the entire construction period. The hourly production rate for dredging or bulk filling within the open Victoria Harbour (outside the breakwater of CBTS) shall not exceed 156 m³ per hour (if there are other concurrent marine works in Victoria Harbour) and the maximum working hour for the dredging / bulkfilling works shall be 16 hours per day.</p> <p>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) shall not exceed 4,500 m³ per day at any time throughout the entire construction period. The hourly</p>	To minimize loss of fines and contaminants from dredging / filling in the Victoria Harbour	Contractor	Marine works areas in Victoria Harbour	Construction phase	Construction phase	^

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	production rate for dredging or bulk filling within the open Victoria Harbour (outside the breakwater of CBTS) 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.						
S11.215	<p>The following good site practices shall be undertaken during dredging:</p> <ul style="list-style-type: none"> • 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, 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 	To minimize loss of fines and contaminants from dredging / filling	Contractor	Marine works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	<p>^</p> <p>^</p> <p>#</p> <p>^</p> <p>^</p>

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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
	<p>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;</p> <ul style="list-style-type: none"> 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. 						N/A
S11.216	<p>The following mitigation measures are proposed to minimize the potential water quality impacts from the construction works at or close to the seafront:</p> <ul style="list-style-type: none"> 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 	<p>minimize release of construction wastes from construction works at or close to the seafront</p>	Contractor	Construction works at or close to the seafront	Construction phase	<ul style="list-style-type: none"> EIAO-TM WPCO 	<p>*</p> <p>*</p> <p>^</p>

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	nearby receiving waters.						
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	<ul style="list-style-type: none"> • EIAO-TM • WPCO 	#
S11.219	It is recommended that collection and removal of floating 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.	To minimize water quality impacts from illegal dumping and littering from marine vessels and runoff from the coastal area	Contractor	Marine works area	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • WDO 	#
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.	minimize water quality impacts due to sewage generated from construction workforce	Contractor	All works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS • WDO 	^

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	<p>The Contractor shall also be responsible for waste disposal and maintenance practices.</p> <p>Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.</p>						^
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.	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS • WDO 	N/A
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	<ul style="list-style-type: none"> • 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"	minimize water quality impact from accidental spillage of chemical	Contractor	All construction works areas	Construction phase	<ul style="list-style-type: none"> • EIAO-TM • WPCO • TM-DSS 	

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	<p>published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • 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. the areas appropriately equipped to control these discharges. 					• WDO	<p>^</p> <p>^</p> <p>^</p>
ERR S 8.5.1	Floating type silt curtains would be installed around the area of site levelling works and 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	*
ERR S 8.5.1	Floating type silt curtains would be installed around the entrances of the basin during rock filling works.	minimize water quality impact at Shek O Casting Basin	Contractor	Shek O Casting Basin	Construction phase	• WPCO	#
EP 2.23.3	All fill materials used in marine works at the Basin shall contain no more than 5% fines (aggregates diameter smaller than 63µm) content.	minimize water quality impact at Shek O Casting Basin	Contractor	Shek O Casting Basin	Construction phase	• WPCO	^

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EP 2.23.4	The sea bed levelling works shall not involve any dumping of imported fill materials onto the seabed. The in-situ volume of sea bed materials to be moved during the sea bed leveling works shall not be more than 10,000m ³ . If sea bed materials other than coarse sand, cobble and gravel as identified in the previous marine investigation are encountered, alternative leveling methods and/or additional mitigation measures shall be proposed for the approval of the Director before the works can proceed. The silt curtain shall be properly installed prior to the commencement of sea bed leveling works, and if necessary, double silt curtains shall be deployed to ensure full enclosure of the leveling works at all times to prevent the escape of sediment to water column outside the silt curtains.	minimize water quality impact at Shek O Casting Basin	Contractor	Shek O Casting Basin	Construction phase	• WPCO	^
EP 2.23.5	The filling of the southern part of the Basin shall be carried out using rocks or coarse aggregates with diameters between 20mm and 200mm and with no more than 5% fines (aggregates with diameter smaller than 63µm) content, up to a level not higher than -12mPD. The maximum filling rate shall be no more than 4,500m ³ /day.	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	reduce waste management	Contractor	All works sites	Construction	• Waste Disposal	

