Ref.: HYDHZMBEEM00_0_2934L.15 4 May 2015

ARUP By Fax (3767 5922) and By Post
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon

Attention: Mr. Colin Meadows / Mr. Michael Chan

Dear Sirs,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

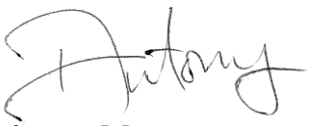
Contract No. HY/2011/09 HZMB Hong Kong Link Road –
Section between HKSAR Boundary and Scenic Hill
Quarterly EM&A Report No.8 for December 2014 to February 2015 (Revision 1)

Reference is made to the submission of Quarterly EM&A Report No.8 for December 2014 to February 2015 version 1.0 dated 22 April 2015 certified by the ET Leader provided to us *via* email on 28 April 2015.

Please be advised that we have no adverse comments on the captioned report.

Thank you for your kind attention. Please do not hesitate to contact the undersigned or the ENPO Leader Mr. Y H Hui should you have any queries.

Yours sincerely,



Antony Wong
Independent Environmental Checker
Hong Kong Link Road

c.c. HyD – Mr. Matthew Fung (By Fax: 3188 6614)
HyD – Mr. Y K Lam (By Fax: 3188 6614)
ARUP – Mr. Eric Chan (By Fax: 2268 3970)
Cinotech – Dr. Priscilla Choy (By Fax: 3107 1388)
DCVJV – Mr. Chu Chung Sing (By Fax: 3121 6688)

Internal: DY, YH, ENPO Site

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ENVIRON Hong Kong Limited 英環香港有限公司
Room 2403 Jubilee Centre, 18 Fenwick Street, Wan Chai, Hong Kong. Tel: 852 3465 2888 Fax: 852 3465 2899
www.environcorp.com

Dragages -China Harbour-VSL JV

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge

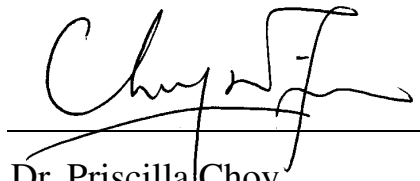
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Quarterly EM&A Report

December 2014 to February 2015

(Version 1.0)

Certified By



Dr. Priscilla Choy
Environmental Team Leader
(Date: 22 April 2015)

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 8th Quarterly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the project "Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract"). This report documents the findings of EM&A Works performed in the period between December 2014 and February 2015.

Environmental Monitoring and Audit Progress

2. A summary of the monitoring activities in this reporting period is listed in **Table I** below:

Table I Summary Table for Monitoring Activities in the Reporting Period

Parameter(s)	Monitoring Date(s)
1-hr TSP Monitoring	1st, 5th, 11th, 17th, 23rd and 29th December 2014 2nd, 8th, 14th, 20th, 26rd and 30th January 2015 5th, 11th, 17th, 23rd and 27th February 2015
24-hr TSP Monitoring	
Noise Monitoring	2nd , 8th , 18th, 24th and 30th December 2014 5th, 15th, 21st and 27th January 2015 6th, 12th, 18th and 24th February 2015
(1)Water Quality Monitoring	1st, 3rd, 5th, 8th, 10th, 12th, 15th, 17th , 20th, 22nd, 24th, 27th, 29th and 31st December 2014 2nd, 5th, 7th, 9th, 12th, 14th, 16th, 19th, 21st, 23rd, 26th, 28th and 30th January 2015 2nd, 4th, 6th, 9th, 11th, 13th, 16th, 18th, 23rd, 25th and 27th February 2015
Dolphin Monitoring (Line-transect Vessel Surveys)	3rd and 10th December 2014 9th and 23rd January 2015 3rd and 10th February 2015
Additional Land-based Dolphin Behaviour and Movement Monitoring	5th and 18th December 2014 2nd and 21st January 2015 17th and 26th February 2015
Environmental Site Inspection	2nd, 9th, 16th, 23rd and 30th December 2014 8th, 13th, 19th and 30th January 2015

	3rd, 10th, 18th and 24th February 2015
Archaeological Site Inspection	30th December 2014

(1) No marine construction works were conducted from 19 to 23 February 2015. Therefore, water quality monitoring scheduled on 21 February 2015 was cancelled and EPD was notified by SOR on 18 February 2015 for the change.

Breaches of Action and Limit Levels

3. Summary of the environmental exceedances of the reporting period is tabulated in **Table II**.

Table II Summary Table for Events Recorded in the Reporting Period

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Air Quality	1-hr TSP	0	0	0	0
	24-hr TSP	1	0	0	0
Noise	$L_{eq(30min)}$	0	0	0	0
Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	0	0	0	0
	Dissolved Oxygen (DO) (Bottom)	0	0	0	0
	Turbidity	0	0	0	0
	Suspended Solids (SS)	10	6	0	0
Dolphin Monitoring	Line-transect Vessel Surveys	0	0	0	0

4. Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. The details of each exceedance were attached in the Monthly EM&A Reports.

Complaint Log

5. Summary of the environmental complaints of the reporting period is tabulated in **Table III**.

Table III Summary Table for Complaints Recorded in the Reporting Period

Complaint Log Ref.	Location	Received Date	Nature of Complaint
Com-2014-12-001	Shores of Po Chue Tam and Shek Tsai Po, Tai O	7 December 2014	Waste Management
Com-2014-12-002	Site Office of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	2 December 2014	Noise
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	Waste Management

Notification of Summons and Successful Prosecutions

6. No notification of summons and successful prosecution was received in the reporting period.

Reporting Changes

7. This report has been developed in compliance with the reporting requirements for the quarterly EM&A Summary Report as required by the EM&A Manual for Hong Kong Link Road (EM&A Manual).

Change of Environmental Team Leader

8. A notification letter was issued to EPD by SOR on 11 February 2015 regarding the change of Environmental Team Leader (ETL) under Contract No. HY/2011/09 from Dr. H.F Chan to Dr. Priscilla Choy is effective starting from 16 February 2015.

Future Key Issues

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

WA4

- Fabrication of rebar cages
- Fabrication of temporary piling platforms

WA7

- Fabrication of rebar cages
- Loading and Unloading of rebar materials

Marine Viaduct (P0 to P80)

Reverse Circulation Drill (RCD) Method:

- Piling works
- Mooring bits and silt curtain installation
- Installation of piling jackets
- Dismantling of piling jackets
- Pile excavation and casing installation
- Inter-face tests, full depth coring test and sonic test
- Grouting works

Kelly Method:

- Removal of piling platform and temporary pile extraction
- Inter-face tests, full depth coring
- test and sonic test
- Toe grouting works

Pile Cap Construction:

- Installation of precast cap shells
- Concreting
- Kingpost installation and associated steel welding works
- Concreting trimming

Works with Cofferdam:

- Installation of waling strut
- Installation of sheet pile
- Installation of temporary working platform
- Installation of shear pin
- Installation of bored pile casing
- Excavation works and casting of concrete plug
- Dewatering works and sealing works
- Additional welding

Column Construction:

- Lifting works
- Lift concreting
- Pier head works
- Pier head concreting
- Column insert installation, mobilization and temporary works

Deck Erection:

- Segment Unloading Frame (SUF)
- Winches test
- Assembly and erection of Lifting Frame 2
- Erection of segment on pier

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

- Pile construction
- Pouring of column
- Pre-bored for sheet pile for cofferdam construction
- Seawall block coring and breaking
- Formwork erection
- Blinding concrete for scaffolding works
- Dismantling of steel bracket system
- Erection of steel bracket system cross road steel portal beams erection and corresponding falsework erection
- Steel girders and cross beams erection

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Dragages -China Harbour-VSL JV (hereinafter called "the Contractor") as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract") in accordance with EP Conditions 2.1.

Purpose of the report

1.2 This is the 8th Quarterly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in the period between December 2014 and February 2015.

Structure of the report

1.3 The structure of the report is as follows:

Section 1: **Introduction -** purpose and structure of the report.

Section 2: **Contract Information** - summarises background and scope of the Contract, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting month.

Section 3: **Environmental Monitoring and Audit Requirements -** summarises the monitoring parameters, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, site audit summary and environmental mitigation measures.

Section 4: **Environmental Monitoring Results -** summarises the environmental monitoring results in terms of air quality, noise, water quality, dolphin and waste management.

Section 5: **Environmental Non-conformance -** summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting period.

Section 6: **Conclusions and Recommendation**

2 CONTRACT INFORMATION

Background

2.1 The proposed Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (HKLR) is 12km long connecting the Hong Kong-Zhuhai-Macao Bridge (HZMB) at the HKSAR Boundary with the Hong Kong Boundary Crossing Facilities (HKBCF) situated at the north eastern waters of the Hong Kong International Airport, opening a new and direct connection route between Hong Kong, Macao and the Western Pearl River Delta.

2.2 The HKLR comprises a 9.4km long viaduct section from the HKSAR boundary to Scenic Hill on the Airport Island; a 1km tunnel section to the reclamation formed along the east coast of the Airport Island and a 1.6km long at-grade road section on the reclamation connecting to the HKBCF. The tunnel section of HKLR will pass under Scenic Hill, Airport Road and Airport Railway to minimize the environmental and visual impacts to Tung Chung residents.

2.3 An application (No ESB-110/2003) for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by Highways Department (the Project Proponent) on 8 October 2003 with a Project Profile (No. No. PP-201/2003) for the Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection. The Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection has subsequently been renamed as HKLR. EPD issued an EIA Study Brief (No: ESB-110/2003) in November 2003 to the Project Proponent to carry out an EIA study.

2.4 An EIA Study (Reg. No. AEIAR-144/2009) has been undertaken to provide information on nature and extent of environmental impacts arising from the construction and operation of HKLR. The Environmental Permit was issued on 4 November 2009 (Permit No. EP-352/2009). Pursuant to Section 13 of the EIAO, the Director of Environmental Protection amends the Environmental Permit (No. EP-352/2009) based on the Application No. VEP-339/2011 and the environmental Permit (Permit No. EP-352/2009/A) was issued on 9 November 2011 for HKLR to the Highways Department as the Permit Holder. Subsequently, the Director of Environmental Protection amends the Environmental Permits (No. EP-352/2009/A, EP-352/2009/B, EP-352/2009/C) based on the Application No. VEP-409/2013, VEP-411/2013 and VEP-459/2014 respectively. The environmental Permit (Permit No. EP-352/2009/D) was then issued on 22 December 2014.

2.5 **Figure 1a-d** shows the layout of the Contract and the scope of the Contract works comprises the following major items:

- a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;
- a grade-separated turnaround facility located near San Shek Wan, composed of sliproads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;

- provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and
- associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and reprovisioning works of affected existing facilities/utilities.

Contract Organisation

2.6 Different parties with different levels of involvement in the Contract organization include:

- Supervising Officer's Representative (SOR) – Ove Arup & Partners Hong Kong Limited (ARUP)
- Contractor –Dragages -China Harbour-VSL JV (DCVJV)
- Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)

2.7 The proposed project organization and lines of communication with respect to the on-site environmental management structure are shown in **Figure 2**. The key personnel contact names and numbers are summarized in **Table 2.1.**

Table 2.1 Key Contacts of the Contract

Party	Position	Name	Phone No.	Fax No.
SOR (ARUP)	CRE	Mr. Michael Chan	3767 5803	3767 5922
		Mr. Colin Meadows	3767 5801	
ENPO/IEC (Environ)	Environmental Project Office Leader	Mr. Y. H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Mr. Antony Wong	3465 2888	3465 2899
Contractor (DCVJV)	Deputy Project Director	Mr. W.K Poon	3121 6638	3121 6688
	Environmental Officer	Mr. CHU Chung Sing	3121 6672	
	24-hour Hotline	--	6898 6161	--
ET (Cinotech)	*Environmental Team Leader	Dr. H.F Chan	2151 2088	3107 1388
		Dr. Priscilla Choy	2151 2089	

Remark: * A notification letter was issued to EPD by SOR on 11 February 2015 regarding the change of Environmental Team Leader (ETL) under Contract No. HY/2011/09 from Dr. H.F Chan to Dr. Priscilla Choy is effective starting from 16 February 2015.

2.8 ENVIRON Hong Kong Ltd. (Environ) is employed by the Highways Department as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Project.

Construction Programme

2.9 A copy of Contractor's construction programme is provided in **Appendix A**.

Summary of Construction Works Undertaken During Reporting Period

2.10 The major site activities undertaken in the reporting period included:

December 2014:

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

(a) Pile construction is in progress at P82 to P83 and 3 piles were concreted in this reporting period.

(b) Total 147 pours for column were completed with 8 pours in this reporting period; 54 columns were completed to top level (26 gridlines – P88, P90 to P114.

(c) Pilecap P84L and P84R was completed.

(d) Pre-bored for sheet pile for cofferdam construction at P81R & L in progress.

(e) Sewage diversion at P83 is in progress.

(f) P83L piling work is in progress.

(g) P82L piling work was completed.

(h) Portal P107 dismantling of falsework and steel girder system was completed on 15 December 2014.

(i) Portal P106 falsework dismantling is in progress.

(j) Portal P95 erection of steel cross beams and planking at P95R is in progress.

(k) Portal P108 dismantling of falsework and steel bracket system was completed.

(l) Portal P114 installation of temporary supports and temporary jacks are in progress.

(m) Portal P102 was concreted on 29 November 2014 and removal of falsework is in progress.

(n) Portal P101 was cast on 9 December 2014 and removal of formwork is in progress.

(o) Portal P97 was concreted on 17 December 2014 and removal of side formwork was in progress.

(p) Portal P98 erection of side formwork is in progress.

(q) Portal P100 steel fixing is in progress.

(r) Portal P99 erection formwork is in progress.

(s) Portal P96 erection of falsework and planking are in progress.

Marine Viaduct (P0 to P80)

RCD Method:

(a) Construction works at P68 and P69 may be resumed on 23 December 2014.

(b) Remobilization for P75's works started on 25 September 2014. Excavation by backhoe on flat top barge is on-going and steel boxes are under construction at WA7.

(c) Piling jackets were installed at D18 & P8.

(d) Piling jackets were dismantled at D17 & D20.

(e) Pile excavations and casing installation are in progress at P5, P10 & D18 with 6 nos. piles concreted in the reporting period.

(f) Inter-face coring tests were carried out at P15, P23, P24 & P80.

(g) Full depth coring test was carried at P24.

(h) Sonic tests were carried out at P15, P23, P55 & P80.

(i) Grouting works were carried out at P23, P24, P25 & P31.

Kelly Method:

(j) Piling platform removal and temporary pile extraction were carried out at P3, P4, P21 & P31.

(k) Pile excavation by Kelly method are in progress at P2, & P7 and 4 piles concreted in the reporting period.

(l) All friction piles by Kelly Method were completed.

(m) All inter-face core tests were completed.

(n) Full depth coring was carried out at P12-R3.

(o) Sonic tests were carried out at P1, P2, P7 & P12.

(p) Toe grouting works were carried out at P1, P2, P3 & P7.

Disposal from Marine Works

(a) The disposals in this reporting period are shown in below table.

Disposal Location	No of Trip	Type of Materials
TM38	2	Inert Materials
TMCLK	0	Inert Materials
HK Open Sea Mud Pits	3	Type II Materials
Cross Boundary Disposal	4	Marine Mud

Pilecap Construction:

(a) 10 precast cap shells were installed P14, P16, P30, P32 & P59.

(b) Stage 1 concreting was completed at P27, P28, P30, P32 & P59.

(c) Stage 1 works is in progress at P14, P16, P27, P28, P30, P32 & P52.

(d) Stage 2 concreting was completed at P27, P28, P29, P67.

(e) Stage 2 works is in progress at P27, P28, P29, P32, P67.

(f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P14, P16, P21, P30, P31 & P53.

(g) Concrete trimming and advanced trimming (inside casing) works were carried out at P16, P21, P24, P25, P27, P28, P31, P53, P58 & P59.

(h) Submerged pilecap works with cofferdam:

Pier Location	Side	Progress
P70	L	Formwork installation for pile cap is in progress;
	R	Formwork installation for pile cap completed; Re-bar steel fixing is in progress.
P71	L	Concreting works of pile cap completed on 6-Oct-14
	R	Concreting works of pile cap completed on 18-Dec-14
P72	L	Concrete plug was casted on 24-Dec-14; Curing is in progress.
	R	Installation of 3rd layer of waling & strut completed; Dewatering to the bottom of cofferdam is in progress.
P73	L	Concreting works of pile cap completed on 4-Dec-14
	R	Formwork installation for pile cap completed; Re-bar steel fixing is in progress.
P74	L	Excavation works in progress
	R	Excavation works in progress
P76	L	Installation of 1st & 2nd waling & strut completed; Installation of 3rd waling & strut is in progress.
	R	Installation of 1st & 2nd waling & strut completed; Excavation works to be started.
P77	L	Installation of 1st & 2nd waling & strut completed; Excavation works is in progress.
	R	Installation of 1st & 2nd waling & strut completed; Installation of 3rd waling & strut to be started.
P78	L	Installation of 3rd waling & strut completed; Cleaning & drainage works is in progress.
	R	Concrete plug was casted on 17-Dec-14; Installation of 3rd waling & strut to be started.

In-situ Column Construction

(a) 1st lift works is in progress at P33, P34, P50, P61, P63 & P64.
(b) 1st lift concrete was poured at P33, P34, P50 & P64.

(c) 2nd lift works is in progress : P50.
(d) 2nd lift concreting was poured: N/A.
(e) Pier head works is in progress at: P49, P51, P60, P65 & P66.
(f) Pier head concreting in progress at P49, P60 & P66.

Precast Column Erection

(g) P37 and P38 – base units installed.
(h) P39 to P41 – all units installed.
(i) P43 to P44 – all units installed.

In-situ Double Blade Column Construction

Pier Location	Side	Progress
P19	L	1st lift works in progress
	R	1st lift works in progress
P20	L	completed 3rd lift and 4th lift works in progress
	R	completed 2nd lift and 3rd lift works in progress
P71	L	completed 1st lift and 2nd lift works in progress
	R	Column works to be started by end of December

Marine Portal

(a) Portal construction at P52 commence on 11 Dec 2014. Temporary barrier piles were driven at the location for safety measures.

Deck Erection

(a) Setting up of Equipment:

Type of Equipment	Status
Segment Unloading Frame (SUF)	Fully operational
Lifting Frames 1 (LF1)	Assembly of the first set of LF1 is on-going at WA4 but is still hampered by lack of available area; Steelwork for the 4th set of Lifting Frames is under fabrication with some deliveries commenced;
Lifting Frames 2 (LF2)	LF2 at P109-P110 L & R have now been removed and preliminary works are underway in preparation to erect P109 span by crane.
Launching Gantry 1 (LG1)	LG1 assembly continues at Portion C with all components on site; LCB's and all main truss elements erected (with the exception of the link trusses).
Launching Gantry 2 (LG2)	Assembly of truss has commenced with main elements lifted on to pile-caps at P47/P46. Further erection will be continued after completion of in-situ SOP works.

- A total of 22 segments have been erected to date with P45 SOP and one of P46 segments delivered to site and off-loaded into temporary storage on a "flat-top" barge during this reporting period.

Precast Segment

(a) Progress for mould assembly:

Type of Segment	Number of Mould	Status
A	10	Completed (including 2 nos. SPO)
B	1	Completed
D	2	Completed
E	4	Completed
CH1	2	Completed
CH2	2	Completed
CH3	2	Completed
CH4	2	Completed
CH5	2	Completed
CP (long span SOP)	4	Completed (2 x CPA and 2 x CPB)
DT	1	Completed
E/EV	2	Completed

(b) Segment Casting and Delivery

Item	Number in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
Segment Cast	215	1601
Segment Delivered	4	80

(c) Off-site Storage:

Area	No. in Off-site Storage
A1	134
A2	240

Precast Concrete Shell Casting

(a) Summary of precast shell cast in the precast yard:

Type of Shell	Number of Precast Shell Cast in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
CP1	5	61
CP2	Completed	12
CP3	2	4
CP4	Completed	8
CP5	2	6
CP6	2	2

Precast Column & Precast Pier Head Casting

(a) Progress of the precast column & precast pier head casting:

- All the 5 moulds are in service for precast production;

- Totally 21 precast elements (14 piers with 6m high, 4 monolithic pier heads and 3 pier heads supporting bearings) were cast in this reporting period.
- Cumulatively 93 precast elements have been produced.

(b) Delivery Progress:

Item	No. of units delivered in this reporting period	Cumulative No
Segment Delivered	12 (3 trips)	32 (8 trips)

January 2015:

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

(a) Pile construction is in progress at P83 and 2 piles were concreted in this reporting period.

(b) Total 158 pours for column were completed with 11 pours in this reporting period; 57 columns were completed to top level (28 gridlines - P87 to P114).

(c) Backfilling of P84L and P84R are in progress.

(d) Pre-bored for sheet pile for cofferdam construction at P81R & L is in progress.

(e) Sewage diversion at P83 was completed and P82 is in progress.

(f) P83L piling work is in progress.

(g) P83R pile cap excavation work is in progress.

(h) Portal P107 dismantling of falsework and steel girder system was completed on 18 December 2014.

(i) Portal P106 steel girder system dismantling was completed on 11 January 2015.

(j) Portal P95 erection of falsework, formwork at P95R, erection of Megashor tower and cross beams at P95L are in progress.

(k) Portal P96 steel fixing is in progress.

(l) Portal P97 dismantling of steel brackets system is in progress.

(m) Portal P114 installation of temporary supports and temporary jacks were completed on 24 January 2015. Installation of formwork for grouting bearing lower anchors is in progress. Removal of remaining falsework is scheduled to start on 28 January 2015.

(n) Portal P102 removal of steel bracket system was completed on 27 January 2015.

(o) Portal P101 was cast on 9 December 2014 and removal of steel bracket system is in progress.

(p) Portal P98 was concreted on 23 January 2015.

(q) Portal P100 was concreted on 3 January 2015 and dismantling of falsework is in progress.

(r) Portal P99 steel fixing is in progress.

(s) Portal P94 erection of steel cross beams and planking are in progress.

(t) Portal P93 erection of steel bracket system is in progress; and

(u) Construction of drainage work near P115 Abutment is in progress.

Marine Viaduct (P0 to P80)

RCD Method:

(a) Piling jackets were installed at P6 & P26-L side.

(b) Piling jackets were dismantled at P8 & P9.

(c) Pile excavations and casing installation are in progress at P6 & D18 with 9nos. piles concreted in the reporting period.

(d) Inter-face coring tests were carried out at P11, P13 & P15.

(e) Full depth coring test was carried at P24.

(f) Sonic tests were carried out at P11, P13, P15, P22 & P56.

(g) Grouting works were carried out at P22, P55 & P80.

Kelly Method:

(h) Piling platform removal and temporary pile extraction were carried out at P1, P3 & P7.

(i) Full depth coring was carried out at P12-R3 and P7-L1.

(j) Sonic tests were carried out at P2; and

(k) Toe grouting works were carried out at P1, P2 & P7.

Disposal from Marine Works

(b) The disposals in this reporting period are shown in below table.

Disposal Location	No of Trip	Type of Materials
TM38	2	Inert Materials
TMCLK	0	Inert Materials
HK Open Sea Mud Pits	2	Types II Marine Mud
Cross Boundary Disposal	9	Type I Marine Mud

Pilecap Construction:

(a) 10 precast cap shells were installed P21, P24, P25, P31 & P53.

(b) Stage 1 concreting was completed at P14, P16, P21, P31 & P53.

(c) Stage 1 works is in progress at P24, P53 & P54.

(d) Stage 2 concreting was completed at P14, P16, P30 & P59.

(e) Stage 2 works is in progress at P16, P24 & P25.

(f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P2, P3, P24, P25 & P53.

(g) Concrete trimming and advanced trimming (inside casing) works were carried out at P22, P23, P54, P79 & P80.

(h) Submerged pilecap works with cofferdam:

Pier Location	Side	Progress
P70	L	Concreting works of pile cap completed on 13-Jan-15
	R	Concreting works of pile cap completed on 5-Jan-15
P71	L	Concreting works of pile cap completed on 6-Oct-14
	R	Concreting works of pile cap completed on 18-Dec-14
P72	L	Installation of 3rd layer of waling & strut completed; Dewatering to the bottom of cofferdam is in progress.
	R	Steel fixing for pile cap is in progress.
P73	L	Concreting works of pile cap completed on 4-Dec-14
	R	Concreting works of pile cap completed on 3-Jan-15
P74	L	Excavation works is in progress
	R	Excavation works is in progress
P76	L	Installation of 3rd waling & strut completed; Excavation works is in progress
	R	Installation of 1st & 2nd waling & strut completed; Excavation works is in progress.
P77	L	Concrete plug was casted on 20-Jan-15; Installation of 3rd waling & strut to be started.
	R	Installation of 3rd waling & strut completed; Excavation works is in progress
P78	L	Steel fixing for pile cap is in progress.

Pier Location	Side	Progress
	R	Trimming of pile head concrete completed; Installation of formworks for pile cap to be started.

In-situ Column Construction

(a) 1st lift works is in progress at P29, P32, P61, P62 & P63.
(b) 1st lift concrete was poured at P32, P61 & P63.
(c) 2nd lift works is in progress at P50.
(d) 2nd lift concreting was poured at P50.
(e) Pier head works is in progress at P51, P63, P64 & P65.
(f) Pier head concreting was poured at P51, P64 & P65.

Precast Column Erection

(g) P35 – base units installed.
(h) P36 – Base and first unit installed.
(i) P37 to P41 – all units installed.
(j) P43 to P44 – all units installed

In-situ Double Blade Column Construction

Pier Location	Side	Progress
P19	L	Completed 1st lift and 2nd lift in progress
	R	Completed 1st lift and 2nd lift in progress
P20	L	Completed 4th lift and 5th lift in progress
	R	Completed 4th lift and 5th lift in progress
P71	L	Completed 2nd lift and pier head in progress
	R	Completed 1st lift

Marine Portal

(a) Falsework of the portal at P52 is in progress and construction of portal at P60 was commenced.

Deck Erection

(a) Setting up of Equipment:

Type of Equipment	Status
Lifting Frames 1 (LF1)	Assembly of the first set of LF1 is on-going at WA4; Steelwork for the 4th set of Lifting Frames is under fabrication

Type of Equipment	Status
	with some deliveries commenced.
Lifting Frames 3 (LF3)	Fabrication of LF3 in China has commenced.
Launching Gantry 1 (LG1)	LG1 assembly has been completed, load test carried out and segment erection at P110 commenced.
Launching Gantry 2 (LG2)	Truss beams for LG2 have been erected at P46 and P47 ready for the main truss elements erection. One main truss is assembled on the P46 and P47 pile caps with the other main truss partially assembled on a barge.

- A cumulative total of 37 segments have been erected.

Precast Segment

(a) Segment Casting and Delivery

Item	Number in this reporting period	Cumulative No. of Precast Segment Completed (up to 28th of each month)
Segment Cast	176	1777
Segment Delivered	28	108

(b) Off-site Storage:

Area	No. in Off-site Storage
A1	134
A2	240

Precast Concrete Shell Casting

(a) Summary of precast shell cast in the precast yard:

Type of Shell	Number of Precast Shell Cast in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
CP1	6	68
CP2	Completed	12
CP3	2	6
CP4	Completed	8
CP5	Completed	6
CP6	1	3

Precast Column & Precast Pier Head Casting

(a) Progress of the precast column & precast pier head casting:

- All the 5 moulds are in service for precast production;
- Totally 26 precast elements (19 piers with 6m high, 4 monolithic pier heads and 3 pier heads supporting bearings) were cast in this reporting period.
- Cumulatively 127 precast elements have been produced.

(b) Delivery Progress:

Item	No. of units delivered in this reporting period	Cumulative No
Segment Delivered	16 (4 trips)	48 (12 trips)

February 2015:

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

(a) Pile construction is in progress at P83 and 2 piles were concreted in this reporting period.

(b) Total 161 pours for column were completed with 3 pours in this reporting period; 59 columns were completed to top level (28 gridlines - P87 to P114).

(c) Backfilling work and sheetpile removal work of P84L&R are completed.

(d) Pre-bored for sheet pile at P81R & L are completed, excavation work in progress.

(e) Sewage diversion at P82 is in progress.

(f) P83L piling work is in progress.

(g) P83R pile cap excavation work is in progress.

(h) Portal P95 erection of formwork completed, steel fixing is in progress.

(i) Portal P96 was concreted on 11 February 2015, removal of formwork is in progress.

(j) Portal P97 dismantling of steel brackets system was completed.

(k) Portal P114 Removal of remaining falsework resumed on 27 January 2015 and it was completed in early February 2015.

(l) Portal P101 removal of steel bracket system is in progress.

(m) Portal P98 was concreted on 23 January 2015, removal of soffit formwork & falsework is in progress.

(n) Portal P100 removal of falsework is in progress.

(o) Portal P99 was concreted on 4 February 2015, removal of formwork is in progress.

(p) Portal P94 erection of vertical formwork and wing slab scaffold are in progress.

(q) Portal P93 erection of soffit is in progress.

(r) Portal P92 foundation work for falsework was completed.

(s) Portal P88 erection of planking above steel bracket was completed, erection of falsework is in progress.

(t) Portal P87 backfilling temporary platform for steel bracket erection is in progress;

(u) Construction of drainage work near P115 Abutment is almost completed, except installation of manhole covers; and

(v) Excavation work and construction of temporary foundations for P114 segment temporary supports is in progress.

Marine Viaduct (P0 to P80)

RCD Method:

(a) Piling jackets were installed at D18-R2A side.

(b) Piling jackets were dismantled at P6 & P10.

(c) Pile excavations and casing installation are in progress at P26-L3A and D18-R2A with 9nos. piles concreted in the reporting period.

(d) Inter-face coring tests were carried out at P10, P11 & P13.

(e) No Full depth coring test was carried.

(f) Sonic tests were carried out at P5, P10 & P57.

(g) Grouting works were carried out at P13 & P15.

Kelly Method:

(h) Piling platform removal and temporary pile extraction were carried out at P2, P7 & P12.

(i) All pile testing and toe grout works were completed.

Disposal from Marine Works

(a) The disposals in this reporting period are shown in below table.

Disposal Location	No of Trip	Type of Materials
TM38	2	Inert Materials
TMCLK	0	Inert Materials
HK Open Sea Mud Pits	0	Types II Marine Mud
Cross Boundary Disposal	6	Type I Marine Mud

Pilecap Construction:

(a) 10 precast cap shells were installed P3, P4, P17, P22 & P23.

(b) Stage 1 concreting was completed at P2, P4, P24, P25 & P53R.

(c) Stage 1 works is in progress at P3, P4, P17, P24, P25 & P53R.

(d) Stage 2 concreting was completed at P21, P24, P31 & P53.

(e) Stage 2 works is in progress at P3, P25, P21, P24, P31 & P53.

(f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P1, P12, P22 & P23.

(g) Concrete trimming and advanced trimming (inside casing) works were carried out at P1, P7, P12, P15, P17, P22, P54, P79 & P80.

(h) Submerged pilecap works with cofferdam:

Pier Location	Side	Progress
P70	L	Concreting works of pile cap completed on 13-Jan-15
	R	Concreting works of pile cap completed on 5-Jan-15
P71	L	Concreting works of pile cap completed on 6-Oct-14
	R	Concreting works of pile cap completed on 18-Dec-14
P72	L	Trimming of pile head concrete completed; Installation of formworks for pile cap is in progress
	R	Concreting works of pile cap completed on 31-Jan-15
P73	L	Concreting works of pile cap completed on 4-Dec-14
	R	Concreting works of pile cap completed on 3-Jan-15
P74	L	Excavation works is in progress
	R	Excavation works is in progress
P76	L	Excavation works is in progress
	R	Excavation works is in progress
P77	L	Trimming of pile head concrete is in progress
	R	Concreting works of plug completed on 13-Feb-15; Dewatering to be started
P78	L	Concreting works of pile cap completed on 24-Jan-15

Pier Location	Side	Progress
	R	Concreting works of pile cap completed on 30-Jan-15

In-situ Column Construction

(a) 1st lift works is in progress at P28, P31, P59 & P70.
(b) 1st lift concrete was poured at P29, P30 & P62.
(c) Pier head works is in progress at P50, P61 & P62.
(d) Pier head concreting was poured at P63 & P64.

Precast Column Erection

(e) P33-34 – base units installed.
(f) P35 – Base and First unit installed.
(g) P36 - P38 – Pier Heads installed.
(h) P44 & P41 vertical nailing tendons stressed.

In-situ Double Blade Column Construction

Pier Location	Side	Progress
P19	L	Completed 2nd and 3rd lift
	R	Completed 2nd lift and 3rd lift in progress
P20	L	Completed 5th and 6th lift and 7th lift in progress
	R	Completed 5th lift and 6th lift in progress
P71	L	All cast with pier head
	R	Completed 1st lift and 2nd lift in progress
P73	L	Completed kicker and 1st lift in progress
	R	Completed kicker and 1st lift in progress

Marine Portal

(a) Falsework of the portal at P52 is in progress and construction of portal at P60 was resumed on 23 Feb 2015.

Deck Erection

(a) Setting up of Equipment:

Type of Equipment	Status
Lifting Frames 1 (LF1)	Assembly of the first set of LF1 is on-going at WA4; Steelwork for the 4th set of Lifting Frames is under fabrication with some deliveries commenced.
Lifting Frames 3 (LF3)	Fabrication of LF3 in China has commenced.
Launching Gantry 1 (LG1)	LG1 assembly has been completed, load test carried out and segment erection at P110 commenced.
Launching Gantry 2 (LG2)	Truss beams for LG2 have been erected at P46 and P47 ready for the main truss elements erection. One main truss is assembled on the P46 and P47 pile caps with the other main truss partially assembled on a barge.

- A cumulative total of 37 segments have been erected.

Precast Segment

(a) Segment Casting and Delivery

Item	Number in this reporting period	Cumulative No. of Precast Segment Completed (up to 28th of each month)
Segment Cast	176	1777
Segment Delivered	28	108

(b) Off-site Storage:

Area	No. in Off-site Storage
A1	134
A2	240

Precast Concrete Shell Casting

(a) Summary of precast shell cast in the precast yard:

Type of Shell	Number of Precast Shell Cast in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
CP1	6	74
CP2	Completed	12
CP3	1	7
CP4	Completed	8
CP5	Completed	6
CP6	0	3

Precast Column & Precast Pier Head Casting

(a) Progress of the precast column & precast pier head casting:

- All the 5 moulds are in service for precast production;
- Totally 10 precast elements (8 piers with 6m high and 2 monolithic pier heads) were cast in this reporting period.
- Cumulatively 137 precast elements have been produced.

(b) Delivery Progress:

Item	**No. of units delivered in this reporting period**	**Cumulative No**
Segment Delivered	8 (2 trips)	56 (14 trips)

Status of Environmental Licences, Notification and Permits

2.11 The valid environmental licenses and permits were attached in the Monthly EM&A Reports.

3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

3.1 The EM&A Manual designates locations for the ET to monitor environmental impacts in terms of air quality, noise, underwater noise, water quality and dolphin to the Contract. The monitoring locations are depicted in **Figures 3 to 6**. The details of monitoring requirements are presented in **Table 3.1**.

Table 3.1 Summary of Impact EM&A Requirements

Type of Monitoring	Parameter	Frequency	Location	Remarks
Air Quality	1-hr TSP	Three times / 6 days	AMS1 – Sha Lo Wan AMS4 – San Tau	While the highest dust impact was expected
	24-hr TSP	Once / 6 days		--
Noise	$L_{10(30\ min.)}$ dB(A) $L_{90(30\ min.)}$ dB(A) $L_{eq(30\ min.)}$ dB(A) (as six consecutive $L_{eq,\ 5min}$ readings)	Once per week	NMS1 – Sha Lo Wan NMS4 – San Tau	Daytime on normal weekdays (0700-1900 hrs)
Water Quality	• Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides (within ± 1.75 hour of the predicted time) during the construction period of the Contract	IS1, IS2, IS3 IS4, CS1, CS2, SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	• 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.
Dolphin	Line-transect Methods	Twice per month	West Lantau	--

3.2 The wind speed and wind direction were recorded by the installed Wind Anemometer set at AMS4. The location is shown in **Figure 3**.

Monitoring Methodology and Calibration Details

3.3 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly EM&A Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

3.4 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results (except the Action and Limit Levels for underwater noise monitoring). Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in **Table 3.2a-f**.

Table 3.2a Action and Limit Levels for 1-Hour TSP

Location	Action Level, μg/m^3	Limit Level, μg/m^3
AMS1	381	500
AMS4	352	

Table 3.2b Action and Limit Levels for 24-Hour TSP

Location	Action Level, μg/m^3	Limit Level, μg/m^3
AMS1	170	260
AMS4	171	

Table 3.2c Action and Limit Levels for Construction Noise

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

Noted: If works are to be carried during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Table 3.2d Action and Limit Levels for Water Quality

Parameter (unit)	Water Depth	Action Level	Limit Level
Dissolved Oxygen (mg/L) (surface, middle, bottom)	Surface and Middle	***5.0***	***4.2*** except 5 for FCZ
	Bottom	***4.7***	***3.6***
Turbidity (NTU)	Depth average	***27.5*** and 120% of upstream control station's turbidity at the same tide of the same day	***47.0*** and 130% of turbidity at the upstream control station at the same tide of same day
Suspended Solids (mg/L)	Depth average	***23.5*** and 120% of upstream control station's SS at the same tide of the same day	***34.4*** and 130% of SS at the upstream control station at the same tide of same day and 10mg/L for WSD Seawater Intakes

Note:
(1) Depth-averaged is calculated by taking the arithmetic means of reading of all three depths
(2) For DO, non-compliance of the water quality limit occurs when monitoring result is lower that the limit.
(3) For SS & turbidity non-compliance of the water quality limits occur when monitoring result is higher than the limits.
(4) All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
(5) The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

Table 3.2e Action and Limit Levels for Dolphin Line Transect Monitoring

	West Lantau
Action Level	STG < 60% of baseline & ANI <60% of baseline
Limit Level	STG < 45% of baseline & ANI <45% of baseline

Derived Value of Action Level (AL) and Limit Level (LL):

	West Lantau
Action Level	STG < 9.8 & ANI <36.3
Limit Level	STG < 7.4 & ANI <27.2

Remarks:
1. STG means quarterly encounter rate of number of dolphin sightings
2. ANI means quarterly encounter rate of total number of dolphins
3. Baseline value: 16.4 for ER (STG) and 60.5 for ER (ANI)

Event and Action Plan

3.5 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix G** shall be carried out.

Implementation Status of Environmental Mitigation Measures

3.6 Relevant mitigation measures as recommended in the EIA report have been stipulated in the EM&A Manual for the Contractor to implement. The implementation status of environmental mitigation measures (EMIS) is given in **Appendix H**.

3.7 Regular marine travel route for marine vessels were implemented properly in accordance with the submitted plan and relevant records were kept properly.

3.8 Acoustic decoupling measures for the stationary equipment (generators, winch generators and air compressors) mounted on boards were adopted according to EP Condition 3.7 and EM&A Manual, Section 10.2.18.

3.9 Dolphin exclusion zone and dolphin watching plan according to EM&A Manual, Section 10.2.12 and EP Condition 3.5 was implemented by DCVJV's trained dolphin watcher.

3.10 Spill kits and booms are ready on site for the event of accidental spillage of oil or other hazardous chemicals from construction activities including vessels operating for the Contract.

Site Audit Summary

3.11 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Contract site. The observations and recommendations made during the reporting period are summarized in **Appendix I**.

3.12 According to EP condition 4.7 and EM&A Manual, periodic monitoring (every three months) of construction works shall be conducted to ensure the avoidance of any impacts on Sha Lo Wan (West) Archaeological Site. Access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment is not allowed. One inspection to the Sha Lo Wan (West) Archaeological Site was conducted in the reporting period (30th December 2014). No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed. The photographic records of the inspection to the Sha Lo Wan (West) Archaeological Site are shown in the Monthly EM&A Reports**.**

Status of Waste Management

3.13 The amount of wastes generated by the activities of the Contract during the reporting month is shown in **Appendix J**.

4 ENVIRONMENTAL MONITORING RESULTS

Air Quality Monitoring Results

4.1 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in **Table 4.1 and 4.2** respectively. Graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices B and C** respectively.

Table 4.1 Summary Table of 1-hour TSP Monitoring Results during the Reporting Period

Month	Monitoring Station	Concentration (µg/m3)		Action Level, µg/m^3	Limit Level, µg/m^3
		Average	Range		
December 2014	AMS1	41	17 – 91	381	500
	AMS4	42	16 – 73	352	
January 2015	AMS1	60	20 – 143	381	
	AMS4	53	28 – 95	352	
February 2015	AMS1	50	23 – 72	381	
	AMS4	52	23 – 100	352	

Table 4.2 Summary Table of 24-hour TSP Monitoring Results during the Reporting Period

Month	Monitoring Station	Concentration (µg/m3)		Action Level, µg/m^3	Limit Level, µg/m^3
		Average	Range		
December 2014	AMS1	87	37 – 128	170	260
	AMS4	76	15 – 116	171	
January 2015	AMS1	119	52 – *365	170	
	AMS4	72	48 – 113	171	
February 2015	AMS1	104	37 – 244	170	
	AMS4	92	41 – 158	171	

* 24-hr TSP monitoring result at AMS1 on 30 January 2015 is considered invalid due to the filter paper was contaminated by mold

4.2 According to our field observations, the major dust source identified at the designated air quality monitoring stations in the reporting period are as follows:

Table 4.3 Observation at Dust Monitoring Stations

Monitoring Station	Major Dust Source
AMS1	Exhaust from marine traffic
AMS4	N/A

4.3 The wind data monitoring results were attached in the Monthly EM&A Reports

Noise Monitoring Results

4.4 The noise monitoring results are summarized in **Table 4.4**. Graphical presentations of noise monitoring are shown in **Appendix D**.

Table 4.4 Summary Table of Noise Monitoring Results during the Reporting Period

Month	Monitoring Station	Noise Level, $L_{eq\ (30min)}$ dB(A)		Limit Level
		Average	Range	
December 2014	NMS1	71	68 - 73	75 dB(A)
	NMS4	62	57 – 64	
January 2015	NMS1	71	68 - 73	
	NMS4	62	60 – 64	
February 2015	NMS1	71	71	
	NMS4	62	61 – 62	

Remark: +3dB(A) Façade correction included

4.5 According to our field observations, the major noise source identified at the designated noise monitoring stations in the reporting period are as follows:

Table 4.5 Observation at Noise Monitoring Stations

Monitoring Station	Major Noise Source
NMS1	Air traffic & marine traffic noise
NMS4	Air traffic & marine traffic noise

Water Quality Monitoring Results

4.6 The graphical presentation of water quality at the monitoring stations is shown in **Appendix E**.

4.7 Water quality impact sources during the water quality monitoring were the construction activities of the Contract, nearby construction activities by other parties and near by operating vessels by other parties.

Dolphin Monitoring (Line-transect Vessel Survey)

Summary of survey effort and dolphin sightings

4.8 During the period of December 2014 to February 2015, six sets of systematic line-transect vessel surveys were conducted to cover all transect lines in WL survey area twice per month.

4.9 From these surveys, a total of 198.00 km of survey effort was collected, with 86.8% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). The total survey effort conducted

on primary lines was 128.90 km, while the effort on secondary lines was 67.08km. Survey effort conducted on primary and secondary lines were both considered as on-effort survey data. Summary table of the survey effort is shown in **Appendix I of Appendix F**.

4.10 During the six sets of monitoring surveys in December 2014 to February 2015, a total of 29 groups of 135 Chinese White Dolphins were sighted. All except three sightings were made during on-effort search. Seventeen on-effort sightings were made on primary lines, while the other on-effort sightings were made on secondary lines. Summary table of the dolphin sightings is shown in **Appendix II of Appendix F**.

Distribution

4.11 Distribution of dolphin sightings made during monitoring surveys in December 2014 to February 2015 is shown in **Figure 1 of Appendix F**. The dolphin groups were evenly distributed throughout the WL survey area, with no particular concentration of sightings (**Figure 1 of Appendix F**). However, it appeared that more dolphins occurred in the central portion of the survey area between Tai O Peninsula and Kai Kung Shan, while they occurred less frequently at the northern and southern end of the survey area.

4.12 Sighting distribution of dolphins in the present quarter was similar to the one during the baseline period, with some apparent differences. There appeared to be fewer dolphins sighted to the north of Tai O Peninsula and Fan Lau during the present monitoring quarter when compared to the dolphin distribution record in the baseline period.

4.13 Only one of the 29 dolphin groups was sighted near the HKLR09 alignment in WL survey area during the present quarter (**Figure 1 of Appendix F**).

Encounter rate

4.14 During the three-month impact phase monitoring period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) from West Lantau survey area are shown in **Table 4.6**. The average encounter rates deduced from the six sets of surveys from December 2014 to February 2015 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (**Table 4.7**).

Table 4.6 Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (December 2014 – February 2015)

Survey Area	Dolphin Monitoring	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
West Lantau	Set 1 (December 3rd)	13.8	110.3
	Set 2 (December 10th)	0.0	0.0
	Set 3 (January 9th)	16.6	41.6
	Set 4 (January 23rd)	17.2	46.0
	Set 5 (February 3rd)	9.6	72.3
	Set 6 (February 10th)	19.7	74.0

Table 4.7 Comparison of average dolphin encounter rates from impact monitoring period (December 2014 – February 2015) and baseline monitoring period (September-November 2011)

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	December 2014 - February 2015	September-November 2011	December 2014 - February 2015	September-November 2011
West Lantau	12.84 ± 7.17	16.43 ± 7.70	57.36 ± 37.35	60.50 ± 38.47

4.15 The encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 12.6 sightings and 57.7 dolphins per 100 km of survey effort respectively during the present quarter.

4.16 A one-way ANOVA was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. For the comparison between the baseline period and the present quarter (i.e. eighth quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.423 and 0.889 respectively. Therefore, no significant difference in dolphin encounter rate was detected between the baseline period and the present quarter.

4.17 Another comparison was made between the baseline period and the cumulative quarters in the impact phase (i.e. first eight quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.974 and 0.935

respectively. As a result, no significant difference was found in the dolphin encounter rates between the baseline period and the cumulative quarters in the impact phase.

Group size

4.18 Group size of Chinese White Dolphins ranged from 1-14 individuals per group in WL survey area between December 2014 and February 2015. The average dolphin group sizes from these three months were compared with the one deduced from the baseline period in September to November 2011, as shown in **Table 4.8**. The average dolphin group size in the WL region during the present quarter was higher than the one recorded in the three-month baseline period (**Table 4.8**). About half of the dolphin groups were composed of 1-3 dolphins, but there were also eleven groups with more than 5 animals per group, and four groups with over 10 animals.

Table 4.8 Comparison of average dolphin group sizes from impact monitoring period (December 2014 – February 2015) and baseline monitoring period (September-November 2011)

	Average Dolphin Group Size	
	December 2014 – February 2015	**September to November 2014**
West Lantau	4.66 ± 3.78 (n = 29)	3.63 ± 2.97 (n = 46)

4.19 Distribution of dolphins with the larger groups during December 2014 to February 2015 is shown **Figure 3 of Appendix F**. These groups were scattered from the bridge alignment to Fan Lau waters, with slightly higher concentration near Kai Kung Shan. This was slightly different from the baseline period, when the larger dolphin groups mostly occurred to the northwest of Tai O Peninsula (near the bridge alignment) as well as near Kai Kung Shan and Peaked Hill (**Figure 3 of Appendix F**).

Habitat use

4.20 From December 2014 to February 2015, the most heavily utilized habitats by the dolphins were mainly found near Tai O Peninsula, near Kai Kung Shan and near Fan Lau (**Figures 4a and 4b of Appendix F**). Conversely, their densities were much lower at the northern end of the survey area, especially near the bridge alignment. However, it should be cautioned that the amount of survey effort collected in each grid during the three-month period was fairly low (6 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern will be presented when more survey effort for each grid will be collected throughout the impact phase monitoring programme.

4.21 When compared with the habitat use pattern recorded during the baseline period, it appears that the overall dolphin densities were lower in West Lantau waters, especially the waters adjacent to Tai O Peninsula, and between Peaked Hill and Fan Lau during the present quarter (**Figure 5 of Appendix F**).

Mother-calf pairs

4.22 During the three-month impact phase monitoring period, a total of four unspotted calves (UC) and one unspotted juvenile (UJ) were sighted in WL survey area. The young calves comprised 3.7% of all animals sighted, which was only half of the percentage recorded during the baseline monitoring period (6.6%).

4.23 The infrequent occurrence of the five mother-calf pairs during three dolphin sightings were all located at the southern end of the survey area. This was in stark contrast to the baseline period when calf occurrence was more frequent and more concentrated near Tai O Peninsula at the northern portion of WL waters (**Figure 6 of Appendix F**).

Activities and associations with fishing boats

4.24 During the three-month impact monitoring period, four dolphin sightings were associated with feeding activities between Tai O Peninsula and Peaked Hill (**Figure 7 of Appendix F**), comprising 13.8% of the total number of dolphin sightings. This percentage was very similar to the percentage recorded during the baseline period (13.0%). Only one of the 29 sightings was associated with socializing activity just north of Peaked Hill (**Figure 7 of Appendix F**), while no dolphin group was engaged in traveling or milling/resting activity during the present quarter.

4.25 Notably, distribution of the feeding and socializing activities during the present impact phase monitoring period was largely similar to the one during the baseline period, with the main concentration of these activities occurred between Tai O and Peaked Hill during the baseline period as well (**Figure 7 of Appendix F**).

4.26 During the three-month monitoring period, one of the dolphin groups was associated with an operating purse-seiner.

Summary of photo-identification works

4.27 From December 2014 to February 2015, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

4.28 In total, 40 individuals sighted 56 times altogether were identified (see summary table in **Appendix III of Appendix F** and photographs of identified individuals in **Appendix IV of Appendix F**. The majority of identified individuals were sighted only once or twice during the three-month period, but three individuals (NL188, WL137 and WL215) were sighted 3-4 times.

4.29 Notably, two of these 40 individuals (i.e. NL259, NL285) were also sighted in North Lantau waters during the HKLR03 monitoring surveys in the same three-month period, showing their extensive movement across the HKLR09 bridge alignment. Moreover, some individuals that were consistently sighted in North Lantau waters in the past were identified in West Lantau waters (e.g. EL01, NL188, NL259, NL285).

4.30 During the three-month period, two recognizable females, NL188 and WL21, were

accompanied with their calves during their re-sightings.

Individual range use

4.31 Ranging patterns of the 40 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in **Appendix V of Appendix F**.

4.32 For those that primarily used West Lantau waters as their home ranges, most of their re-sightings were made at the middle or southern portion of their ranges during the present quarter, but seldom occurred near the HKLR09 alignment where they were frequently re-sighted in the past. It is possible that their range use in West Lantau waters have been somewhat affected by the HKLR09 construction activities with some moderate shift in range use. It will be crucial to examine whether such shifts are temporary or permanent in nature, which may have been as a result of disturbance from the HKLR09-related works.

Conclusion

4.33 During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations.

4.34 Nevertheless, the dolphin usage in WL region should be continuously monitored, to further examine whether it has been significantly affected by the on-going construction activities in relation to the HZMB works.

Additional Land-based Dolphin Behaviour and Movement Monitoring

4.35 Additional land-based dolphin behavior and movement monitoring were conducted in the reporting period. The progress of the monitoring is summarized in the **Table 4.9**.

Table 4.9 Progress Record of Additional Land-based Dolphin Behaviour and Movement Monitoring (December 2014 to February 2015)

Date	Time	Weather		Number of Staff	Number of Dolphin Sighting
		Beaufort	Visibility		
05/12/14	09:04 - 14:38	2	3	3	0
18/12/14	09:00 - 14:15	2	2.5	3	0
02/01/15	09:07 - 14:29	2	2.5-3	3	0
21/01/15	09:14 - 13:15	1-2	3-3.5	3	0
17/02/15	09:03 - 14:31	1	3.5-4	3	0
26/02/15	08:59 - 14:32	2-3	2	3	1

4.36 Detailed monitoring methodology and results will be provided in a separate report after the completion of full set of additional land-based dolphin behavior and movement monitoring.

Advice on the Solid and Liquid Waste Management Status

4.37 The Contractor was advised to minimize the wastes generated through the recycling or reusing. All mitigation measures stipulated in approved waste management plan shall be fully implemented.

4.38 The amount of wastes generated by the activities of the Contract during the reporting month is shown in **Appendix J**.

5 ENVIRONMENTAL NON-CONFORMANCE (EXCEEDANCES)

Summary of Exceedances

5.1 Summary of exceedance is provided in **Appendix K**. The details of the exceedances were attached in the Monthly EM&A Report.

Air Quality

5.2 For 1-hour TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.

5.3 For 24-hr TSP monitoring, no Limit Level exceedance was recorded. One Action Level exceedance was recorded at AMS1 on 11 February 2015.

5.4 According to the investigation, no dust generation works was conducted at near the monitoring station during the monitoring and observable dust source from construction activity under Contract No. HY/2011/09. In addition, high and very high Air Quality Health Index (AQHI) was recorded during the monitoring period according to EPD. Therefore, the exceedance is considered not due to the Contract.

Noise

5.5 No Action/Limit Level exceedance was recorded in the reporting period.

Water Quality

5.6 There are 10 Action Level exceedances and 6 Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance for turbidity were recorded in the reporting period.

5.7 According to the investigation, the exceedances are considered not due to the Contract due to the following reasons:

1) No pollution discharge was observed from the site;
2) Sediment plume which is considered due to the movement of vessel was observed but no direct evidence to show the vessel was belonged to HY/ 2011/09;
3) Dispersion of sediment plume to the monitoring stations from the area outside the site boundary (i.e. works area not under and related to HY/2011/09) was observed;
4) Adverse water quality outside the site boundary;
5) Sediment plume due to natural fluctuation of shallow water; and
6) Exceeded result was within the range of baseline monitoring results.

Dolphin Monitoring (Line-transect Vessel Survey)

5.8 No Action/Limit Level exceedance was recorded in the reporting period.

Summary of Environmental Complaint

5.9 Three environmental related complaints were received in the reporting period. The Complaint Log is attached in **Appendix L**. All investigation reports for complaint of the

Contract have been submitted to summarize the investigation results. The summary of environmental complaints is presented in **Table 5.1**.

Table 5.1 Summary of Environmental Complaints in the Reporting Period

Complaint Log Ref.	Location	Received Date	Nature of Complaint
Com-2014-12-001	Shores of Po Chue Tam and Shek Tsai Po, Tai O	7 December 2014	Waste Management
Com-2014-12-002	Site Office of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	2 December 2014	Noise
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	Waste Management

Summary of Notification of Summons and Successful Prosecution

5.10 There was one prosecution or notification of summons received since the Contract commencement. Summary of successful prosecution is attached in **Appendix M**.

6 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken in the period between December 2014 and February 2015 in accordance with EM&A Manual.

6.2 No Action/Limit Level exceedance was recorded for noise.

6.3 For 1-hour TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.

6.4 For 24-hr TSP monitoring, no Limit Level exceedance and one Action Level exceedance were recorded in the reporting period.

6.5 For water quality monitoring, there are 10 Action Level exceedances and 6 Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance was for turbidity were recorded in the reporting period.

6.6 According to the investigation, all exceedances are considered not due to the Contract.

6.7 During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations.

6.8 Environmental site inspection was conducted on 2nd, 9th, 16th, 23rd and 30th December 2014, 8th, 13th, 19th and 30th January 2015, 3rd, 10th, 18th and 24th February 2015 by ET in the reporting month. All deficiencies identified during the site inspection have already rectified / improved during the follow-up audit session.

6.9 The inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 30th December 2014. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed.

6.10 There were three environmental complaints, no notification of summons and successful prosecution received in the reporting period.

6.11 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

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

Air Quality Impact

- To regularly maintain the quality of machinery and vehicles on site.
- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.

- To provide hoarding along the entire length of that portion of the site boundary.

Noise Impact

- To inspect the noise sources inside the site.
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers, if necessary.

Water Impact

- To prevent any surface runoff discharge into any stream course and sea.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To avoid accumulation of stagnant and ponding water on site.

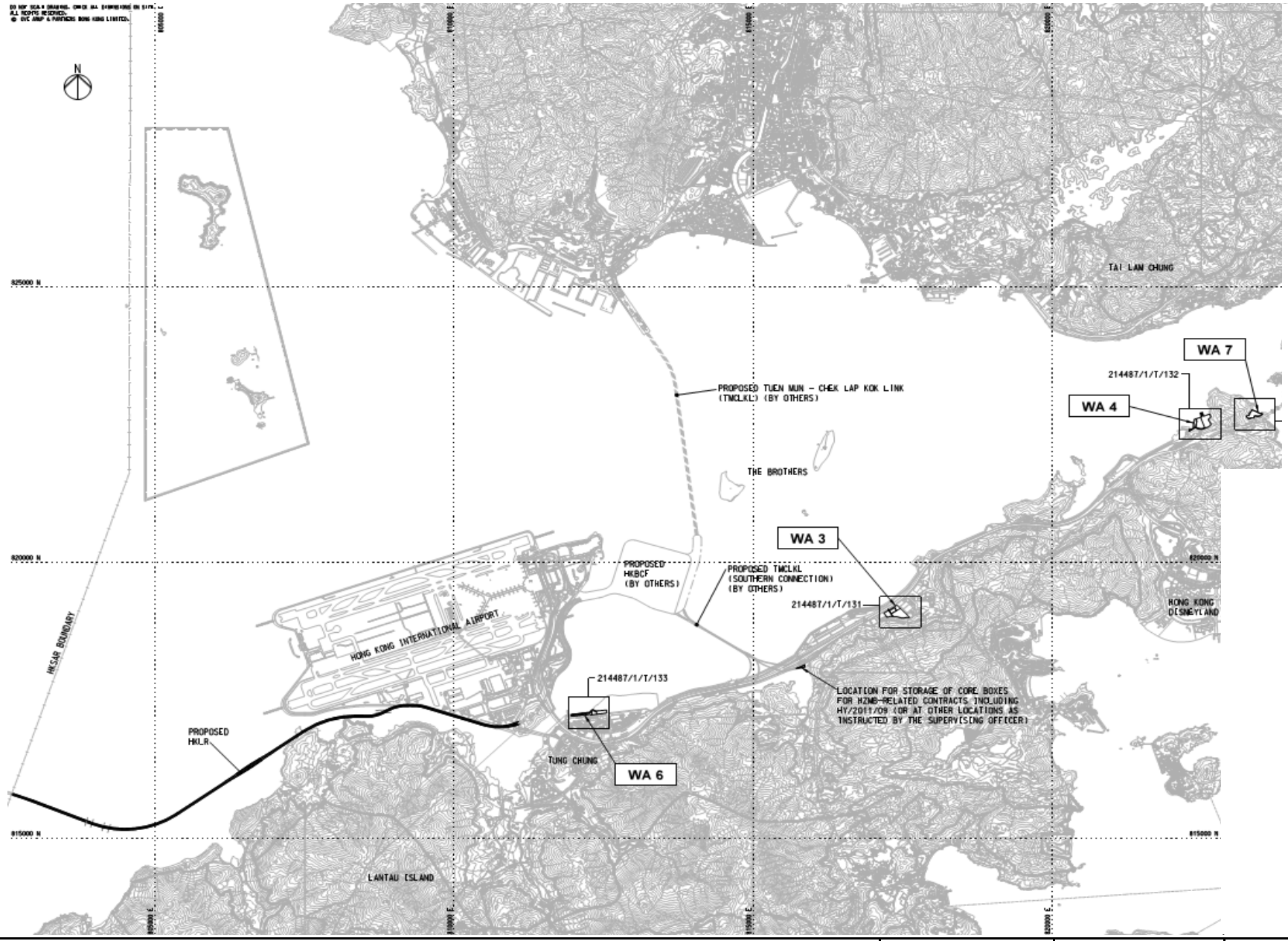
Ecology Impact

- To implement Spill Response Plan in the event of accidential spillage of or other hazardours chemicals.
- To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to the west of Airport.
- To implement Dolphin Watching Plan after the bored piling casing is installed.
- To ensure the acoustically-decoupled measures were implemented for air compressors and other noisy equipment mounted on construction vessels according to acoustic decoupling measures plan.

Waste/Chemical Management

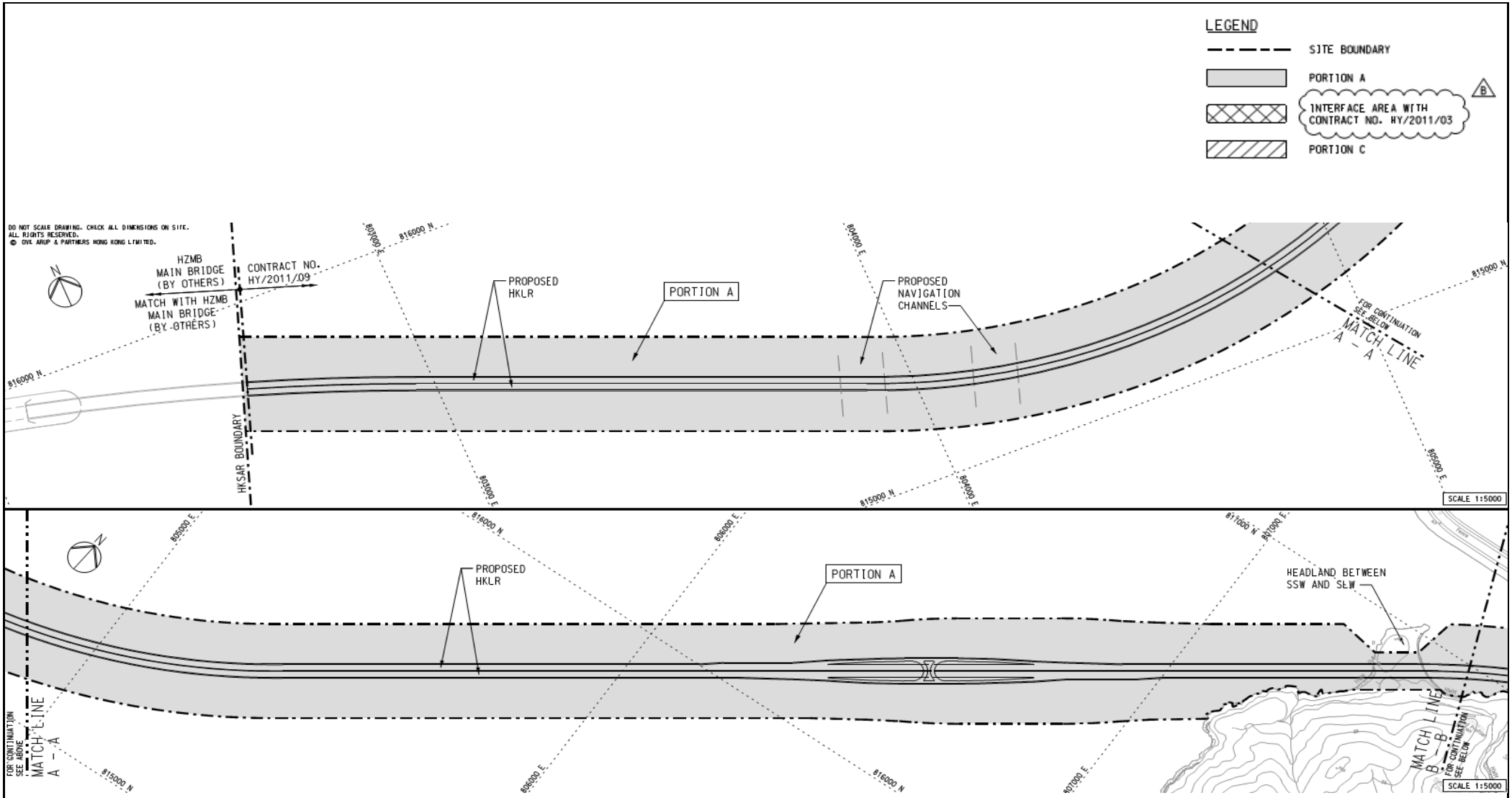
- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum on site.

FIGURE(S)



Title		Scale	Proposa
Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill		N.T.S	No. MA12014
Site Layout Plan (WA3, WA4, WA6 and WA7)		Date Feb-13	Figure 1a

CINOTECH



Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Portion A)	Scale: N.T.S Date: May-13	Proposa No.: MA12014 Figure: 1b

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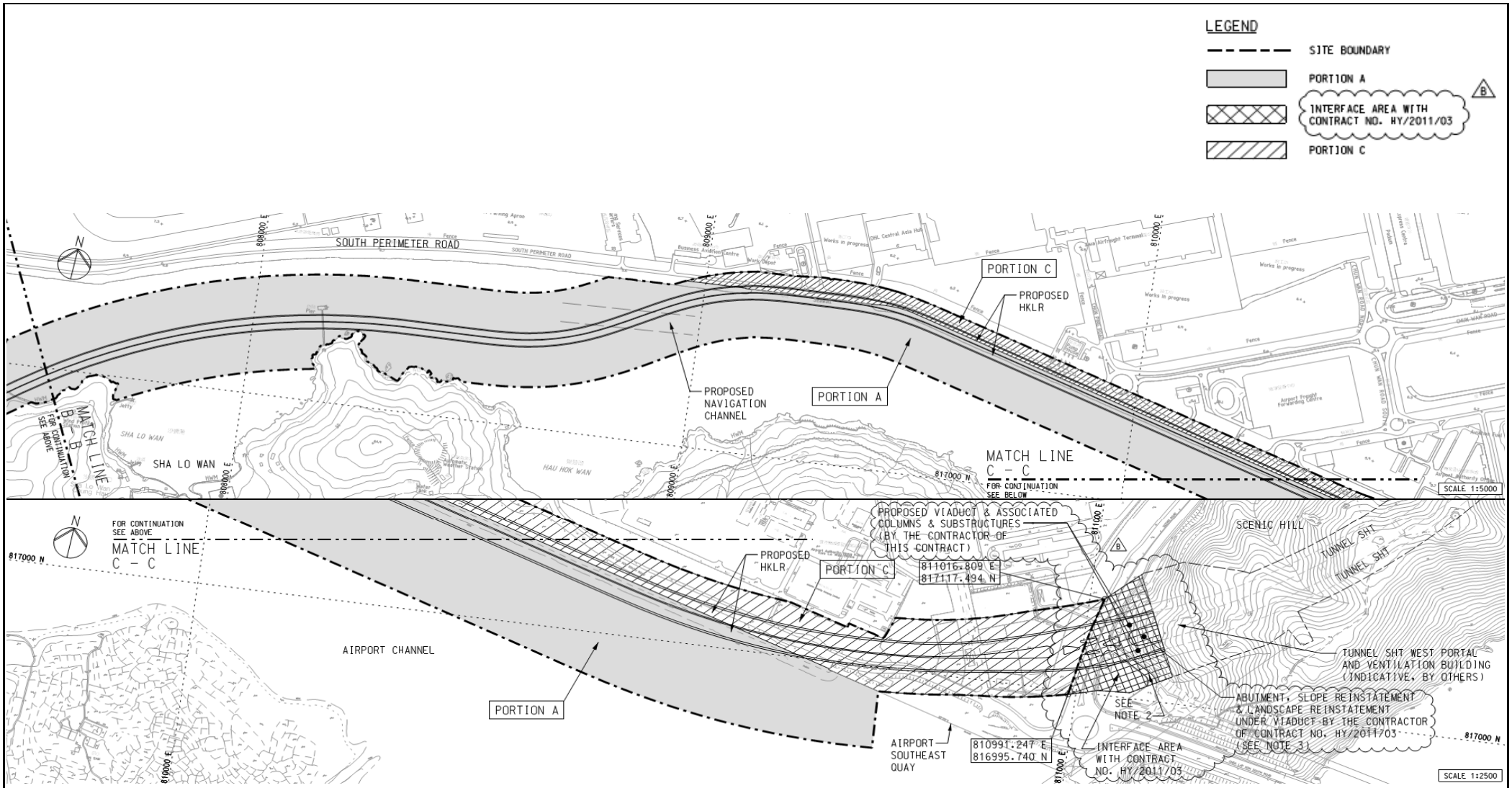

Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Portion A and C)	Scale N.T.S Date May-13	Proposa No. MA12014 Figure 1c

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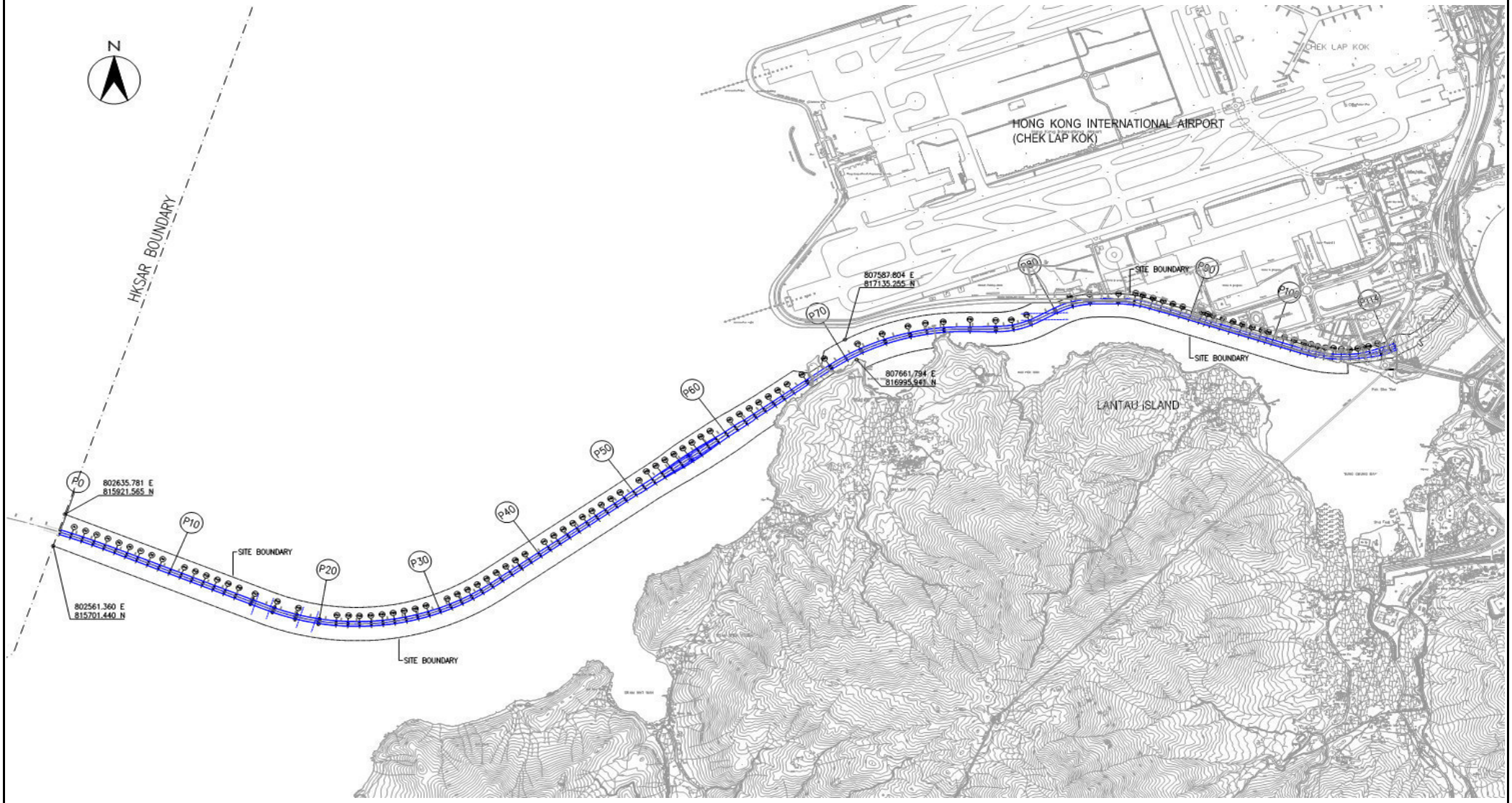
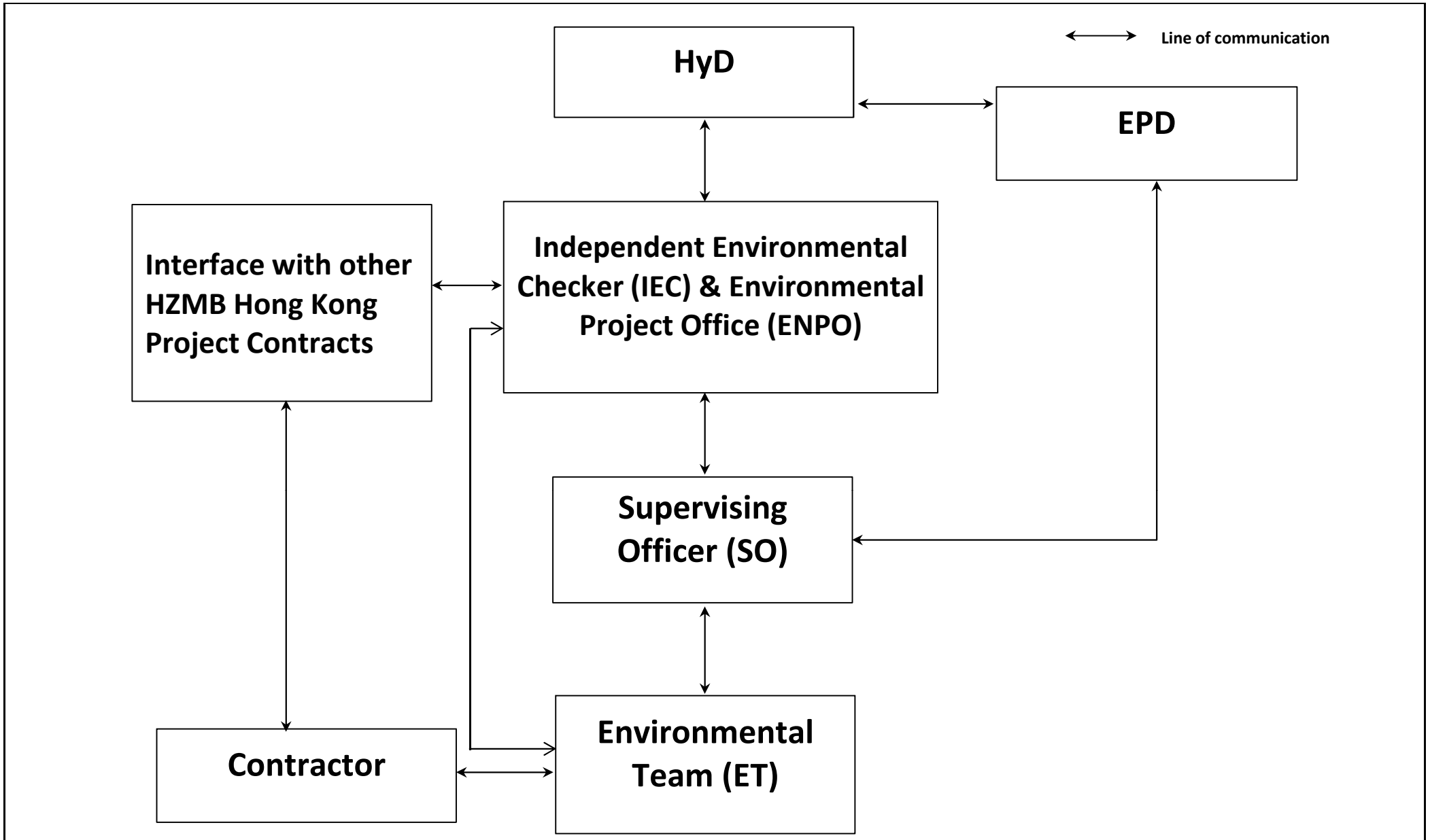
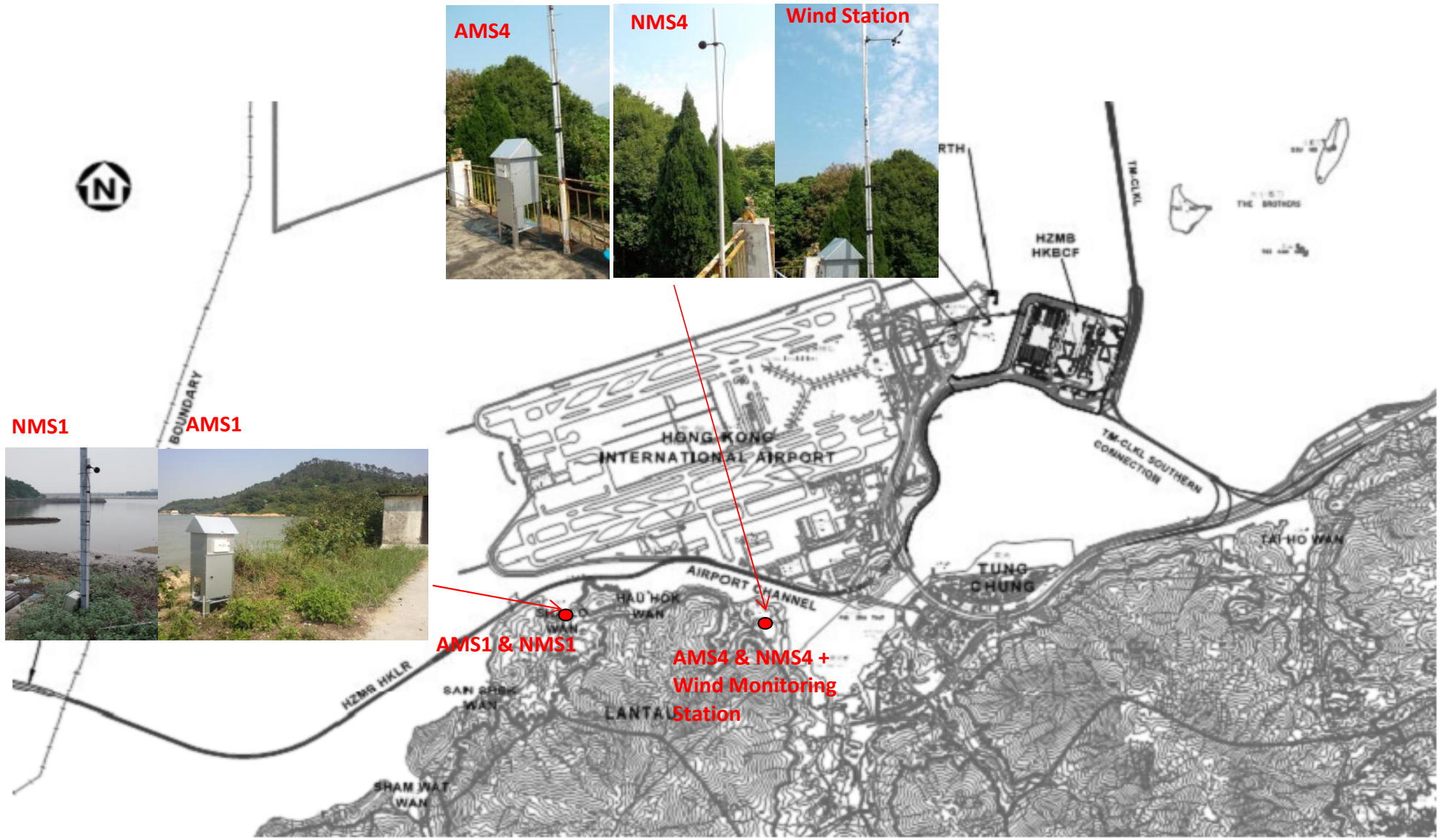


Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Pier(s) Site)	Scale: N.T.S Date: Feb-13	Proposa No. MA12014 Figure: 1d

CINOTECH



Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Project Organisation for Environmental Works	Scale N.T.S Date Feb-13	Proposa No. MA12014 Figure 2	CINOTECH



Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Locations of Air Quality and Noise Monitoring Stations	Scale: N.T.S Date: Feb-13	Proposal No.: MA12014 Figure: 3

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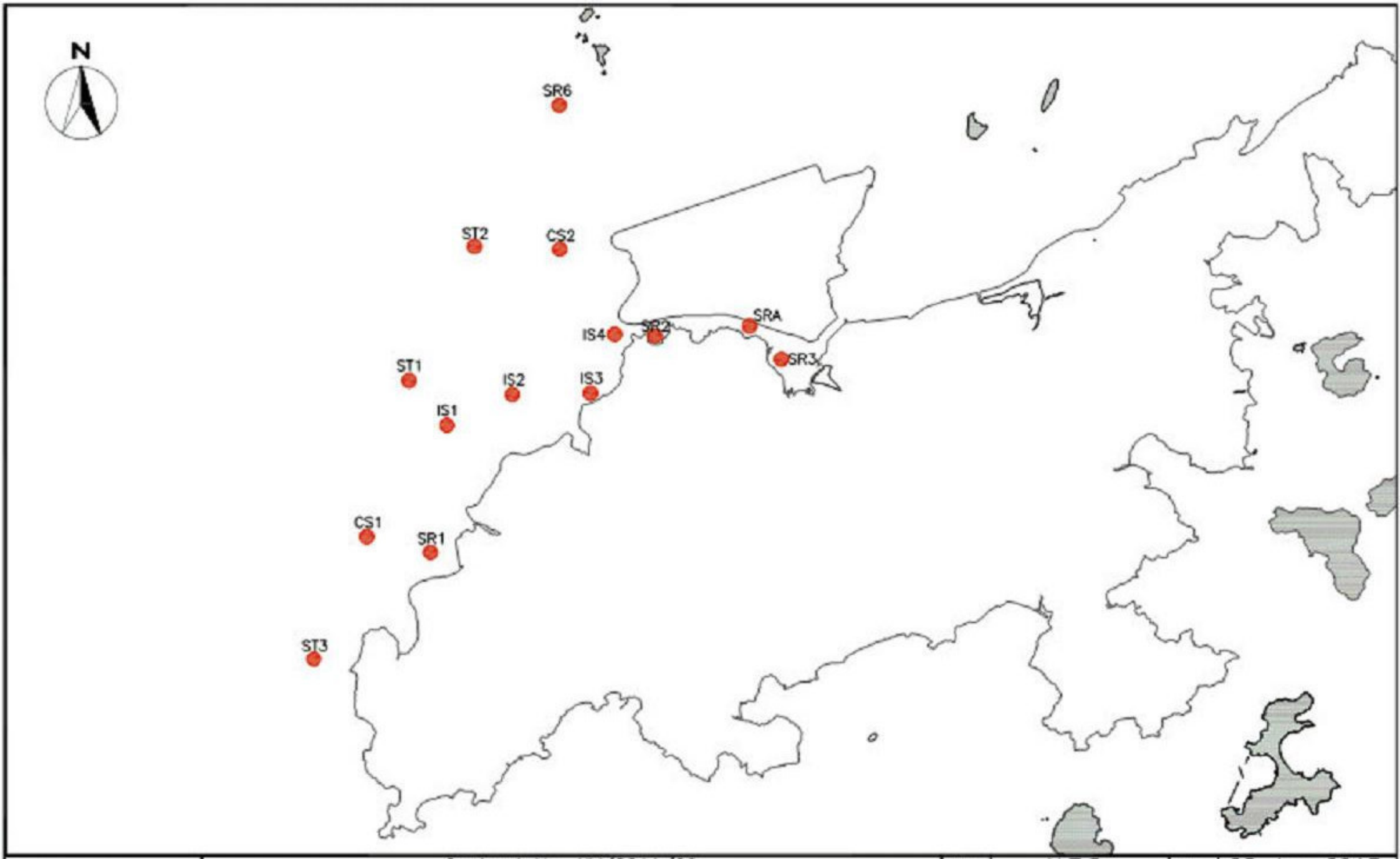


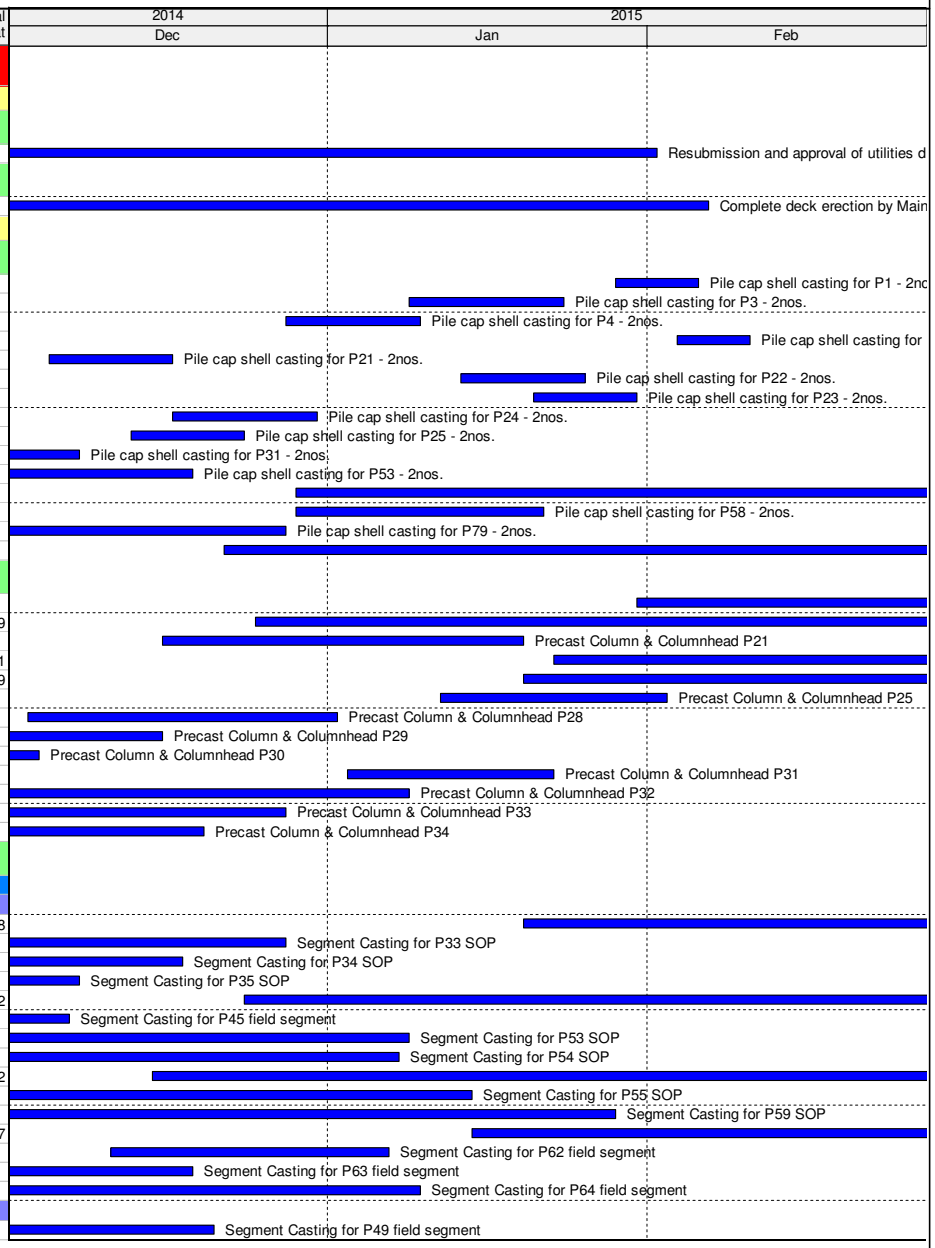
CINOTECH
Cinotech Consultants Limited

Contract No. HY/2011/09
Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road – Section Between HKSAR Boundary and Scenic Hill
Locations of Marine Water Quality Monitoring Stations

SCALE	N.T.S	DATE	28 Jan 2013
CHECK	PC	DRAWN	IT
PROJECT NO.	MA12014	FIGURE NO. 4	REV –

APPENDIX A
CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Original	emaining	Schedule %	Start	Finish	Total Float
HKZB Hong Kong Link Road - 3 Months Rolling Programme 1503 (Base							
Project General Submission							
Utilities Diversion Schedule							
PGS2255	Resubmission and approval of utilities diversion schedule	21	0	100%	4/4/14 A	2/2/15 A	
Interface Contract							
PGS1950	Complete deck erection by Mainland section at P0	243	0	35.39%	7/3/14 A	7/2/15 A	
Procurement and Fabrication							
Pile Cap Shell Casting							
PC1010	Pile cap shell casting for P1 - 2nos.	8	0	100%	29/1/15 A	6/2/15 A	
PC1030	Pile cap shell casting for P3 - 2nos.	8	0	100%	9/1/15 A	24/1/15 A	
PC1040	Pile cap shell casting for P4 - 2nos.	8	0	100%	28/12/14 A	10/1/15 A	
PC1120	Pile cap shell casting for P12 - 2nos.	8	0	0%	4/2/15 A	11/2/15 A	
PC1170	Pile cap shell casting for P21 - 2nos.	8	0	0%	5/12/14 A	17/12/14 A	
PC1180	Pile cap shell casting for P22 - 2nos.	8	0	100%	14/1/15 A	26/1/15 A	
PC1190	Pile cap shell casting for P23 - 2nos.	8	0	100%	21/1/15 A	31/1/15 A	
PC1200	Pile cap shell casting for P24 - 2nos.	8	0	100%	17/12/14 A	31/12/14 A	
PC1210	Pile cap shell casting for P25 - 2nos.	8	0	100%	13/12/14 A	24/12/14 A	
PC1270	Pile cap shell casting for P31 - 2nos.	8	0	0%	24/11/14 A	8/12/14 A	
PC1490	Pile cap shell casting for P53 - 2nos.	13	0	100%	23/11/14 A	19/12/14 A	
PC1500	Pile cap shell casting for P54 - 2nos.	13	0	100%	29/12/14 A	13/3/15 A	
PC1540	Pile cap shell casting for P58 - 2nos.	13	0	100%	29/12/14 A	22/1/15 A	
PC1680	Pile cap shell casting for P79 - 2nos.	30	0	100%	15/11/14 A	28/12/14 A	
PC1690	Pile cap shell casting for P80 - 2nos.	30	0	100%	22/12/14 A	24/3/15 A	
Column Casting							
PC1780	Precast Column & Columnhead P5	9	0	100%	31/1/15 A	12/3/15 A	
PC1890	Precast Column & Columnhead P16	25	2	0%	25/12/14 A	29/3/15	-309
PC1900	Precast Column & Columnhead P21	25	0	28%	16/12/14 A	20/1/15 A	
PC1910	Precast Column & Columnhead P22	25	20	100%	23/1/15 A	3/5/15	-291
PC1930	Precast Column & Columnhead P24	21	8	100%	20/1/15 A	9/4/15	-259
PC1940	Precast Column & Columnhead P25	21	0	100%	12/1/15 A	3/2/15 A	
PC1970	Precast Column & Columnhead P28	17	0	100%	3/12/14 A	2/1/15 A	
PC1980	Precast Column & Columnhead P29	17	0	0%	18/10/14 A	16/12/14 A	
PC1990	Precast Column & Columnhead P30	13	0	0%	12/10/14 A	4/12/14 A	
PC2000	Precast Column & Columnhead P31	13	0	100%	3/1/15 A	23/1/15 A	
PC2010	Precast Column & Columnhead P32	13	0	0%	24/11/14 A	9/1/15 A	
PC2020	Precast Column & Columnhead P33	13	0	0%	14/11/14 A	28/12/14 A	
PC2030	Precast Column & Columnhead P34	13	0	0%	7/11/14 A	20/12/14 A	
Segment Casting							
Type A, C, D Segment (Total 12 set Moulds)							
Type A Segment (Western Water Typical Span)							
SC_A1560	Segment Casting for P32 SOP	10	5	100%	20/1/15 A	3/4/15	-428
SC_A1580	Segment Casting for P33 SOP	8	0	0%	11/8/14 A	28/12/14 A	
SC_A1600	Segment Casting for P34 SOP	8	0	0%	13/10/14 A	18/12/14 A	
SC_A1620	Segment Casting for P35 SOP	8	0	0%	11/9/14 A	8/12/14 A	
SC_A1650	Segment Casting for P36 field segment	50	29	0%	24/12/14 A	25/4/15	-332
SC_A1830	Segment Casting for P45 field segment	40	0	0%	23/8/14 A	7/12/14 A	
SC_A1950	Segment Casting for P53 SOP	8	0	0%	27/10/14 A	9/1/15 A	
SC_A1970	Segment Casting for P54 SOP	8	0	0%	3/11/14 A	8/1/15 A	
SC_A1980	Segment Casting for P54 field segment	50	27	0%	15/12/14 A	23/4/15	-402
SC_A1990	Segment Casting for P55 SOP	8	0	0%	24/10/14 A	15/1/15 A	
SC_A2070	Segment Casting for P59 SOP	10	0	0%	19/11/14 A	29/1/15 A	
SC_A2080	Segment Casting for P59 field segment	38	36	0%	15/1/15 A	16/4/16	-347
SC_A2110	Segment Casting for P62 field segment	25	0	0%	11/12/14 A	7/1/15 A	
SC_A2130	Segment Casting for P63 field segment	30	0	16.67%	24/7/14 A	19/12/14 A	
SC_A2150	Segment Casting for P64 field segment	50	0	0%	20/10/14 A	10/1/15 A	
Type D Segment (P49 to P63)							
SC_D1010	Segment Casting for P49 field segment	40	0	100%	19/7/14 A	21/12/14 A	

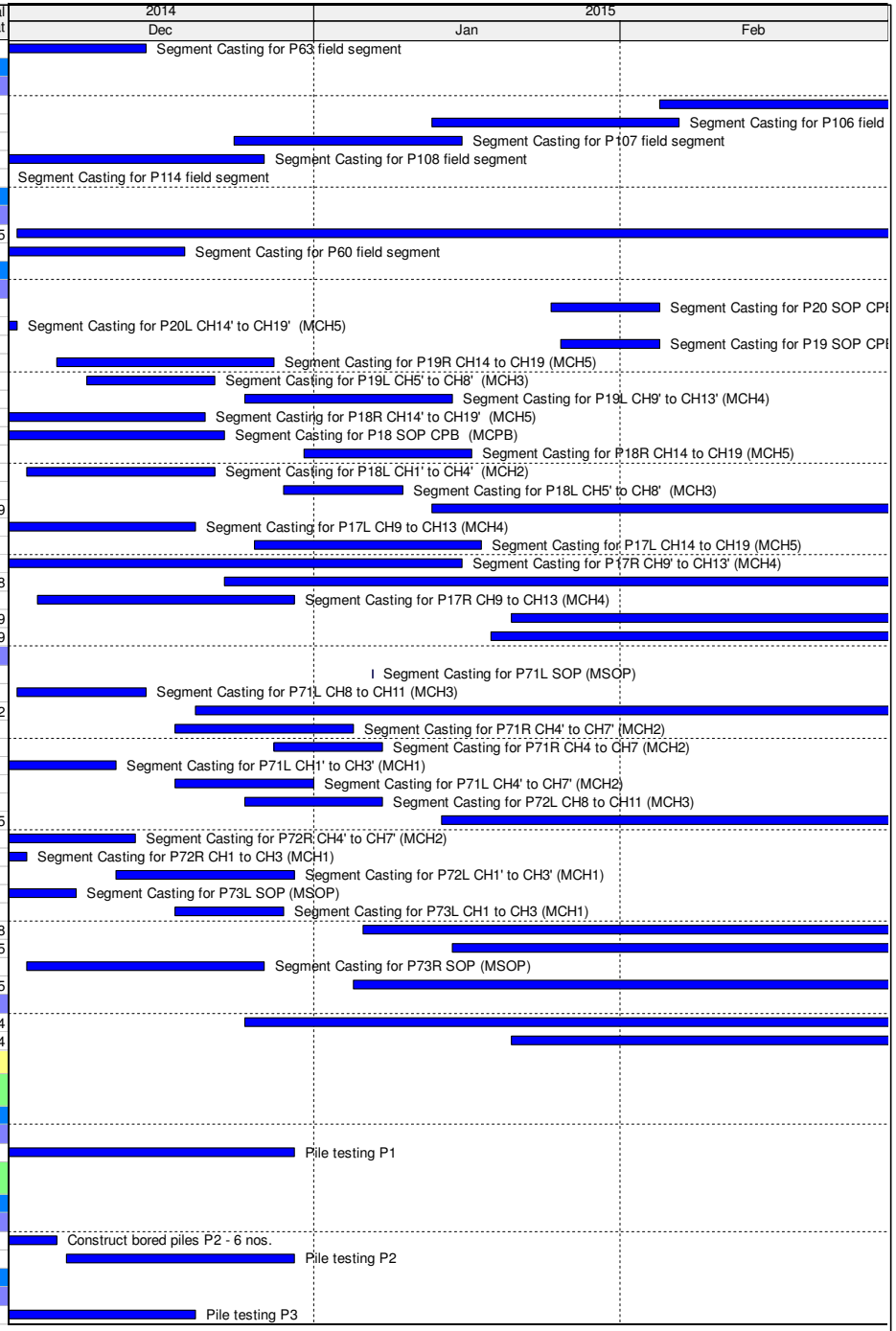


Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

HKLR EMA report (Dec 14 to Feb 15)
Page 1 of 8

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original	emaining	Schedule %	Start	Finish	Total Float
SC_D1130	Segment Casting for P63 field segment	40	0	42.5%	18/7/14 A	15/12/14 A	
Type E Segment (Total 5 set Moulds)							
Land Viaduct (P85 to Easternmost Abutment)							
SC_E1210	Segment Casting for P105 field segment	20	0	100%	5/2/15 A	20/3/15 A	
SC_E1220	Segment Casting for P106 field segment	20	0	100%	13/1/15 A	7/2/15 A	
SC_E1230	Segment Casting for P107 field segment	18	0	0%	24/12/14 A	16/1/15 A	
SC_E1240	Segment Casting for P108 field segment	64	0	12.89%	30/11/14 A	27/12/14 A	
SC_E1300	Segment Casting for P114 field segment	38	0	68.42%	20/10/14 A	1/12/14 A	
Type B Segment (Total 1 set Mould)							
Turnaround							
SC_B1130	Segment Casting for P59 field segment	80	50	0%	2/12/14 A	22/6/15	-205
SC_B1140	Segment Casting for P60 field segment	40	0	100%	28/10/13 A	19/12/14 A	
Type CH Segment (Total 12 set Moulds)							
ML03 (P16 TO P21)							
SC_CH1100	Segment Casting for P20 SOP CPB (MCPB)	24	0	100%	25/1/15 A	5/2/15 A	
SC_CH1180	Segment Casting for P20L CH14' to CH19' (MCH5)	15	0	0%	13/11/14 A	2/12/14 A	
SC_CH1290	Segment Casting for P19 SOP CPB (MCPB)	24	0	100%	26/1/15 A	5/2/15 A	
SC_CH1330	Segment Casting for P19R CH14 to CH19 (MCH5)	15	0	0%	6/12/14 A	28/12/14 A	
SC_CH1350	Segment Casting for P19L CH5' to CH8' (MCH3)	16	0	0%	9/12/14 A	22/12/14 A	
SC_CH1360	Segment Casting for P19L CH9' to CH13' (MCH4)	15	0	0%	25/12/14 A	15/1/15 A	
SC_CH1460	Segment Casting for P18R CH14' to CH19' (MCH5)	15	0	0%	1/12/14 A	21/12/14 A	
SC_CH1480	Segment Casting for P18 SOP CPB (MCPB)	20	0	100%	25/10/14 A	23/12/14 A	
SC_CH1520	Segment Casting for P18R CH14 to CH19 (MCH5)	15	0	0%	31/12/14 A	17/1/15 A	
SC_CH1530	Segment Casting for P18L CH1' to CH4' (MCH2)	16	0	0%	3/12/14 A	22/12/14 A	
SC_CH1540	Segment Casting for P18L CH5' to CH8' (MCH3)	16	0	0%	29/12/14 A	10/1/15 A	
SC_CH1550	Segment Casting for P18L CH9' to CH13' (MCH4)	15	12	100%	13/1/15 A	8/4/15	-409
SC_CH1600	Segment Casting for P17L CH9 to CH13 (MCH4)	15	0	0%	3/11/14 A	20/12/14 A	
SC_CH1610	Segment Casting for P17L CH14 to CH19 (MCH5)	15	0	0%	26/12/14 A	18/1/15 A	
SC_CH1640	Segment Casting for P17R CH9' to CH13' (MCH4)	15	0	0%	26/11/14 A	16/1/15 A	
SC_CH1670	Segment Casting for P17 SOP CPB (MCPB)	20	10	100%	23/12/14 A	6/4/15	-368
SC_CH1700	Segment Casting for P17R CH9 to CH13 (MCH4)	15	0	0%	4/12/14 A	30/12/14 A	
SC_CH1710	Segment Casting for P17R CH14 to CH19 (MCH5)	15	12	100%	21/1/15 A	6/5/15	-409
SC_CH1730	Segment Casting for P17L CH5' to CH8' (MCH3)	16	12	100%	19/1/15 A	8/4/15	-419
ML11 (P70 TO P74)							
SC_CH2260	Segment Casting for P71L SOP (MSOP)	20	0	0%	7/1/15 A	7/1/15 A	
SC_CH2290	Segment Casting for P71L CH8 to CH11 (MCH3)	16	0	0%	2/12/14 A	15/12/14 A	
SC_CH2300	Segment Casting for P71L CH12 to CH16 (MCH4)	15	12	0%	20/12/14 A	8/4/15	-412
SC_CH2330	Segment Casting for P71R CH4' to CH7' (MCH2)	16	0	0%	18/12/14 A	5/1/15 A	
SC_CH2400	Segment Casting for P71R CH4 to CH7 (MCH2)	16	0	0%	28/12/14 A	8/1/15 A	
SC_CH2440	Segment Casting for P71L CH1' to CH3' (MCH1)	15	0	0%	1/12/14 A	12/12/14 A	
SC_CH2450	Segment Casting for P71L CH4' to CH7' (MCH2)	16	0	100%	18/12/14 A	1/1/15 A	
SC_CH2520	Segment Casting for P72L CH8 to CH11 (MCH3)	16	0	0%	25/12/14 A	8/1/15 A	
SC_CH2530	Segment Casting for P72L CH12 to CH16 (MCH4)	15	12	53.33%	14/1/15 A	10/6/15	-415
SC_CH2560	Segment Casting for P72R CH4' to CH7' (MCH2)	16	0	0%	29/11/14 A	14/12/14 A	
SC_CH2620	Segment Casting for P72R CH1 to CH3 (MCH1)	15	0	0%	21/11/14 A	3/12/14 A	
SC_CH2670	Segment Casting for P72L CH1' to CH3' (MCH1)	15	0	0%	12/12/14 A	30/12/14 A	
SC_CH2720	Segment Casting for P73L SOP (MSOP)	20	0	0%	25/11/14 A	8/12/14 A	
SC_CH2730	Segment Casting for P73L CH1 to CH3 (MCH1)	15	0	0%	18/12/14 A	29/12/14 A	
SC_CH2740	Segment Casting for P73L CH4 to CH7 (MCH2)	16	4	100%	6/1/15 A	31/3/15	-408
SC_CH2780	Segment Casting for P73R CH1' to CH3' (MCH1)	15	5	100%	15/1/15 A	1/4/15	-445
SC_CH2830	Segment Casting for P73R SOP (MSOP)	20	0	0%	3/12/14 A	27/12/14 A	
SC_CH2850	Segment Casting for P73R CH1 to CH3 (MCH1)	15	5	100%	5/1/15 A	1/4/15	-415
ML12 (P74 TO P78)							
SC_CH2950	Segment Casting for P75L SOP (MSOP)	20	10	0%	25/12/14 A	8/5/15	-454
SC_CH3280	Segment Casting for P76L SOP (MSOP)	24	8	100%	21/1/15 A	28/4/15	-454
Viaduct between HKSAR Boundary and Landing Point on Airport Island							
ML01L/R 75mx8 - Stage 2 of Works							
Pier P1L/R							
Foundation - Bored Pile							
WW1120	Pile testing P1	28	0	100%	27/11/14 A	30/12/14 A	
ML01L/R 75mx8 - Stage 4 of Works							
Pier P2L/R							
Foundation - Bored Pile							
WW1190	Construct bored piles P2 - 6 nos.	48	0	100%	28/7/14 A	6/12/14 A	
WW1200	Pile testing P2	28	0	100%	7/12/14 A	30/12/14 A	
Pier P3L/R							
Foundation - Bored Pile							
WW1280	Pile testing P3	28	0	100%	19/10/14 A	20/12/14 A	



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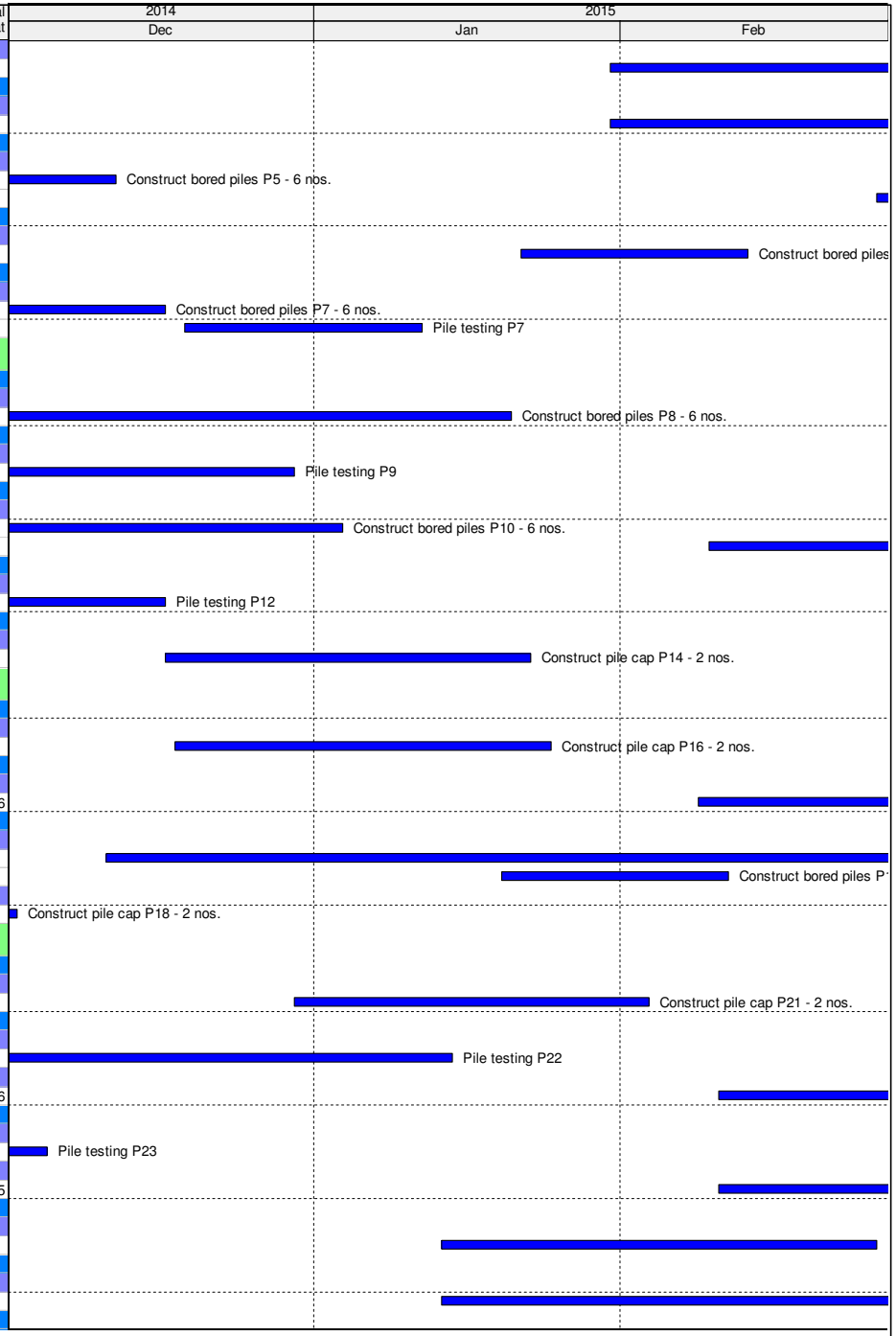
Pile Cap Construction							
WW1290	Construct pile cap P3 - 2 nos.	30	0	78.33%	31/1/15 A	15/3/15 A	
Pier P4L/R							
Pile Cap Construction							
WW1370	Construct pile cap P4 - 2 nos.	30	0	26.67%	31/1/15 A	13/3/15 A	
Pier P5L/R							
Foundation - Bored Pile							
WW1430	Construct bored piles P5 - 6 nos.	35	0	100%	24/10/14 A	12/12/14 A	
WW1440	Pile testing P5	28	0	100%	27/2/15 A	19/3/15 A	
Pier P6L/R							
Foundation - Bored Pile							
WW1510	Construct bored piles P6 - 6 nos.	35	0	100%	22/1/15 A	14/2/15 A	
Pier P7L/R							
Foundation - Bored Pile							
WW1590	Construct bored piles P7 - 6 nos.	48	0	100%	24/10/14 A	17/12/14 A	
WW1600	Pile testing P7	28	0	100%	19/12/14 A	12/1/15 A	
ML02L/R 75mx8 - Stage 4 of Works							
Pier P8L/R (M.J.)							
Foundation - Bored Pile							
WW1670	Construct bored piles P8 - 6 nos.	34	0	100%	29/11/14 A	21/1/15 A	
Pier P9L/R							
Foundation - Bored Pile							
WW1760	Pile testing P9	28	0	100%	28/11/14 A	30/12/14 A	
Pier P10L/R							
Foundation - Bored Pile							
WW1830	Construct bored piles P10 - 6 nos.	37	0	100%	15/11/14 A	4/1/15 A	
WW1840	Pile testing P10	28	0	100%	10/2/15 A	6/3/15 A	
Pier P12L/R							
Foundation - Bored Pile							
WW2000	Pile testing P12	28	0	100%	22/10/14 A	17/12/14 A	
Pier P14L/R							
Pile Cap Construction							
WW2170	Construct pile cap P14 - 2 nos.	30	0	100%	17/12/14 A	23/1/15 A	
ML03L/R 109.661m+150mx3+109.661m Navigation Channel - Stage 4 of Works							
Pier P16L/R (M.J.)							
Pile Cap Construction							
NC1080	Construct pile cap P16 - 2 nos.	30	0	100%	18/12/14 A	25/1/15 A	
Pier P17L/R							
Pile Cap Construction							
NC1200	Construct pile cap P17 - 2 nos.	60	30	83.33%	9/2/15 A	8/5/15	-216
Pier P18L/R							
Foundation - Bored Pile							
NC1290	Construct bored piles P18 - 3 nos. (Downstream Dolphin)	20	0	100%	11/12/14 A	7/3/15 A	
NC1295	Construct bored piles P18 - 1 nos. (1 outstanding uptream dolphin)	10	0	100%	20/1/15 A	12/2/15 A	
Pile Cap Construction							
NC1320	Construct pile cap P18 - 2 nos.	60	0	100%	11/10/14 A	2/12/14 A	
ML04L/R 74.5mx8 - Stage 4 of Works							
Pier P21L/R (M.J.)							
Pile Cap Construction							
WW5045	Construct pile cap P21 - 2 nos.	30	0	100%	30/12/14 A	4/2/15 A	
Pier P22L/R							
Foundation - Bored Pile							
WW5040	Pile testing P22	28	0	100%	21/6/14 A	15/1/15 A	
Pile Cap Construction							
WW5050	Construct pile cap P22 - 2 nos.	30	1	100%	11/2/15 A	30/3/15	-246
Pier P23L/R							
Foundation - Bored Pile							
WW5120	Pile testing P23	28	0	100%	14/11/14 A	5/12/14 A	
Pile Cap Construction							
WW5130	Construct pile cap P23 - 2 nos.	30	6	100%	11/2/15 A	3/4/15	-295
Pier P24L/R							
Pile Cap Construction							
WW5210	Construct pile cap P24 - 2 nos.	30	0	100%	14/1/15 A	27/2/15 A	
Pier P25L/R							
Pile Cap Construction							
WW5290	Construct pile cap P25 - 2 nos.	30	0	100%	14/1/15 A	3/3/15 A	
Pier P27L/R							