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	<ul style="list-style-type: none"> - 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. 	impacts			phase	Ordinance (Cap. 354) <ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance (Cap. 28) <ul style="list-style-type: none"> • DEVB TCW No. 6/2010 	^ ^ ^ ^ ^
S12.76	<i>Good Site Practices and Waste Reduction Measures (Con't)</i> <ul style="list-style-type: none"> - 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 	achieve waste reduction	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • Waste Disposal Ordinance (Cap. 354) • Land (Miscellaneous Provisions) Ordinance (Cap.	^ ^

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	<p>recycling of materials and their proper disposal;</p> <ul style="list-style-type: none"> - 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. 					28)	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S12.77	<p><i>Good Site Practices and Waste Reduction Measures (Con't)</i></p> <ul style="list-style-type: none"> - The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWBTCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan shall 	achieve waste reduction	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • ETWB TCW No. 19/2005 	<p>^</p>

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	<p>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.</p> <p>The EMP shall be reviewed regularly and updated by the Contractor, preferably in a monthly basis.</p>						^
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	<p><i>Storage, Collection and Transportation of Waste</i></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - 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 	minimize potential adverse environmental impacts arising from waste storage	Contractor	All works sites	Construction phase	-	^ ^ ^

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	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	<i>Storage, Collection and Transportation of Waste (Con't)</i> 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)	minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All works sites	Construction phase	-	^ ^ ^ ^

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	<ul style="list-style-type: none"> - Waste shall be disposed of at licensed waste disposal facilities - Maintain records of quantities of waste generated, recycled and disposed 						<p>^</p> <p>^</p>
S12.81	<p><i>Storage, Collection and Transportation of Waste (Con't)</i></p> <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> • DEVB TCW No. 6/2010 	<p>^</p>
S12.83 – 12.86	<p><i>Sorting of C&D Materials</i></p> <ul style="list-style-type: none"> - 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 	minimize potential adverse environmental impacts during the handling, transportation and disposal of C&D materials	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> • DEVB TCW No. 6/2010 • ETWB TCW No. 33/2002 • ETWB TCW No. 19/2005 	<p>^</p> <p>^</p> <p>^</p>

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	<p>investigated before disposal of at designated landfills.</p> <p>- 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</p>						^
S12.88	<p>Sediments</p> <p><i>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</i></p>	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	<p>Sediments</p> <p>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</p>	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 Ordinance	^

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	necessary permits from relevant authorities, including the dumping permit as required under DASO from EPD, for the disposal of dredged and excavated sediment prior to the commencement of the excavation works.						
S12.91-12.94	<p>Sediments</p> <ul style="list-style-type: none"> - 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 / 	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	<p>^</p> <p>^</p>

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	<p>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.</p> <ul style="list-style-type: none"> - 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 appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site. 						<p>^</p> <p>^</p>
S12.95	<p>Sediments</p> <p>A possible arrangement for Type 3 disposal is by geosynthetic</p>	To ensure handling of sediments are in	Contractor	Work Sites, Sediment	Construction Phase	ETWB TC(W) No. 34/2002 &	N/A

SCL Works Contract 11227 - 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
	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.	accordance to statutory requirements		disposal sites		Dumping at Sea Ordinance	
S12.97	<p>Containers for Storage of Chemical Waste</p> <p>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:</p> <ul style="list-style-type: none"> - Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; - Have a capacity of less than 450 liters unless the 	register with EPD as a Chemical waste producer and store chemical waste in appropriate containers	Contractor	All works sites	Construction phase	• Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes	<p>*</p> <p>^</p>

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	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						^
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.	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	N/A N/A N/A N/A N/A N/A
S12.98	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	clearly label the chemical waste at works areas	Contractor	All works sites	Construction phase	• Code of Practice on the Packaging, Labelling and	^

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	individual containers which are fully labelled in English and Chinese and stored in a designated secure place.					Storage of Chemical Wastes	
S12.100	<p><i>Collection and Disposal of Chemical Waste</i></p> <p>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</p>	To monitor the generation, reuse and disposal of chemical waste	Contractor	All works sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) (General) Regulation 	N/A
S12.101	<p><i>General Refuse</i></p> <p>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.</p>	properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	All works sites	Construction phase	-	^
S12.102	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	facilitate recycling of recyclable portions of refuse	Contractor	All works sites	Construction phase	-	^

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	recycling bins for different types of recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.						
S12.102	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 Year 2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and 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
	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000kg)	('000kg)	('000kg)	('000kg)	('000m ³)
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
October	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
November	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
December	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000

**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
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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
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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
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