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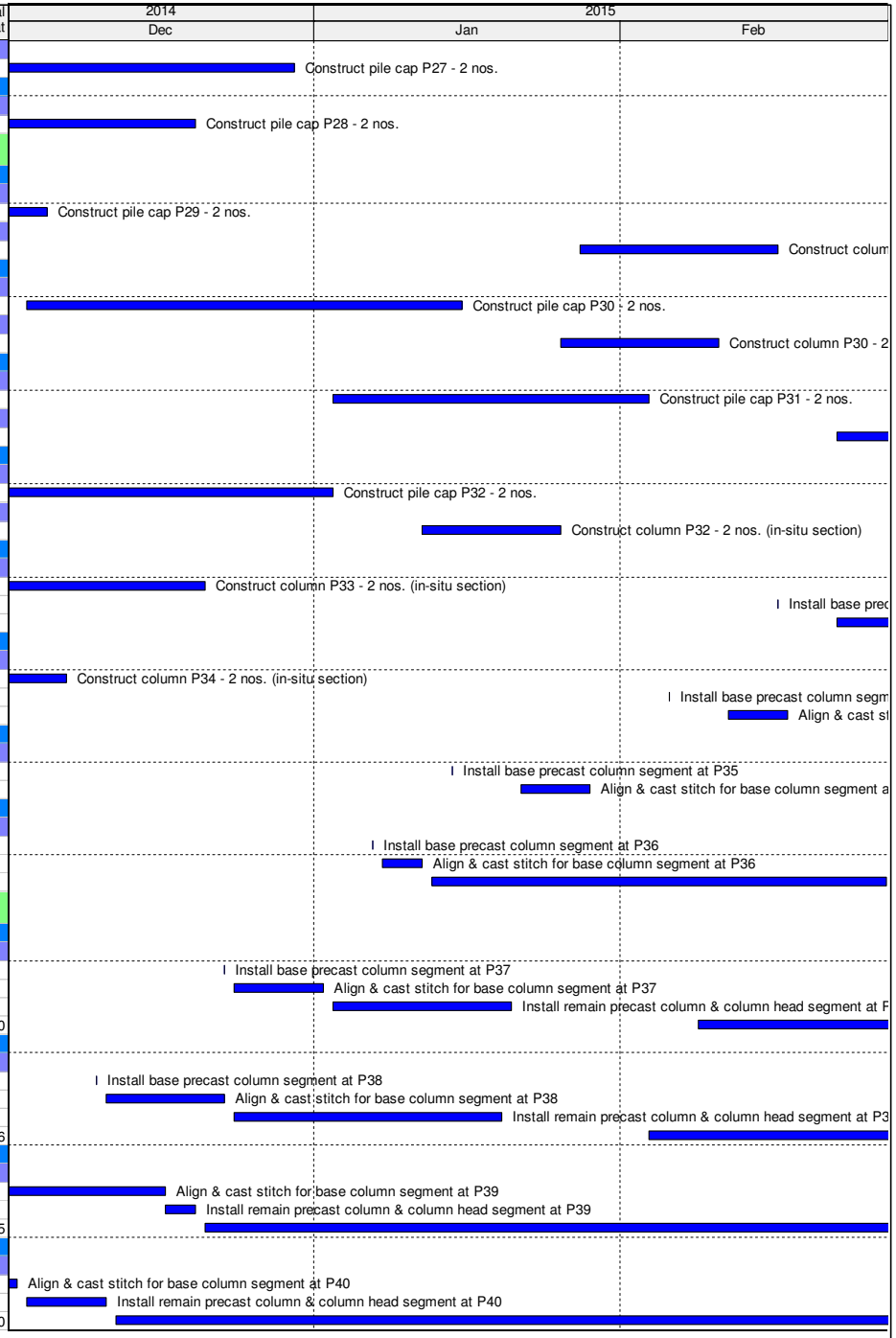
Pile Cap Construction							
WW5450	Construct pile cap P27 - 2 nos.	30	0	100%	14/11/14 A	30/12/14 A	
Pier P28L/R							
Pile Cap Construction							
WW5530	Construct pile cap P28 - 2 nos.	30	0	100%	14/11/14 A	20/12/14 A	
ML05L/R 74.5mx8 - Stage 4 of Works							
Pier P29L/R (M.J.)							
Pile Cap Construction							
WW5610	Construct pile cap P29 - 2 nos.	30	0	100%	29/10/14 A	5/12/14 A	
Column Construction							
WW5620	Construct column P29 - 2 nos. (in-situ section)	12	0	100%	28/1/15 A	17/2/15 A	
Pier P30L/R							
Pile Cap Construction							
WW5690	Construct pile cap P30 - 2 nos.	30	0	100%	3/12/14 A	16/1/15 A	
Column Construction							
WW5700	Construct column P30 - 2 nos. (in-situ section)	12	0	100%	26/1/15 A	11/2/15 A	
Pier P31L/R							
Pile Cap Construction							
WW5770	Construct pile cap P31 - 2 nos.	30	0	100%	3/1/15 A	4/2/15 A	
Column Construction							
WW5780	Construct column P31 - 2 nos. (in-situ section)	12	0	100%	23/2/15 A	7/3/15 A	
Pier P32L/R							
Pile Cap Construction							
WW5850	Construct pile cap P32 - 2 nos.	30	0	100%	29/11/14 A	3/1/15 A	
Column Construction							
WW5860	Construct column P32 - 2 nos. (in-situ section)	12	0	100%	12/1/15 A	26/1/15 A	
Pier P33L/R							
Column Construction							
WW5940	Construct column P33 - 2 nos. (in-situ section)	12	0	100%	1/12/14 A	21/12/14 A	
WW9480	Install base precast column segment at P33	1	0	100%	17/2/15 A	17/2/15 A	
WW9482	Align & cast stitch for base column segment at P33	6	0	100%	23/2/15 A	2/3/15 A	
Pier P34L/R							
Column Construction							
WW6020	Construct column P34 - 2 nos. (in-situ section)	12	0	100%	24/11/14 A	7/12/14 A	
WW9500	Install base precast column segment at P34	1	0	100%	6/2/15 A	6/2/15 A	
WW9502	Align & cast stitch for base column segment at P34	6	0	100%	12/2/15 A	18/2/15 A	
Pier P35L/R							
Column Construction							
WW9520	Install base precast column segment at P35	1	0	100%	15/1/15 A	15/1/15 A	
WW9522	Align & cast stitch for base column segment at P35	6	0	100%	22/1/15 A	29/1/15 A	
Pier P36L/R							
Column Construction							
WW9540	Install base precast column segment at P36	1	0	100%	7/1/15 A	7/1/15 A	
WW9542	Align & cast stitch for base column segment at P36	6	0	100%	8/1/15 A	12/1/15 A	
WW9544	Install remain precast column & column head segment at P36	3	0	100%	13/1/15 A	28/2/15 A	
ML06L/R 74.5mx8 - Stage 4 of Works							
Pier P37L/R (M.J.)							
Column Construction							
WW9560	Install base precast column segment at P37	1	0	0%	23/12/14 A	23/12/14 A	
WW9562	Align & cast stitch for base column segment at P37	6	0	100%	24/12/14 A	2/1/15 A	
WW9564	Install remain precast column & column head segment at P37	3	0	100%	3/1/15 A	21/1/15 A	
WW9570	Prestress works & infill concrete at P37	12	10	100%	9/2/15 A	11/4/15	-340
Pier 38L/R							
Column Construction							
WW9580	Install base precast column segment at P38	1	0	0%	10/12/14 A	10/12/14 A	
WW9582	Align & cast stitch for base column segment at P38	6	0	100%	11/12/14 A	23/12/14 A	
WW9584	Install remain precast column & column head segment at P38	3	0	0%	24/12/14 A	20/1/15 A	
WW9590	Prestress works & infill concrete at P38	12	9	100%	4/2/15 A	10/4/15	-286
Pier 39L/R							
Column Construction							
WW9602	Align & cast stitch for base column segment at P39	6	0	100%	29/11/14 A	17/12/14 A	
WW9604	Install remain precast column & column head segment at P39	3	0	0%	17/12/14 A	20/12/14 A	
WW9610	Prestress works & infill concrete at P39	12	6	0%	21/12/14 A	3/4/15	-275
Pier 40L/R							
Column Construction							
WW9622	Align & cast stitch for base column segment at P40	6	0	100%	14/11/14 A	2/12/14 A	
WW9624	Install remain precast column & column head segment at P40	3	0	0%	3/12/14 A	11/12/14 A	
WW9630	Prestress works & infill concrete at P40	12	6	100%	12/12/14 A	3/4/15	-340



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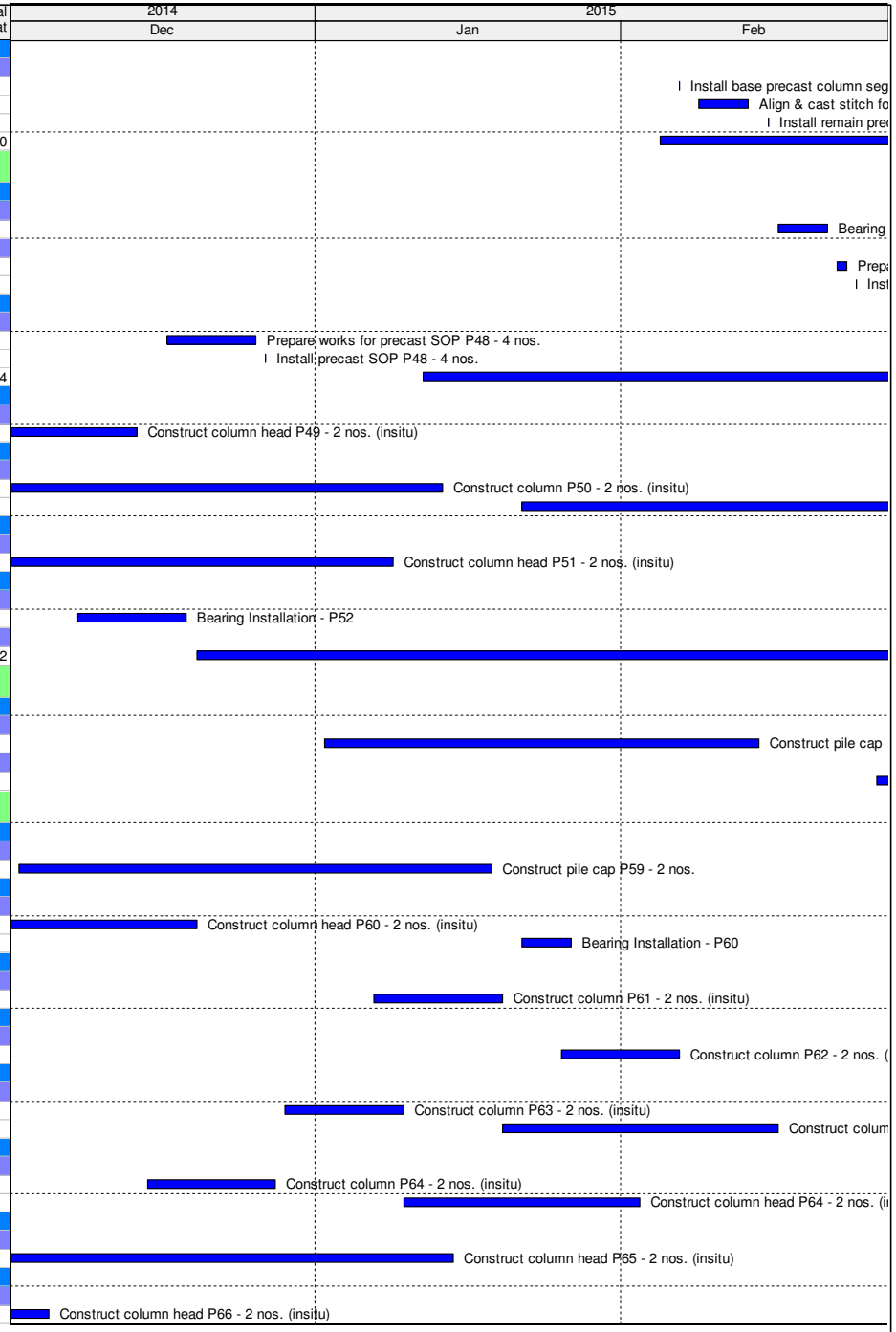
Pier 42L/R							
Column Construction							
WW9660	Install base precast column segment at P42	1	0	100%	7/2/15 A	7/2/15 A	
WW9662	Align & cast stitch for base column segment at P42	6	0	100%	9/2/15 A	14/2/15 A	
WW9664	Install remain precast column & column head segment at P42	3	0	100%	16/2/15 A	16/2/15 A	
WW9670	Prestress works & infill concrete at P42	12	8	100%	5/2/15 A	20/5/15	-340
ML07L/R 73.396mx8 - Stage 4 of Works							
Pier P45L/R (M.J.)							
Column Construction							
WW9732	Bearing Installation - P45	5	0	100%	17/2/15 A	22/2/15 A	
Pier Segment Construction							
WW6908	Prepare works for precast SOP P45 - 4 nos.	2	0	100%	23/2/15 A	24/2/15 A	
WW6910	Install precast SOP P45 - 4 nos.	3	0	100%	25/2/15 A	25/2/15 A	
Pier P48L/R							
Pier Segment Construction							
WW7148	Prepare works for precast SOP P48 - 4 nos.	2	0	100%	17/12/14 A	26/12/14 A	
WW7150	Install precast SOP P48 - 4 nos.	4	0	75%	27/12/14 A	27/12/14 A	
WW7152	Insitu works for SOP P48 - 4 nos.	9	1	100%	12/1/15 A	28/3/15	-354
Pier P49L/R							
Column Construction							
WW10077	Construct column head P49 - 2 nos. (insitu)	21	0	100%	28/9/14 A	14/12/14 A	
Pier P50L/R							
Column Construction							
WW10087	Construct column P50 - 2 nos. (insitu)	24	0	100%	24/11/14 A	14/1/15 A	
WW10097	Construct column head P50 - 2 nos. (insitu)	21	0	100%	22/1/15 A	8/3/15 A	
Pier P51L/R							
Column Construction							
WW10117	Construct column head P51 - 2 nos. (insitu)	21	0	100%	26/10/14 A	9/1/15 A	
Pier P52L/R							
Column Construction							
WW9872	Bearing Installation - P52	5	0	100%	8/12/14 A	19/12/14 A	
In-situ Portal/SOP Construction							
WW7230	Contruct in-situ portal P52	90	45	72.22%	20/12/14 A	29/5/15	712
ML08L/R 70mx6 - Stage 4 of Works							
Pier P53L/R (M.J.)							
Pile Cap Construction							
WW7500	Construct pile cap P53 - 2 nos.	35	0	100%	2/1/15 A	15/2/15 A	
Column Construction							
WW10147	Construct column P53 - 2 nos. (insitu)	24	0	12.5%	27/2/15 A	24/3/15 A	
ML09L/R 73.396Mx8 - Stage 4 of Works							
Pier P59L/R (M.J.)							
Pile Cap Construction							
WW7980	Construct pile cap P59 - 2 nos.	35	0	100%	2/12/14 A	19/1/15 A	
Pier P60L/R							
Column Construction							
WW10297	Construct column head P60 - 2 nos. (insitu)	21	0	100%	17/11/14 A	20/12/14 A	
WW9997	Bearing Installation - P60	5	0	100%	22/1/15 A	27/1/15 A	
Pier P61L/R							
Column Construction							
WW10307	Construct column P61 - 2 nos. (insitu)	12	0	100%	7/1/15 A	20/1/15 A	
Pier P62L/R							
Column Construction							
WW10327	Construct column P62 - 2 nos. (insitu)	12	0	100%	26/1/15 A	7/2/15 A	
Pier P63L/R							
Column Construction							
WW10347	Construct column P63 - 2 nos. (insitu)	12	0	100%	29/12/14 A	10/1/15 A	
WW10357	Construct column head P63 - 2 nos. (insitu)	21	0	100%	20/1/15 A	17/2/15 A	
Pier P64L/R							
Column Construction							
WW10367	Construct column P64 - 2 nos. (insitu)	12	0	100%	15/12/14 A	28/12/14 A	
WW10377	Construct column head P64 - 2 nos. (insitu)	21	0	100%	10/1/15 A	3/2/15 A	
Pier P65L/R							
Column Construction							
WW10397	Construct column head P65 - 2 nos. (insitu)	21	0	100%	24/11/14 A	15/1/15 A	
Pier P66L/R							
Column Construction							
WW10417	Construct column head P66 - 2 nos. (insitu)	21	0	100%	4/11/14 A	5/12/14 A	



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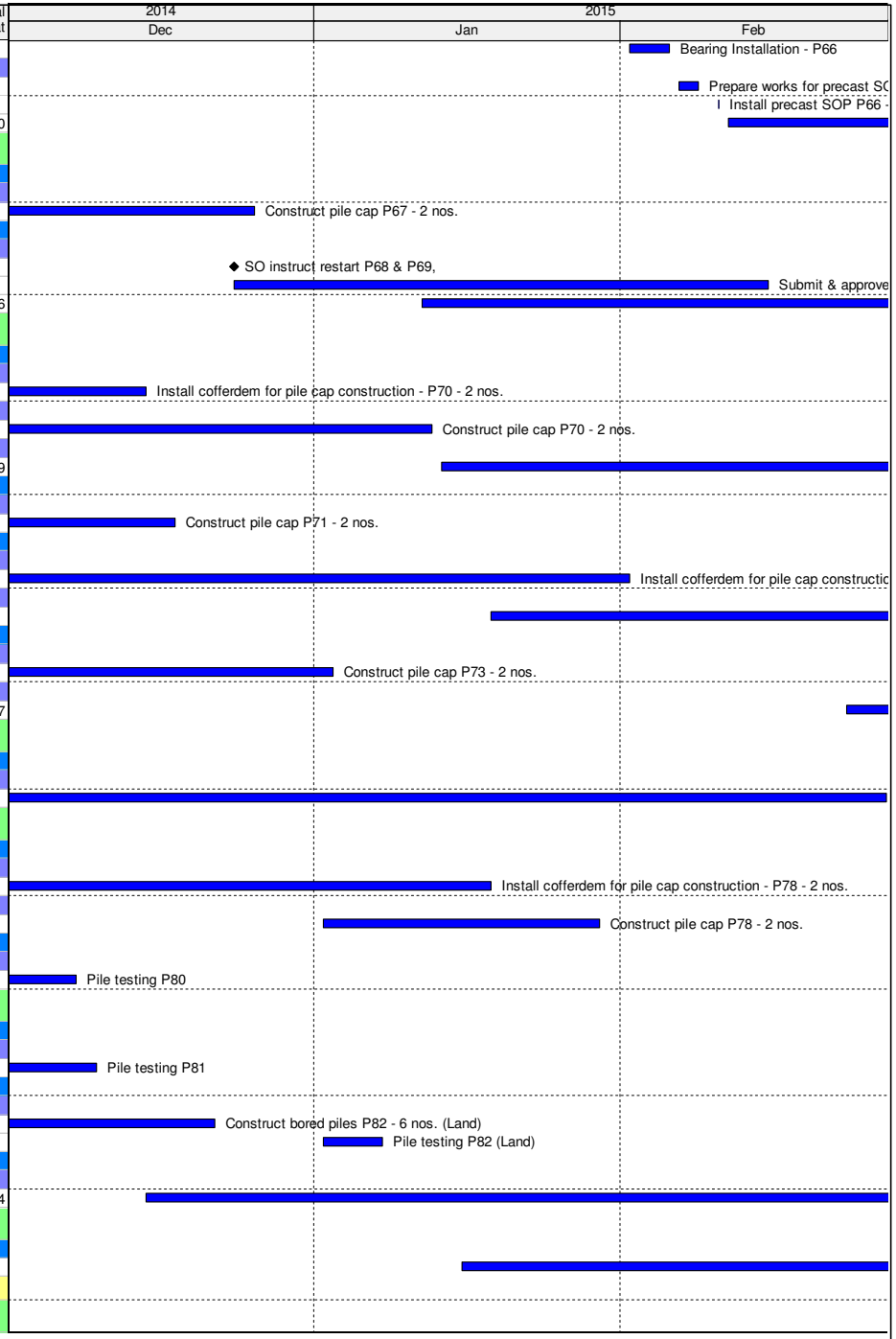
WW8555	Bearing Installation - P66	5	0	100%	2/2/15 A	6/2/15 A	
Pier Segment Construction							
WW8558	Prepare works for precast SOP P66 - 4 nos.	2	0	100%	7/2/15 A	9/2/15 A	
WW8560	Install precast SOP P66 - 4 nos.	4	0	100%	11/2/15 A	11/2/15 A	
WW8562	Insitu works for SOP P66 - 4 nos.	9	5	100%	12/2/15 A	2/4/15	-350
ML10L/R 115m+180m+115m - Stage 4 of Works							
Pier P67L/R (M.J.)							
Pile Cap Construction							
AC1040	Construct pile cap P67 - 2 nos.	30	0	100%	30/10/14 A	26/12/14 A	
Pier P68L/R							
Restart P68 & P69							
CL1000	SO instruct restart P68 & P69	0	0	100%		24/12/14 A	
CL1010	Submit & approve MS for P68 working platform	0	0	100%	24/12/14 A	16/2/15 A	
CL1020	Reconstruct piling platform for P68	90	24	48.89%	12/1/15 A	30/4/15	-376
ML11L/R 109m+165mx2+109m - Stage 4 of Works							
Pier P70L/R (M.J.)							
Temporary Works							
AC1170	Install cofferdem for pile cap construction - P70 - 2 nos.	125	0	100%	8/8/14 A	15/12/14 A	
Pile Cap Construction							
AC1210	Construct pile cap P70 - 2 nos.	48	0	100%	26/11/14 A	13/1/15 A	
Column Construction							
AC1204	Construct column P70 - 2 nos. (insitu)	36	27	100%	14/1/15 A	5/5/15	-379
Pier P71L/R							
Pile Cap Construction							
AC1290	Construct pile cap P71 - 2 nos.	60	0	100%	1/9/14 A	18/12/14 A	
Pier P72L/R							
Temporary Works							
AC1320	Install cofferdem for pile cap construction - P72 - 2 nos.	60	0	100%	12/5/14 A	2/2/15 A	
Pile Cap Construction							
AC1380	Construct pile cap P72 - 2 nos.	32	0	100%	19/1/15 A	10/3/15 A	
Pier P73L/R							
Pile Cap Construction							
AC1470	Construct pile cap P73 - 2 nos.	29	0	100%	11/11/14 A	3/1/15 A	
Column Construction							
AC1480	Construct column P73 - 4 nos.	50	38	56%	24/2/15 A	19/5/15	-297
ML12L/R 109m+165mx2+109m - Stage 4 of Works							
Pier P77L/R							
Temporary Works							
AC1770	Install cofferdem for pile cap construction - P77 - 2 nos.	160	0	98.75%	1/9/14 A	28/2/15 A	
ML13L/R 115m+180m+115m - Stage 4 of Works							
Pier P78L/R (M.J.)							
Temporary Works							
AC1850	Install cofferdem for pile cap construction - P78 - 2 nos.	168	0	94.05%	12/8/14 A	19/1/15 A	
Pile Cap Construction							
AC1910	Construct pile cap P78 - 2 nos.	30	0	100%	2/1/15 A	30/1/15 A	
Pier P80L/R							
Foundation - Bored Pile							
AC2060	Pile testing P80	28	0	100%	24/10/14 A	8/12/14 A	
ML14L/R 115m+180m+100.561m - Stage 4 of Works							
Pier P81L/R (M.J.)							
Foundation - Bored Pile							
AC2150	Pile testing P81	28	0	100%	21/11/14 A	10/12/14 A	
Pier P82L/R							
Foundation - Bored Pile							
AC2500	Construct bored piles P82 - 6 nos. (Land)	90	0	100%	19/9/14 A	22/12/14 A	
AC2656	Pile testing P82 (Land)	28	0	100%	2/1/15 A	8/1/15 A	
Pier P83L/R							
Utilities Diversion							
AC2470	300 & 450mm Drainage diversion for P83	60	12	100%	15/12/14 A	14/4/15	-224
Deck Construction between HKSAR Boundary and Landing Point on Airport Channel							
Segment Erection - Launching Girder							
DC1070	Assemble LG2 at P46 & P47	50	0	100%	16/1/15 A	24/3/15 A	
Viaduct between Landing Point on Airport Island and Scenic Hill							
ML15L/R 43m+65mx6+37m - Stage 5 of Works							



Actual Work
Remaining Work
Critical Remaining Work
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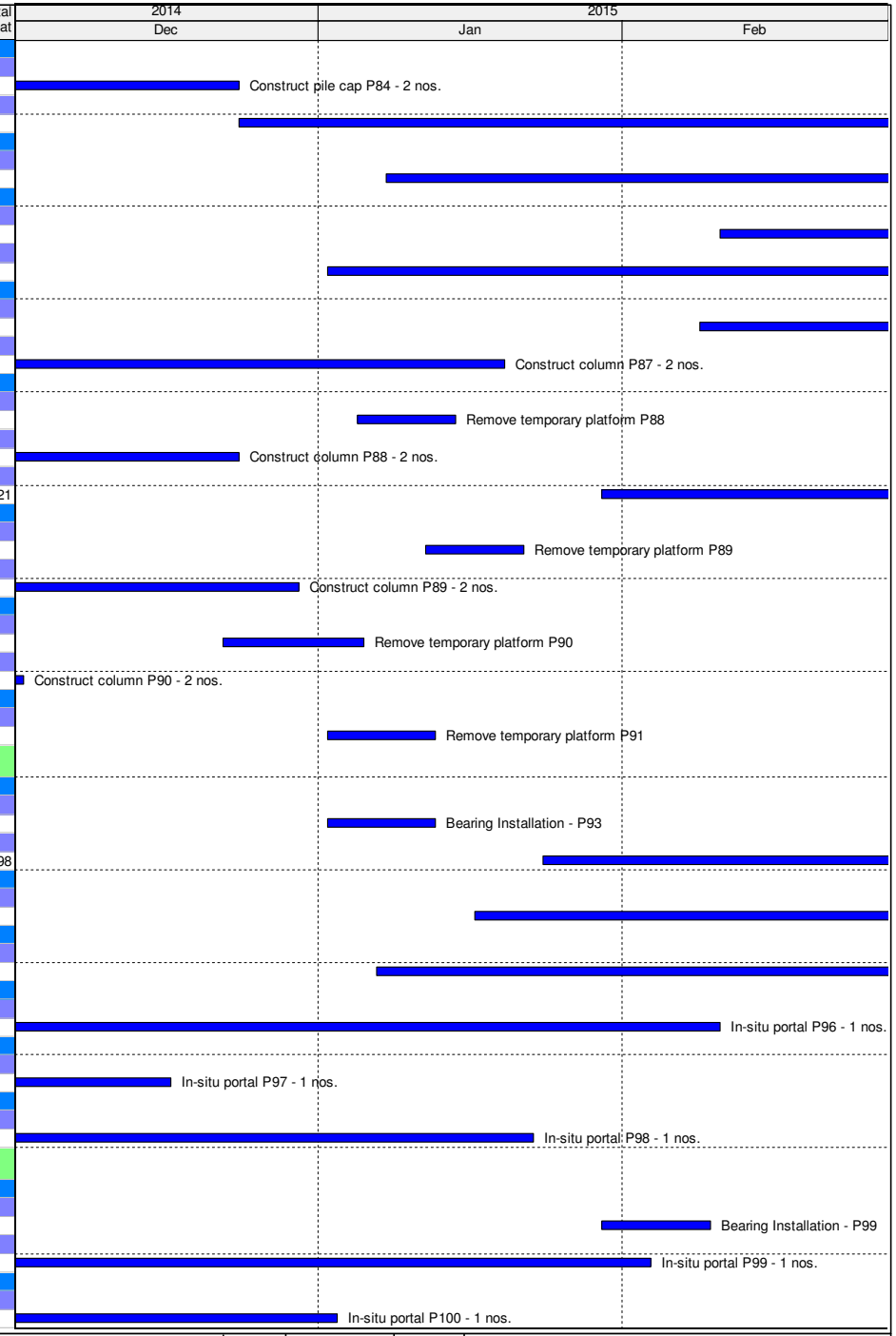
Date	Revision	Checked	Approved

Activity ID	Activity Name	Original	emaining	Schedule %	Start	Finish	Total Float
Pier P84L/R (M.J.)							
Pile Cap Construction							
AI1050	Construct pile cap P84 - 2 nos.	60	0	75%	19/7/14 A	24/12/14 A	
Column Construction							
AI1060	Construct column P84 - 2 nos.	84	0	83.33%	24/12/14 A	21/3/15 A	
Pier P85L/R							
Column Construction							
AI1140	Construct column P85 - 2 nos.	72	0	97.22%	8/1/15 A	27/3/15 A	
Pier P86L/R							
Temporary Works							
AI3310	Remove temporary platform P86	10	0	100%	11/2/15 A	25/3/15 A	
Column Construction							
AI1210	Construct column P86 - 2 nos.	50	0	100%	2/1/15 A	18/3/15 A	
Pier P87L/R							
Temporary Works							
AI3320	Remove temporary platform P87	10	0	100%	9/2/15 A	2/3/15 A	
Column Construction							
AI1280	Construct column P87 - 2 nos.	44	0	100%	12/11/14 A	20/1/15 A	
Pier P88L/R							
Temporary Works							
AI3330	Remove temporary platform P88	10	0	100%	5/1/15 A	15/1/15 A	
Column Construction							
AI1350	Construct column P88 - 2 nos.	44	0	100%	1/11/14 A	24/12/14 A	
In-situ Portal/T-pier Construction							
AI1360	In-situ portal P88 - 1 nos.	60	36	0%	30/1/15 A	22/8/15	-221
Pier P89L/R							
Temporary Works							
AI3340	Remove temporary platform P89	10	0	100%	12/1/15 A	22/1/15 A	
Column Construction							
AI1420	Construct column P89 - 2 nos.	44	0	100%	7/11/14 A	30/12/14 A	
Pier P90L/R							
Temporary Works							
AI3350	Remove temporary platform P90	10	0	100%	22/12/14 A	5/1/15 A	
Column Construction							
AI1490	Construct column P90 - 2 nos.	38	0	100%	17/10/14 A	2/12/14 A	
Pier P91L/R							
Temporary Works							
AI3360	Remove temporary platform P91	10	0	100%	2/1/15 A	13/1/15 A	
ML16L/R 37m+65mx5+43m - Stage 5 of Works							
Pier P93L/R							
Column Construction							
AI1705	Bearing Installation - P93	10	0	100%	2/1/15 A	13/1/15 A	
In-situ Portal/T-pier Construction							
AI1710	In-situ portal P93 - 1 nos.	60	12	100%	24/1/15 A	14/4/15	-198
Pier P94L/R							
In-situ Portal/T-pier Construction							
AI1780	In-situ portal P94 - 1 nos.	60	0	76.67%	17/1/15 A	24/3/15 A	
Pier P95L/R							
In-situ Portal/T-pier Construction							
AI1850	In-situ portal P95 - 1 nos.	60	0	100%	7/1/15 A	13/3/15 A	
Pier P96L/R							
In-situ Portal/T-pier Construction							
AI1920	In-situ portal P96 - 1 nos.	60	0	100%	29/11/14 A	11/2/15 A	
Pier P97L/R							
In-situ Portal/T-pier Construction							
AI1990	In-situ portal P97 - 1 nos.	60	0	100%	11/7/14 A	17/12/14 A	
Pier P98L/R							
In-situ Portal/T-pier Construction							
AI2060	In-situ portal P98 - 1 nos.	60	0	100%	17/10/14 A	23/1/15 A	
ML17L/R 43m+65mx3+47m - Stage 5 of Works							
Pier P99L/R (M.J.)							
Column Construction							
AI2125	Bearing Installation - P99	10	0	100%	30/1/15 A	10/2/15 A	
In-situ Portal/T-pier Construction							
AI2130	In-situ portal P99 - 1 nos.	60	0	100%	27/9/14 A	4/2/15 A	
Pier P100L/R							
In-situ Portal/T-pier Construction							
AI2200	In-situ portal P100 - 1 nos.	60	0	100%	4/10/14 A	3/1/15 A	



Actual Work
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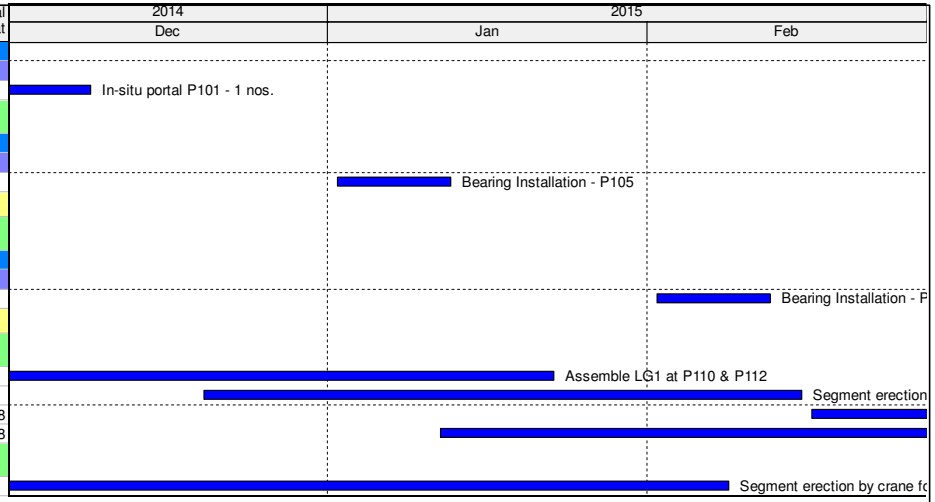
Date	Revision	Checked	Approved

Activity ID	Activity Name	Original	emaining	Schedule %	Start	Finish	Total Float
Pier P101L/R							
In-situ Portal/T-pier Construction							
AI2270	In-situ portal P101 - 1 nos.	60	0	100%	4/9/14 A	9/12/14 A	
ML18L/R 47m+55mx5+35m - Stage 5 of Works							
Pier P105L/R							
Column Construction							
AI2545	Bearing Installation - P105	10	0	100%	2/1/15 A	13/1/15 A	
Land Viaduct P108 to P114							
ML19L/C/R 40m+65mx2 Stage 5 of Works							
Pier P111L/C/R							
Column Construction							
AI2925	Bearing Installation - P111	10	0	100%	2/2/15 A	13/2/15 A	
Deck Construction between Landing Point on Airport Island and Scenic Hill							
Segment Erection - Launching Girder							
DC5000	Assemble LG1 at P110 & P112	35	0	100%	16/7/14 A	23/1/15 A	
DC5020	Segment erection P112 C/R (Learning)	9	0	100%	20/12/14 A	16/2/15 A	
DC5030	Segment erection P113 C/R	8	7	100%	17/2/15 A	13/4/15	-328
DC5037	Segment erection P112 L	13	12	69.16%	12/1/15 A	7/5/15	-328
Segment Erection - Crane Erection							
DC2755	Segment erection by crane for P109	8	0	100%	26/9/14 A	9/2/15 A	



Actual Work
Remaining Work
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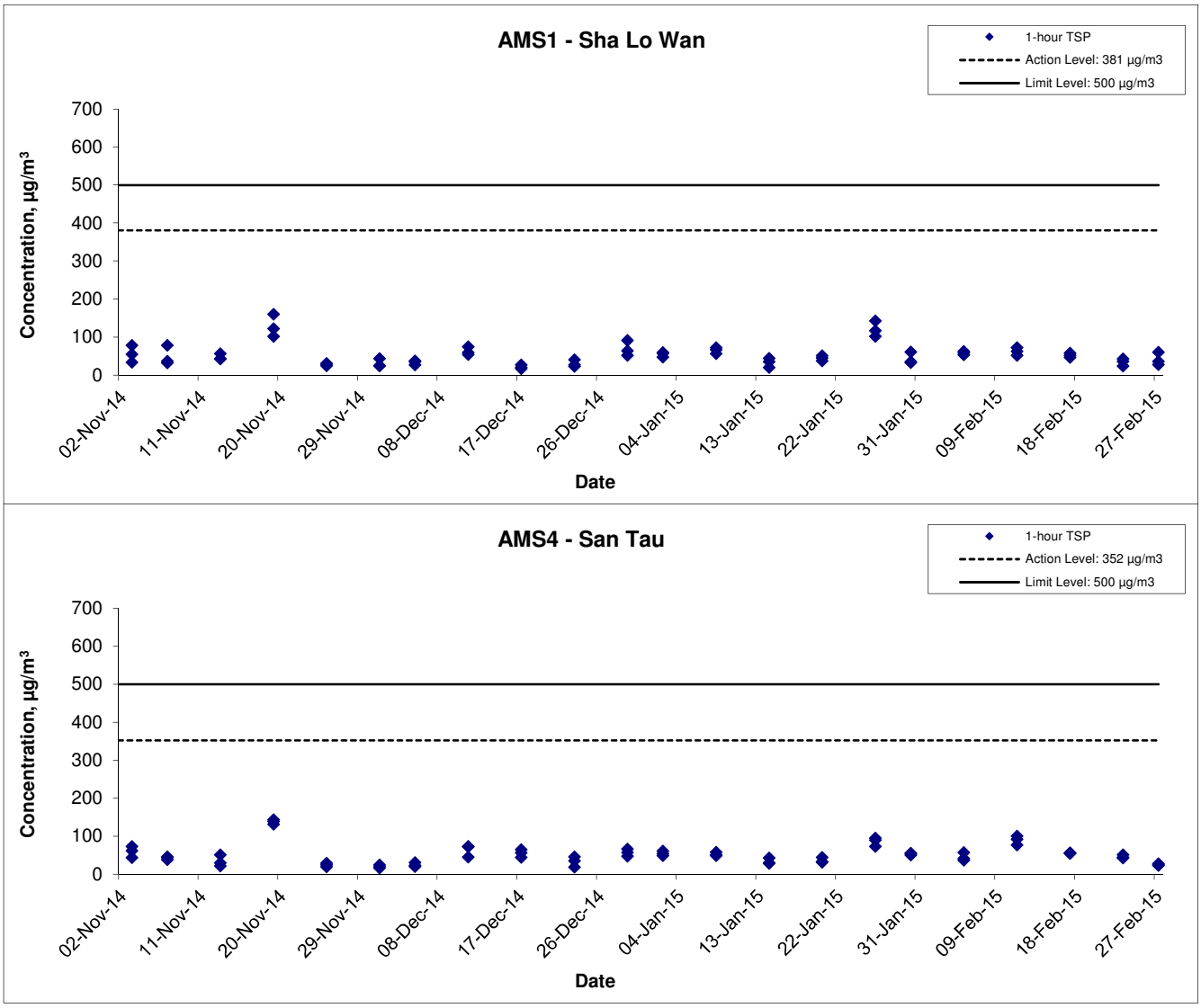
APPENDIX B
GRAPHICAL PRESENTATION OF 1-HOUR TSP MONITORING RESULTS

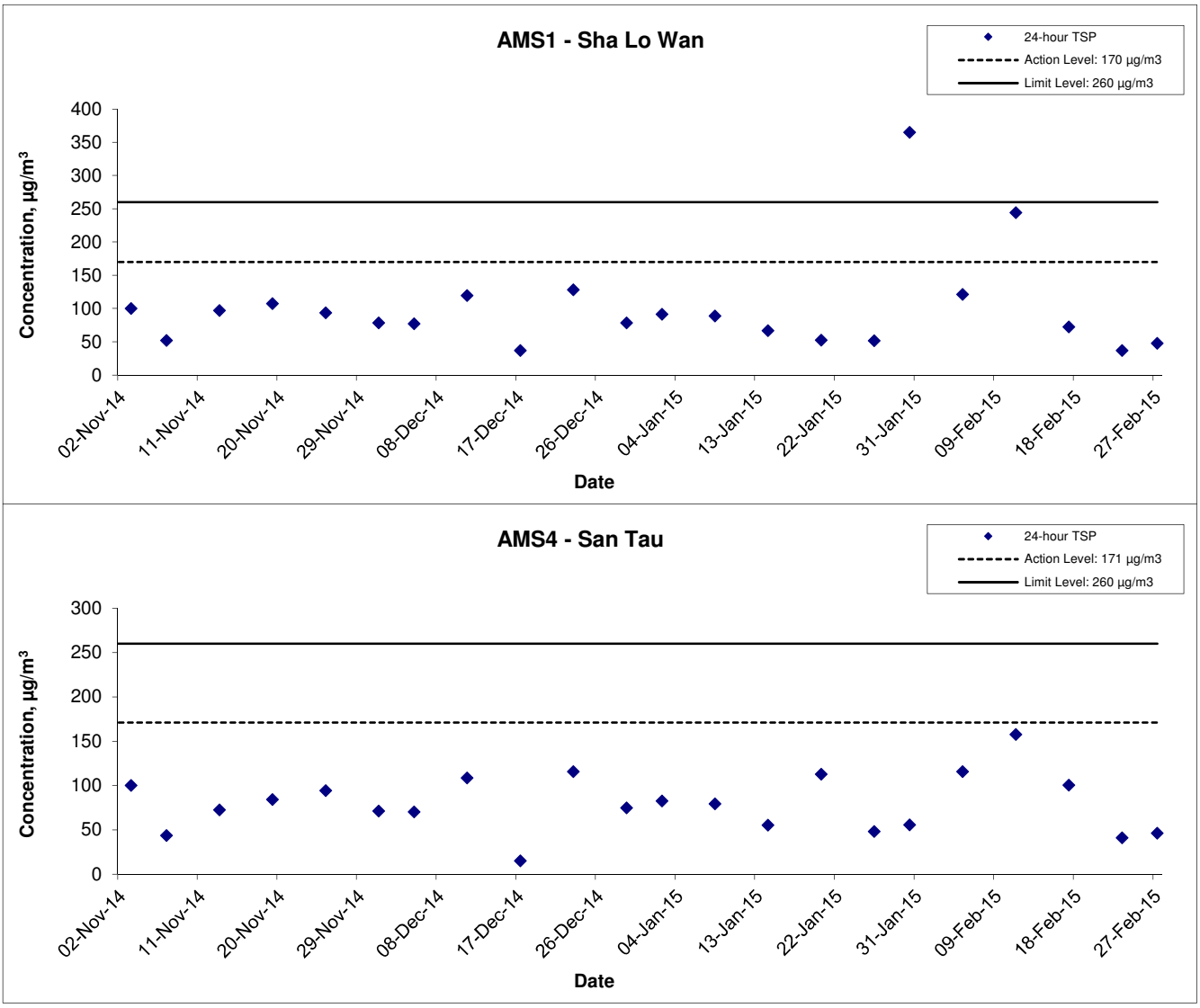
1-hour TSP Concentration Levels



Title: Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Feb 15	Project No.: MA12014 Appendix: B	CINOTECH

APPENDIX C
GRAPHICAL PRESENTATION OF 24-HOUR TSP MONITORING RESULTS

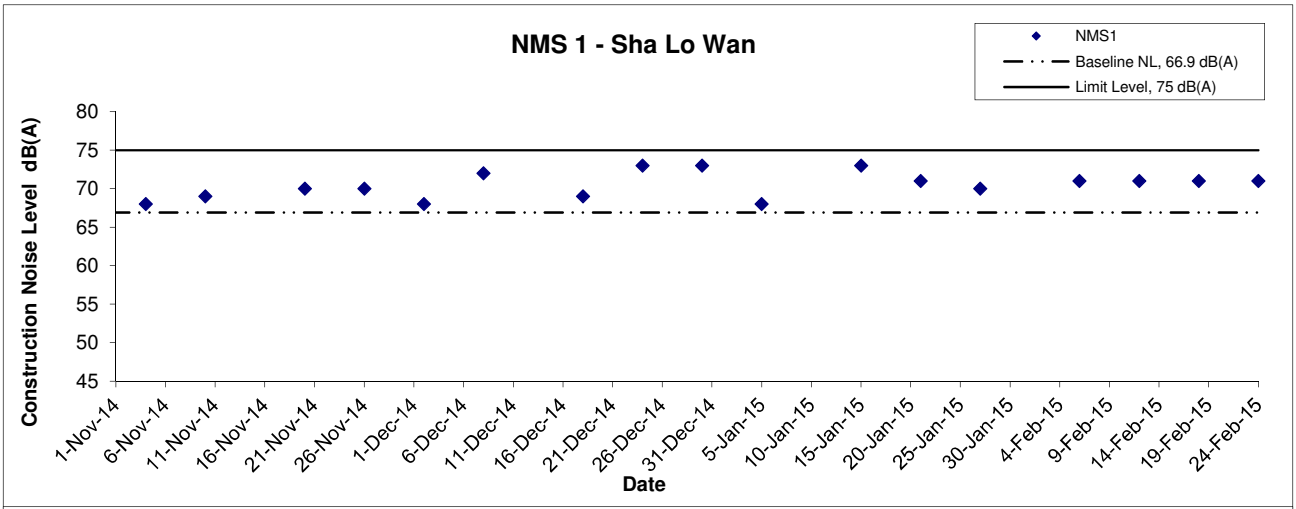
24-hour TSP Concentration Levels

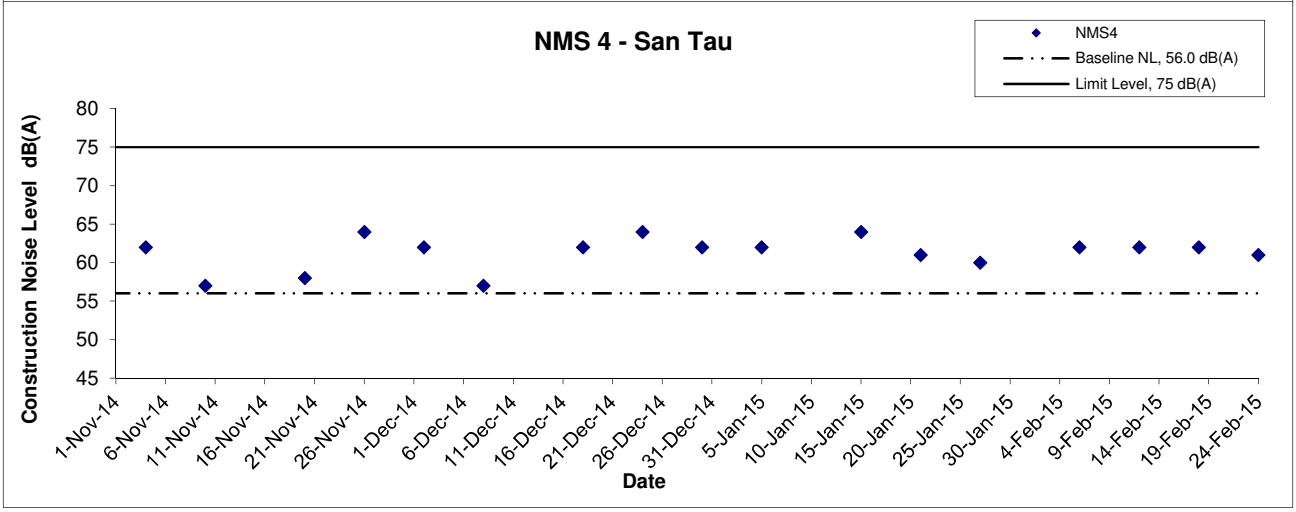


Title: Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Feb 15	Project No.: MA12014 Appendix: C	CINOTECH

APPENDIX D
GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS

Noise Levels

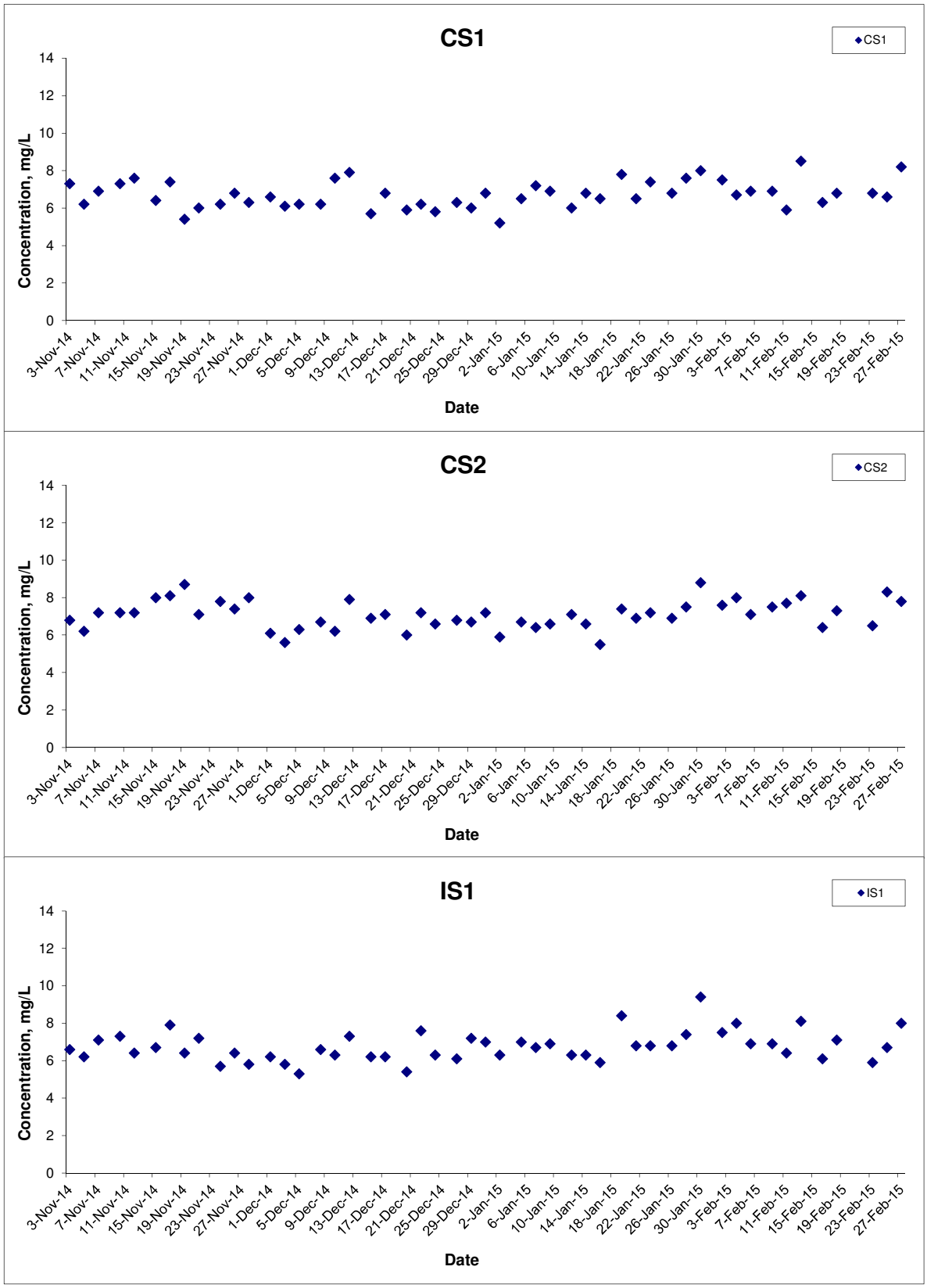




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Feb 15	Appendix D	

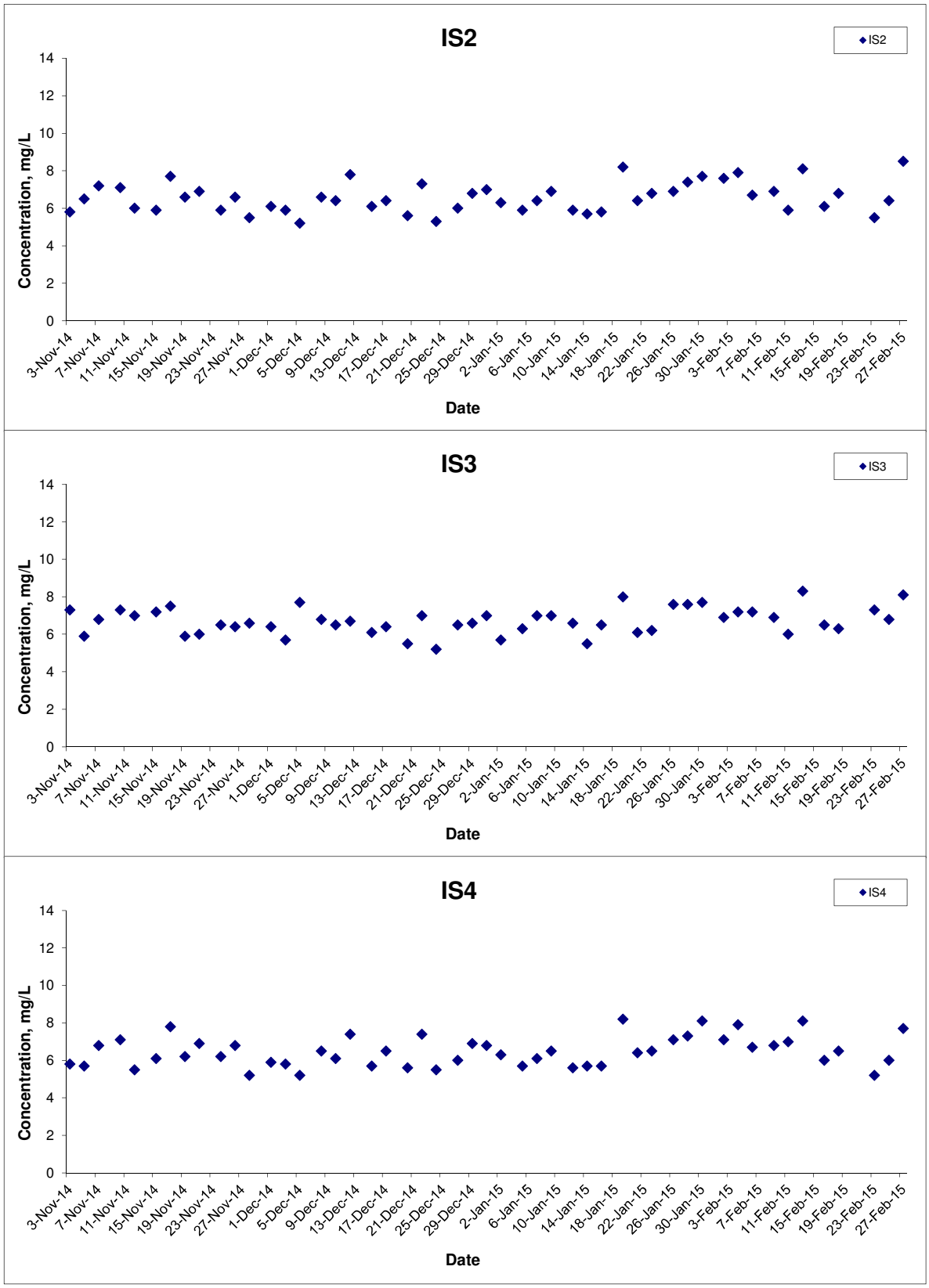
APPENDIX E
GRAPHICAL PRESENTATION OF WATER QUALITY MONITORING RESULTS

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
		Date: Feb 15	Appendix: E	

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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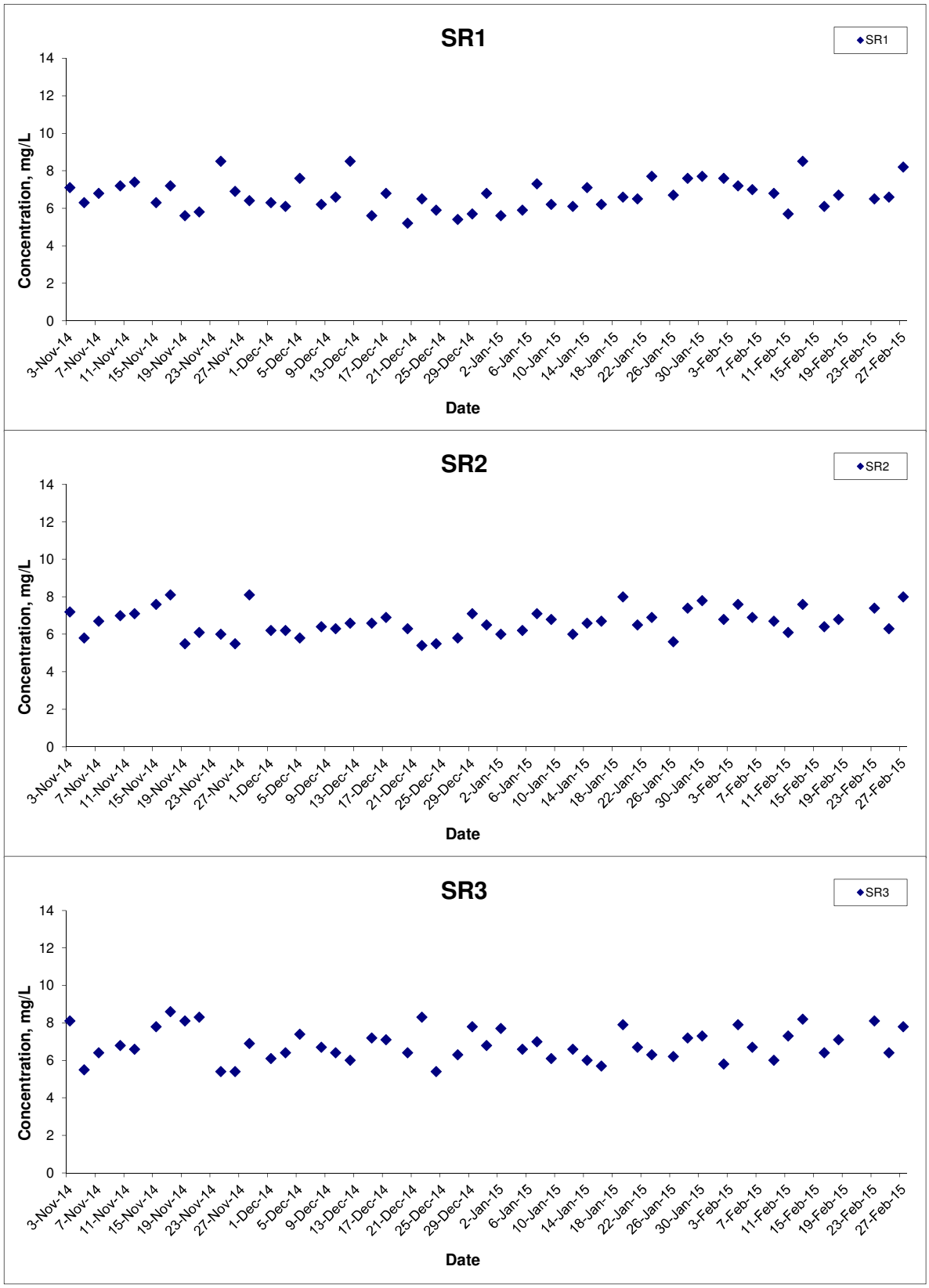
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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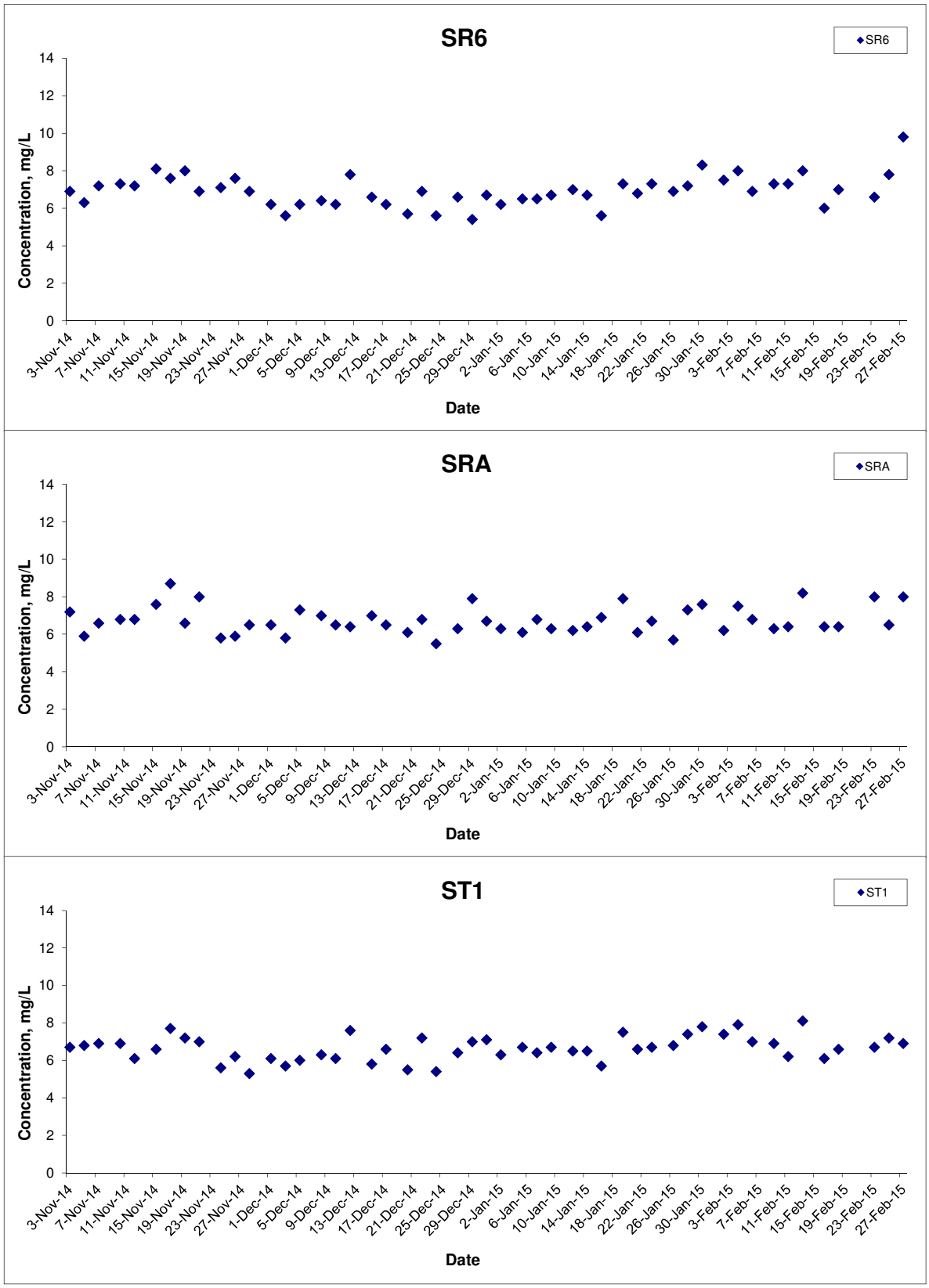
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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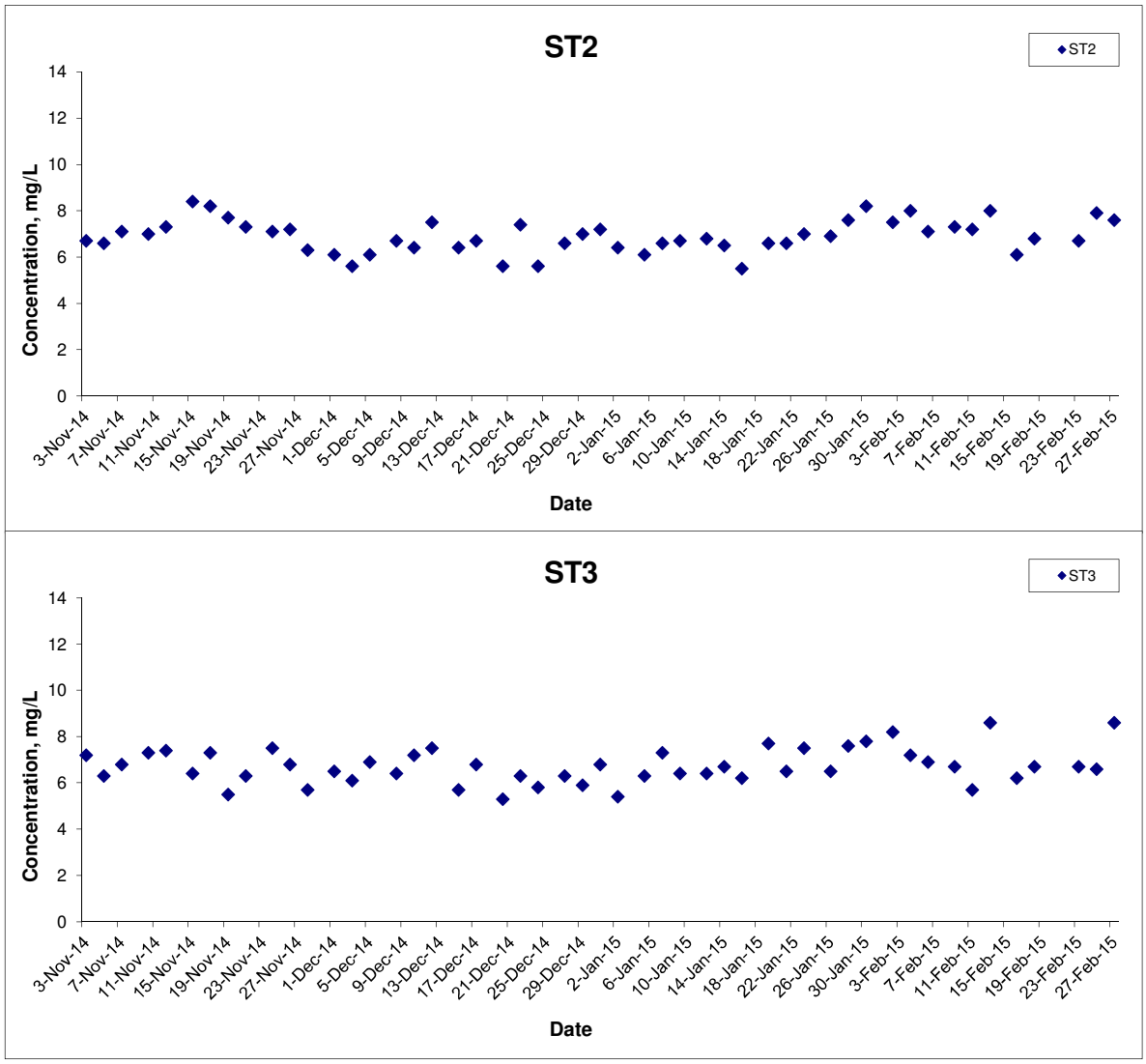
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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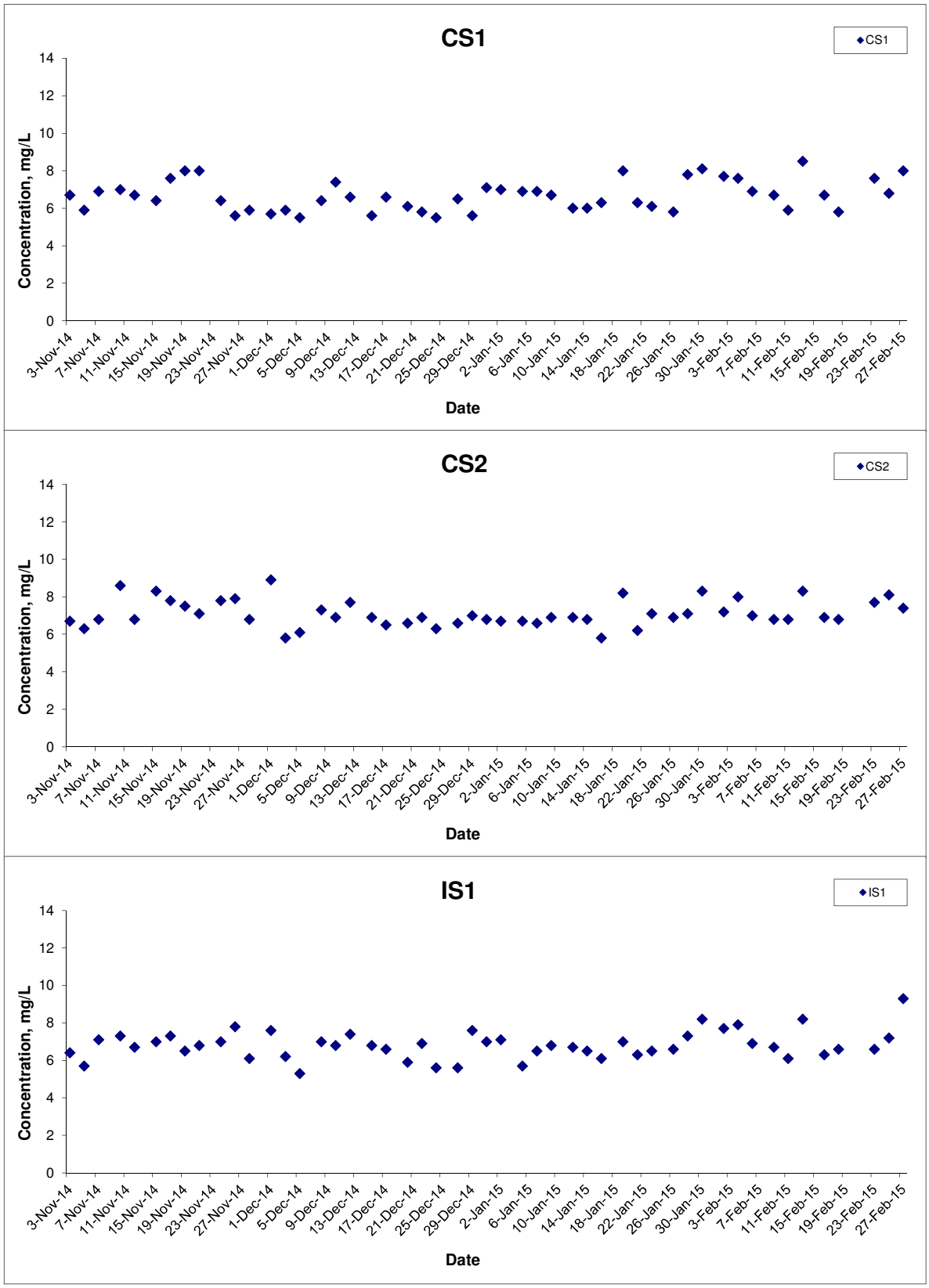
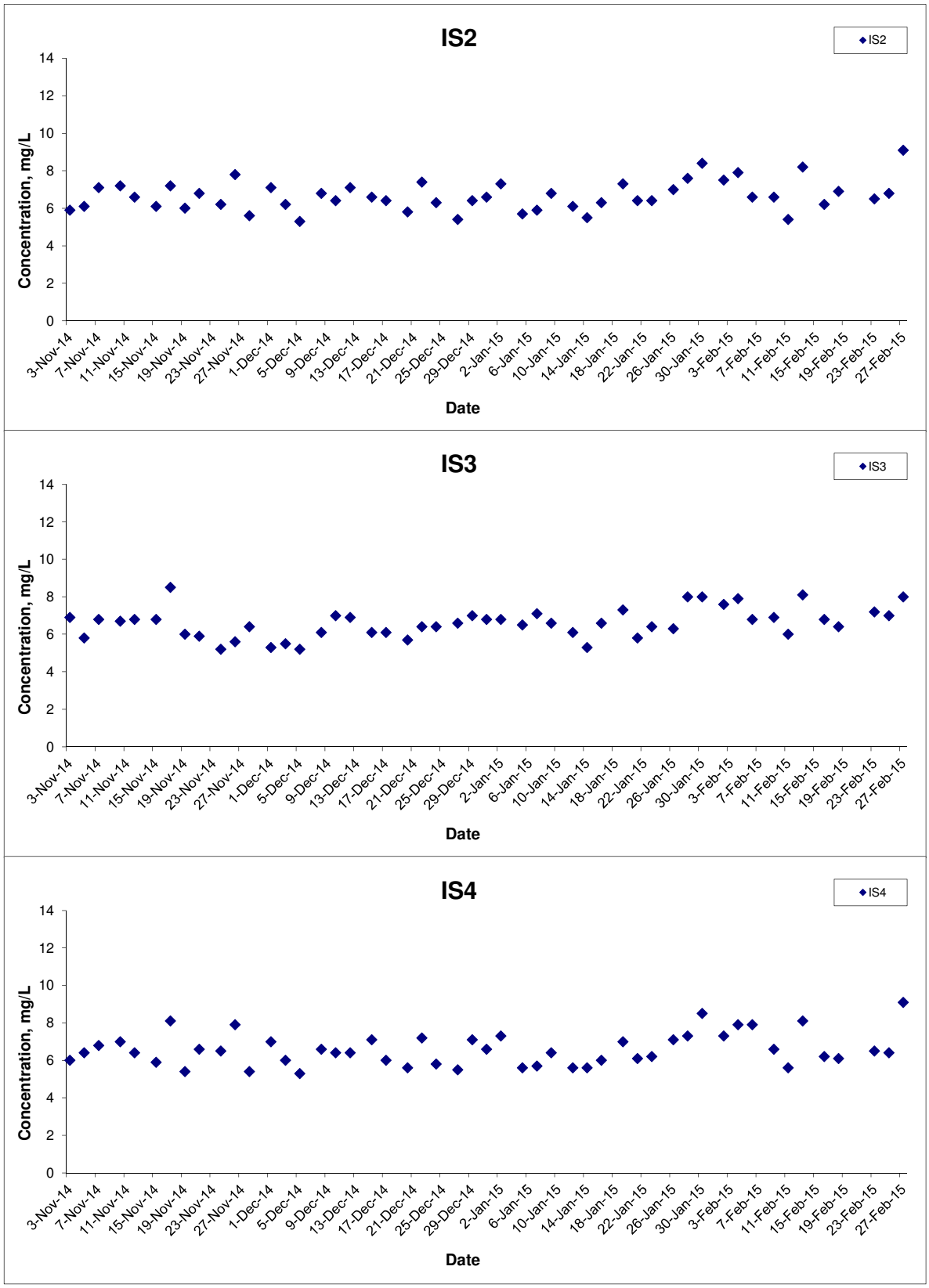
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



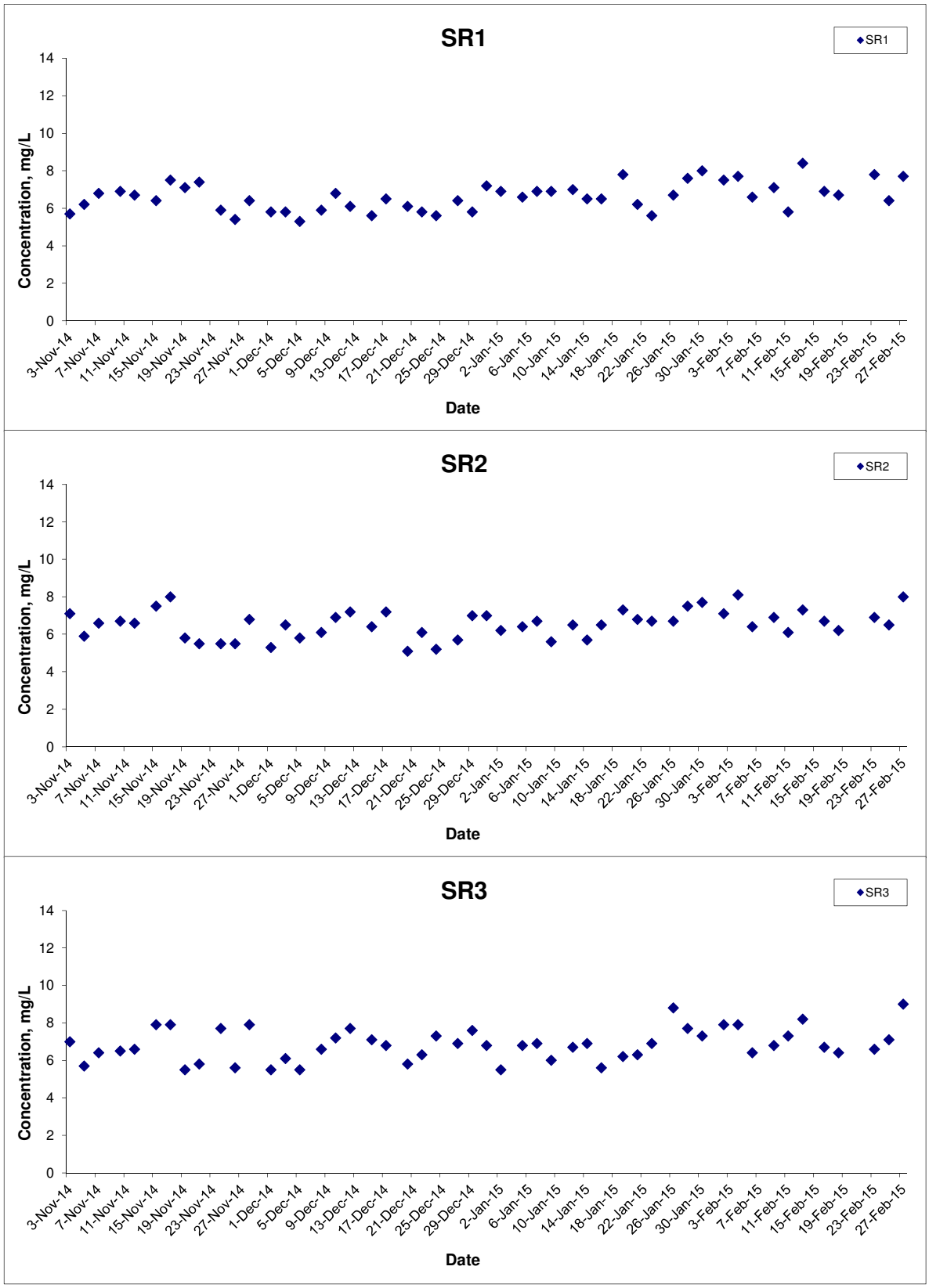
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
		Date: Feb 15	Appendix: E	

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Feb 15	Appendix E	

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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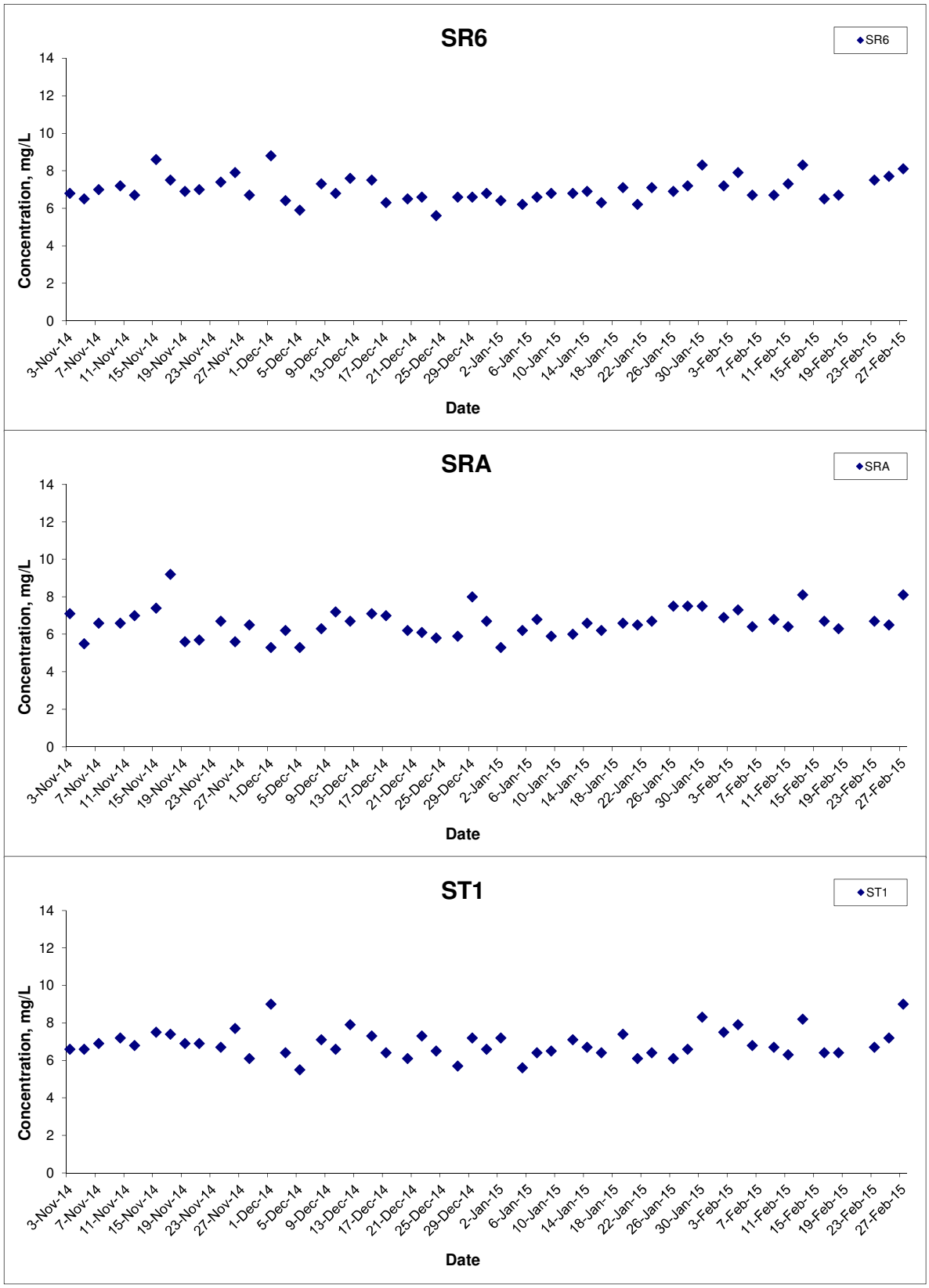

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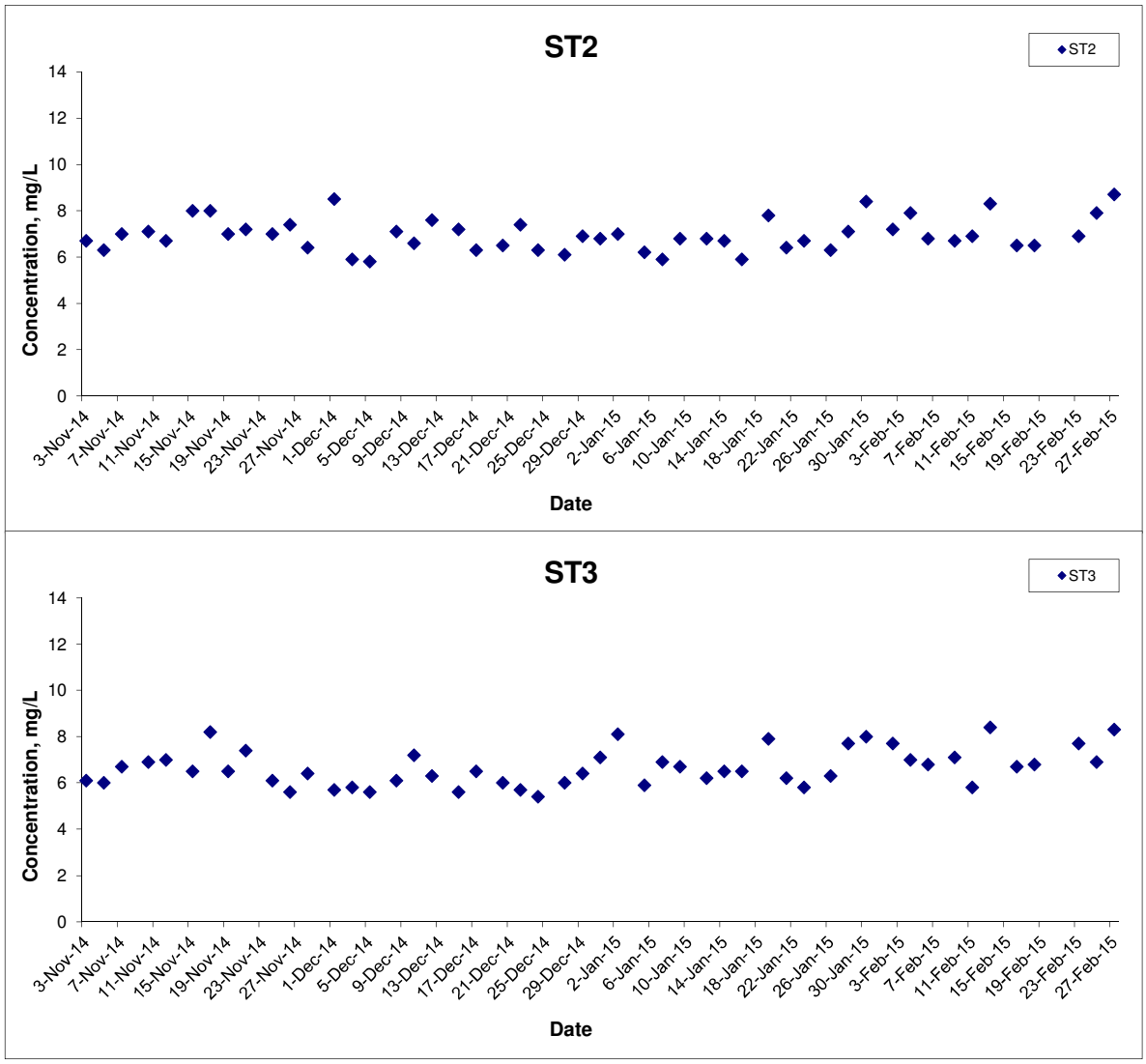

Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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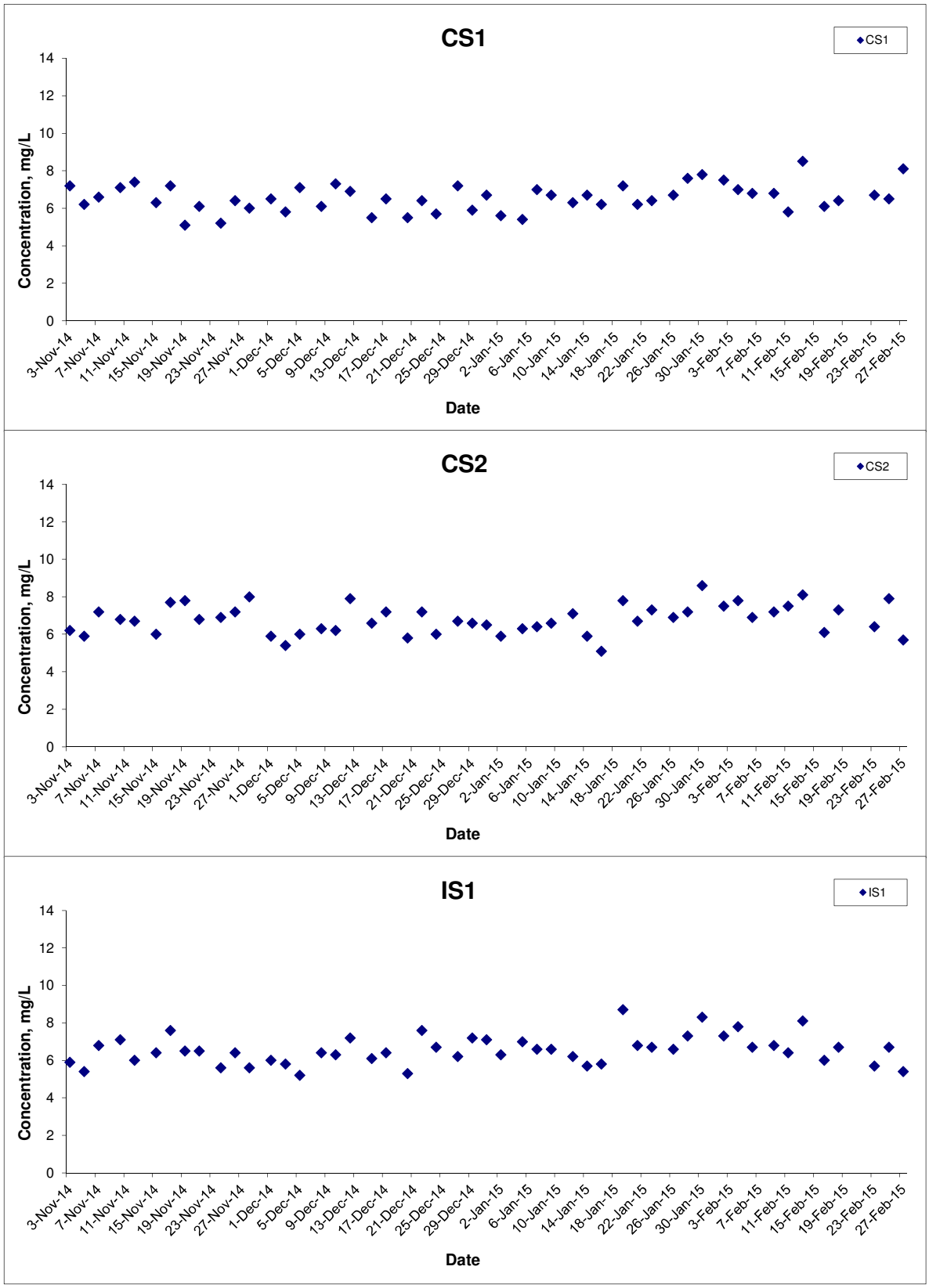
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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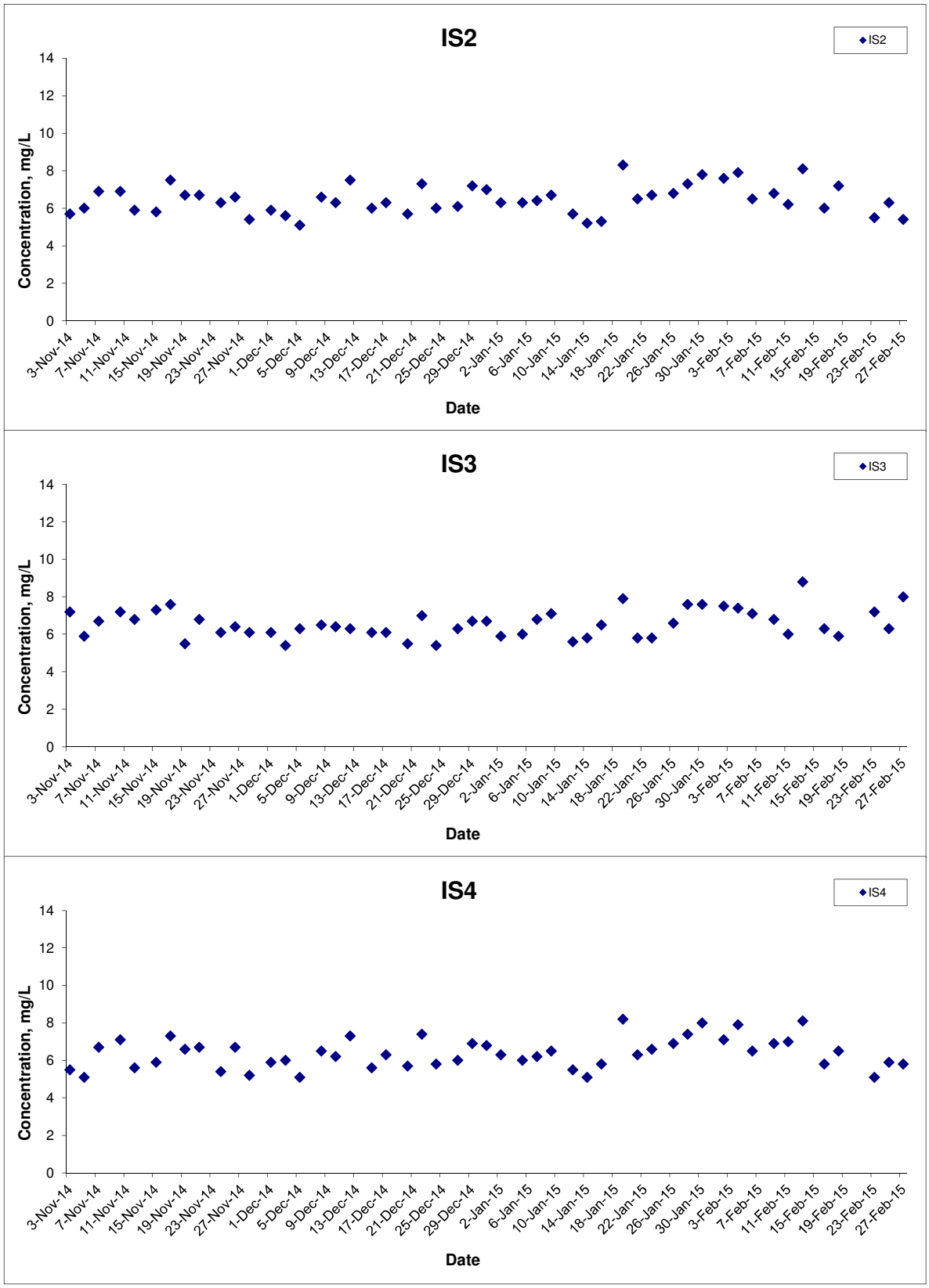
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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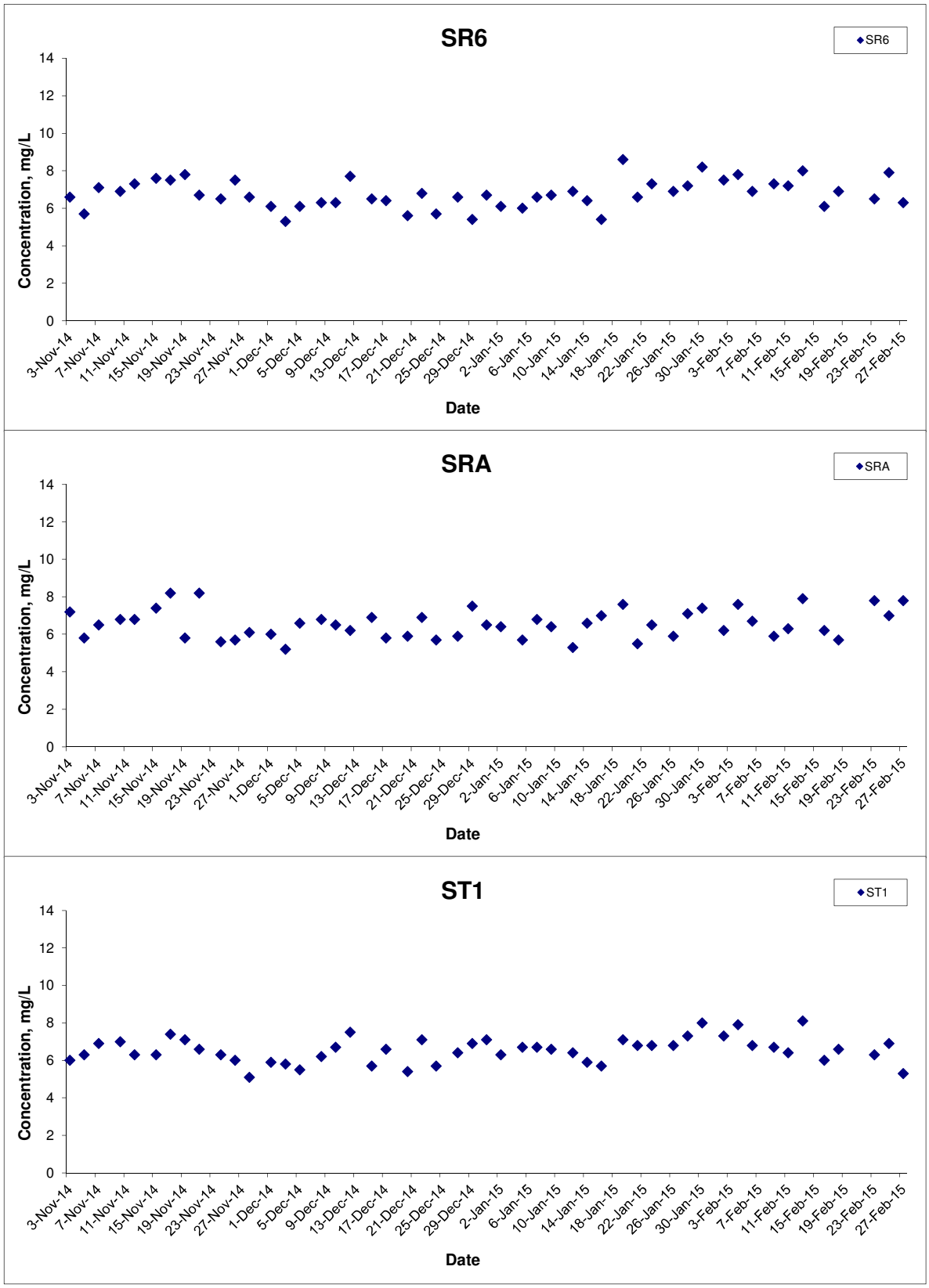
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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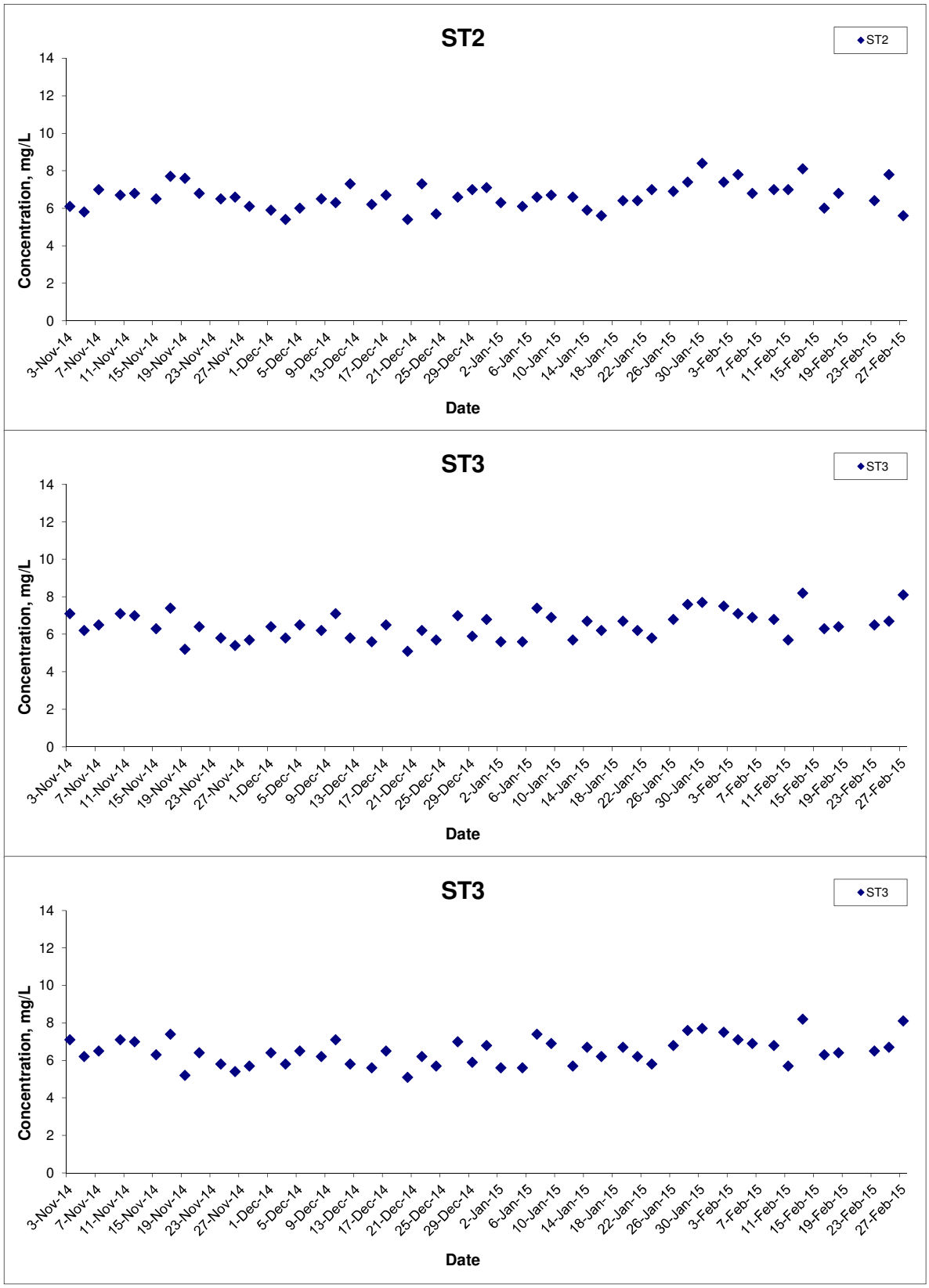

Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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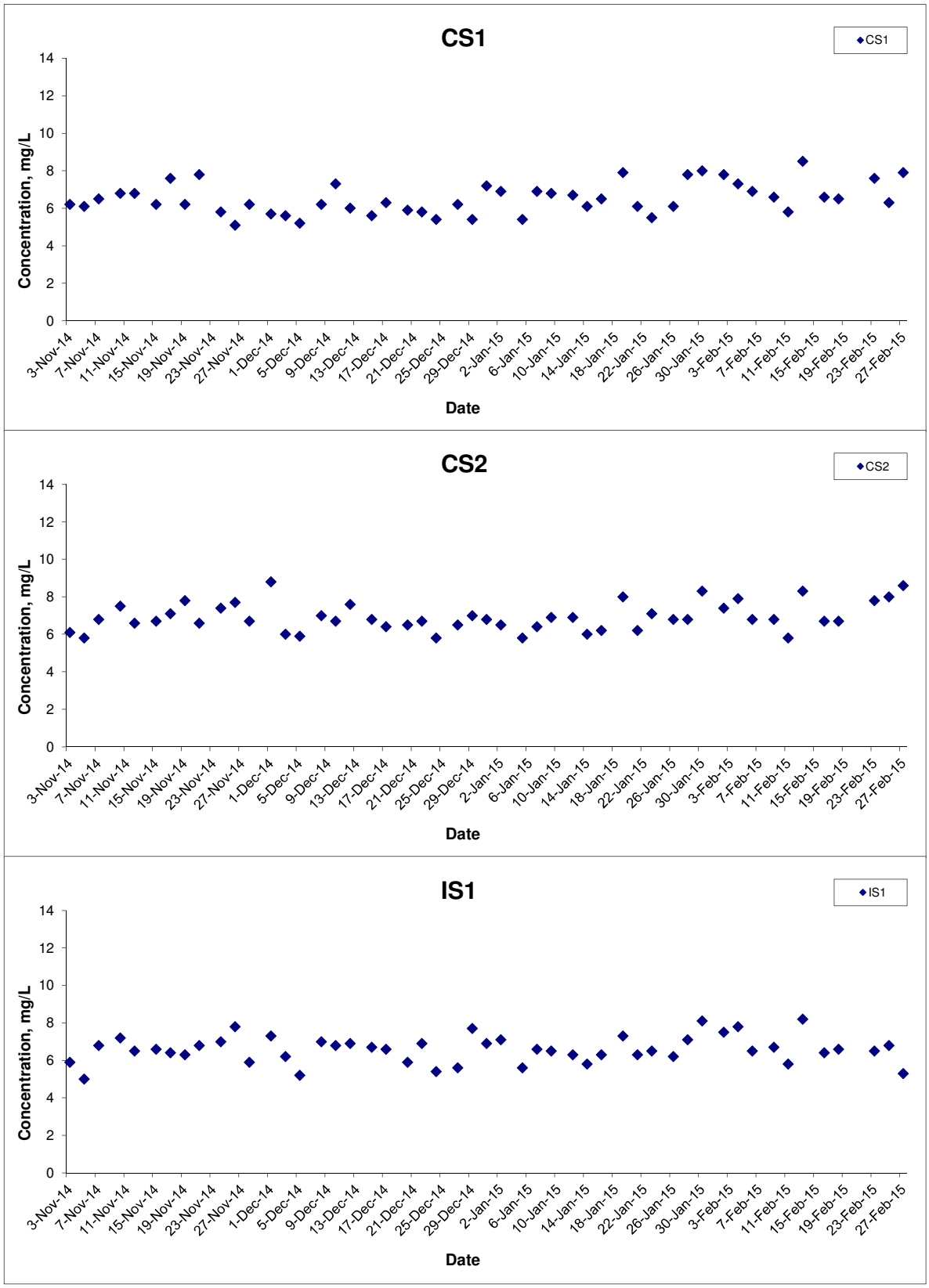

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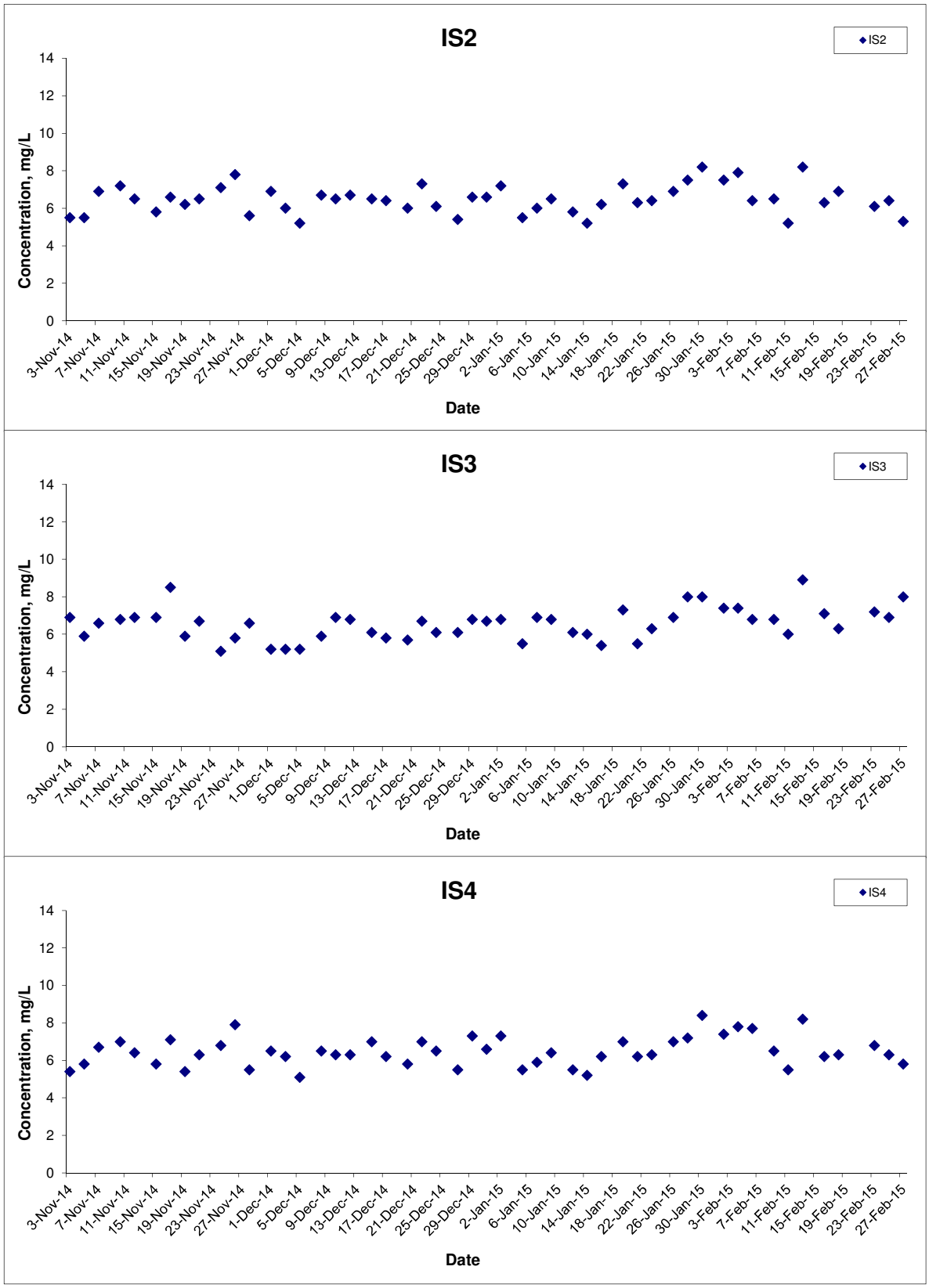

Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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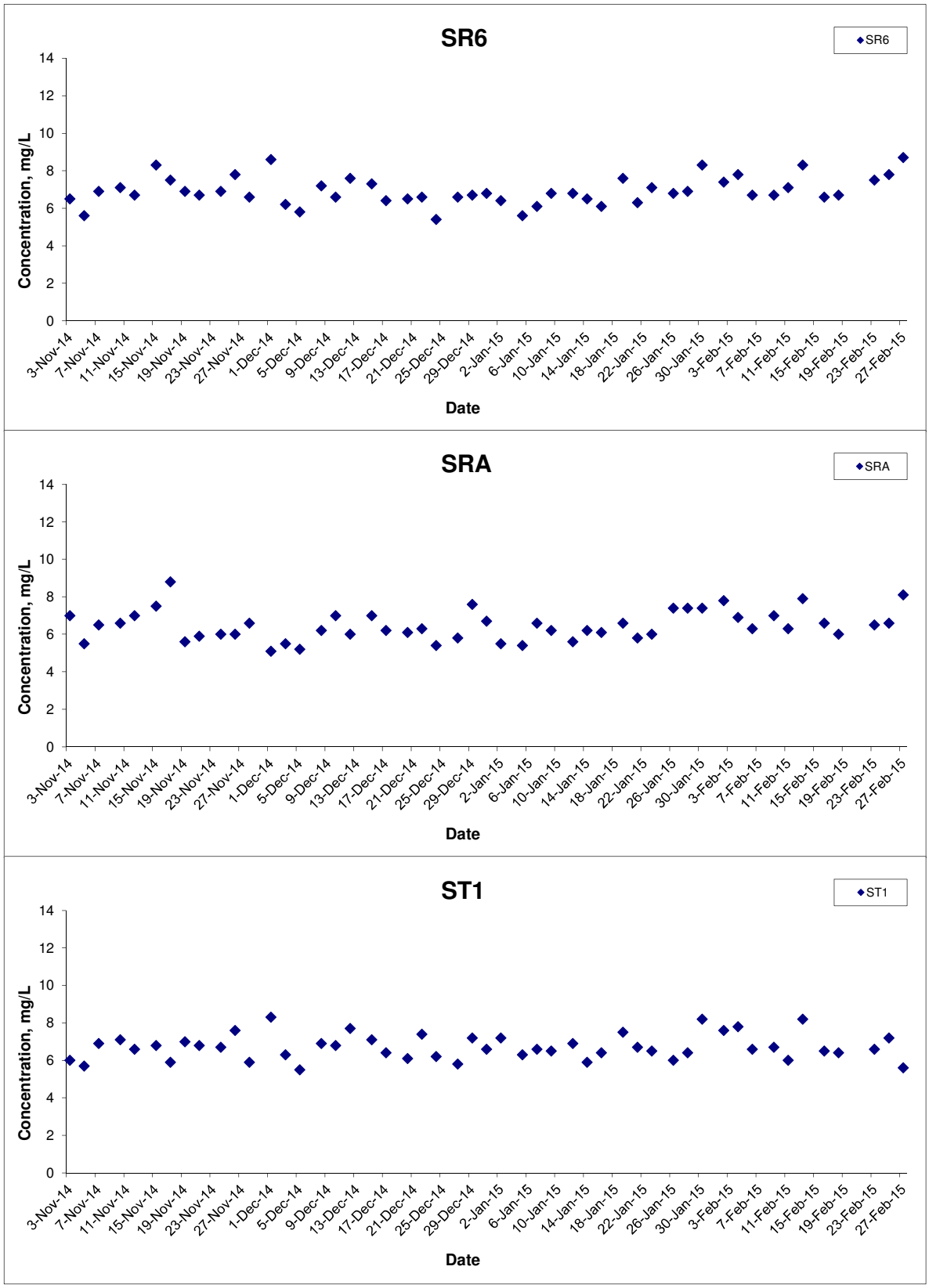
Dissolved Oxygen (Bottom) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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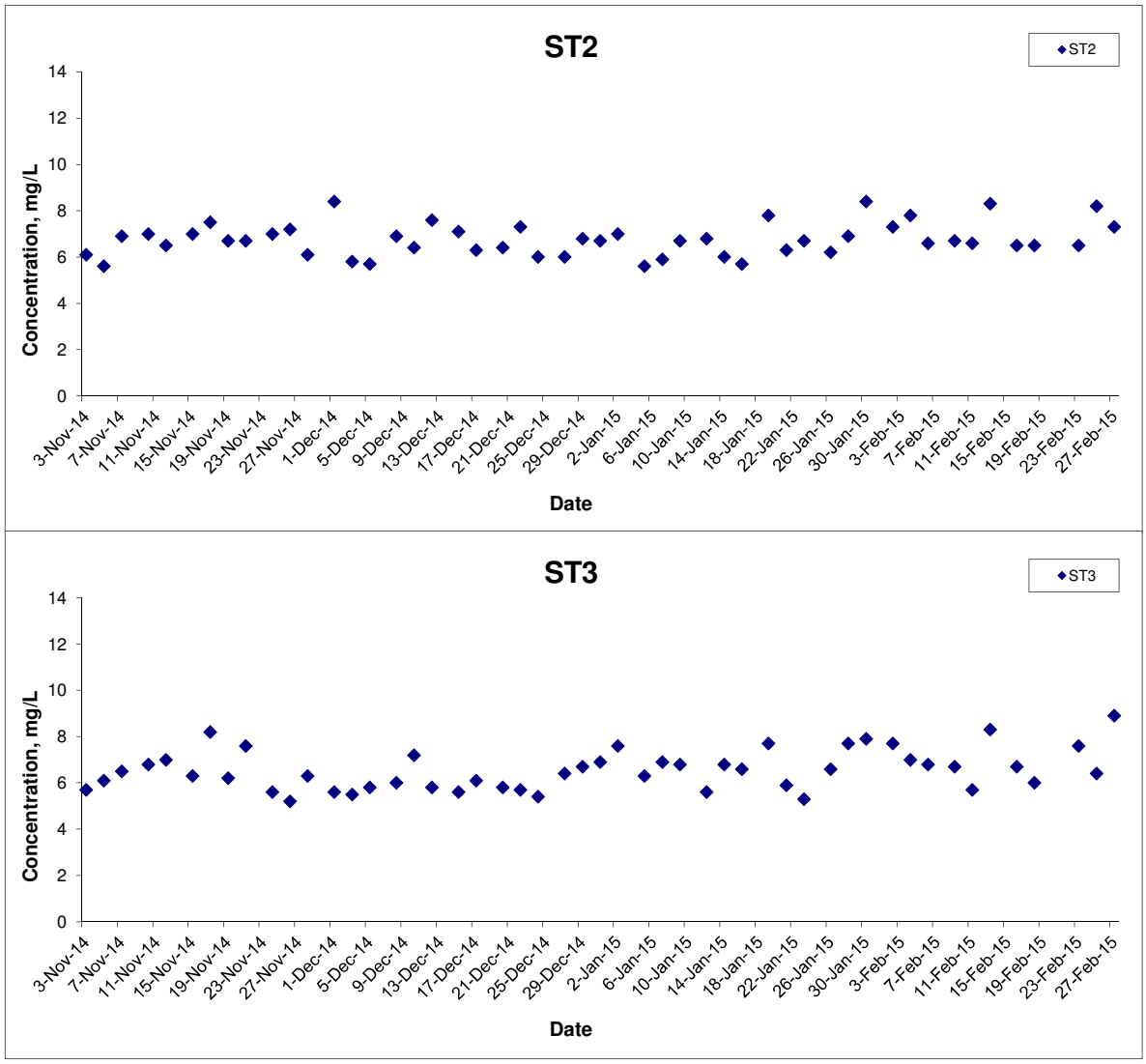
Dissolved Oxygen (Bottom) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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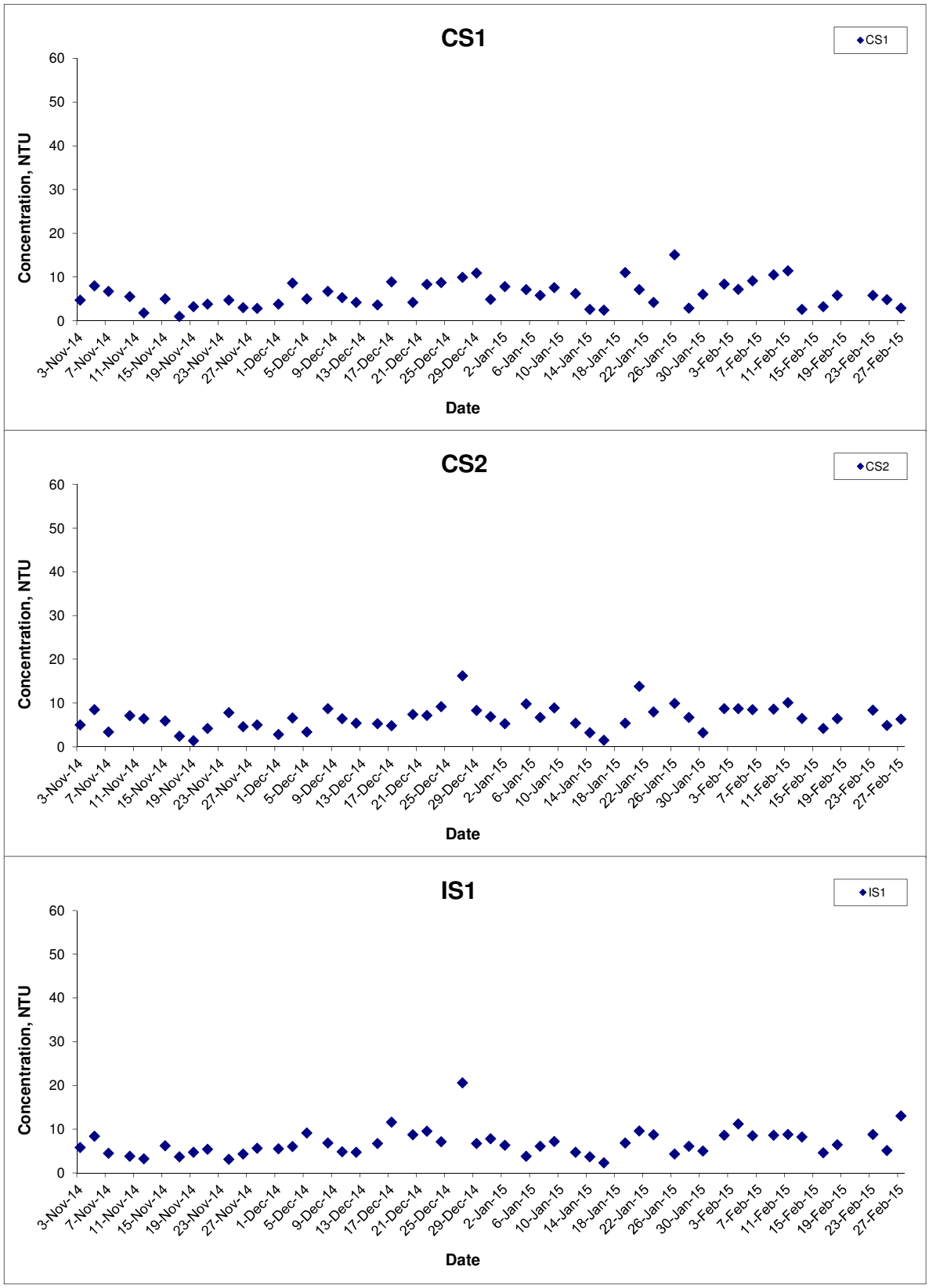
Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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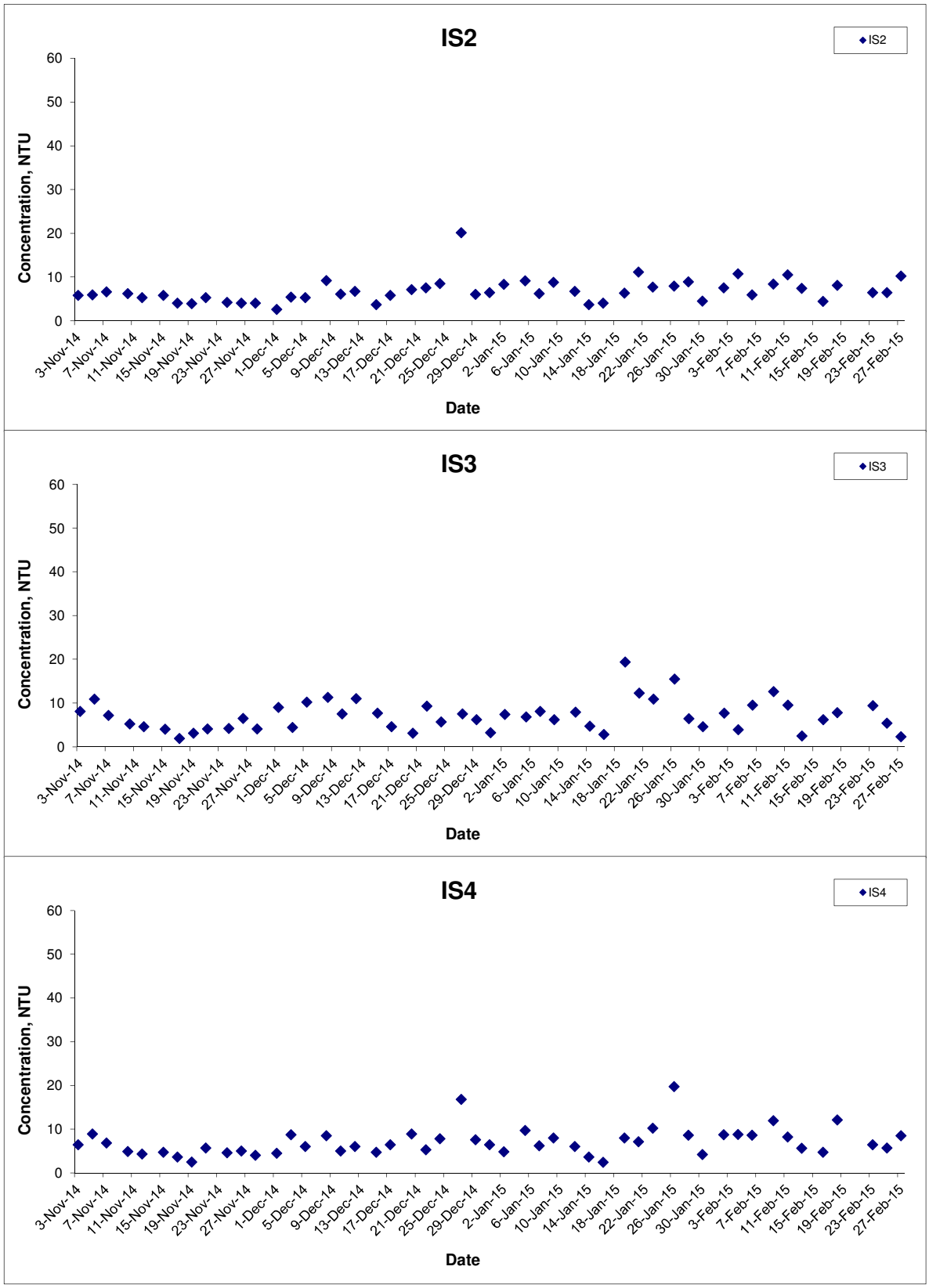
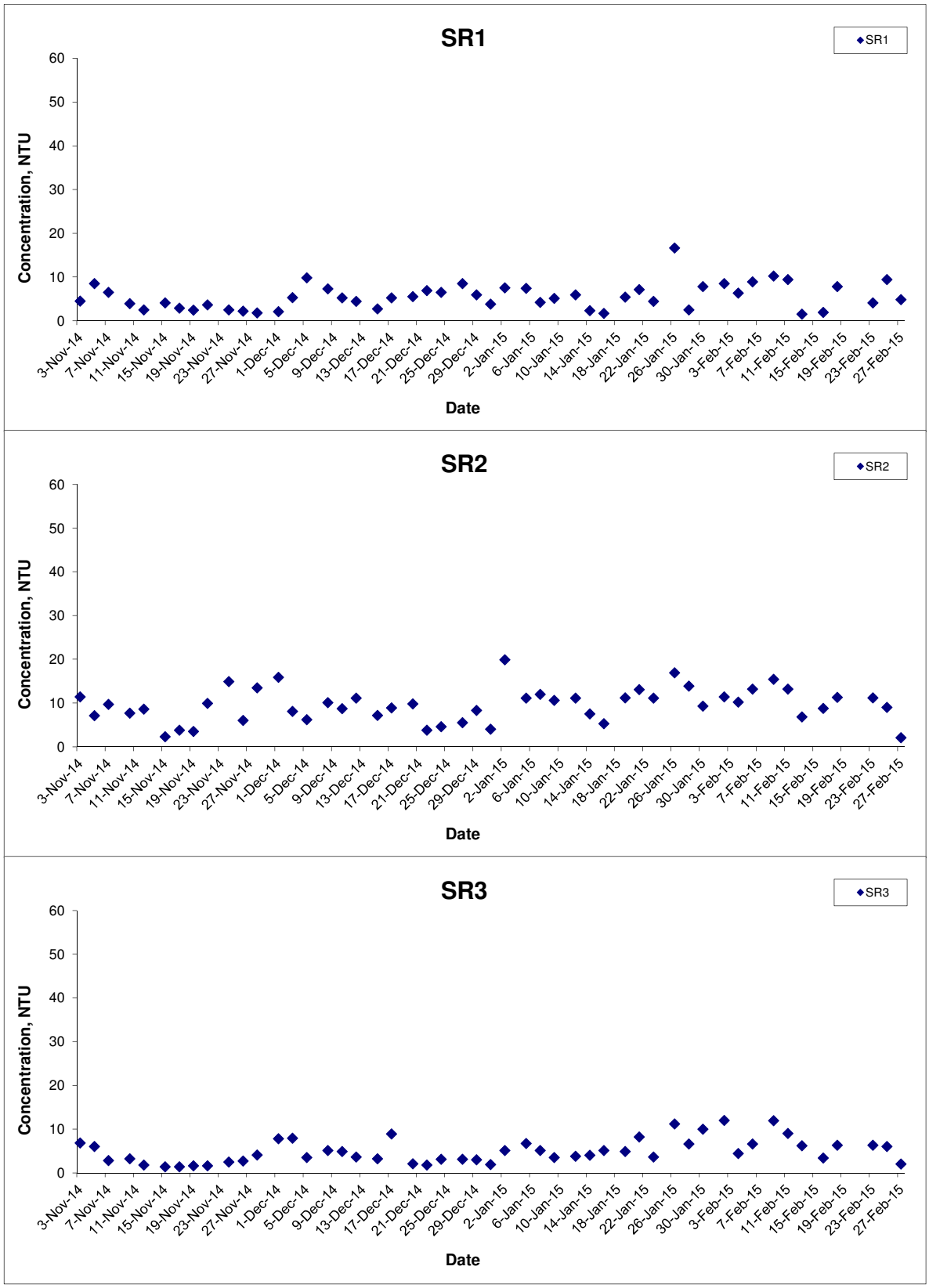
Turbidity (Depth-averaged) at Mid-Ebb Tide



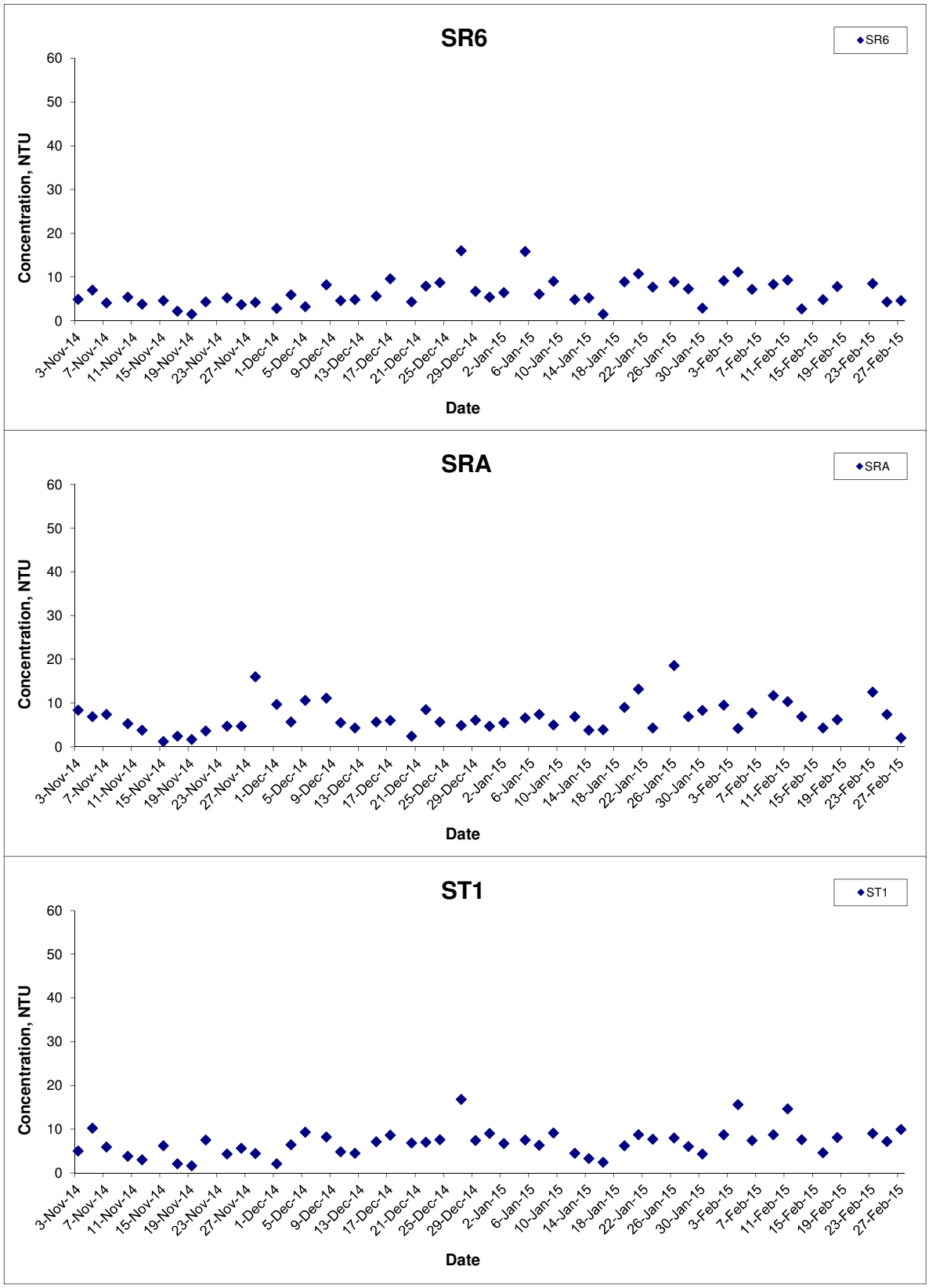
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Feb 15	Appendix E	

Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Feb 15	Appendix E	

Turbidity (Depth-averaged) at Mid-Ebb Tide



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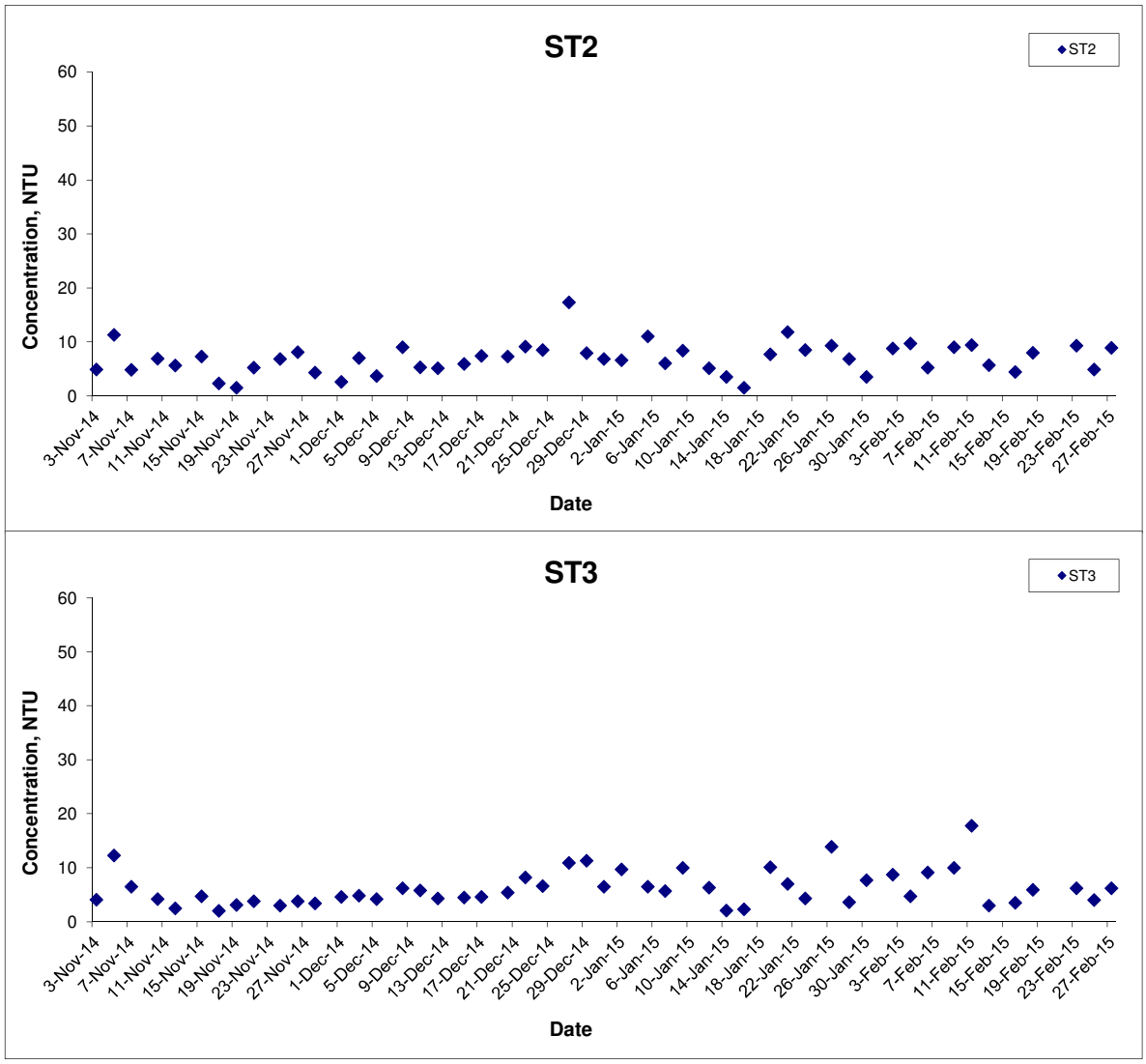
		Date Feb 15	Appendix E	

Turbidity (Depth-averaged) at Mid-Ebb Tide



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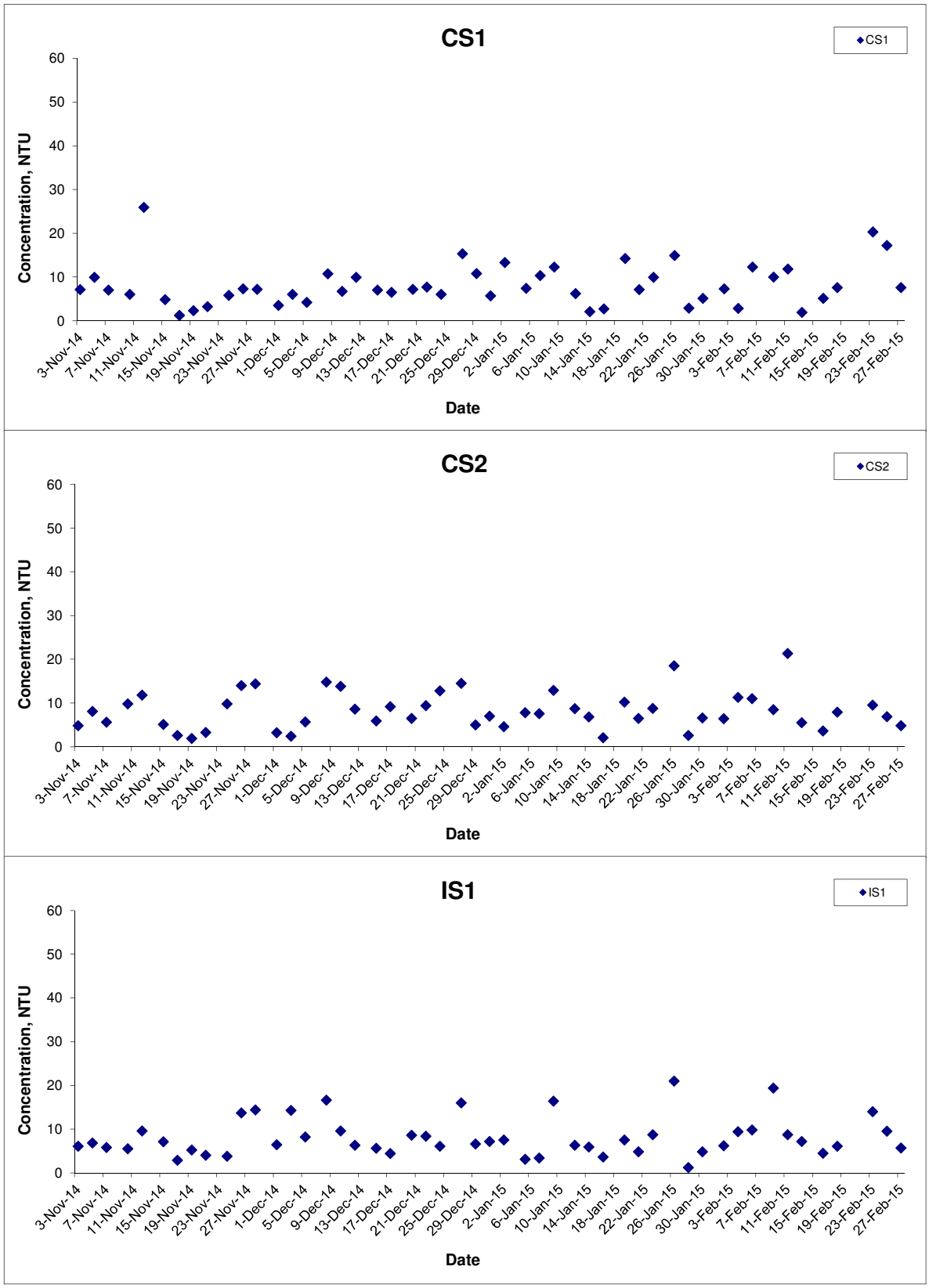
		Date: Feb 15	Appendix: E	

Turbidity (Depth-averaged) at Mid-Flood Tide



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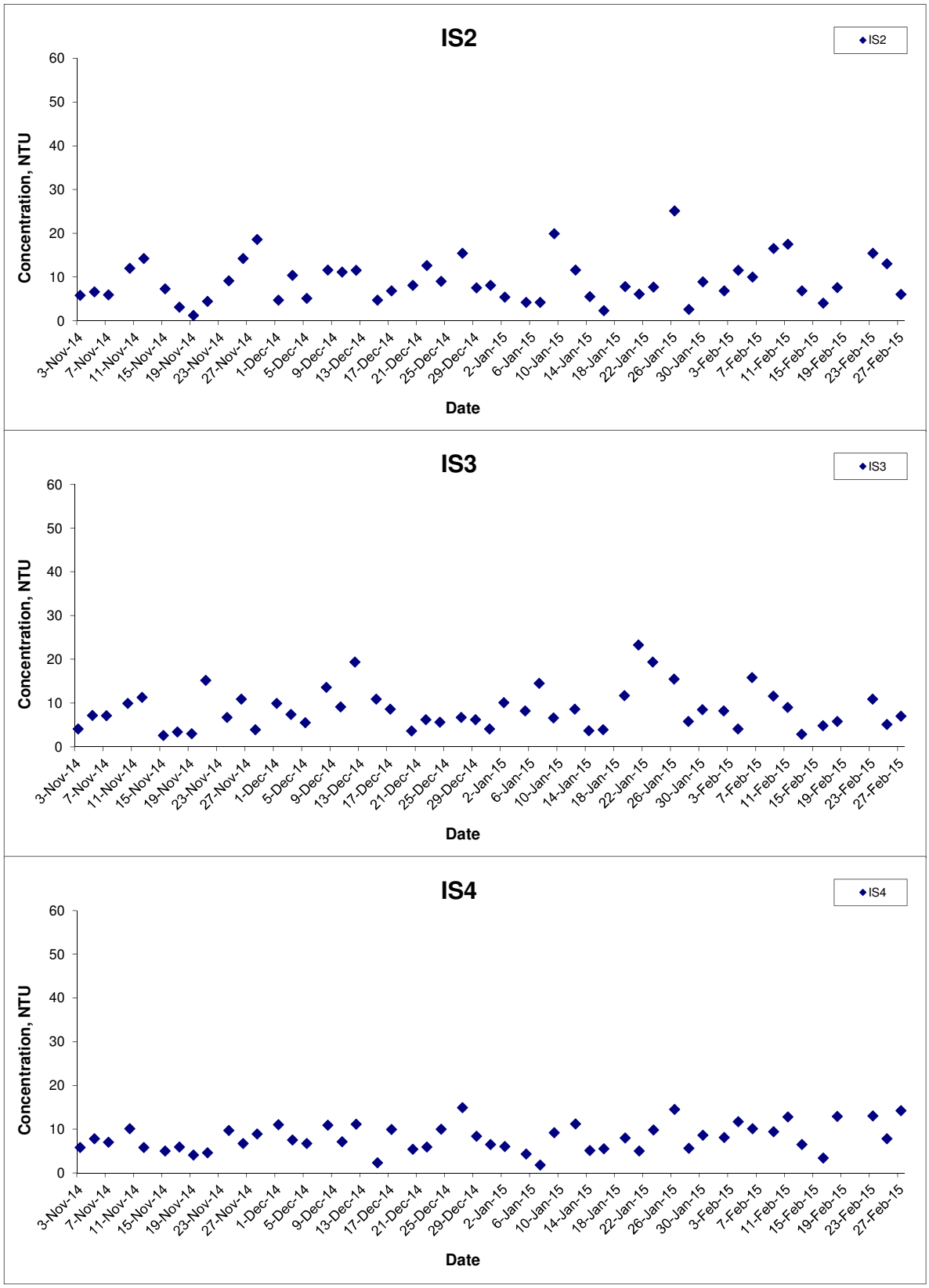
		Date: Feb 15	Appendix: E	

Turbidity (Depth-averaged) at Mid-Flood Tide



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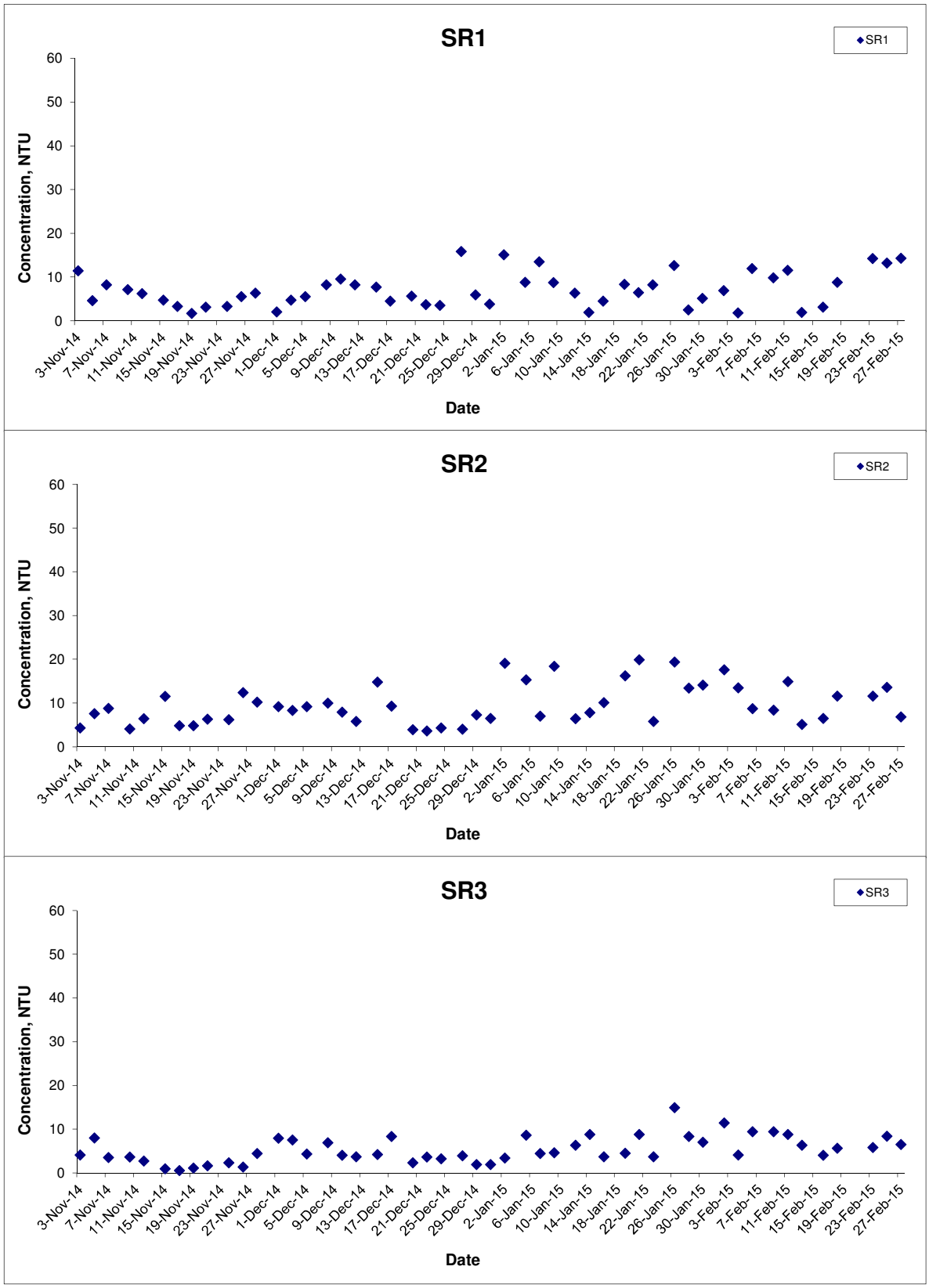
		Date: Feb 15	Appendix: E	

Turbidity (Depth-averaged) at Mid-Flood Tide



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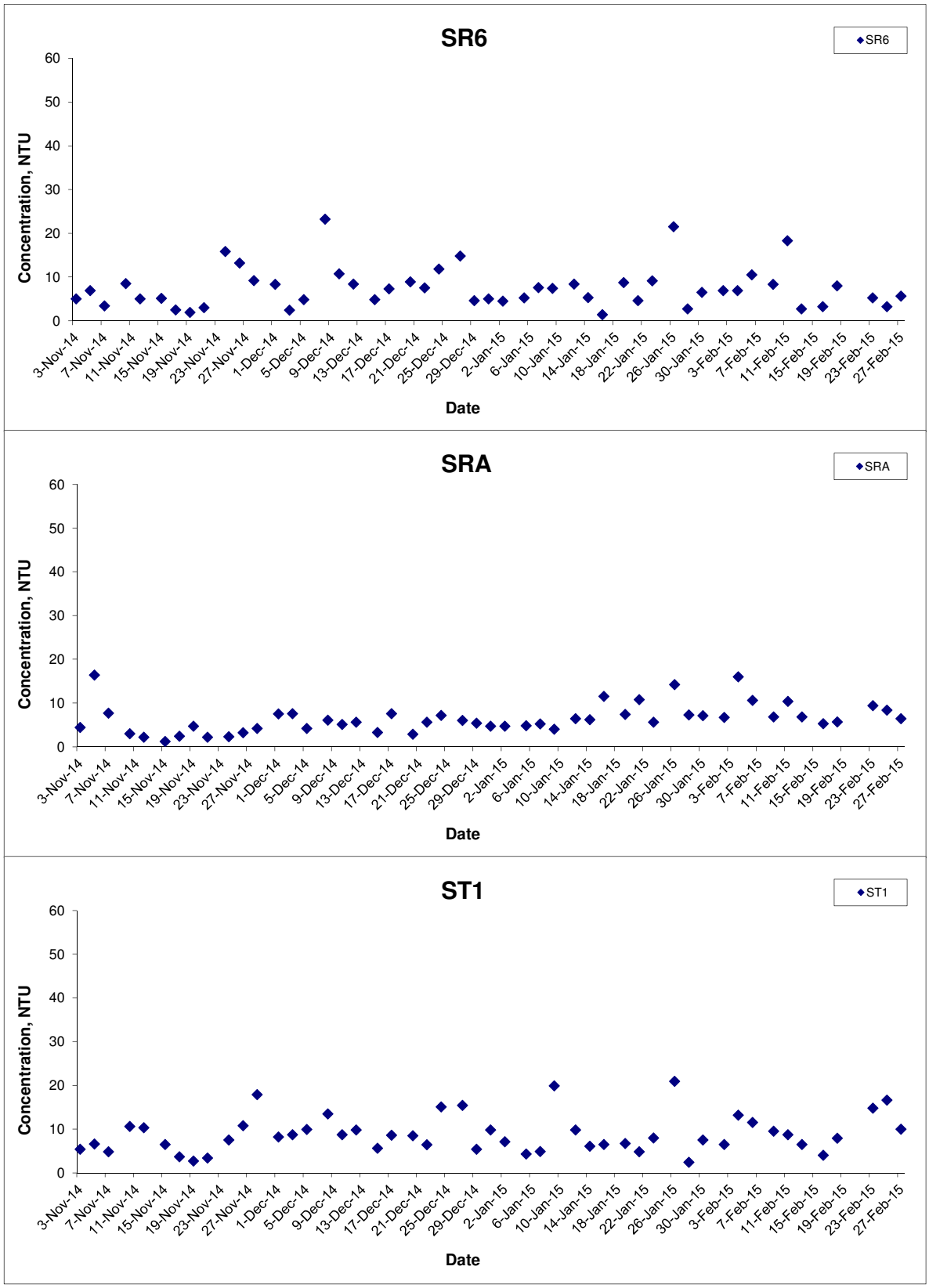

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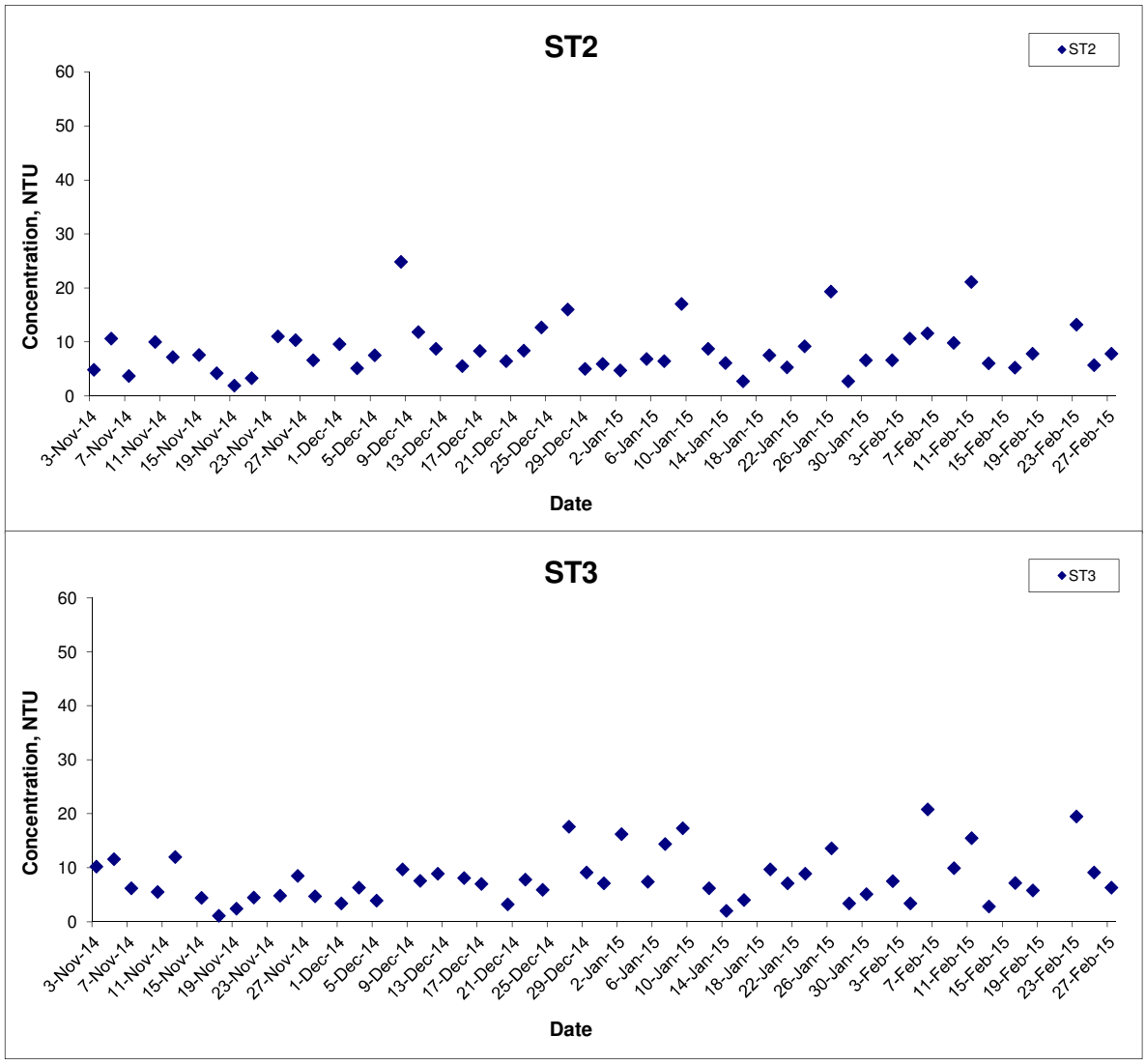

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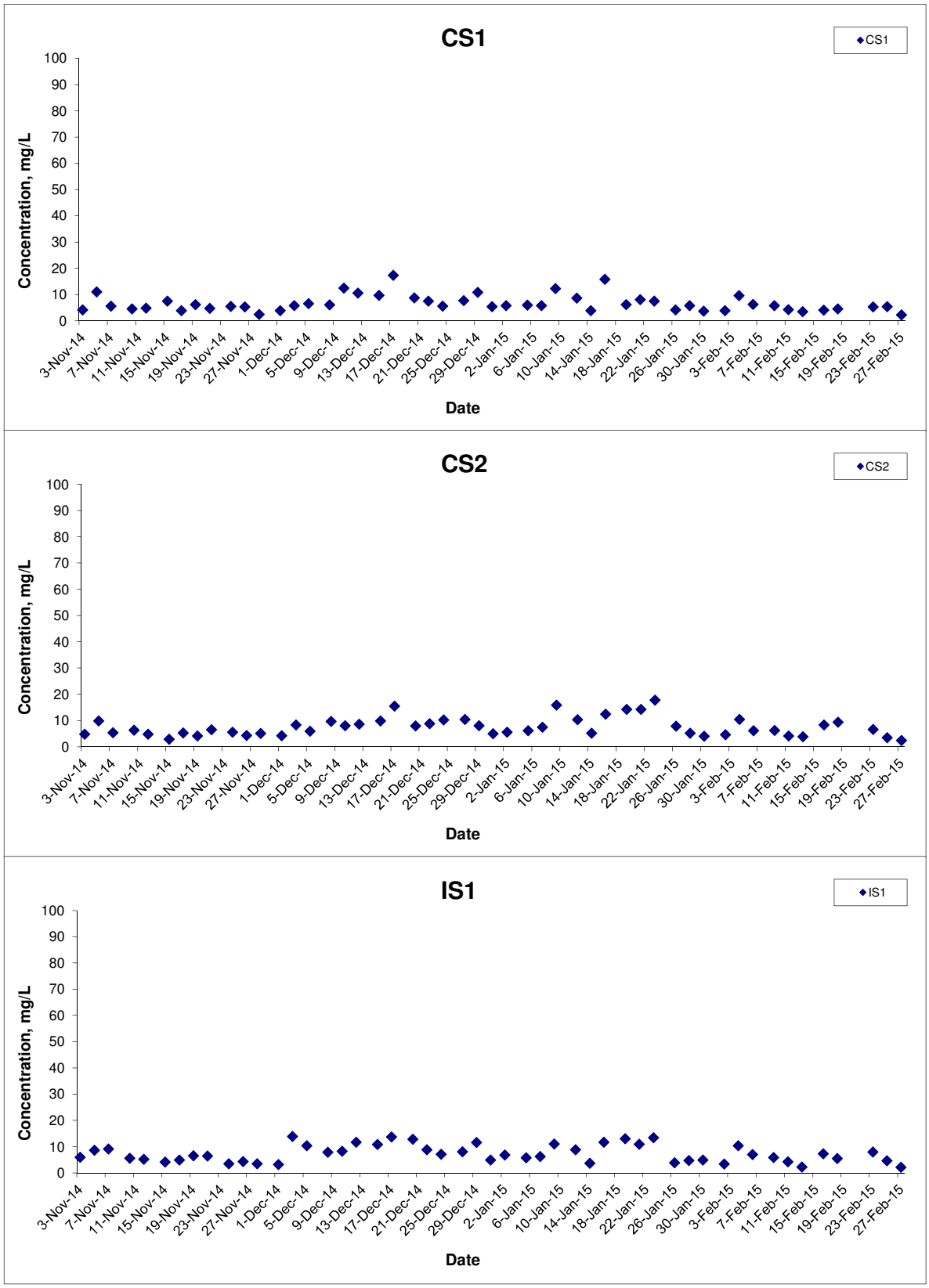
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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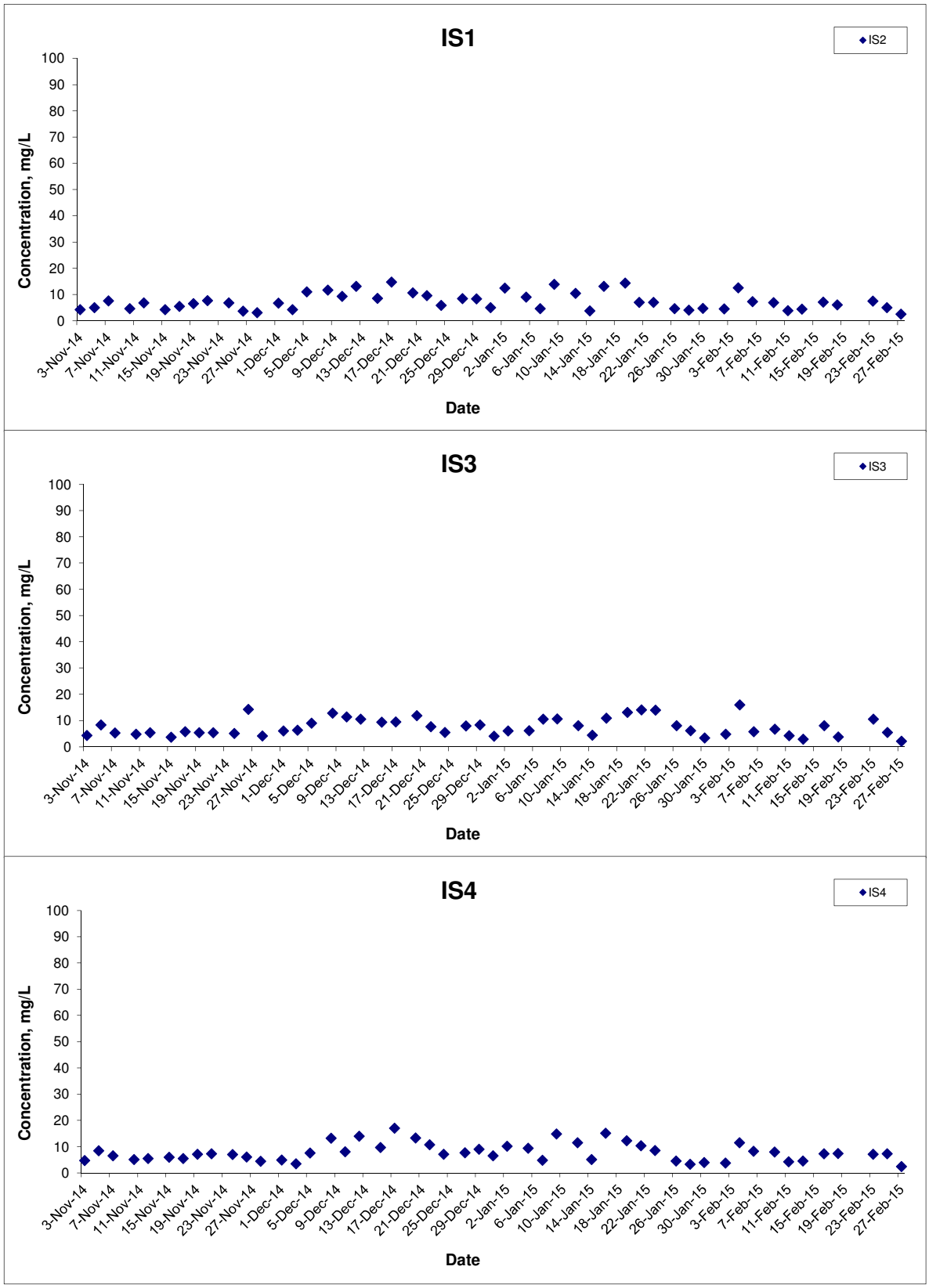
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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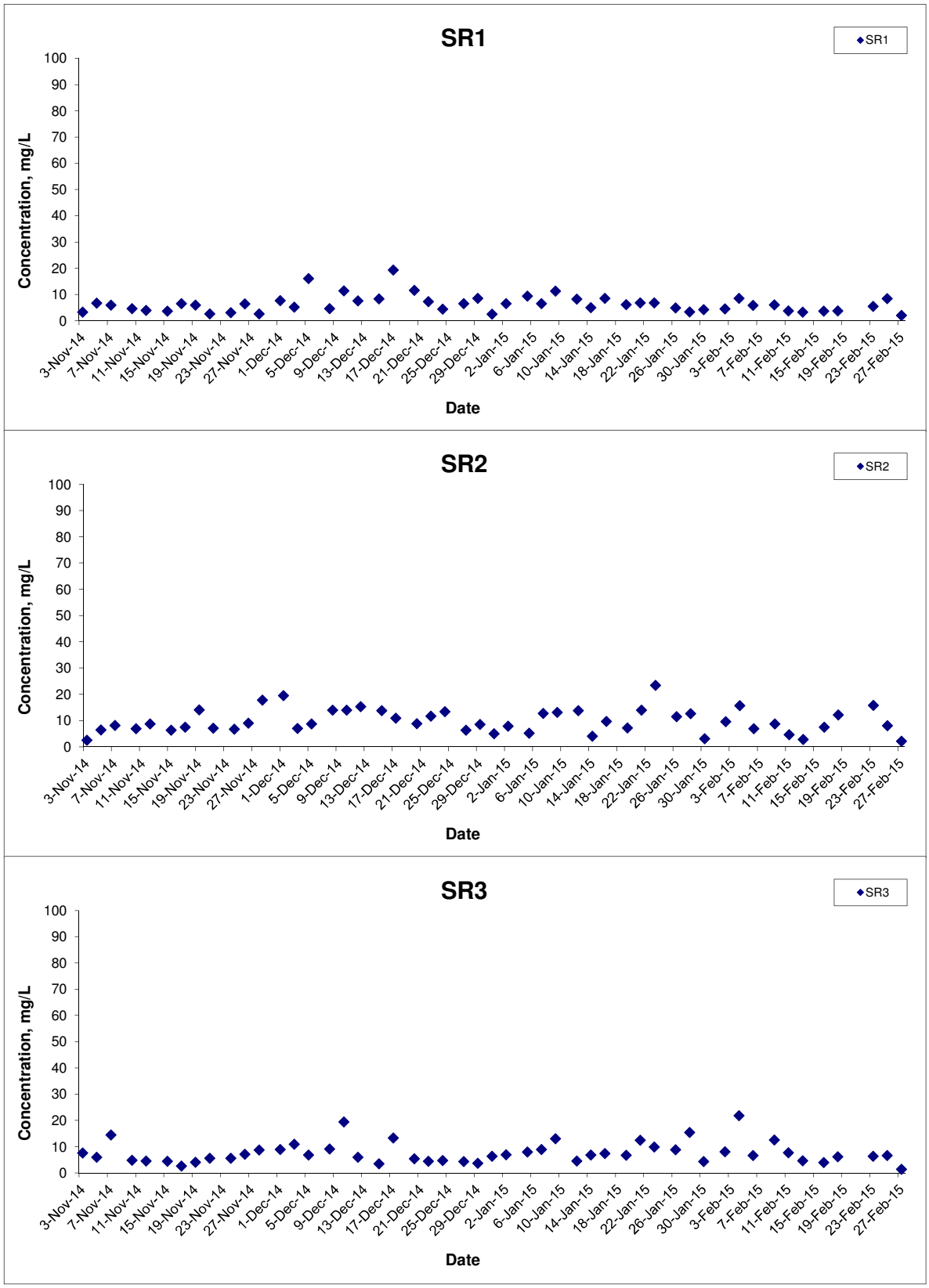
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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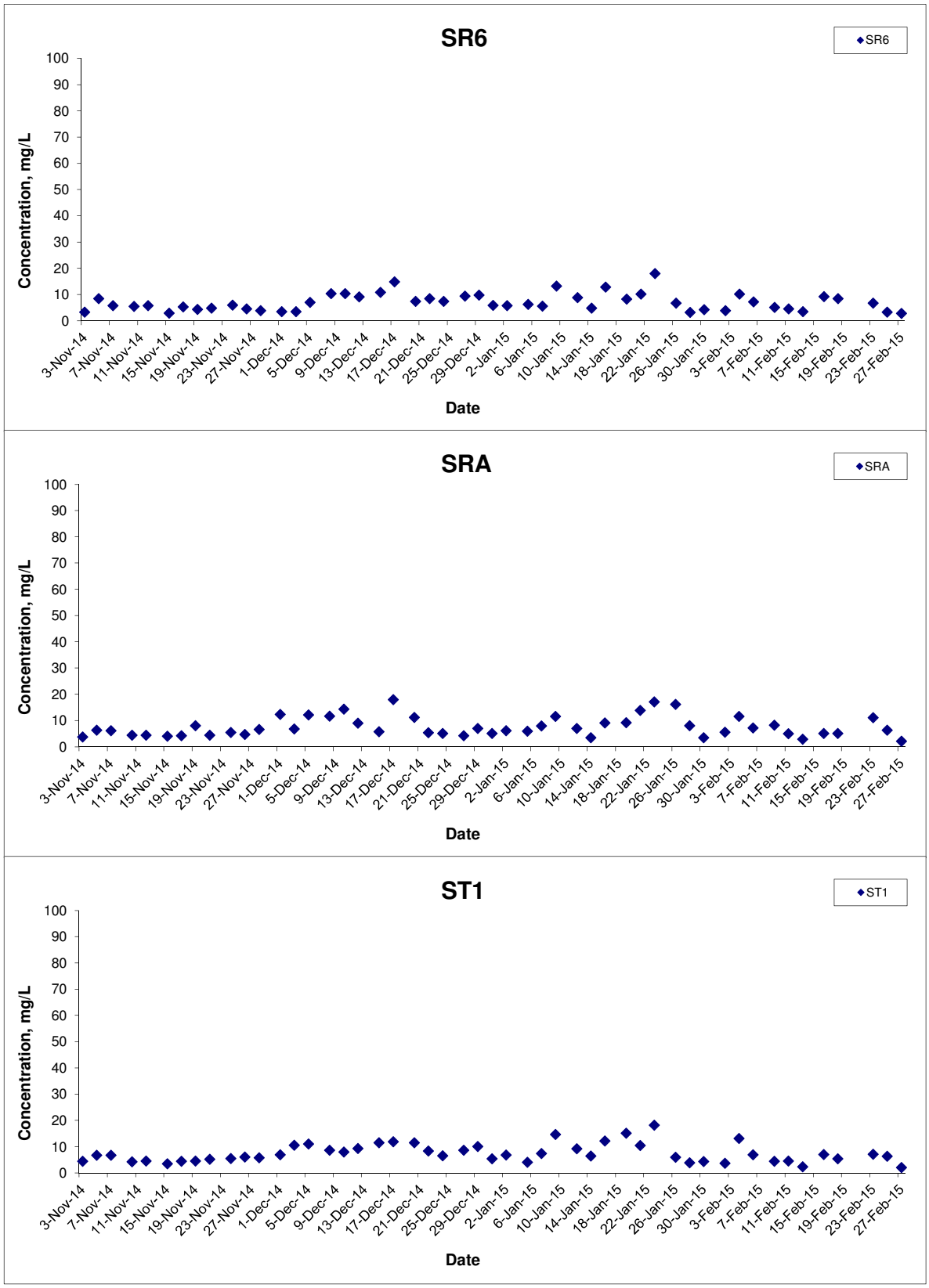

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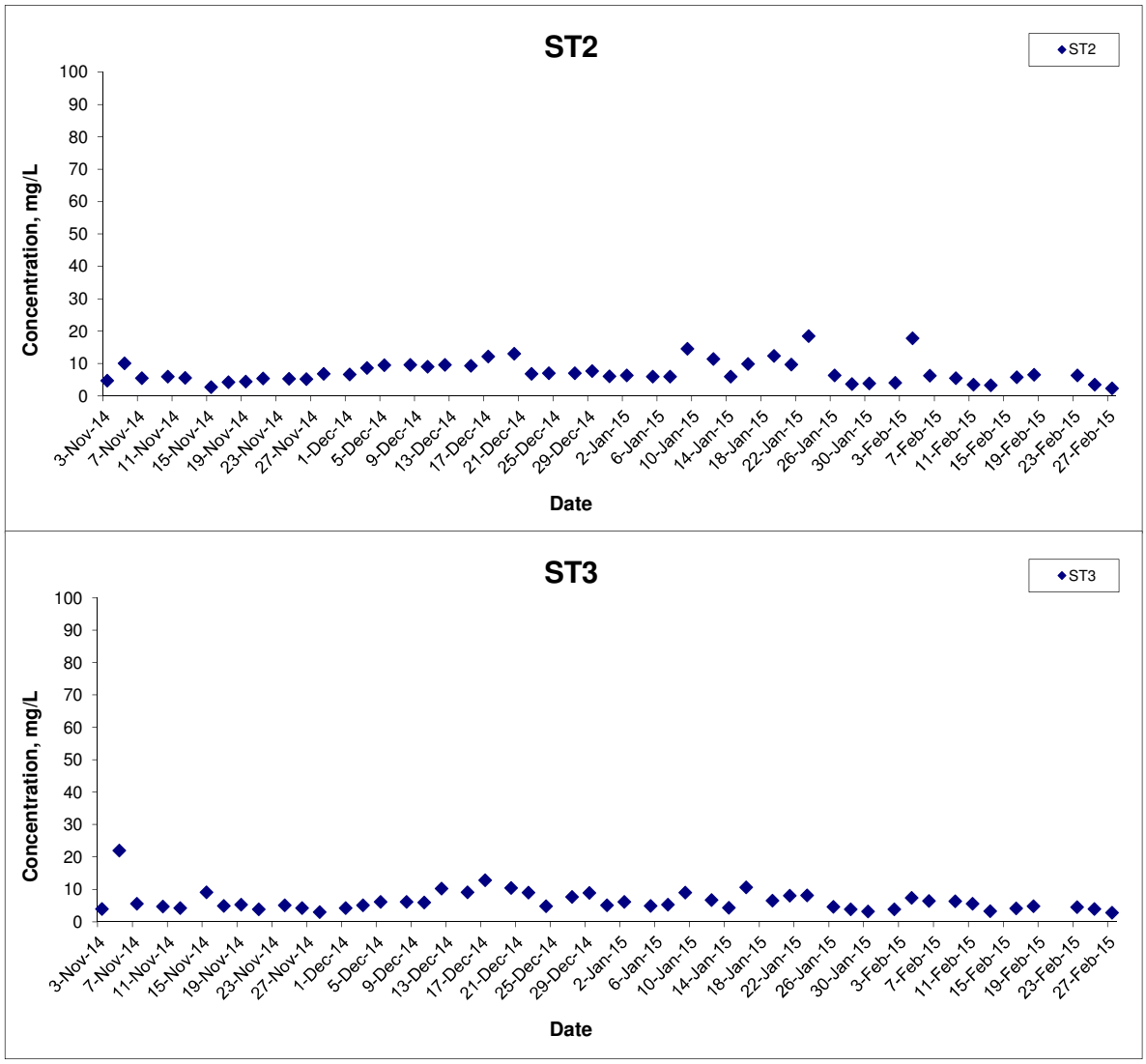
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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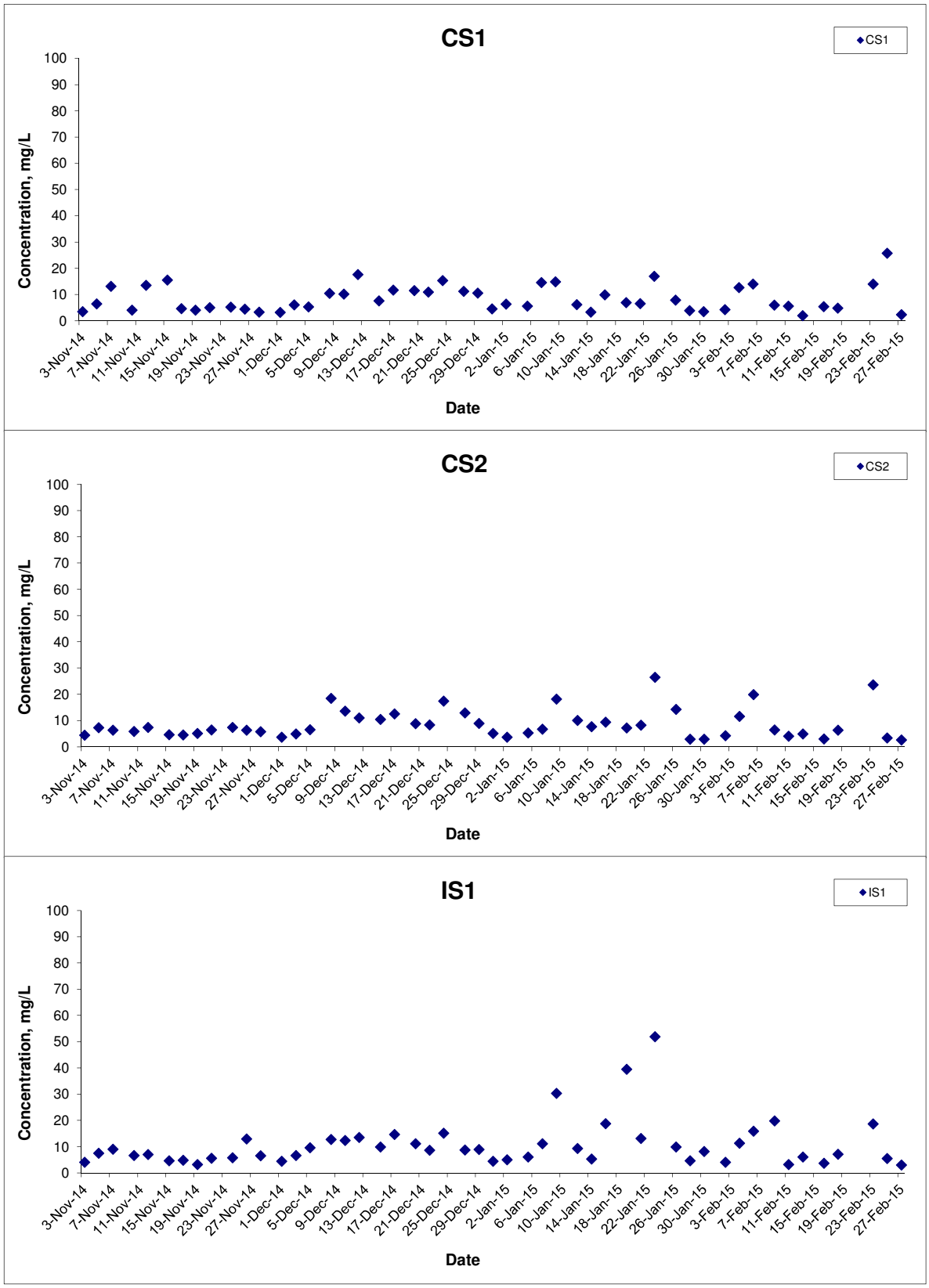
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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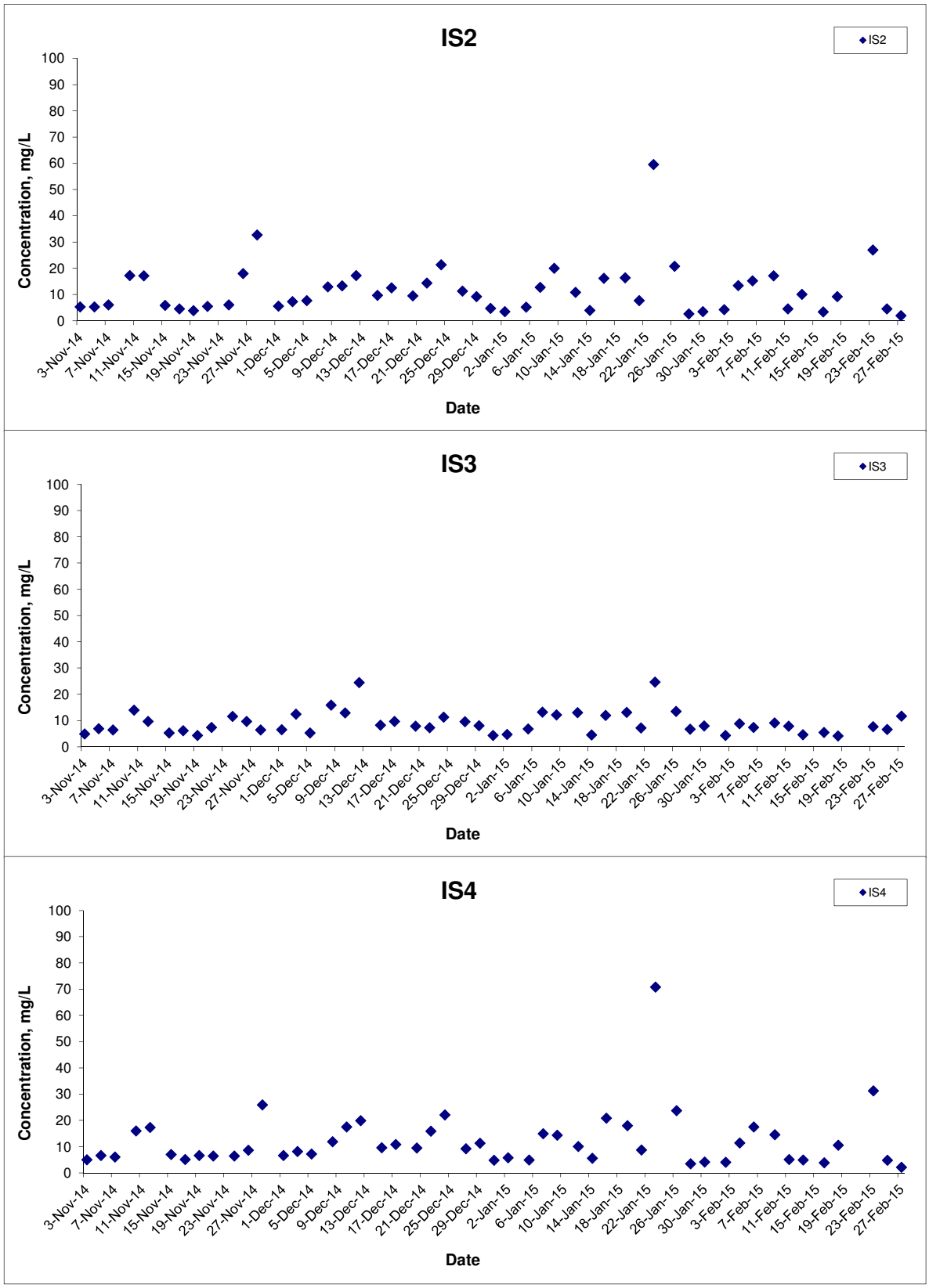

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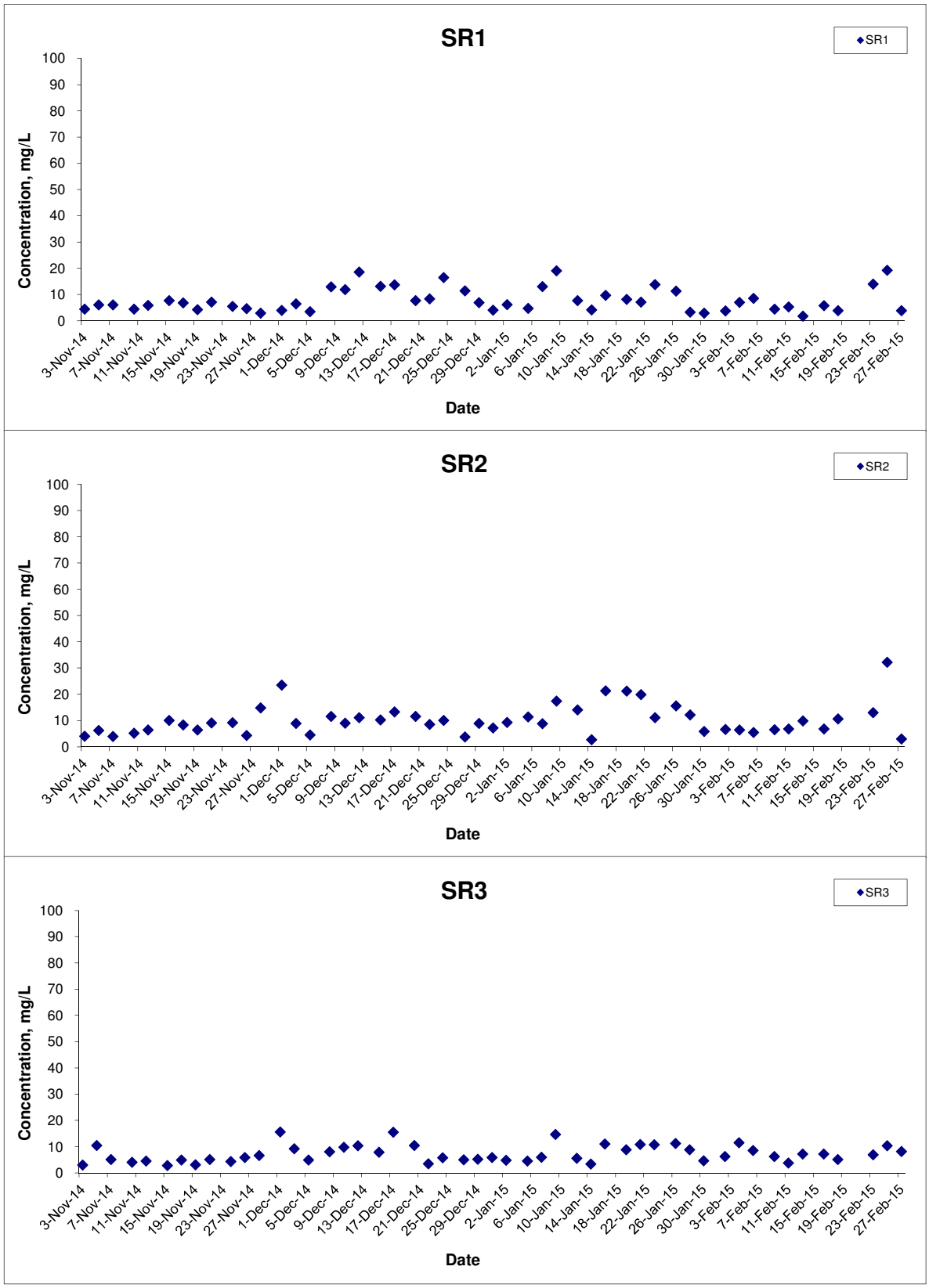

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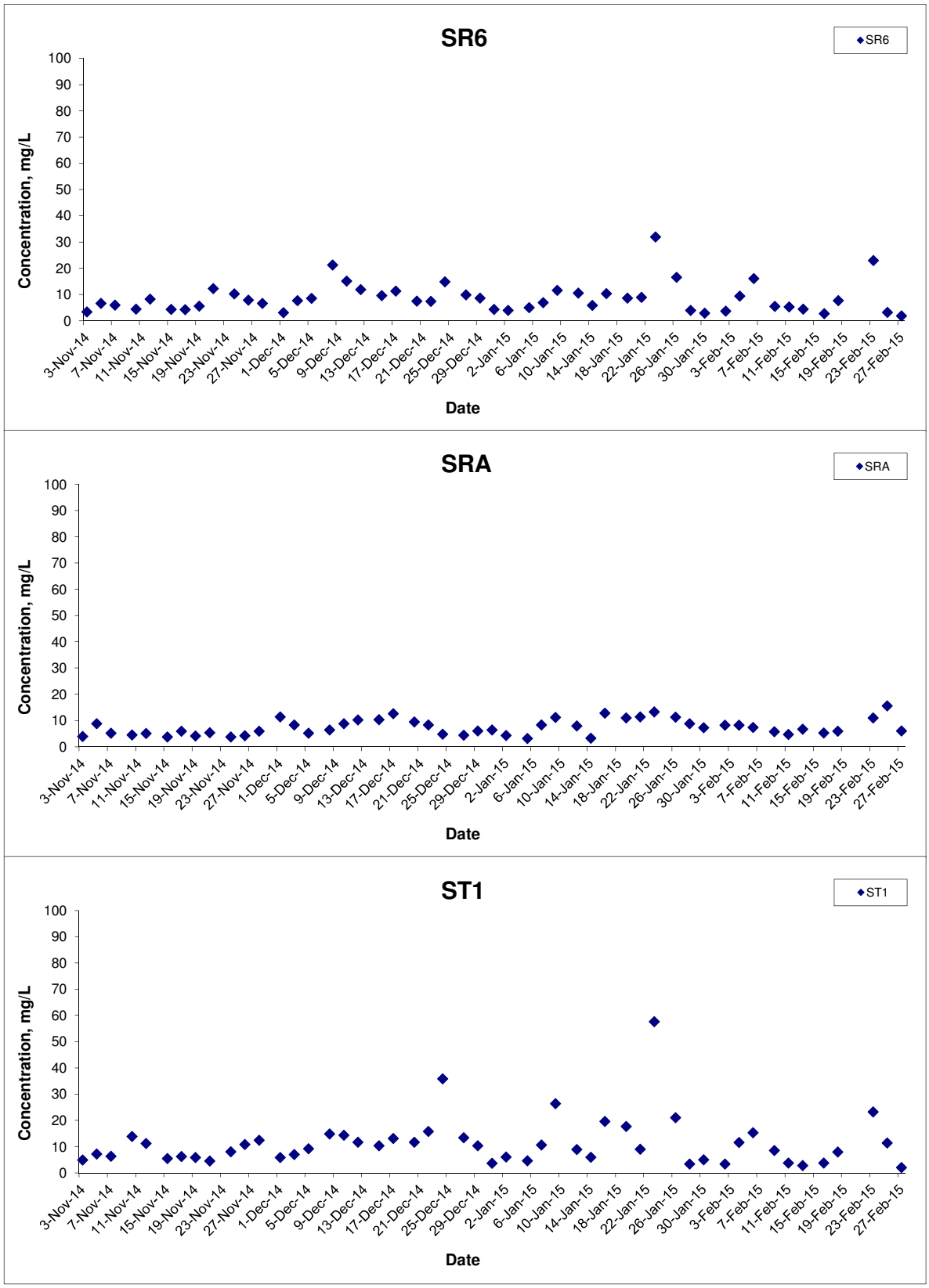

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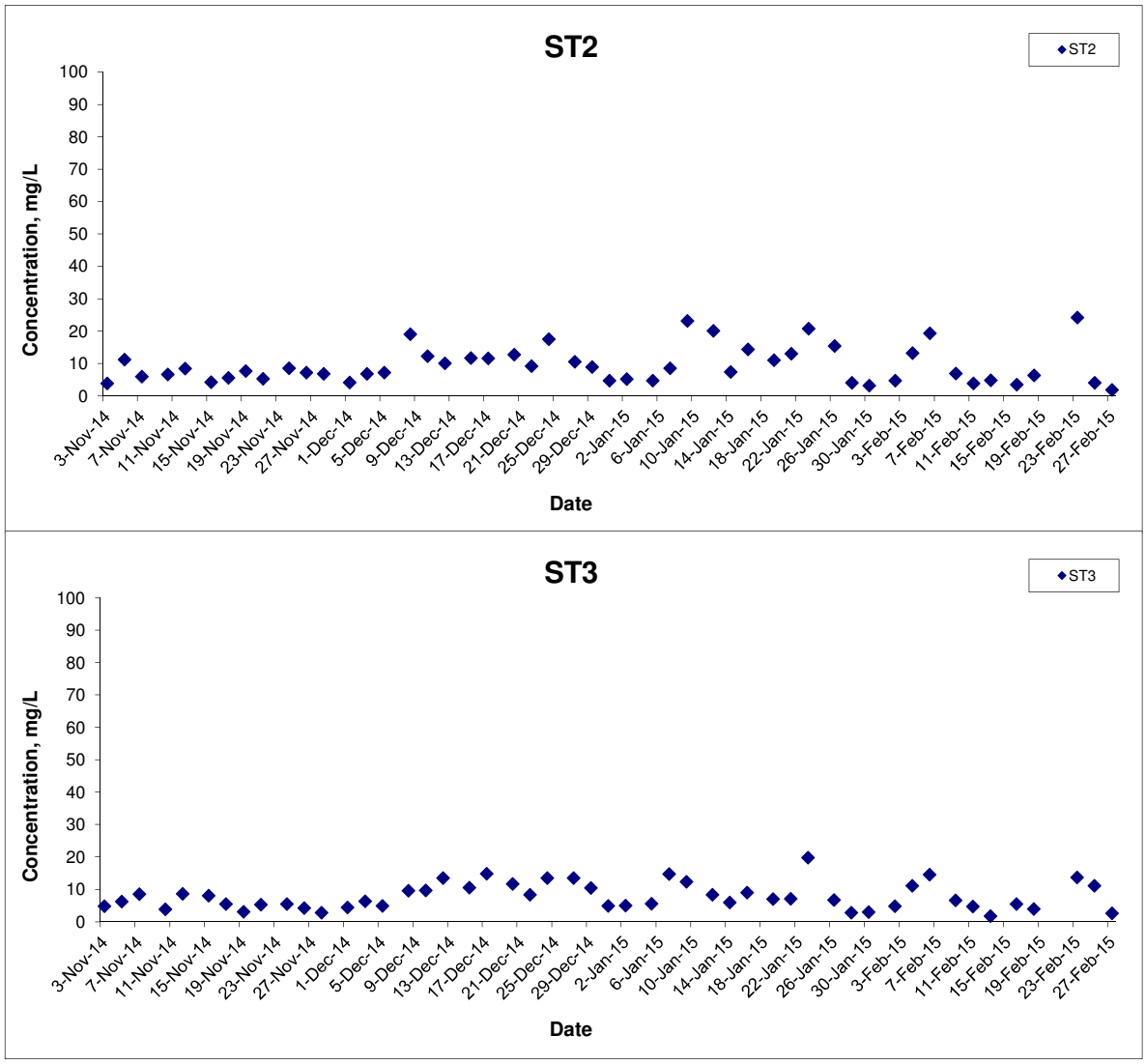

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APPENDIX F
DOLPHIN MONITORING REPORT
(LINE TRANSECT)

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Dolphin Monthly Monitoring

8th Quarterly Progress Report (December 2014 – February 2015)

Submitted by
Samuel K.Y. Hung, Ph.D., Hong Kong Cetacean Research Project
23 March 2015

1. Introduction

1.1. The Hong Kong Link Road (HKLR) serves to connect the Hong Kong-Zhuhai-Macao Bridge (HZMB) Main Bridge at the Hong Kong Special Administrative Region (HKSAR) Boundary and the HZMB Hong Kong Boundary Crossing Facilities (HKBCF) located at the northeastern waters of the Hong Kong International Airport.

1.2. According to the updated Environmental Monitoring and Audit (EM&A) Manual (for HKLR), monthly line-transect vessel surveys for Chinese White Dolphin should be conducted to cover the West Lantau survey area as in AFCD annual marine mammal monitoring programme.

1.3. Since November 2012, Hong Kong Cetacean Research Project (HKCRP) has been commissioned by Dragages – China Harbour – VSL JV (DCVJV) to conduct this 34-month dolphin monitoring study in order to collect data on Chinese White Dolphins during the construction phase (i.e. impact period) of the HKLR09 project in West Lantau (WL) survey area, and to analyze the collected survey data to monitor distribution, encounter rate, abundance, activities and occurrence of dolphin calves. Photo-identification will also be collected from individual Chinese White Dolphins to examine their individual range patterns and core area use.

1.4. From the monitoring results, any changes in dolphin occurrence within the study area will be examined for possible causes, and appropriate actions and additional mitigation measures will be recommended as necessary.

1.5. This report is the eighth quarterly progress report under the HKLR09 construction phase dolphin monitoring programme submitted to DCVJV, summarizing the results of the surveys findings during the period of December 2014 to February 2015.

2. Monitoring Methodology

2.1. Vessel-based Line-transect Survey

2.1.1. According to the requirement of the updated EM&A manual, dolphin monitoring programme should cover all transect lines in WL survey area (see Figure 1) twice per month throughout the entire construction period. The co-ordinates of all transect lines are shown in Table 1.

Table 1. Co-ordinates of transect lines in WL survey area

Line No.		Easting	Northing		Line No.		Easting	Northing
1	Start Point	803750	818500		7	Start Point	800200	810450
1	End Point	803750	815500		7	End Point	801400	810450
2	Start Point	803750	815500		8	Start Point	801300	809450
2	End Point	802940	815500		8	End Point	799750	809450
3	Start Point	802550	814500		9	Start Point	799400	808450
3	End Point	803700	814500		9	End Point	801430	808450
4	Start Point	803120	813600		10	Start Point	801500	807450
4	End Point	801640	813600		10	End Point	799600	807450
5	Start Point	801100	812450		11	Start Point	800300	806500
5	End Point	802900	812450		11	End Point	801750	806500
6	Start Point	802400	811500		12	Start Point	801760	805450
6	End Point	800660	811500		12	End Point	800700	805450

2.1.2. The survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 17 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2013).

For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

2.1.3. Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). One to two additional experienced observers were available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.

2.1.4. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex Legend*).

2.1.5. Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.

2.1.6. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as "primary" survey effort, while the survey effort being conducted along the connecting lines between parallel lines was labeled as "secondary" survey

effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese white dolphins deduced from effort and sighting data collected along primary and secondary lines were similar in survey areas around Lantau Island (Hung 2013). Therefore, primary and secondary survey effort were both presented as on-effort survey effort in this report.

2.2. Photo-identification Work

2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

2.2.2. One to two professional digital cameras (*Canon* EOS 7D and/or 60D models), each equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995.

2.2.4. Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

2.2.5. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

2.3. Data analysis

2.3.1. Distribution Analysis – The line-transect survey data was integrated with the

Geographic Information System (GIS) in order to visualize and interpret different spatial and temporal patterns of dolphin distribution using sighting positions. Location data of dolphin groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView© 3.1) to examine their distribution patterns in details. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, young calves and activities.

2.3.2. Encounter rate analysis – Encounter rates of Chinese white dolphins (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in West Lantau (WL) survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Dolphin encounter rates were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.

Firstly, for the comparison with the HZMB baseline monitoring results, the encounter rates were calculated using primary survey effort alone, and only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. The average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) were deduced based on the encounter rates from six events during the present quarter (i.e. six sets of line-transect surveys in West Lantau), which was also compared with the one deduced from the six events during the baseline period (i.e. six sets of line-transect surveys in West Lantau).

Secondly, the encounter rates were calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition as in AFCD long-term monitoring study. The encounter rate of sightings and dolphins were deduced by dividing the total number of on-effort sightings (STG) and total number of dolphins (ANI) by the amount of survey effort for the entire quarterly period (i.e. December 2014 – February 2015).

2.3.3. Quantitative grid analysis on habitat use – To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the quarterly impact phase monitoring period were plotted onto 1-km^2 grids in WL survey area on GIS. Sighting densities (number of on-effort sightings per km^2) and dolphin densities (total number of dolphins from on-effort sightings per km^2) were then calculated for each 1 km by 1 km grid with the aid

of GIS. Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).

The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort **s**ightings **p**er 100 units of **s**urvey **e**ffort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of **d**olphins **p**er 100 units of **s**urvey **e**ffort. Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km^2 grid within the study area:

$$SPSE = ((S / E) \times 100) / SA\%$$
$$DPSE = ((D / E) \times 100) / SA\%$$

where S = total number of on-effort sightings
D = total number of dolphins from on-effort sightings
E = total number of units of survey effort
SA% = percentage of sea area

2.3.4. Behavioural analysis – When dolphins were sighted during vessel surveys, their behaviour was observed. Different activities were categorized (i.e. feeding, milling/resting, traveling, socializing) and recorded on sighting datasheets. This data was then input into a separate database with sighting information, which can be used to determine the distribution of behavioural data with a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities of the dolphins.

2.3.5. Ranging pattern analysis – Location data of individual dolphins that occurred during the three-month impact phase monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program

Animal Movement Analyst Extension, was loaded as an extension with ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

3. Monitoring Results

3.1. Summary of survey effort and dolphin sightings

3.1.1. During the period of December 2014 to February 2015, six sets of systematic line-transect vessel surveys were conducted to cover all transect lines in WL survey area twice per month.

3.1.2. From these surveys, a total of 198.00 km of survey effort was collected, with 96.3% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). The total survey effort conducted on primary lines was 130.39 km, while the effort on secondary lines was 67.61 km. Survey effort conducted on primary and secondary lines were both considered as on-effort survey data. A summary table of the survey effort is shown in Appendix I.

3.1.3. During the six sets of monitoring surveys in December 2014 to February 2015, a total of 29 groups of 135 Chinese White Dolphins were sighted. All except three sightings were made during on-effort search. Seventeen on-effort sightings were made on primary lines, while the other on-effort sightings were made on secondary lines. A summary table of the dolphin sightings is shown in Appendix II.

3.2. Distribution

3.2.1. Distribution of dolphin sightings made during monitoring surveys in December 2014 to February 2015 is shown in Figure 1. The dolphin groups were evenly distributed throughout the WL survey area, with no particular concentration of sightings (Figure 1). However, it appeared that more dolphins occurred in the central portion of the survey area between Tai O Peninsula and Kai Kung Shan, while they occurred less frequently at the northern and southern end of the survey area.

3.2.2. Sighting distribution of dolphins in the present quarter was similar to the one during the baseline period, with some apparent differences. There appeared to

be fewer dolphins sighted to the north of Tai O Peninsula and Fan Lau during the present monitoring quarter when compared to the dolphin distribution record in the baseline period (Figure 1).

3.2.3. Only one of the 29 dolphin groups was sighted near the HKLR09 alignment in WL survey area during the present quarter (Figure 1). When pooling the data from HKLR03 monitoring surveys in the same winter quarter of 2014-15, dolphins also appeared to have avoided the entire HKLR09 alignment in the present quarter (including the section in NWL survey area), in contrast to their frequent occurrence there during the baseline monitoring period (i.e. autumn of 2011) (Figure 2). Such avoidance has been consistent in the past several quarters during the construction period.

3.3. Encounter rate

3.3.1. During the three-month impact phase monitoring period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) from West Lantau survey area are shown in Table 2. The average encounter rates deduced from the six sets of surveys from December 2014 to February 2015 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (Table 3).

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (December 2014 – February 2015)

Survey Area	**Dolphin Monitoring**	**Encounter rate (STG)** **(no. of on-effort dolphin sightings per 100 km of survey effort)**	**Encounter rate (ANI)** **(no. of dolphins from all on-effort sightings per 100 km of survey effort)**
		Primary Lines Only	**Primary Lines Only**
West Lantau	Set 1 (December 3rd)	13.8	110.3
	Set 2 (December 10th)	0.0	0.0
	Set 3 (January 9th)	16.6	41.6
	Set 4 (January 23rd)	17.2	46.0
	Set 5 (February 3rd)	9.6	72.3
	Set 6 (February 10th)	19.7	74.0

Table 3. Comparison of average dolphin encounter rates from impact monitoring period (December 2014 to February 2015) and baseline monitoring period (September to November 2011) (Note: the encounter rates deduced from the baseline monitroing period have been recalculated based only on the survey effort and on-effort sighting data made along the primary transect lines under favourable conditions)

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	December 2014 - February 2015	**September-November 2011**	**December 2014 - February 2015**	**September-November 2011**
West Lantau	12.84 ± 7.17	16.43 ± 7.70	57.36 ± 37.35	60.50 ± 38.47

3.3.2. To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 12.6 sightings and 57.7 dolphins per 100 km of survey effort respectively during the present quarter.

3.3.3. A one-way ANOVA was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. For the comparison between the baseline period and the present quarter (i.e. eighth quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.423 and 0.889 respectively. Therefore, no significant difference in dolphin encounter rate was detected between the baseline period and the present quarter.

3.3.4. Another comparison was made between the baseline period and the cumulative quarters in the impact phase (i.e. first eight quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.974 and 0.935 respectively. As a result, no significant difference was found in the dolphin encounter rates between the baseline period and the cumulative quarters in the impact phase.

3.4. Group size

3.4.1. Group size of Chinese White Dolphins ranged from 1-14 individuals per group in WL survey area between December 2014 and February 2015. The average dolphin group size for the three-month period was compared with the one deduced from the baseline period in September to November 2011, as shown in Table 4.

Table 4. Comparison of average dolphin group sizes from impact monitoring period (December 2014 to February 2015) and baseline monitoring period (September-November 2011)

	Average Dolphin Group Size	
	December 2014 – February 2015	**September – November 2011**
West Lantau	4.66 ± 3.78 (n = 29)	3.63 ± 2.97 (n = 46)

3.4.2. The average dolphin group size in the WL region during the present quarter was higher than the one recorded in the three-month baseline period (Table 4). About half of the dolphin groups were composed of 1-3 dolphins, but there were also eleven groups with more than 5 animals per group, and four groups with over 10 animals.

3.4.3. Distribution of dolphins with the larger groups during December 2014 to February 2015 is shown in Figure 3. These groups were scattered from the bridge alignment to Fan Lau waters, with slightly higher concentration near Kai Kung Shan. This was slightly different from the baseline period, when the larger dolphin groups mostly occurred to the northwest of Tai O Peninsula (near the bridge alignment) as well as near Kai Kung Shan and Peaked Hill (Figure 3).

3.5. Habitat use

3.5.1. From December 2014 to February 2015, the most heavily utilized habitats by the dolphins were mainly found near Tai O Peninsula, near Kai Kung Shan and near Fan Lau (Figures 4a & 4b). Conversely, their densities were much lower at the northern end of the survey area, especially near the bridge alignment. However, it should be cautioned that the amount of survey effort collected in each grid during the three-month period was fairly low (6 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern will be presented when more survey effort for each grid will be collected throughout the impact phase monitoring programme.

3.5.2. When compared with the habitat use pattern recorded during the baseline period, it appears that the overall dolphin densities were lower in West Lantau waters, especially the waters adjacent to Tai O Peninsula, and between Peaked Hill and Fan Lau during the present quarter (Figure 5).

3.6. Mother-calf pairs

3.6.1. During the three-month impact phase monitoring period, a total of four unspotted calves (UC) and one unspotted juvenile (UJ) were sighted in WL

survey area. The young calves comprised 3.7% of all animals sighted, which was only half of the percentage recorded during the baseline monitoring period (6.6%).

3.6.2. The infrequent occurrence of the five mother-calf pairs during three dolphin sightings were all located at the southern end of the survey area. This was in stark contrast to the baseline period when calf occurrence was more frequent and more concentrated near Tai O Peninsula at the northern portion of WL waters (Figure 6).

3.7. Activities and associations with fishing boats

3.7.1. During the three-month impact monitoring period, four dolphin sightings were associated with feeding activities between Tai O Peninsula and Peaked Hill (Figure 7), comprising 13.8% of the total number of dolphin sightings. This percentage was very similar to the percentage recorded during the baseline period (13.0%). Only one of the 29 sightings was associated with socializing activity just north of Peaked Hill (Figure 7), while no dolphin group was engaged in traveling or milling/resting activity during the present quarter.

3.7.2. Notably, distribution of the feeding and socializing activities during the present impact phase monitoring period was largely similar to the one during the baseline period, with the main concentration of these activities occurred between Tai O and Peaked Hill during the baseline period as well (Figure 7).

3.7.3. During the three-month monitoring period, one of the dolphin groups was associated with an operating purse-seiner.

3.8. Summary of photo-identification works

3.8.1. From December 2014 to February 2015, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

3.8.2. In total, 40 individuals sighted 56 times altogether were identified (see the summary table in Appendix III and photographs of identified individuals in Appendix IV). The majority of identified individuals were sighted only once or twice during the three-month period, but three individuals (NL188, WL137 and WL215) were sighted 3-4 times.

3.8.3. Notably, two of these 40 individuals (i.e. NL259, NL285) were also sighted in North Lantau waters during the HKLR03 monitoring surveys in the same three-month period, showing their extensive movement across the HKLR09

bridge alignment. Moreover, some individuals that were consistently sighted in North Lantau waters in the past were identified in West Lantau waters (e.g. EL01, NL188, NL259, NL285). It is possible that some of these identified dolphins have shifted their range use into West Lantau due to the increased disturbance of HZMB-related construction works in North Lantau region, as documented in Hung (2014).

3.8.4. During the three-month period, two recognizable females, NL188 and WL21, were accompanied with their calves during their re-sightings.

3.9. Individual range use

3.9.1. Ranging patterns of the 40 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in Appendix V.

3.9.4. For those that primarily used West Lantau waters as their home ranges, most of their re-sightings were made at the middle or southern portion of their ranges during the present quarter, but seldom occurred near the HKLR09 alignment where they were frequently re-sighted in the past. It is possible that their range use in West Lantau waters have been somewhat affected by the HKLR09 construction activities with some moderate shift in range use. It will be crucial to examine whether such shifts are temporary or permanent in nature, which may have been as a result of disturbance from the HKLR09-related works.

4. Conclusion

4.1. During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations.

4.2. Nevertheless, the dolphin usage in WL region should be continuously monitored, to further examine whether it has been significantly affected by the on-going construction activities in relation to the HZMB works.

5. References

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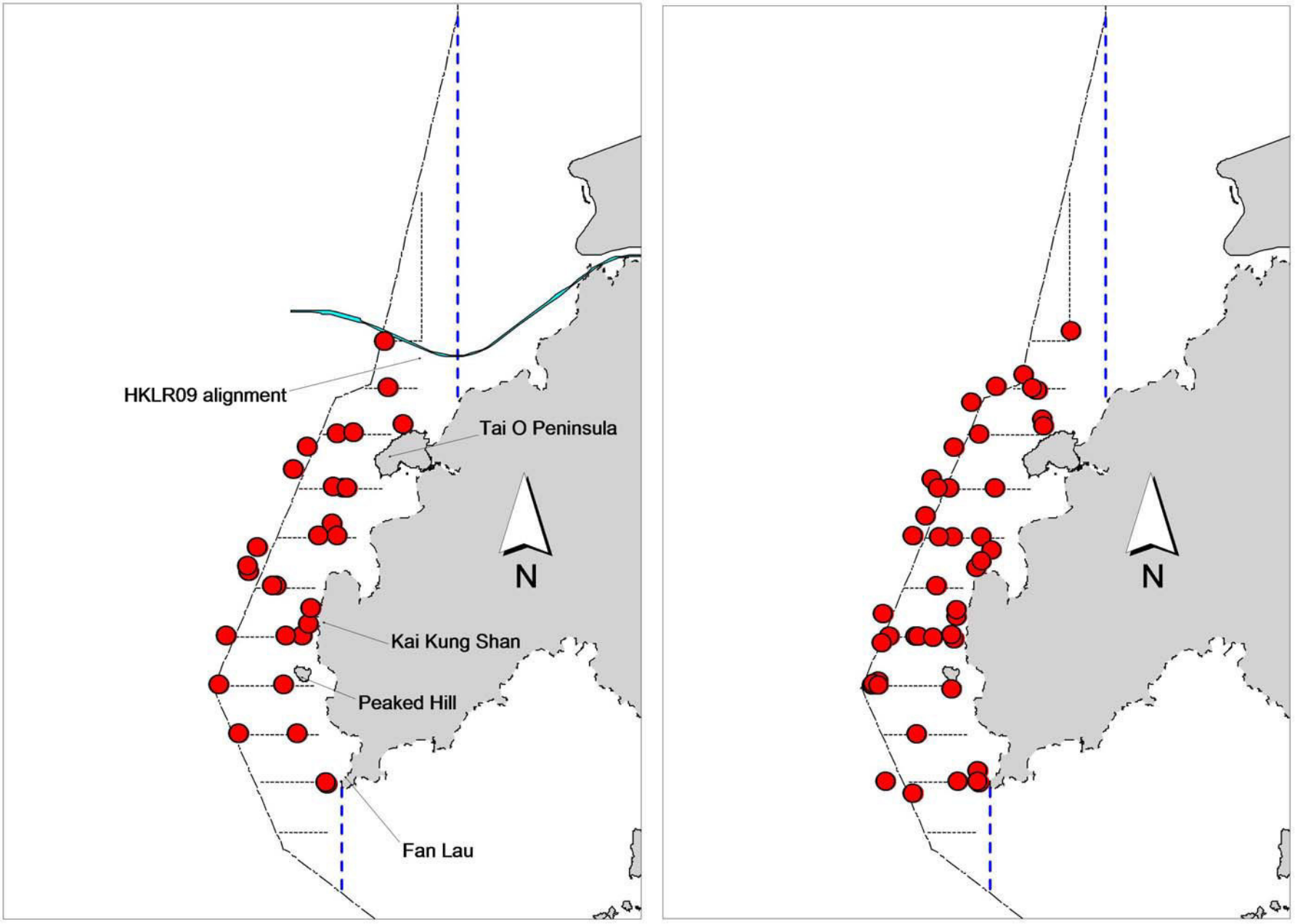


Figure 1. Distribution of Chinese white dolphin sightings in West Lantau during HKLR09 impact phase (left: December 2014 – February 2015) and baseline monitoring surveys (right: September – November 2011)

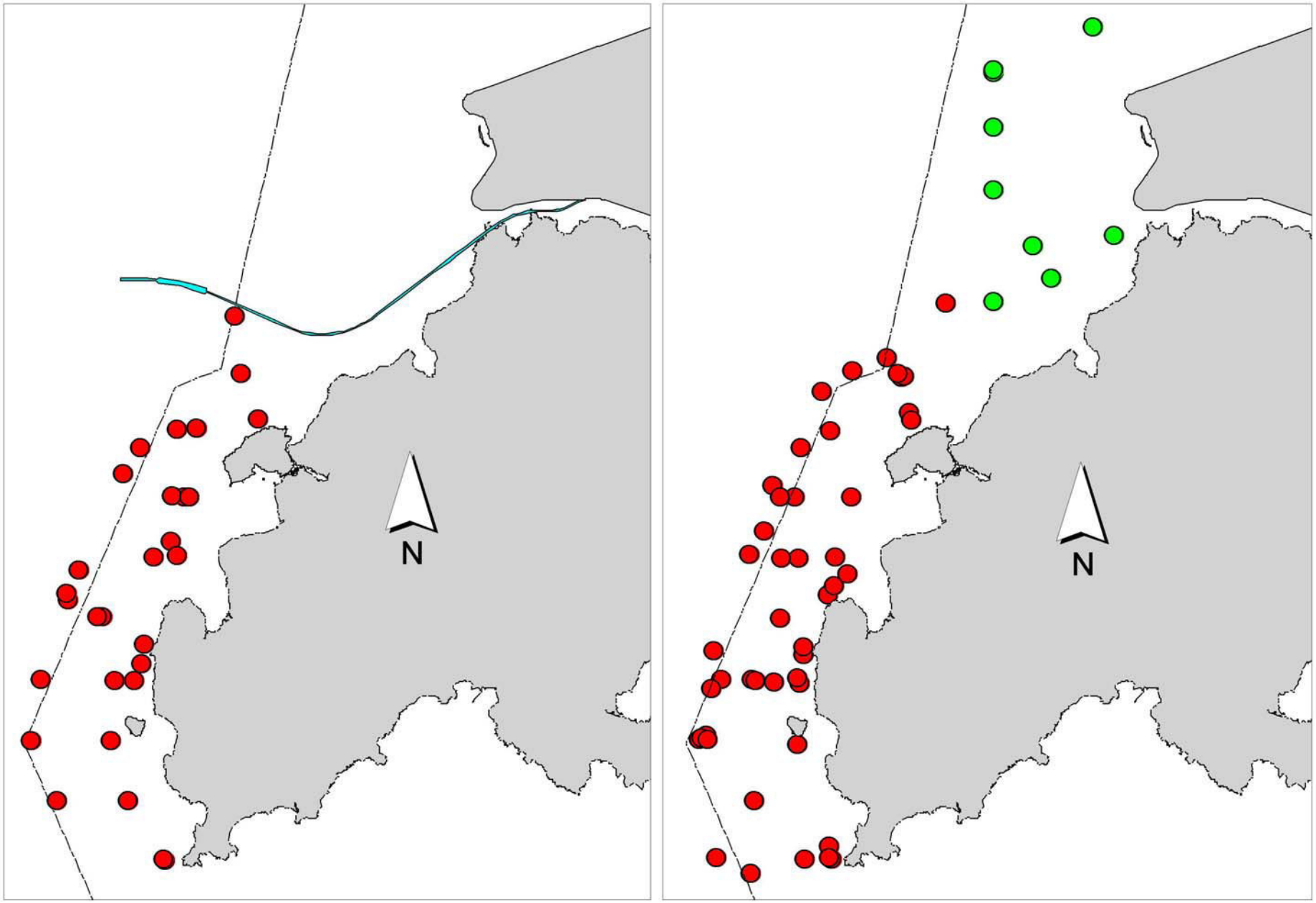


Figure 2. Distribution of Chinese white dolphin sightings from HKLR03 (in green) and HKLR09 surveys (in red) near the HKLR09 alignment during impact phase (left: December 2014 – February 2015) and baseline monitoring surveys (right: September – November 2011)

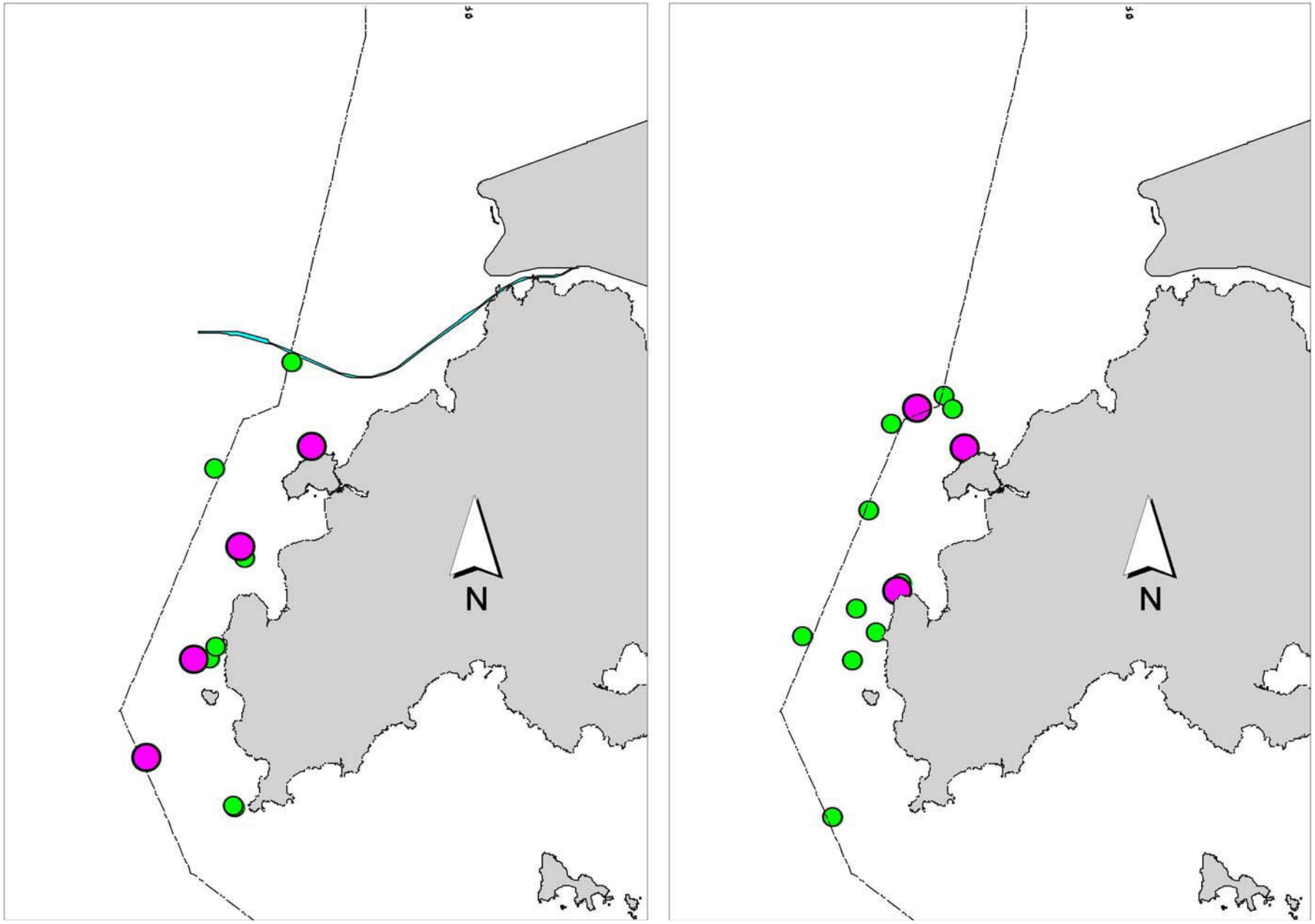


Figure 3. Distribution of Chinese white dolphins with larger group sizes during HKLR09 impact phase (left: December 2014 – February 2015) and baseline monitoring surveys (right: September – November 2011) (green dots: group sizes of 5 or more; purple dots: group sizes of 10 or more)

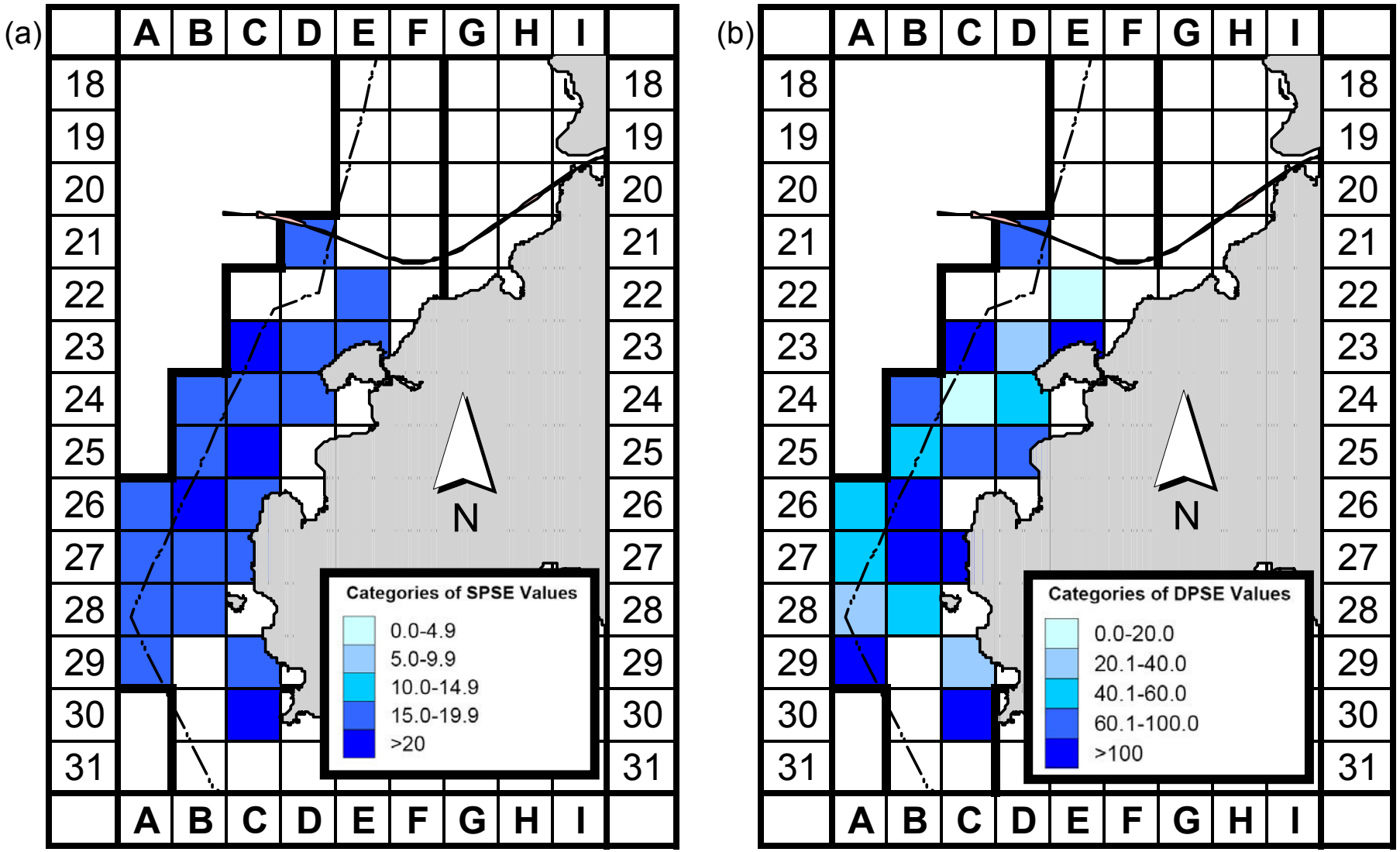


Figure 4a. Sighting density of Chinese white dolphins with corrected survey effort per km^2 in West Lantau survey area, using data collected during HKLR09 impact monitoring period (Dec 14 - Feb 15) (SPSE = no. of on-effort sightings per 100 units of survey effort)

Figure 4b. Density of Chinese white dolphins with corrected survey effort per km^2 in West Lantau survey area, using data collected during HKLR09 impact monitoring period (Dec 14 - Feb 15) (DPSE = no. of dolphins per 100 units of survey effort)

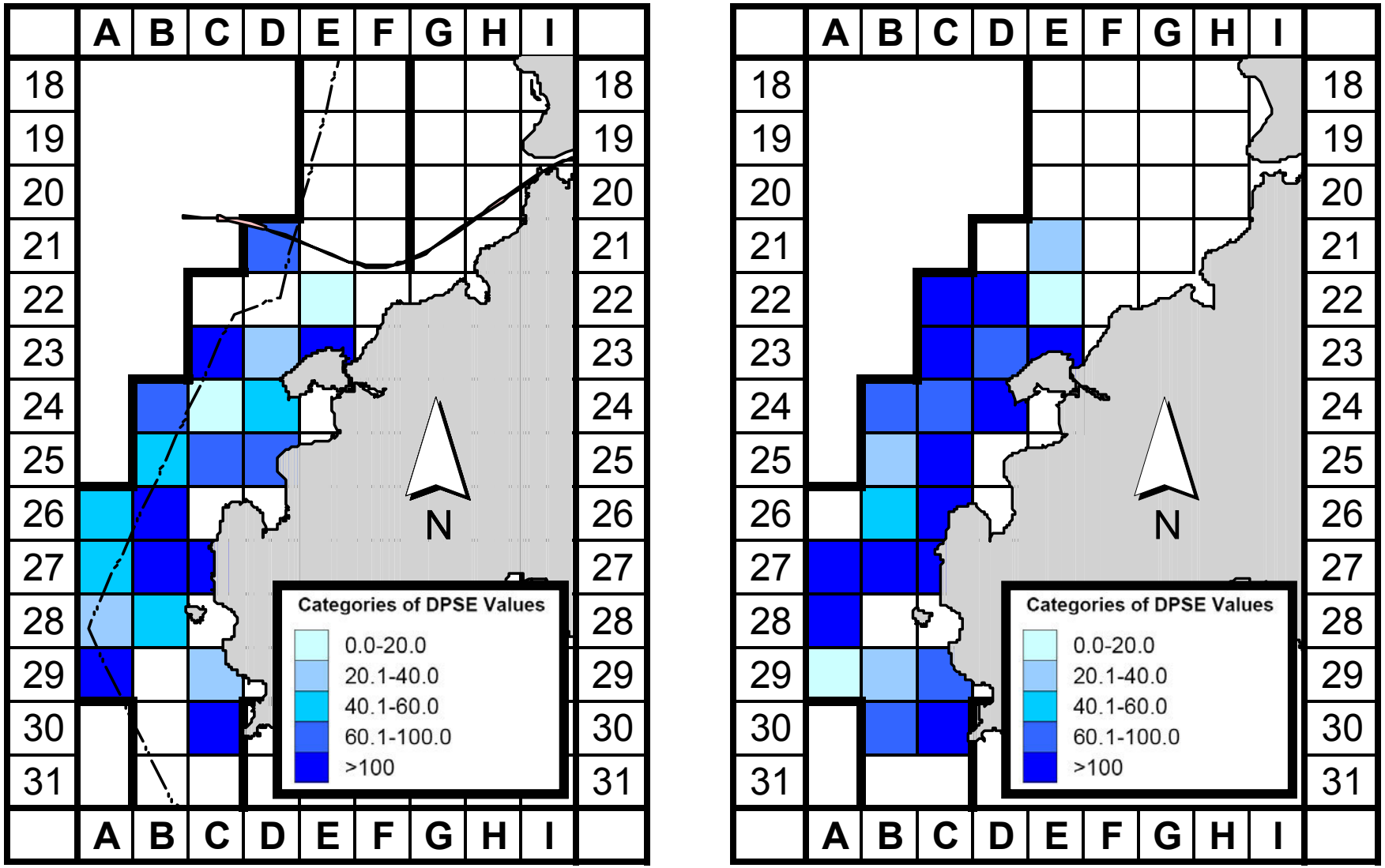


Figure 5. Comparison of density of Chinese white dolphins with corrected survey effort per km^2 in West Lantau survey area between the impact monitoring period (December 2014 - February 2015; left) and baseline monitoring period (September-November 2011; right) (DPSE = no. of dolphins per 100 units of survey effort)

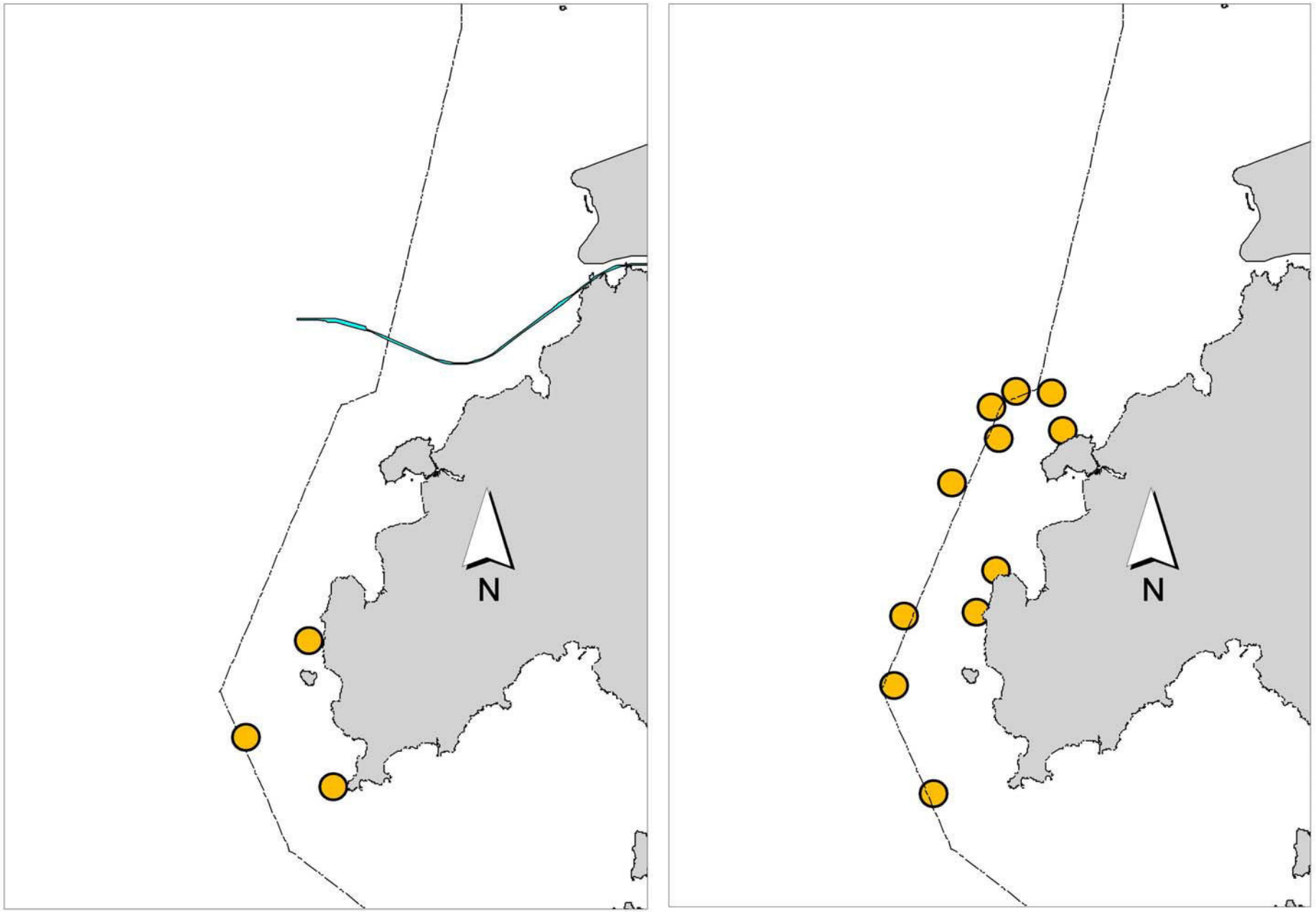


Figure 6. Distribution of young calves of Chinese white dolphins during HKLR09 impact phase (left: December 2014 – February 2015) and baseline monitoring surveys (right: September – November 2011)

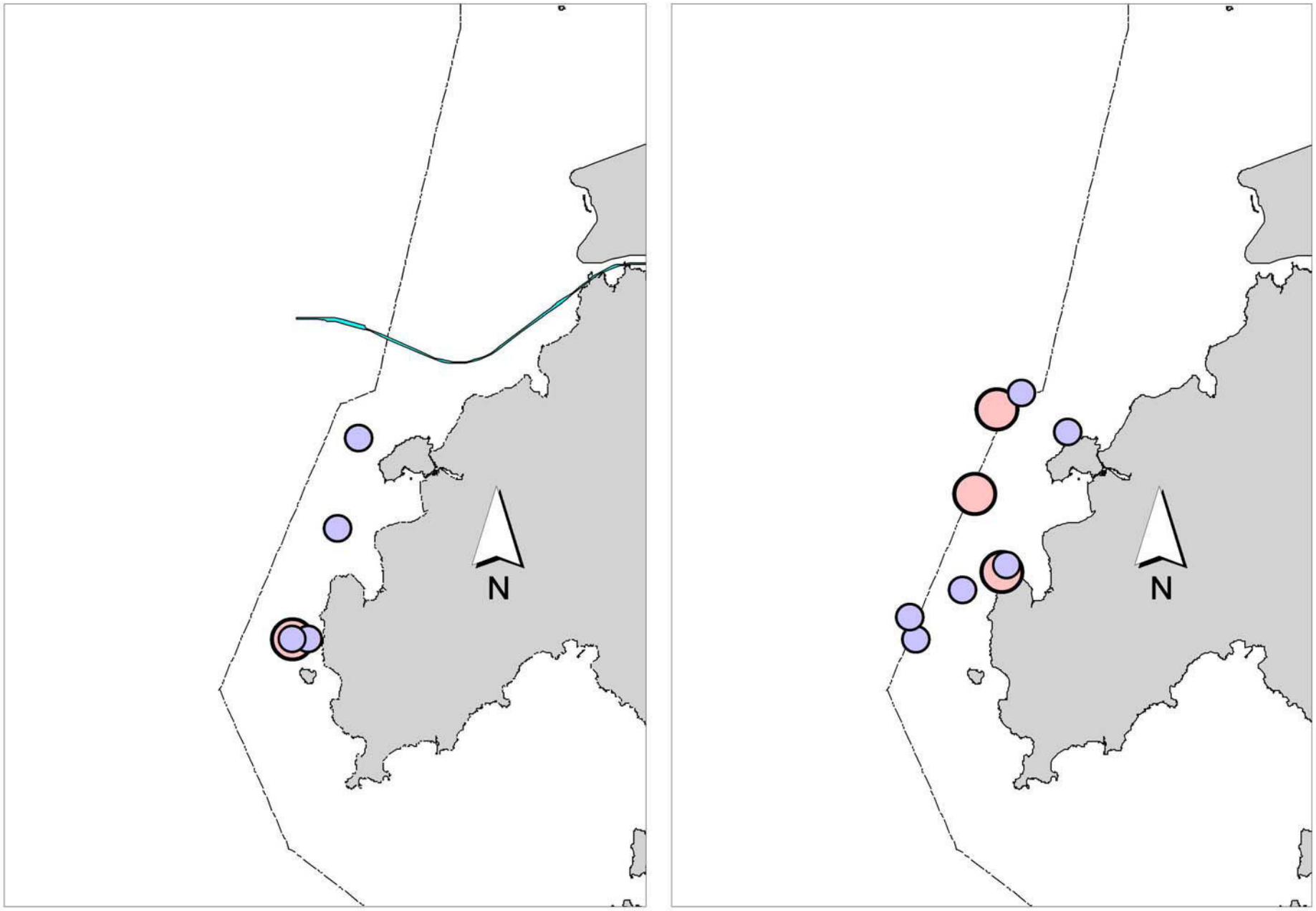


Figure 7. Distribution of dolphins engaged in feeding (in purple) and socializing (in pink) activities during HKLR09 impact phase (left: December 2014 – February 2015) and baseline monitoring surveys (right: September – November 2011)

Appendix I. HKLR09 Survey Effort Database (December 2014 - February 2015)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
3-Dec-14	W LANTAU	2	11.03	WINTER	STANDARD31516	HKLR	P
3-Dec-14	W LANTAU	3	10.72	WINTER	STANDARD31516	HKLR	P
3-Dec-14	W LANTAU	1	1.75	WINTER	STANDARD31516	HKLR	S
3-Dec-14	W LANTAU	2	4.65	WINTER	STANDARD31516	HKLR	S
3-Dec-14	W LANTAU	3	5.17	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	1	4.01	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	2	13.09	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	3	4.79	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	0	0.30	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	1	1.81	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	2	7.15	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	3	1.90	WINTER	STANDARD31516	HKLR	S
9-Jan-15	W LANTAU	2	15.58	WINTER	STANDARD31516	HKLR	P
9-Jan-15	W LANTAU	3	8.46	WINTER	STANDARD31516	HKLR	P
9-Jan-15	W LANTAU	2	9.83	WINTER	STANDARD31516	HKLR	S
9-Jan-15	W LANTAU	3	1.20	WINTER	STANDARD31516	HKLR	S
23-Jan-15	W LANTAU	2	6.25	WINTER	STANDARD31516	HKLR	P
23-Jan-15	W LANTAU	3	11.15	WINTER	STANDARD31516	HKLR	P
23-Jan-15	W LANTAU	4	4.28	WINTER	STANDARD31516	HKLR	P
23-Jan-15	W LANTAU	2	3.33	WINTER	STANDARD31516	HKLR	S
23-Jan-15	W LANTAU	3	4.74	WINTER	STANDARD31516	HKLR	S
23-Jan-15	W LANTAU	4	2.95	WINTER	STANDARD31516	HKLR	S
3-Feb-15	W LANTAU	1	4.74	WINTER	STANDARD31516	HKLR	P
3-Feb-15	W LANTAU	2	16.02	WINTER	STANDARD31516	HKLR	P
3-Feb-15	W LANTAU	1	3.19	WINTER	STANDARD31516	HKLR	S
3-Feb-15	W LANTAU	2	7.89	WINTER	STANDARD31516	HKLR	S
10-Feb-15	W LANTAU	2	12.14	WINTER	STANDARD31516	HKLR	P
10-Feb-15	W LANTAU	3	8.13	WINTER	STANDARD31516	HKLR	P
10-Feb-15	W LANTAU	2	7.39	WINTER	STANDARD31516	HKLR	S
10-Feb-15	W LANTAU	3	4.36	WINTER	STANDARD31516	HKLR	S

Appendix II. HKLR09 Chinese White Dolphin Sighting Database (December 2014 - February 2015)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
3-Dec-14	1	1045	5	W LANTAU	3	187	ON	HKLR	806440	801724	WINTER	NONE	S
3-Dec-14	2	1111	14	W LANTAU	3	67	ON	HKLR	807441	799809	WINTER	NONE	P
3-Dec-14	3	1204	7	W LANTAU	2	162	ON	HKLR	809431	801174	WINTER	NONE	P
3-Dec-14	4	1306	3	W LANTAU	2	236	ON	HKLR	812452	802057	WINTER	NONE	P
3-Dec-14	5	1327	14	W LANTAU	2	ND	OFF	HKLR	811722	801829	WINTER	PURSE SEINE	N/A
10-Dec-14	1	1042	6	W LANTAU	0	77	ON	HKLR	813284	801286	WINTER	NONE	S
10-Dec-14	2	1056	4	W LANTAU	2	86	ON	HKLR	812842	800976	WINTER	NONE	S
10-Dec-14	3	1128	3	W LANTAU	3	21	ON	HKLR	811249	800209	WINTER	NONE	S
10-Dec-14	4	1205	2	W LANTAU	3	69	ON	HKLR	808438	799357	WINTER	NONE	S
9-Jan-15	1	1039	5	W LANTAU	2	185	ON	HKLR	815451	802940	WINTER	NONE	P
9-Jan-15	2	1102	12	W LANTAU	2	249	ON	HKLR	813745	803349	WINTER	NONE	S
9-Jan-15	3	1141	1	W LANTAU	3	170	ON	HKLR	813571	801936	WINTER	NONE	P
9-Jan-15	4	1202	1	W LANTAU	3	718	ON	HKLR	812475	801841	WINTER	NONE	P
9-Jan-15	5	1232	3	W LANTAU	2	117	ON	HKLR	810473	800610	WINTER	NONE	P
9-Jan-15	6	1250	6	W LANTAU	2	ND	OFF	HKLR	809696	801309	WINTER	NONE	N/A
23-Jan-15	1	1054	1	W LANTAU	3	303	ON	HKLR	814509	803041	WINTER	NONE	P
23-Jan-15	2	1126	1	W LANTAU	4	ND	OFF	HKLR	812452	802140	WINTER	NONE	N/A
23-Jan-15	3	1159	1	W LANTAU	4	333	ON	HKLR	810751	800012	WINTER	NONE	S
23-Jan-15	4	1211	3	W LANTAU	2	95	ON	HKLR	810017	801351	WINTER	NONE	S
23-Jan-15	5	1223	3	W LANTAU	4	1347	ON	HKLR	809435	799535	WINTER	NONE	P
23-Jan-15	6	1245	2	W LANTAU	3	570	ON	HKLR	807438	801067	WINTER	NONE	P
23-Jan-15	7	1304	5	W LANTAU	3	106	ON	HKLR	806462	801683	WINTER	NONE	P
3-Feb-15	1	1151	12	W LANTAU	2	109	ON	HKLR	809432	800834	WINTER	NONE	P
3-Feb-15	2	1229	3	W LANTAU	2	12	ON	HKLR	808435	800770	WINTER	NONE	P
10-Feb-15	1	1100	2	W LANTAU	2	255	ON	HKLR	813592	802266	WINTER	NONE	P
10-Feb-15	2	1148	5	W LANTAU	2	187	ON	HKLR	811489	801921	WINTER	NONE	P
10-Feb-15	3	1217	4	W LANTAU	2	450	ON	HKLR	811479	801530	WINTER	NONE	P
10-Feb-15	4	1242	3	W LANTAU	3	162	ON	HKLR	810873	799982	WINTER	NONE	S
10-Feb-15	5	1302	4	W LANTAU	3	129	ON	HKLR	810473	800527	WINTER	NONE	P

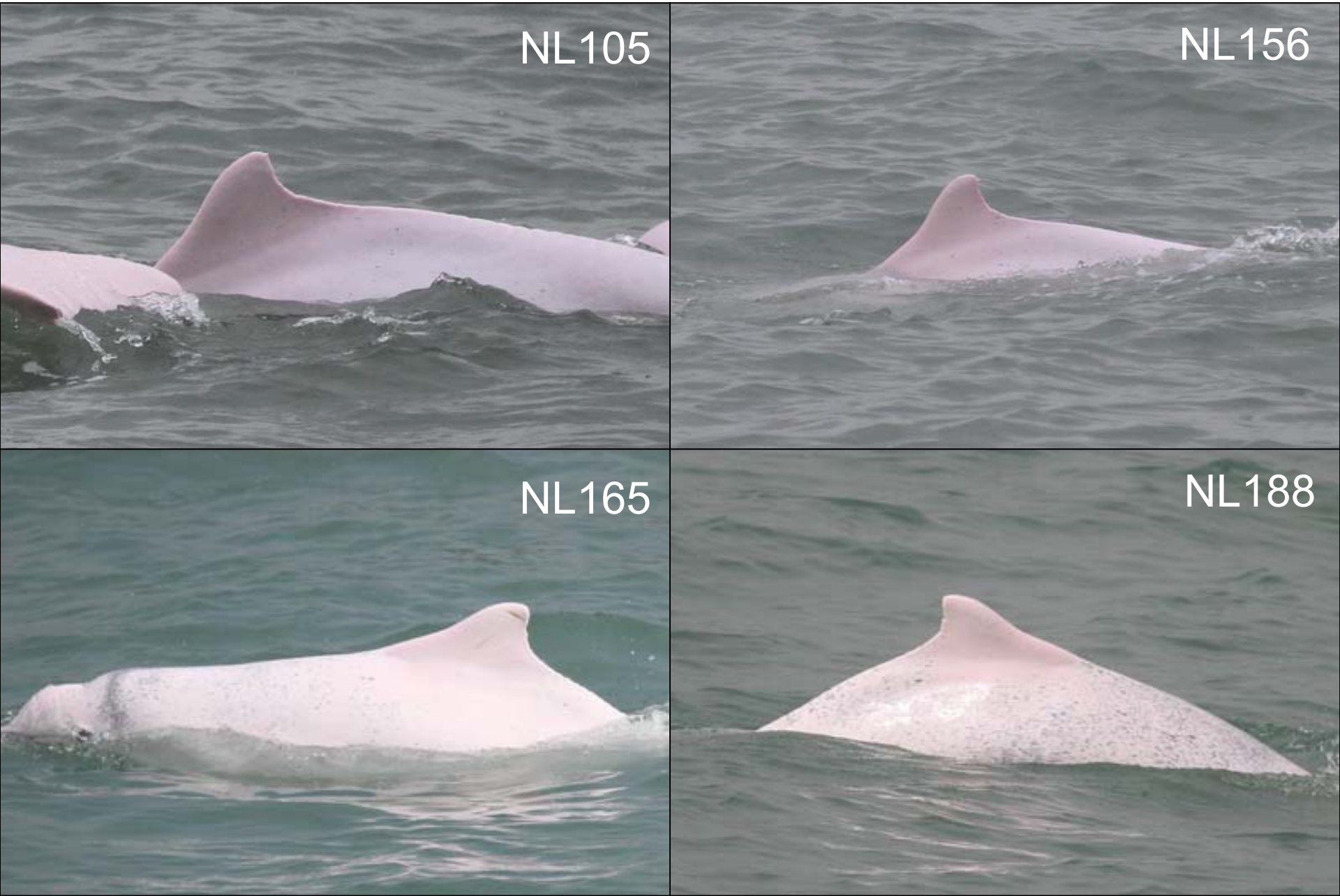
Appendix III. Individual dolphins identified during HKLR09 monitoring surveys in December 2014 - February 2015

ID#	DATE	STG#	AREA
CH12	03/12/14	5	W LANTAU
	09/01/15	2	W LANTAU
CH108	09/01/15	6	W LANTAU
EL01	09/01/15	2	W LANTAU
NL49	03/12/14	4	W LANTAU
NL105	03/12/14	4	W LANTAU
NL156	03/12/14	4	W LANTAU
NL165	03/02/15	1	W LANTAU
NL188	03/12/14	5	W LANTAU
	09/01/15	2	W LANTAU
	03/02/15	1	W LANTAU
NL206	03/12/14	5	W LANTAU
NL259	10/12/13	3	W LANTAU
NL269	09/01/15	2	W LANTAU
NL285	03/12/14	2	W LANTAU
SL05	09/01/15	6	W LANTAU
SL40	03/12/14	2	W LANTAU
	10/12/13	1	W LANTAU
SL44	03/02/15	1	W LANTAU
SL47	10/02/15	2	W LANTAU
WL11	10/02/15	3	W LANTAU
WL21	10/02/15	4	W LANTAU
WL42	03/12/14	5	W LANTAU
WL47	10/02/15	2	W LANTAU
WL72	09/01/15	6	W LANTAU
WL109	09/01/15	2	W LANTAU
WL116	23/01/15	7	W LANTAU
WL118	03/12/14	3	W LANTAU
WL128	03/12/14	5	W LANTAU
	23/01/15	7	W LANTAU
WL129	03/12/14	5	W LANTAU
WL131	09/01/15	6	W LANTAU
	03/02/15	1	W LANTAU
WL137	03/12/14	1	W LANTAU
	10/12/13	1	W LANTAU
	03/02/15	1	W LANTAU
	10/02/15	1	W LANTAU

ID#	DATE	STG#	AREA
WL142	09/01/15	6	W LANTAU
	23/01/15	7	W LANTAU
WL144	03/12/14	3	W LANTAU
WL152	09/01/15	2	W LANTAU
	10/02/15	5	W LANTAU
WL168	03/12/14	4	W LANTAU
	03/12/14	5	W LANTAU
WL171	09/01/15	2	W LANTAU
WL180	10/12/13	1	W LANTAU
WL210	03/12/14	2	W LANTAU
	03/12/14	5	W LANTAU
WL215	10/12/13	1	W LANTAU
	10/12/13	2	W LANTAU
	03/02/15	1	W LANTAU
	10/02/15	1	W LANTAU
WL232	10/02/15	2	W LANTAU
WL243	10/02/15	2	W LANTAU
WL249	03/02/15	1	W LANTAU
WL252	03/02/15	1	W LANTAU

Appendix IV. Thirty-seven individual dolphins that were identified during December 2014 to February 2015 under HKLR09 impact phase monitoring surveys

Appendix IV. (cont'd)



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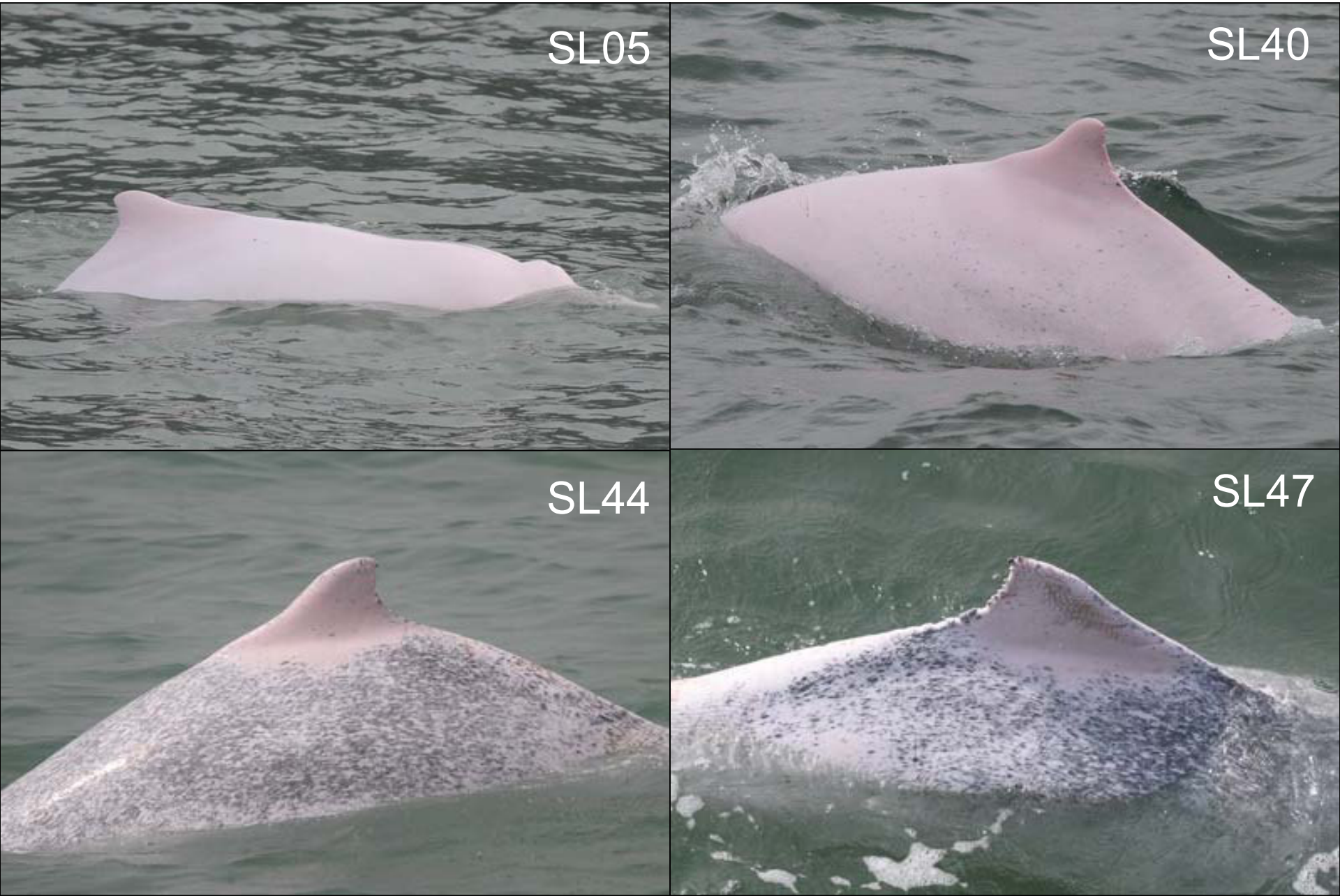

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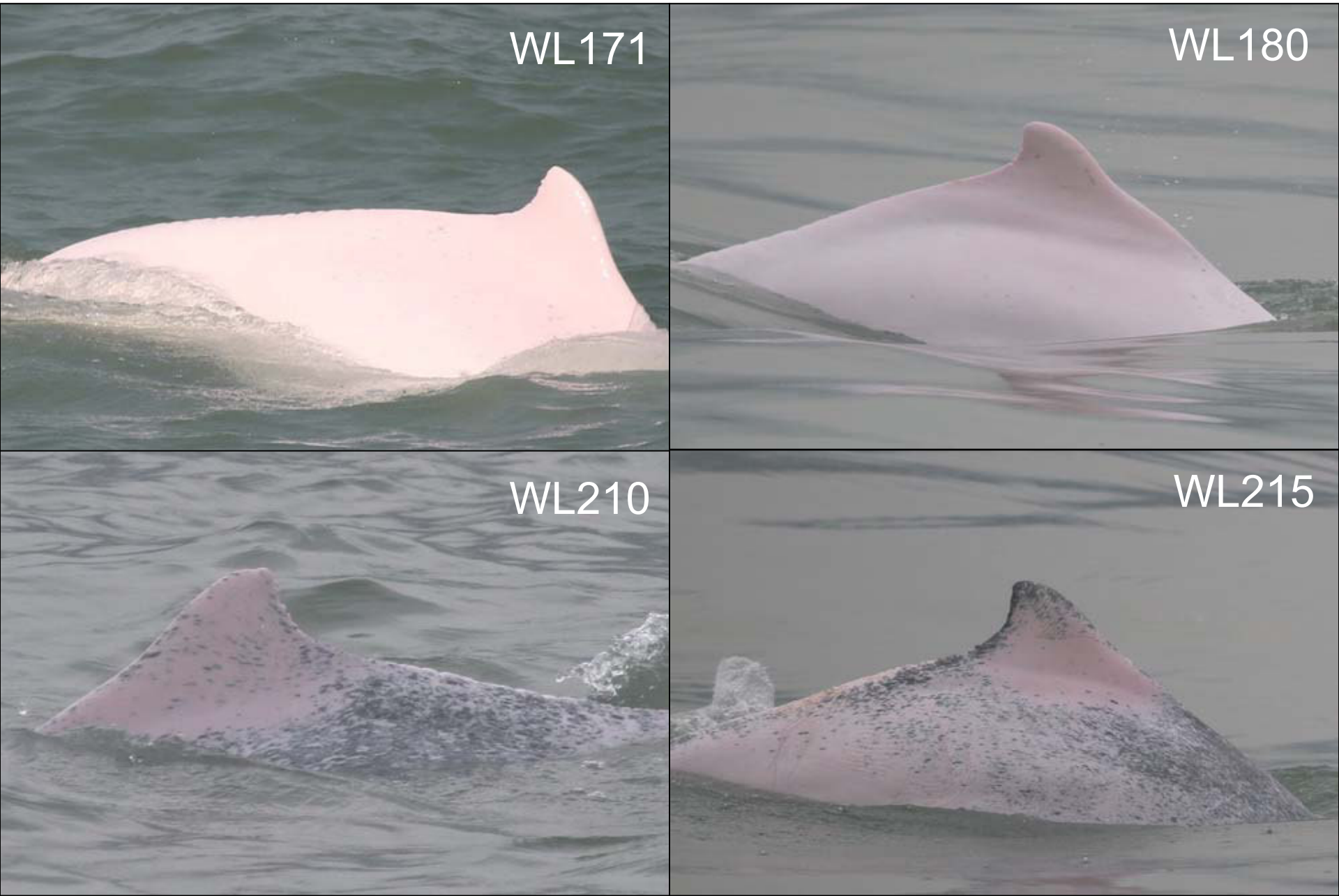
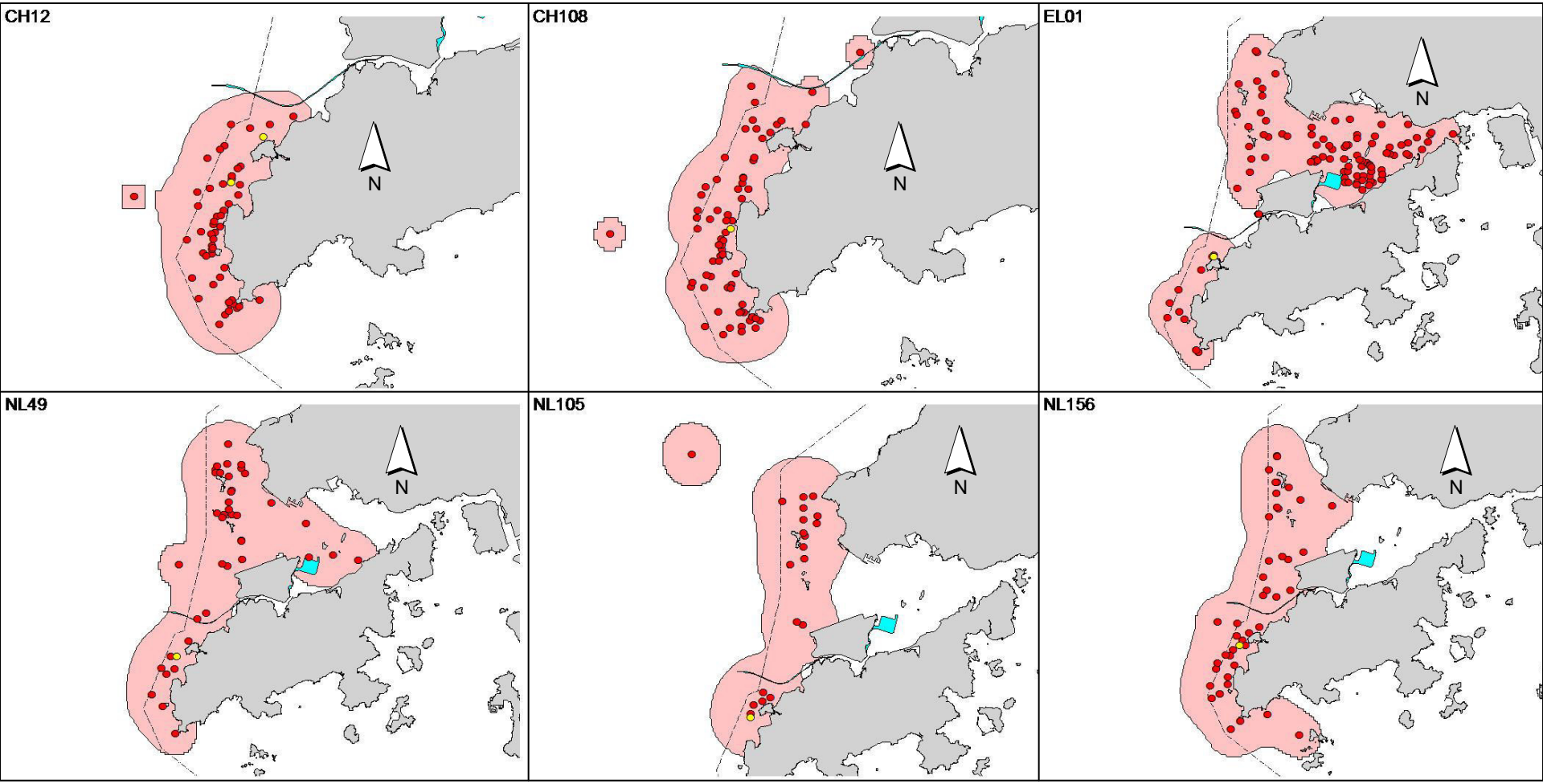


Appendix IV. (cont'd)

Appendix V. Ranging patterns (95% kernel ranges) of 40 individual dolphins that were sighted during HKLR09 impact phase monitoring period (note: yellow dots indicates sightings made in December 2014 – February 2015)



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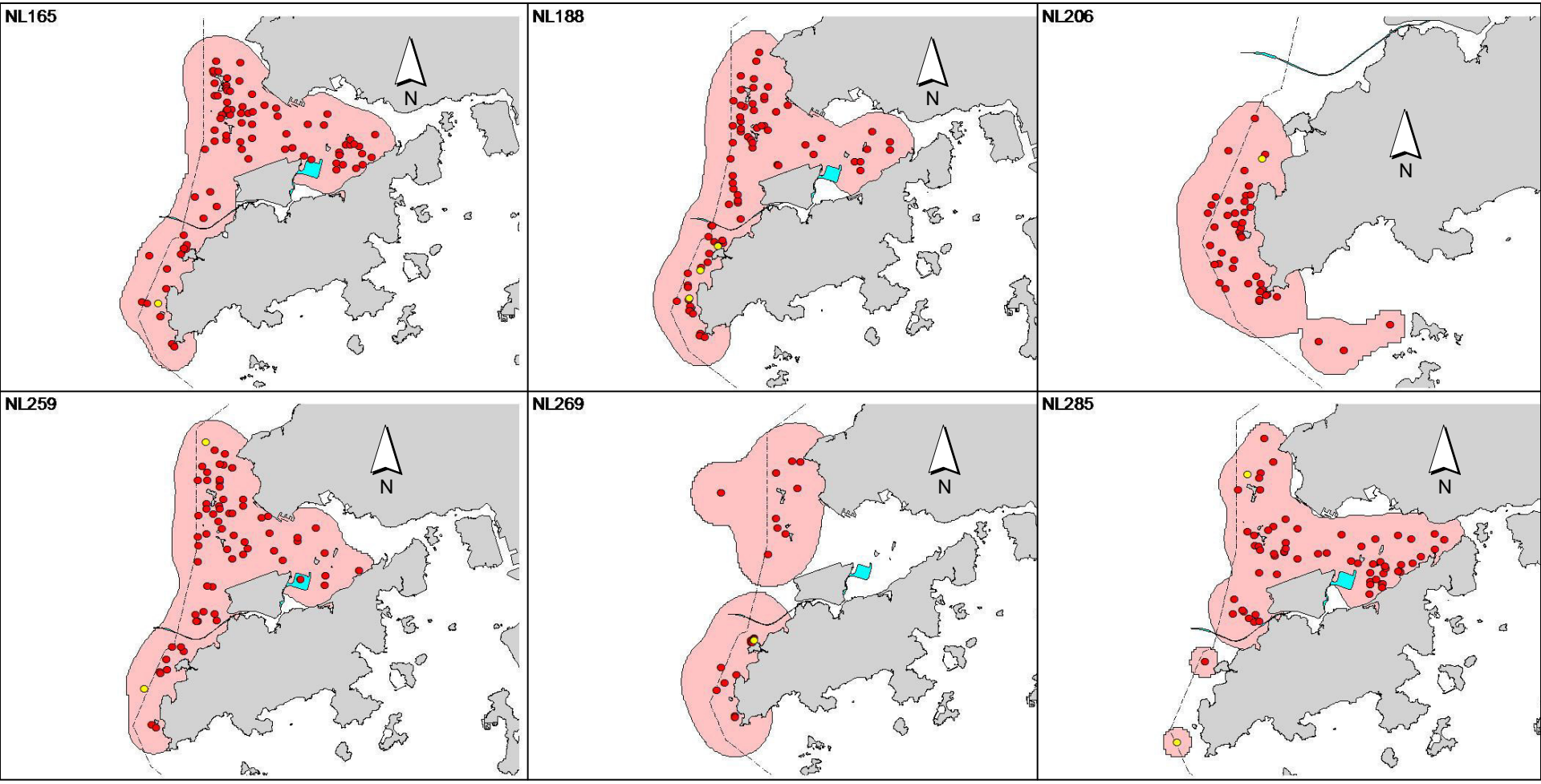

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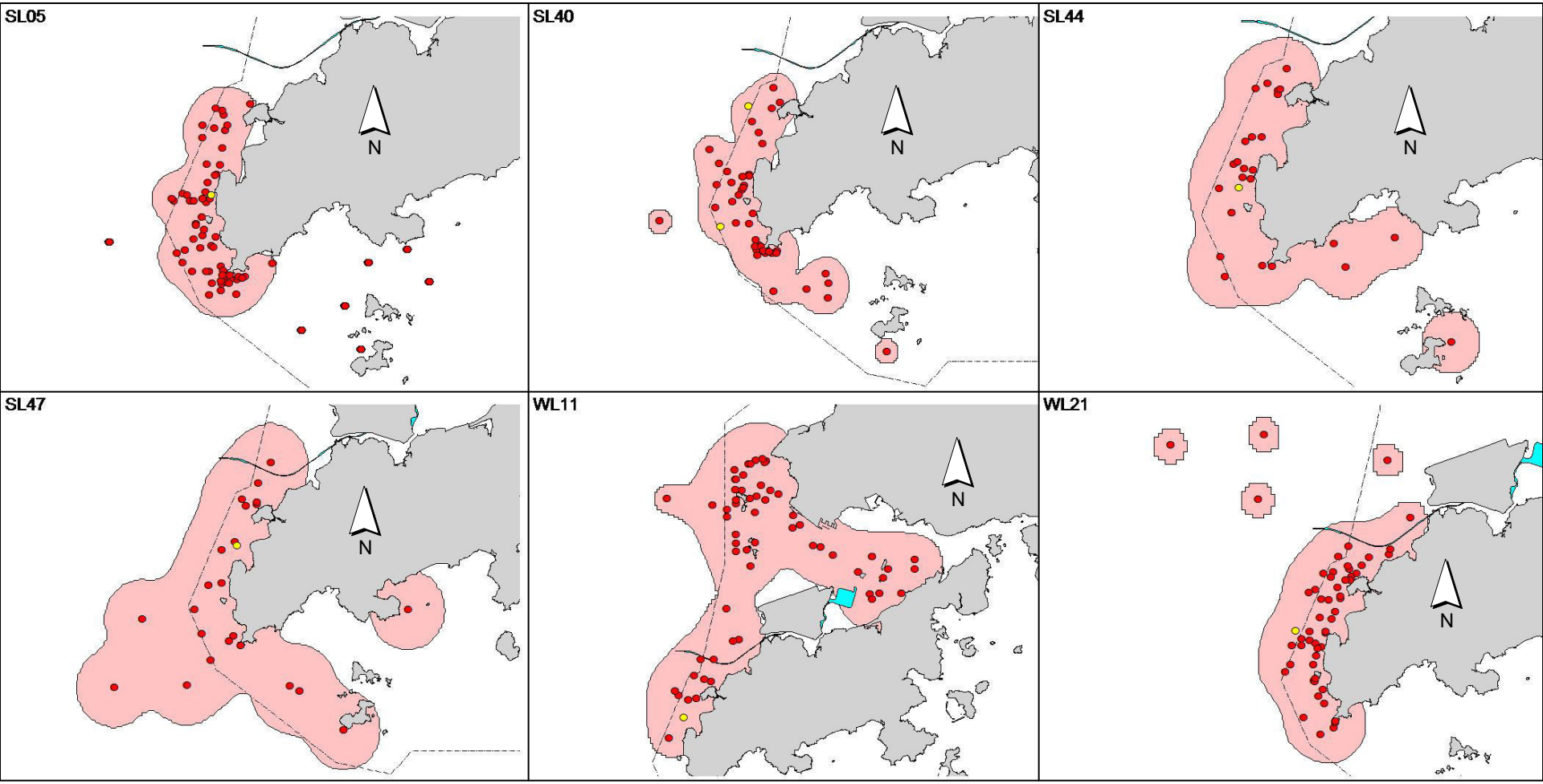

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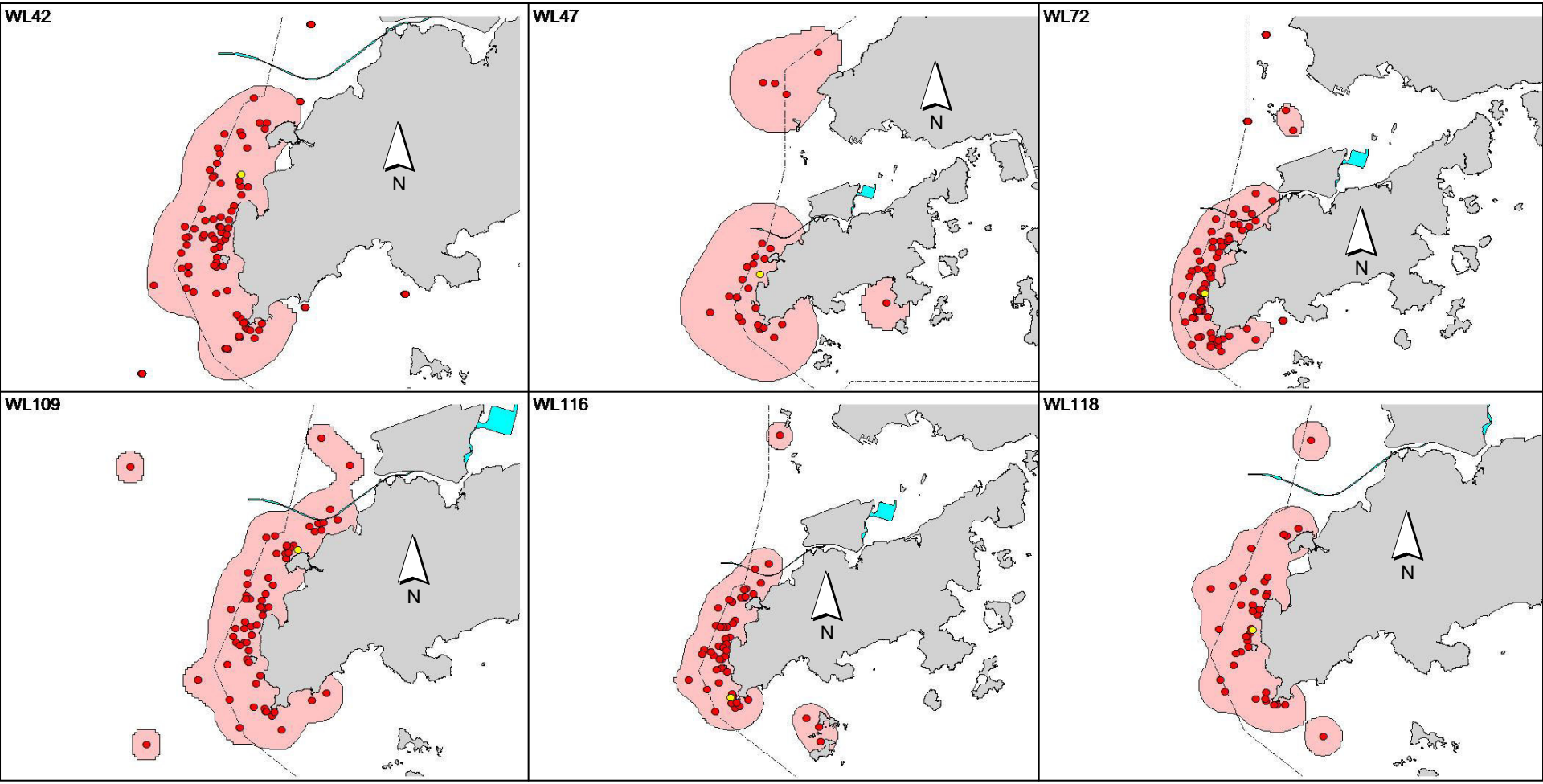
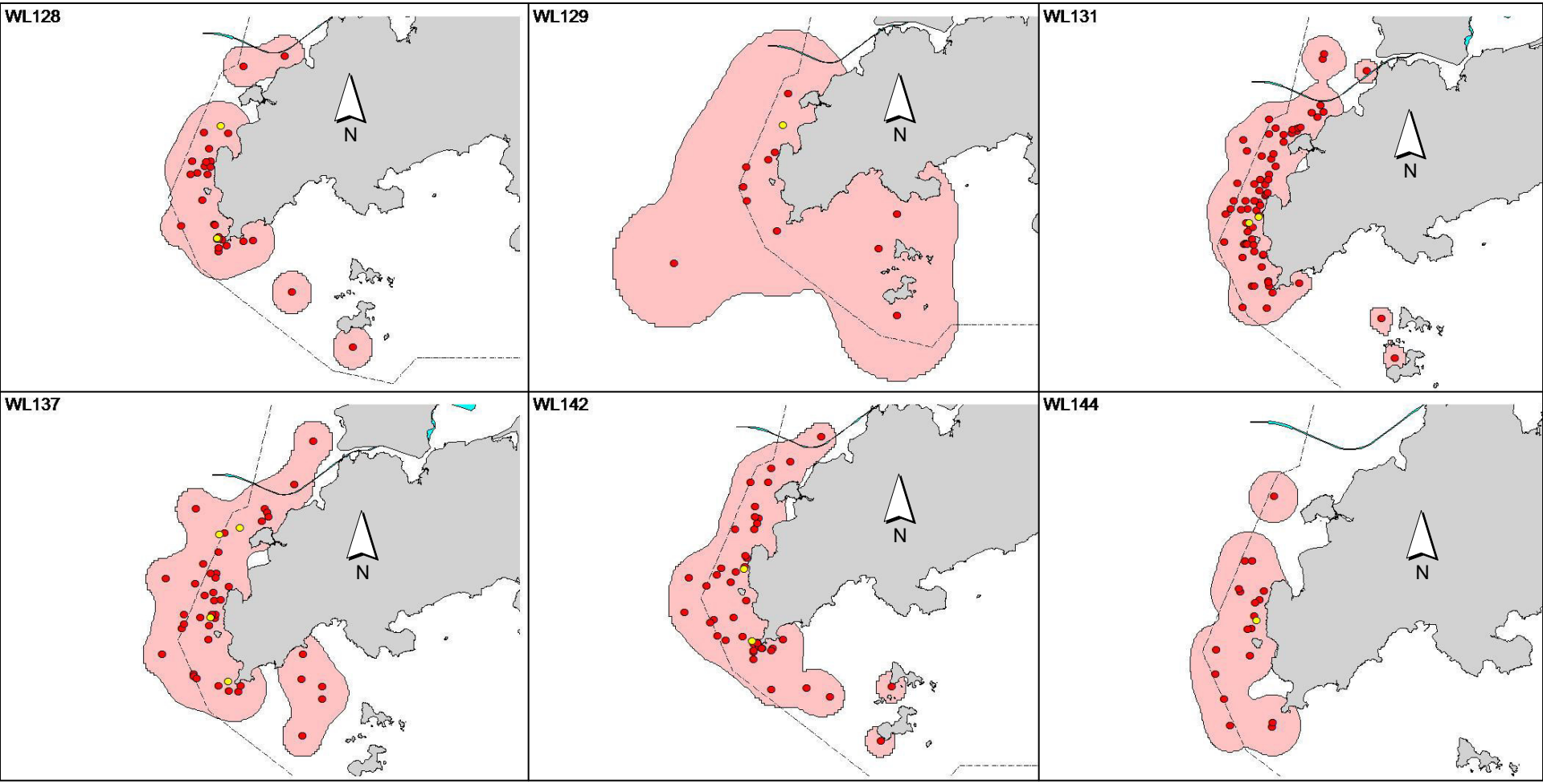
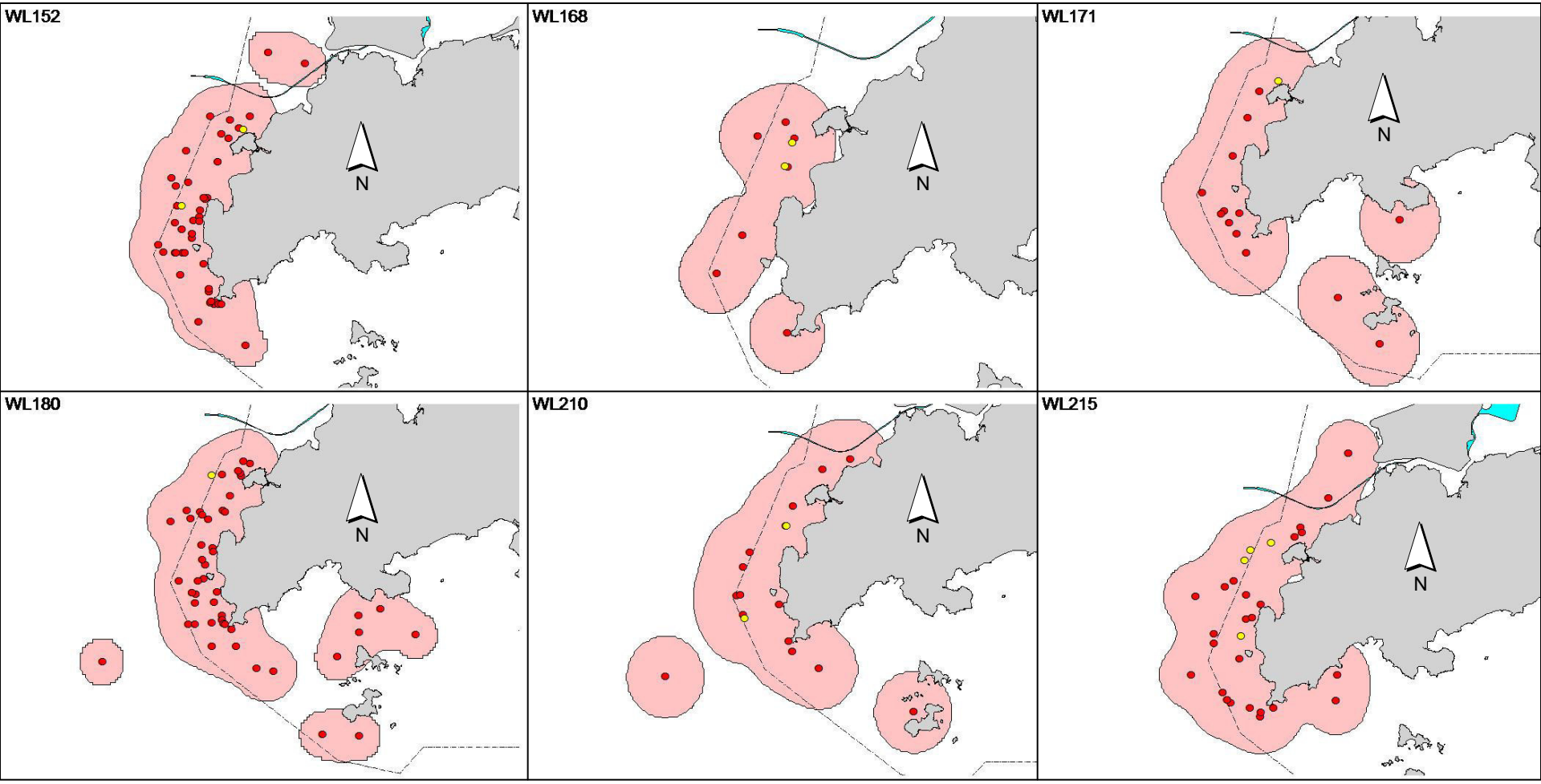


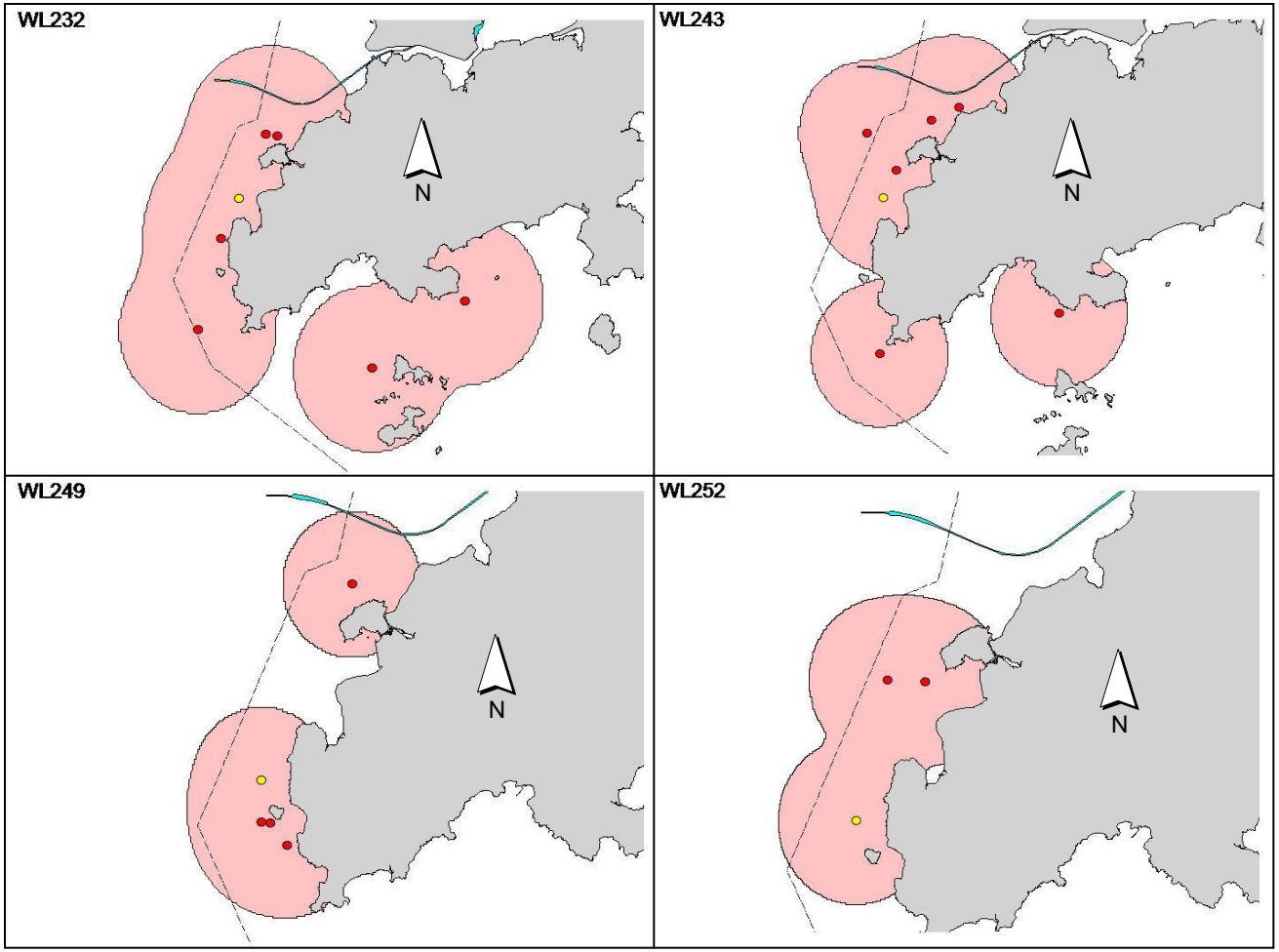
Appendix V. (cont'd)



Appendix V. (cont'd)



Appendix V. (cont'd)



APPENDIX G
EVENT ACTION PLANS

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and SO; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2.Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and SO; 3. Advise the SO on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and SO; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor;	1. Submit proposals for remedial to SO within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

LIMIT LEVEL				
1.Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform SO, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the SO on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2.Exceedance for two or more consecutive samples	1. Notify IEC, SO, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and SO to discuss	1. Discuss amongst SO, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly; 3. Supervise the implementation of	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SO until the exceedance

	the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results; 8. If exceedance stops, cease additional monitoring.	remedial measures.	5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	is abated.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, SO – Supervising Office

Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	**IEC**	**SO**	**CONTRACTOR**
Action Level	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Notify IEC and Contractor; 3. Report the results of investigation to the IEC, SO and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the SO accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, SO, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;	1. Discuss amongst SO, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly; 3. Supervise the implementation of	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals;

EVENT	ACTION			
	ET	**IEC**	**SO**	**CONTRACTOR**
	6. Inform IEC, SO and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results; 8. If exceedance stops, cease additional monitoring.	remedial measures.	noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SO until the exceedance is abated.

Event and Action Plan for Water Quality

Event	ET Leader	IEC	SO	Contractor
Action level being exceeded by one sampling day	Repeat *in situ* measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor and SO; Check monitoring data, all plant, equipment and Contractor's working methods.	Check monitoring data submitted by ET and Contractor's working methods.	Confirm receipt of notification of non-compliance in writing; Notify Contractor.	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Action level;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly; Supervise the implementation of mitigation measures.	Discuss with IEC on the proposed mitigation measures; Ensure mitigation measures are properly implemented; Assess the effectiveness of the implemented mitigation measures.	Inform the Supervising Officer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of additional mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SO and Contractor;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly.	Confirm receipt of notification of failure in writing; Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to review the working methods.	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET,

Event	ET Leader	IEC	SO	Contractor
				IEC and SO.
Limit level being exceeded by two or more consecutive sampling days	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SO and Contractor; Ensure mitigation measures are implemented;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SO accordingly; Supervise the implementation of mitigation measures.	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Ensure mitigation measures are properly implemented; Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	Take immediate action to avoid further exceedance; Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO; Implement the agreed mitigation measures; Resubmit proposals of mitigation measures if problem still not under control; As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor, 5. Check monitoring data. 6. Review to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary.	1. Check monitoring data submitted by ET and Contractor. 2. Discuss monitoring results and findings with the ET and the Contractor.	1. Discuss monitoring data with the IEC and any other measures proposed by the ET. 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing. 2. Discuss with the ET and the IEC to propose measures to the IEC and the ER/SOR. 3. Implement the agreed measures.

Event	ET Leader	IEC	ER / SOR	Contractor
Limit Level	1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor of findings, 5. Check monitoring data. 6. Repeat reviewing to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary. 7. If the ET proves that the source of impact is caused by any of the construction activity by the works contract, the ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor for necessity of additional dolphin monitoring, and/or any other potential mitigation measures (eg, consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activities…etc), and submit to the IEC a proposal of additional dolphin monitoring and/or	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor, and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures, and advise ER/SOR of the results and findings accordingly.	1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with proposals for additional dolphin monitoring and/or any other mitigation measures submitted by the ET and Contractor and verified by the IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

	mitigation measures where necessary.			

APPENDIX H
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

EIA Ref.	EM&A Log 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?	Implementation Status
Air Quality							
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	^
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	* ^ ^ ^ ^
S5.5.6.2	A2	• When there are open excavation and reinstatement works, hoarding	Good construction site	Contractor	All construction	Construction	^

EIA Ref.	EM&A Log 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?	Implementation Status
		of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;	practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.		sites	stage	^ ^ ^ N/A ^ ^

EIA Ref.	EM&A Log 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?	Implementation Status
S5.5.6.2	A2	• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	N/A N/A N/A
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	*
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	^
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: • Loading, unloading, handling, transfer or storage of any dusty	Monitor the 24 hr and 1hr TSP levels at the representative dust	Contractor	Selected representative dust	Construction stage	^

EIA Ref.	EM&A Log 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?	Implementation Status
		materials should be carried out in totally enclosed system; • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; • Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; • The materials which may generate airborne dusty emissions should be wetted by water spray system; • All receiving hoppers should be enclosed on three sides up to 3m above unloading point; • All conveyor transfer points should be totally enclosed; • All access and route roads within the premises should be paved and wetted; and • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	monitoring stations to ensure compliance with relevant criteria throughout the construction period.		monitoring station		^ ^ ^ ^ ^ ^ ^
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points.	Control construction dust	Contractor	All construction sites	Construction stage	N/A N/A N/A N/A
Construction Noise (Air borne)							
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the	Control construction airborne	Contractor	All construction	Construction	

EIA Ref.	EM&A Log 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?	Implementation Status
		following: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	noise by means of good site practices		sites	stage	^ ^ ^ ^ ^ ^
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	^
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	*
S6.4.13	N4	4) Select “Quiet plants” which comply with the BS 5228 Part 1 or TM	Reduce the noise levels of	Contractor	For plant items	Construction	^

EIA Ref.	EM&A Log 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?	Implementation Status
		standards.	plant items		listed in Appendix 6D of the EIA report at all construction sites	stage	
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	^
	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	^
Waste Management (Construction Waste)							
S8.3.8	WM1	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	^ * ^ N/A ^

EIA Ref.	EM&A Log 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?	Implementation Status
		the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation					* ^
S8.3.9 - S8.3.11	WM2	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	^ *

EIA Ref.	EM&A Log 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?	Implementation Status
		areas of the sites should be considered for such segregation and storage.					
S8.2.12-S8.3.15	WM3	<u>*Chemical Waste*</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	^ ^ ^ *

EIA Ref.	EM&A Log 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?	Implementation Status
		waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					
S8.3.16	WM4	*Sewage* • Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	^
S8.3.17	WM5	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans,	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	* ^ * ^

EIA Ref.	EM&A Log 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?	Implementation Status
		plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.					*
Water Quality (Construction Phase)							
S9.11.1 – S9.11.1.2	W1	• Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below and summarised in the Environmental Mitigation Implementation Schedule in EM&A Manual. • Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts; • For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing; • where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%; • single layer silt curtains will be applied around all works; • during the first two months of dredging work for HKLR, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the above shall be those close to the locations of the initial period of dredging work. Details in this regard shall be determined by the ENPO to be established,	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	^ ^ ^ N/A ^ N/A

EIA Ref.	EM&A Log 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?	Implementation Status
		taking account of the Contractor's proposed actual locations of his initial period of dredging work. • silt curtain shall be fully maintained throughout the works. In addition, dredging operations should be undertaken in such a manner as to minimise resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging contract. • trailer suction hopper dredgers shall not allow mud to overflow; • use of Lean Material Overboard (LMOB) systems shall be prohibited; • mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; • barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; • any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; • loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; • excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;					* N/A N/A ^ ^ ^ ^ * ^

EIA Ref.	EM&A Log 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?	Implementation Status
		• all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • the works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.					^ *
S9.11.1.3	W2	<u>*Land Works*</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; • silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	* N/A * ^

EIA Ref.	EM&A Log 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?	Implementation Status
		specifically at the onset of and after each rainstorm; • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;					^ ^ ^ ^ ^ ^ ^ ^

EIA Ref.	EM&A Log 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?	Implementation Status
		• wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.					^ N/A * ^ ^ ^
S9.14	W3	Implement a water quality monitoring programme	Control water quality	Contractor	At identified monitoring location	During construction period	^
Ecology (Construction Phase)							
S10.7	E1	• Good site practices to avoid runoff entering woodland habitats in Scenic Hill	Avoid potential disturbance on habitat of Romer's Tree	Designer; Contractor	Scenic Hill	During construction	^

EIA Ref.	EM&A Log 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?	Implementation Status
		• Reinstate works areas in Scenic Hill • Avoid stream modification in Scenic Hill	Frog in Scenic Hill				N/A ^
S10.7	E2	• Use closed grab in dredging works. • Install silt curtain during the construction. • Limit dredging and works fronts. • Good site practices • Strict enforcement of no marine dumping. • Site runoff control • Spill response plan	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^ ^ ^
S10.7	E3	• Reprovision of replacement Artificial Reefs (of the same volume as the existing ARs inside Marine Exclusion Zone)	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	^
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction	^
S10.7	E6	• Dolphin Exclusion Zone; • Dolphin watching plan	Minimize temporary marine habitat loss impact to dolphins	Contractor	Marine works	During marine works	^ ^
S10.7	E7	• Decouple compressors and other equipment on working vessels • Avoidance of percussive piling • Marine underwater noise monitoring	Minimise marine noise impacts on dolphins	Contractor	Marine works	During marine works	^ ^ ^

EIA Ref.	EM&A Log 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?	Implementation Status
		• Temporal suspension of drilling bored pile casing in rock during peak dolphin calving season in May and June					N/A
S10.7	E8	• Control vessel speed • Skipper training. • Predefined and regular routes for working vessels; avoid Brothers Islands.	Minimise marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works	^ ^ ^
S10.10	E9	• Dolphin vessel monitoring	Minimise marine traffic disturbance on dolphins	Contractor	North Lantau and West Lantau	Prior to construction, during construction, and 1 year after operation	^
Fisheries							
S11.7	F1	• Reprovision of replacement Artificial Reefs(of the same volume as the existing ARs inside Marine Exclusion Zone)	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S11.7	F2	• Reduce re-suspension of sediments • Limit dredging and works fronts. • Good site practices • Strict enforcement of no marine dumping • Spill response plan	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^
Landscape & Visual (Construction Phase)							
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • G1. Grass-hydroseed bare soil surface and stock pile areas.	Minimise visual & landscape impact	Contractor	HKLR	Construction stage	N/A

EIA Ref.	EM&A Log 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?	Implementation Status
		• G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic.					N/A
		• G3. For HKLR, providing aesthetic design on the viaduct, tunnel portals, at-grade roads (e.g. subtle colour tone and slim form for viaduct, featured form of tunnel portals, roadside planting along at-grade roads and landscape berm on) to beautify the HKLR alignment.					N/A
		• G5. Vegetation reinstatement and upgrading to disturbed areas.					N/A
		• G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed.					N/A
		• G7. Provide planting area around peripheral of and within HKLR for tree screening buffer effect.					N/A
		• G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall.					N/A
		• G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt “natural-look” by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance “natural-look” of the new coastline (see Figure 14.4.2 for example).					N/A
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> • V1.Minimize time for construction activities during construction period.					^
		• V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKLR construction.					^

EIA Ref.	EM&A Log 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?	Implementation Status
EM&A							
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	^
S15.5 - S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	^ ^ ^

Remarks: ^ Compliance of mitigation measure

* Recommendation was made during site audit but improved/rectified by the contractor

N/A Not Applicable at this stage as no such site activities were conducted in the reporting month (e.g. concrete batching plan, barging point, seawall dredging and filling, bored piling, landscaping works etc)

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141202
Date	2 December 2014 (Tuesday)
Time	9:15-11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
141202-R01	• Properly erect sand bag bund to avoid discharging the wastewater to the sea at WA4	B16
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141128), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		2 December 2014
Checked by	Dr. Priscilla Choy		2 December 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141209
Date	9 December 2014 (Tuesday)
Time	9:45-11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
141209-R01	• Properly clear the construction wastes at near the trees at P98 and P88.	C30
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
141209-R01	• Properly clear the construction wastes at near the trees at P98 and P88.	F4ii.
141209-R02	• Properly store the chemical containers at P95.	F3i.
141209-R03	• Clear the discarded chemical container as chemical waste at P92.	F2i. & ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141202), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

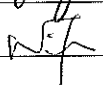
	Name	Signature	Date
Recorded by	Ivy Tam		9 December 2014
Checked by	Dr. Priscilla Choy		9 December 2014

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141216
Date	16 December 2014 (Tuesday)
Time	9:45-11:25

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
141216-R04	• Properly deploy the silt curtain at P100 ,	B25
	B. Ecology	
141216-R03	• Clear the construction materials / wastes at near the trees and provide tree protection zone at near P113.	C30
	C. Air Quality	
141216-R01	• Provide water spray for the dry exposed area at Portion C more frequently.	D5, 6, 8, 14
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
141216-R02	• To display the Environmental Permit at the site exit near P106 (Portion C) and update the Construction Noise Permit at the site exit at Portion C (near Southeast Quay).	G1 and 5
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141209), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

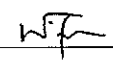
	Name	Signature	Date
Recorded by	Ivy Tam		16 December 2014
Checked by	Dr. Priscilla Choy		16 December 2014

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141223
Date	23 December 2014 (Tuesday)
Time	9:30-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
141223-R01	• Clear the concrete wastes at the platform at P25 and seal the gap to prevent the wastes falling into the sea.	B20
141223-R05	• Properly repair the damage silt curtain at P73.	B25
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
141223-R03	• Provide noise emission label for the air compressor at P25.	E8
141223-R06	• To replace the damage acoustic material for the noise enclosure for generator at P73	E7
	E. Waste / Chemical Management	
141223-R02	• Clear the oil leakage and provide the drip tray for the container at P25.	F8 and F9
141223-R04	• Clear the oil spillage and provide spill kit at P73.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141216), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		23 December 2014
Checked by	Dr. Priscilla Choy		23 December 2014

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141230
Date	30 December 2014 (Tuesday)
Time	9:00-11:50

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
141230-R04	• Properly check and maintain the generator to avoid heavy smoke at the barge near P53.	D19
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
141230-R01	• Provide drip tray for the oil containers at the barge near P48.	F9
141230-R02	• Clear the accumulated wastes and provide waste sorting at the barge near P48.	F1i., 1iii. & 4ii.
141230-R03	• Clear the sand which soaks up the oil around the generator as chemical waste at the barge near P48.	F2ii. & F8
141230-R05	• Clear the accumulated concrete debris and provide sufficient skip for temporary storage of concrete debris at P48.	F4ii. & F7
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141223), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

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	Name	Signature	Date
Recorded by	Ivy Tam		30 December 2014
Checked by	Dr. Priscilla Choy		30 December 2014

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150108
Date	8 January 2015 (Thursday)
Time	9:30-11:30

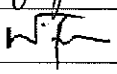
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
150108-R04	• Provide mitigation measures to prevent runoff from site discharging to public road (near P106).	B2i.
150108-R06	• Properly deploy the silt curtain at P91.	B25
150108-R07	• Clear the floating rubbish at P82.	B21
	B. Ecology	
150108-R01	• Clear the construction materials / wastes at near the trees at P113, P107, P96 and P95.	C30
	C. Air Quality	
150108-R02	• Provide water spray for the dry exposed area at near P109.	D5, D6, D14
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
150108-R03	• Provide drip tray for the oil containers and generator at near P108.	F9
150108-R05	• Clear the accumulated wastes regularly at P96.	F1i. F1iii., F4ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141230), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		8 January 2015
Checked by	Dr. Priscilla Choy		8 January 2015

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	150113
Date	13 January 2015 (Tuesday)
Time	9:30-11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
150113-O01	• Oil spillage was observed at the platform at P73. The Contractor was reminded to clear the leaked oil as soon as possible.	F8
150113-R02	• Provide spill kit at the platform at P73.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150108), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

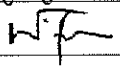
	Name	Signature	Date
Recorded by	Ivy Tam		13 January 2015
Checked by	Dr. Priscilla Choy		13 January 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150119
Date	19 January 2015 (Monday)
Time	9:30-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
150119-R02	• Provide acoustic decoupling measures for the power pack at the barge at P52.	E7
150119-R03	• Properly check and repair the noise enclosure at P71 to ensure it comply with Construction Noise Permit.	E5
	E. Waste / Chemical Management	
150119-R01	• Clear the oil spillage at near the power pack at Portion A. (P82)	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150113), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		19 January 2015
Checked by	Dr. Priscilla Choy		19 January 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150130
Date	30 January 2015 (Friday)
Time	9:30-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
150130-R01	• Clear the excess rockfill materials at the deck of barge at P68.	B20
150130-R02	• Properly deploy the silt curtain to avoid the gap at P71.	B25
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150119), follow up action is needed for the item 150119-R03.	

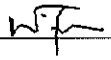
	Name	Signature	Date
Recorded by	Ivy Tam		30 January 2015
Checked by	Dr. Priscilla Choy		30 January 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150203
Date	3 February 2015 (Tuesday)
Time	9:40-11:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
150203-R04	• To repair the damage part of silt curtain at P91.	B25
	B. Ecology	
150203-R01	• Clear the construction materials at near the trees at P100.	C30
150203-R03	• To remove the generator at near the tree at P96.	C30
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
150203-R02	• Clear the accumulated wooden wastes and aluminum cans at between P100 and P99.	F1i., F1iii. & F4ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150130), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

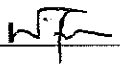
	Name	Signature	Date
Recorded by	Ivy Tam		3 February 2015
Checked by	Dr. Priscilla Choy		3 February 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150210
Date	10 February 2015 (Tuesday)
Time	9:45-11:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
150210-O01	• A sedimentation tank with connecting tube was placed at seawall area at P86. The Contractor was reminded to check the approved discharging location according to wastewater discharge license before discharging the treated muddy water.	B3i.
150210-O02	• Wastewater was observed pumping out to the gully directly at P82. The Contractor was reminded to provide sedimentation facilities and discharge the treated wastewater to approved discharging location.	B3i.
150210-O03	• Muddy water generated from bored piling works and accumulated at P82. The Contractor was reminded to pump the muddy water to the sedimentation tank and discharge to approved discharging location.	B2ii. & B3i.
	B. Ecology	
150210-R04	• Clear the construction materials at near the trees at P91.	C30
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
150210-R05	• Provide noise emission label for the air compressor at P81.	E8
150210-R06	• Properly close the door panel of air compressor at P81.	E9
	E. Waste / Chemical Management	
150210-R07	• Clear the construction wastes and handrail at the seawall area at P84.	F4ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150203), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		10 February 2015
Checked by	Dr. Priscilla Choy		10 February 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150218
Date	18 February 2015 (Wednesday)
Time	9:30-10:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
150218-R01	• Clear the wastes materials at the temporary drainage channel at near P112.	F1i.
150218-R02	• Clear the accumulated general refuse at near P108.	F1iii., F4ii. & F6
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150210), follow up action is required for the item(s) 150210-R04 to R07.	

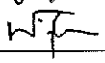
	Name	Signature	Date
Recorded by	Ivy Tam		18 February 2015
Checked by	Dr. Priscilla Choy		18 February 2015

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	150224
Date	24 February 2015 (Tuesday)
Time	9:15-11:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
150224-R01	• Clear the excess concrete debris at the platform at P15.	B20
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
150224-R02	• Provide noise emission labels for the hand held breaker at the platform at P15.	E8
	E. Waste / Chemical Management	
150224-R03	• Regular clear the waste materials at the platform at P19.	F4ii.
150224-R04	• Clear the wastewater which is nearly overflow at the drip tray at P19.	F9
150224-R05	• Clear the oil spillage around the drip tray at P19.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 150218), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		24 February 2015
Checked by	Dr. Priscilla Choy		24 February 2015

APPENDIX J
WASTE GENERATION IN THE REPORTING PERIOD

Appendix: C6 Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No.: HY/2011/09

Monthly Summary Waste Flow Table for 2015 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated[11]	Hard Rock and Large Broken Concrete[6]	Reused in the Contract[8,9]	Reused in other Projects[5,8,9]	Disposed as Public Fill[7]	Imported Fill[6,7,8,9]	Metals[12]	Paper/ cardboard packaging	Plastics[3]	Chemical Waste	Others, e.g. general refuse[8,9]
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Jan	4.101	0.000	0.000	0.000	4.101	0.000	0.070	0.485	0.000	0.000	0.566
Feb	3.823	0.000	0.000	0.000	3.823	0.000	0.000	to be updated	0.000	0.000	0.241
Mar											
Apr											
May											
Jun											
Sub-Total	7.923	0.000	0.000	0.000	7.923	0.000	0.070	0.485	0.000	0.000	0.806
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	7.923	0.000	0.000	0.000	7.923	0.000	0.070	0.485	0.000	0.000	0.806

Forecast of Total Quantities of C&D Materials to be Generated from the Contract [10]										
Total Quantity Generated[11]	Hard Rock and Large Broken Concrete[6]	Reused in the Contract[8,9]	Reused in other Projects[5,8,9]	Disposed as Public Fill[7]	Imported Fill[6,7,8,9]	Metals	Paper/ cardboard packaging	Plastics[3]	Chemical Waste	Others, e.g. general refuse[8,9]
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
229.311	0.000	3.200	73.111	100.000	53.000	1.500	23.273	0.000	7.532	6.818

Notes:

(1) The performance targets are given in ER Appendix 8J Clause 14 and the EM&A Manual.

(2) The waste flow table shall also include C&D materials to be imported for use at the Site.

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3. (ER Part 8 Clause 8.8.5 (d) (ii) refers).

(5) The materials reused in other Project shall not be treated as waste under the Waste Disposal Ordinance (CAP354).

(6) According to the EIA Appendix 8B, the density of rock (bulked) is 2.0 tonnes/m^3.

(7) According to the EIA Appendix 8B, the density of soil (bulked) is 1.8 tonnes/m^3.

(8) Assuming the loading quantities of a 30-tonne truck is 8.0m^3.

(9) Assuming the loading quantities of a 24-tonne truck is 6.5m^3.

(10) The forcast of C&D materials to be generated from the Contract is sourced from the works program in December 2014.

(11) The volume of Total Quantity Generated means the volume of Hard Rock and Large Broken Concrete+Disposed as Public Fill+Imported Fill-Reused in the Contract-Reused in other Projects

(12) The density of metal is 7,850 kg/m^3.

APPENDIX K
SUMMARY OF EXCEEDANCE

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road –
Section between HKSAR Boundary and Scenic Hill

Exceedance Report

(A) Exceedance Report for Air Quality

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Air Quality	1-hr TSP	0	0	0	0
	24-hr TSP	1	0	0	0

(B) Exceedance Report for Construction Noise (NIL in the reporting period)

(C) Exceedance Report for Water Quality

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	0	0	0	0
	Dissolved Oxygen (DO) (Bottom)	0	0	0	0
	Turbidity	0	0	0	0
	Suspended Solids (SS)	10	6	0	0

APPENDIX L
COMPLAINT LOG

Appendix L - Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-04-001	Near Tung Chung New Development Pier	8 April 2013	EPD received the complaint on 8 April 2013. The complainant complained about oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past few months.	1) The vessels photos in the complainant's photo are not the working vessels under Contract No. HK/2011/09. 2) No oil dumped from Contract No. HK/2011/09's working vessels was observed according to ET's site inspection conducted on 9 April 2013 at near Tung Chung New Development Ferry Pier. 3) Joint site inspection (DCVJV and ARUP) was conducted on 10 April 2013 and confirmed that Contract No. HY/2011/09's vessels are not involved the complaint case. 4) DCVJV will keep remind their boat crews not discharging contaminated effluent directly into the sea.	Closed
Com-2013-05-001	WA6	2 May 2013	ARUP received the complaint on 2 May 2013. The complainant alleged the noise nuisance was generated from the Works Area WA6 at around 13:00 on 1 May 2013 (Wednesday).	The site diary report was reviewed and confirmed that no works were carried out at WA6 on 1 May 2013. In addition, no noise was heard from WA6 according to the security guard who on duty at WA6 on 1 May 2013. Based on the information provided, the complaint regarding the construction noise at WA6 is not considered justifiable.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-05-002	WA6	18 May 2013	ARUP received the complaint on 18 May 2013. The complainant advised that the noise nuisance due to loading of metal parts at barge near the seawall of Works Area WA6 early morning (around8:45a.m) on 18 May 2013 (Saturday).	Based on the record of site activities at WA6 on 18 May 2013, 4 metal plates and 2 oxygen-acetylene set were lifted onto a derrick boat "Chiu Kee" by a crane near seawall at WA6 in the morning on that day. Such operation was commenced around 8:40a.m and completed in 10 minutes during the normal construction working hour (0700 – 1900 Monday to Saturday). However, the duration of aforesaid activities is very short and infrequent. Nevertheless, the Contractor was reminded to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific mitigation measures for the complaint including but not limited to:- •To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and •To deploy professional personnel to supervise the works.	Closed
Com-2013-05-003	Near Tung Chung New Development Pier	18 May 2013	EPD received the public complaint on 18 May 2013. This complaint was a follow-up of a previous complaint received by EPD on 8	After receiving the complaint, additional site inspection was conducted at near Tung Chung New Development Pier on 30 May 2013 to investigate whether oil	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			April 2013 (Com-2013-04-001). The complainant complained again about the oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past months.	dumped was due to Contract No. HY/2011/09's vessels. During the site inspection, three working vessels under Contract No.HY/2011/09 was anchored off near Tung Chung New Development Pier. No oil dumped from Contract No. HY/2011/09's vessels were observed and the water around the vessels was clear. The following mitigation measures have been implemented by DCVJV: • DCVJV has sent the letter to the shipping agent to remind them to ensure the vessels under Contract No. HY/2011/09 are in good condition and any oil dumped to sea should be avoided to prevent water pollution. • Provide training to the vessel skippers for prevention of pollution from ships. • DCVJV requested vessel skippers to provide engine oil disposal records The vessel skippers assured to us that all waste lubricants were sent to waste collectors regularly and no oil discharge into seawater.	
Com-2013-07-001	Southeast Quay of Chek Lap Kok near the junction of Chek Lap Kok South Road and Scenic Road	17 July 2013	The complaint was received by EPD on 17th July 2013. According to the EPD's letter, the complainant was concerned for the noise nuisance generated from the	In response to the complaint, ET conducted two times site inspections at Southeast Quay at Chek Lap Kok between 18:45 and 20:30 hours on 23 July 2013 and 20:30 to 22:30 hours on 30 July 2013.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			operation of concrete lorry mixers during evening and night-time period at Southeast Quay of Chek Lap Kok.	During the inspections, the Ro-Ro barge was observed anchored off Southeast Quay at Chek Lap Kok but no concrete lorry mixer was observed throughout the inspection. On 23 July 2013, at about 19:35, one tug boat was observed travelling to Southeast Quay, Chek Lap Kok and left at about 19:40. On 30 July 2013, no tug boat and concrete lorry mixers were observed during the inspection. According to the Contractor, there was no concreting works for the pier sites on 23 July 2013 and therefore no loading and unloading operation at Southeast Quay at Chek Lap Kok. Concreting works were performed at Pier 0 on 30 July 2013. As the Contractor anticipated the arrival time of tug boat and flap-top barge at Southeast Quay will exceed 23:00 hours after the concreting works, they decided to arrange the tug boat and flap-top barge with concrete	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				lorry mixers anchored off around Pier 66 after 23:00 hours. So, no loading and unloading operation at Southeast Quay at Chek Lap Kok was observed. Further night time site inspection was conducted on 22 August 2013 during the loading and unloading operation at Southeast Quay of Chek Lap Kok, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-RS0895-13.	
Com-2013-11-001	Chek Lap Kok (CLK) South Road	16 November 2013	The complaint was received by project customer services on 16th November 2013 regarding the dust problem at Chek Lap Kok (CLK) South Road.	After receiving the complaint, ET conducted the site inspection on 19 and 29 November 2013 to check the appropriate environmental protection and pollution control measures which are properly implemented by the Contractor under HY/2011/09 (DCVJV). The observation are summarized as below:- • Dust generation works was conducted by the other Contractor at South East Quay • Proper watering of haul road to avoid dust generation during vehicle / plant equipment movement. • Vehicle washing facilities provided	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				at every site exit at CLK South Road and South Perimeter Road. • No dark smoke was observed emitting from the plant equipments. Based on the information collected, the complaint of dust problem at Check Lap Kok South Road is considered not related to Contract No. HY/2011/09 as dust suppression measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.	
Com-2014-01-001	Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09	3 January 2014	The complaint was received by EPD on 3rd January 2014. According to the EPD's letter, a resident in Tai O District was concerned for the noise nuisance occasionally arising from the hammering or hitting of metals from Contract No. HY/2011/09.	In response to the complaint, ET conducted an ad hoc night time site inspection at P0, P18 and P19 on 14 January 2014 between around 23:00 and 00:30 hours of 15 January 2014. In accordance with the site activities record and site inspections, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-RS1108-13. Nevertheless, the Contractor was advised to strictly follow the conditions of the permit because any deviation from the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority's refusal to issue further permit. In addition, the following environmental mitigation measures were recommended: • Review and adjust the lighting directions of the barge, under safety consideration, to avoid potential visual impacts to residents in vicinities; • To ensure the equipment are maintaining in good operation condition; and • To strengthen site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific mitigation measures.	
Com-2014-01-002	Hong Kong-Zhuhai-Macao Bridge	16 January 2014	The complaint was received by HyD's PR Team on 16 January 2014 that the complainant advised that the heavy exhaust fume affecting Tung Chung Crescent.	After receiving the complaint, ET conducted the site inspection on 21 January 2014 to check all the plant equipments which were operated for the construction works and air quality	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				mitigation measures. Based on the information collected, the complaint of heavy exhausts affecting Tung Chung Crescent is considered not related to Contract No. HY/2011/09 due to the following reason(s):- 1) The work sites at Portion C and South East Quay at Portion A under Contract No. HY/2011/09 are approximately 800m from Tung Chung Crescent. Any unpleasant smell of exhaust fume would not be anticipated. 2) No heavy smoke was observed emitting from plants / equipment during the site inspection on 21 January 2014. 3) The vehicles and equipments were switched off while not in use. 4) All plant and equipment were well maintained and in good operating condition. 5) Air quality mitigation measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-03-001	Oil Spillage at near Sha Lo Wan	5 March 2014	The complaint was received by EPD on 5 March 2014. The complainant suspected the oil leakage from the works area of Contract No. HY/2011/09 near Sha Lo Wan	Based on ET site inspection, no oil spillage from the works area under Contract No. HY/2011/09 at near Sha Lo Wan was observed. In addition, spill kits are ready on site in order to dealing with spillage cases promptly. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Provide training for the workers regularly regarding the mitigation measures on waste / chemical management. • Provide sufficient chemical spillage kit (e.g. oil absorbent) to all vessels and working platform. • Regular check the condition of vessels and plant equipments to ensure no leakage of oil.	Closed
Com-2014-03-002	Construction Noise in the vicinity of the waters outside Sha Lo Wan	11 March 2014	The complaint was received by EPD on 11 March 2014. According to the EPD's letter, the complainant was concerned for the mobile crane which operating in the vicinity of the waters outside Sha Lo Wan after 23:00.	In accordance with an ad hoc site inspection on 18 March 2014, no construction works were conducted during the restricted hours. The 1st investigation report has been submitted to EPD on 21 March 2014 and the 2nd investigation report was submitted to EPD on 26 June 2014. The Contractor was advised to strictly	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				follow the conditions of the permit because any deviation from the conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority's refusal to issue further permit. Nevertheless, the Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community: · To space out noisy equipment and position it as far away as possible from the sensitive receivers; · To avoid concurrent uses of noisy equipment near the sensitive area; · To ensure the equipment are maintaining in good operation condition; · To turned off any idle equipment on site; and · To enclose the noisy part of the machine by acoustic insulation material if feasible. · To arrange tailor-made training for the Production Team including the management and foremen to explain to them the conditions and requirements listed on the CNP. · To delegate one Engineer for ensuring that all construction activities and PMEs used are in full compliance with the CNP	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				and legislative requirements.	
Com-2014-04-001	Construction marine works by the company Bauer Hong Kong in Tung Chung	14 April 2014	The complaint was received by Agriculture, Fisheries and Conservation Department (AFCD) on 14 April 2014, the complainant complained that the dead dolphin was found under a platform at construction marine works by the company Bauer Hong Kong in Tung Chung (Macau Bridge Piling Works)	In accordance with the photos showing a date of 27 November 2013 (08:00 – 08:25a.m.) which provided by the complainant, the dolphin was observed has been dead for some time and shows signs of decomposition. It was difficult to determine the cause of death of the deceased dolphin based on the photographs and the dead dolphin was found a few months ago. By examining the photos, it is found that the body was beside a barge, not under a working platform. In addition, the dead dolphin was found in the early morning in which the marine construction works have not been commenced. Therefore, from the above information the dead dolphin is considered to be washed to the work site. However, there is no significant increase of cetacean stranding were found in Hong Kong since the commencement of Contact No. HY/2011/09. In regard to the complaint, the following recommendations were made:	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				➢ In case stranded cetaceans are found, the AFCD shall be contacted immediately and provide the following information to facilitate AFCD's investigation: 1. Name and telephone number; 2. Date and time of discovery; 3. Location (as specific as possible); 4. Status of the stranded animal (i.e. alive, freshly dead, slightly decomposed, rotten, mummified); 5. Type and size of the stranded animal. ➢ To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to the west of Airport. ➢ To implement Dolphin Watching Plan after the bored piling casing is installed.	
Com-2014-05-001	At the shore of Sha Lo Wan	13 May 2014	The complaint was received by EPD on 13 May 2014. According to the EPD's email, the complainant was concerned about the sand material that was excavated on the shore of Sha Lo Wan for the construction of Hong Kong -	After receiving the complaint from a Sha Lo Wan's village resident, the sub-contractor was instructed to stop the sand excavation and leave immediately. In addition, all sands excavated from the shore of Sha Lo Wan were returned back to the original area on 13 May 2014.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			Zhuhai - Macao Bridge (HZMB) Project on 11 May 2014.	Nevertheless, the Contractor was advised to arrange tailor-made training for Production Team including the management and foremen to explain to them the conditions and requirements listed on the Environmental Permit. In addition, indicative poles and flags are recommended to put within the site boundary to identify the extent of land areas in Sha Lo Wan / Sha Lo Wan (West) Archaeological site.	
Com-2014-05-002	At the shore of Sha Lo Wan	27 May 2014	The complaint was received by EPD on 27 May 2014. According to the EPD's email, the complainant was concerned about the dumping rubbles along the shore area of Sha Lo Wan on 27 May 2014.	The complaint investigation report for the complaint of dumping rubbles along the shore area of Sha Lo Wan was submitted to EPD on 4 June 2014. EPD and AFCD provided their comments on 5 and 9 June 2014 respectively. A meeting among DCVJV, ARUP, IEC, ET, EPD and AFCD was held on 17 June 2014. According to the meeting, further information is required to include in the complaint investigation report and the report was submitted to EPD on 4 March 2015.	Complaint investigation report is under review by EPD

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-05-003	Pier 39 to 50	29 May 2014	ARUP received the complaint on 29 May 2013. The complainant advised that the workers disposed hundreds of kg of waste spoils (concrete and earth) into the sea every day in the existing locations of HZMB site area.	Based on the investigation findings, the waste spoils (concrete and earth) were disposed to HY/2010/02 Project according to approved WMP. The following recommendations were made: • To check for any accumulation of waste spoils (concrete and earth) on site. • To cover the wastes skip with waste spoils before removing from site. • To carry out inspection of pier(s) regularly to ensure the frontline staff loads inert materials to approved barge properly. • To clean the waste storage areas regularly and do not cause dust nuisance.	Closed
Com-2014-08-001	Near Sha Lo Wan	27 August 2014	ARUP received the complaint on 27 August 2013. The complainant was concerned about the dust on the surface of the roro-barge.	Based on the investigation findings, dusty materials at the ro-ro barge at P63 and dust generation when vehicles passing by at the roro-barge at Southeast Quay were observed. The following recommendations were made: • To check for any accumulation of dusty materials at roro-barge. • To cover the stockpile of dusty materials before removing from site. • To clean the surface of roro-barge	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				regularly and do not cause dust and water quality nuisance. • To maintain the surface of roro-barge wet especially during the vehicle movements. Water misting is considered an acceptable measure to control dust emissions. • To check and replace the worn sand bags at the surface of roro-barge to prevent the turbid water from entering to the sea when watering the barge surface.	
Com-2014-11-001	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	11 November 2014	The complaint was received by EPD on 11 November 2014. According to the EPD's email, the complaint was received from one of the green groups Sea Shepherd. They complained that the residual concrete had been washed off from the deck surface of a flat-top barge into the sea, and marine littering had been spotted by a worker of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	Based on the investigation findings, residue concrete or wastewater contaminated with concrete overflowing/spilling into the sea from the roro barge and marine littering were suspected. The following recommendations were made: ➢ Properly clear the concrete stains on the three ro-ro barges (e.g. hand-held equipments such as shovel etc). Tarpaulin sheet is also recommended to provide when clearing the concrete stains at the edge of roro barge to prevent these removed materials from getting into the sea. The worker should also pay special care to remove the concrete stains to	Closed
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	18 November 2014	The complaint was received by EPD on 18 November 2014. According to the EPD's email, it was alleged that residual concrete		Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
	(Contract No. HY/2011/09)		had been poured out directly from the concrete lorry mixers on a roro barge into the sea during night-time by the workers of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	minimize the water quality nuisance. ➢ Keep cleanliness of the surface of roro-barge and do not cause water quality nuisance. ➢ To check and reinforce the concrete / sand bag bund between baffles erected near the edge of the three ro-ro barges to avoid accidental leakage of wastewater from the deck regularly. ➢ Keep all debris/ aggregate away from the edge of ro-ro barge to prevent them from falling into the sea. ➢ Provide sufficient skips for temporary storage of concrete residue/wastewater. ➢ To check for any accumulation of residual waste concrete at the waste skip on roro-barge. ➢ Provide spare and sufficient sand bags at each roro barges to confine the concerned area in the event of accidental spillage of concrete when discharge the concrete from the concrete lorry mixers to pump truck. ➢ Provide absorptive materials to absorb the wastewater in case of accidental spillage of wastewater	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				during washing concrete lorry mixers or other equipments. ➢ Assign trained staff to ensure proper management of environmental matters on each of the ro-ro barges in particular the handling of concrete residue/wastewater generated during operation. ➢ Keep record for collection of skip or temporary storage tank for wastewater and excess concrete. ➢ Ensure sufficient garbage bag / rubbish bin are provided at working barge / pier site. ➢ Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2014-11-003	Floating Concrete Batching Plant (FCBP)	28 November 2014	The complaint was received by EPD on 28 November 2014. The complaint was received from one of the green groups Green Lantau Association. They complained about the hauling of the floating concrete batching plant (FCBP) by the tug boat to the site of Contract No. HY/2011/09 from the north-	Based on the information collected, the following conclusions were drawn: 1) It is suspected that the wake following the FCBP was resulted from disturbance to the bottom sediment when it was traveling during the lowest tide on that day. 2) The FCBP was traveling within the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			east side had disturbed the seabed causing an increase of turbidity in marine waters at around noon of 15 November 2014.	site area and the maximum number of movement of a floating plant (and therefore tug boat) is two times per day. Average duration of each movement is around 1 hour/day. Therefore, the disturbance to the bottom sediment is considered temporary, localized and infrequent. 3) No illegally discharge of wastewater or domestic wastewater to the sea from FCBP. 4) Relevant environmental mitigation measures as shown in EP-352/2009/C were properly implemented. 5) No deterioration of marine water quality based on the marine water quality monitoring results on 15 November 2014. Nevertheless, DCVJV was also recommended the mitigation measures as below: • The vessel skipper should pay special care about the movement of deep draught vessel to avoid seabed disturbance. (e.g. speed restrictions) • In case of sediment plume was found behind vessel, the vessel skipper	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				should further reduce vessel speed. • Minimum clearance of 0.6m should be 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. (Reference: EIA-081/2002 - Construction of Lung Kwu Chau Jetty)	
Com-2014-12-001	Shores of Po Chue Tam and Shek Tsai Po, Tai O	7 December 2014	The complaint was received from one of the green groups Green Lantau Association. They complained about some waste materials (including a number of grey plastic mats and buoys) suspected in relation to the HZMB works have recently washed up on the shores of Po Chue Tam and Shek Tsai Po, Tai O	The owner of objects found on the shores could not be identified. DCVJV has taken initiative to remove these materials after receiving the complaint. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Gather up and remove debris to keep the work site orderly. • Maintain site housekeeping. Designate areas for waste materials and provide containers. • Secure loose or light material that is stored on open floors. • Do not permit rubbish to fall freely from any level of the pier sites. • Provide training for the workers	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2014-12-002	Site Office of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	2 December 2014	Highways Department (HyD) received a public complaint from a resident of Le Bleu Duex on 2 December 2014. According to the email from ARUP dated 3 December 2014, the complainant advised that the noise nuisance due to the metal parts were dropped onto the ground by people repetitively and loading or unloading a boat at the pier. The complaint was quoted, "*A resident living in Le Bleu Duex addressed a complaint to CE of HyD at about 20:04 hrs last night. He complained about the noise nuisance coming from site office since 19:30 hrs last night. Repetitively metal parts had been dropped on the ground by people who seem to*	Based on the information collected, the noise generated is considered due to the metal parts were dropped onto the ground at the seashore area near Le Bleu Duex. The metal pipe was unloaded at non-designated area and no powered mechanical equipment was used for unloading works at WA6 during restricted hour. The Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report and the specific mitigation measures for the complaint including but not limited to:- • To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and • To deploy professional personnel to	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			be loading or unloading a boat at the pier. Noise was still going on right now at 20:04."	supervise the works.	
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	The complainant was concerned about the increase of marine refuse (water bottles and debris) along the shore from Yat Tung to Tai O suspected in relation to the HZMB works.	The owner of marine refuse found on the shores could not be identified. DCVJV has taken initiative to remove these wastes after receiving the complaint. DCVJV will also take the initiative to clear the marine refuse along the shore from Yat Tung to Tai O, if necessary. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Gather up and remove debris to keep the work site orderly. • Maintain site housekeeping. Designate areas for waste materials and provide containers. • Secure loose or light material that is stored on open floors. • Do not permit rubbish to fall freely from any level of the pier sites. • Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				protection.	

APPENDIX M
SUMMARY OF SUCCESSFUL PROSECUTION

Appendix M - Summary of Successful Prosecution

Date of Successful Prosecution	Details of the Successful Prosecution	Status	Follow Up
20 October 2014	The non-compliance of construction noise permit (CNP) numbered GW-RS1217-13 that use of powered mechanical equipment not permitted in the CNP on 15 March 2014 between the hours of 7p.m. and 7a.m. at Pier 72.	The subcontractor was fined.	To ensure the construction works would comply with the CNP during restricted hours, a Permit-to-work system was formulated to control daily operation of the CNPs.